

# INNOVATIONS IN ZIMBABWEAN RESTAURANT SECTOR DURING PANDEMICS: INSIGHTS FROM COVID 19 PANDEMIC PERIOD

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## Abstract

The global tourism and hospitality sector pulled down its curtains and the restaurant sector was not spared. The coronavirus (Covid 19) pandemic caused an accumulative damage to the global restaurant industry. In Zimbabwe, due to measures of social distancing and general caution in public places, customers have been dining out less and less posing an alarming comatose state of the restaurant sector. However, the restaurant sector could not afford to completely shut its doors whenever there is a pandemic hence the need for innovations that could revive the sector. Despite the global importance of innovation, there is limited research focusing on the potential of innovation in solving the negative impacts of a pandemic like Covid 19 in Zimbabwe. Therefore, this study adopted a mixed research methodology to establish the different innovations that were adopted by the restaurant sector during a pandemic such as Covid 19. A sample size of 380 participants was adopted through a stratified random sampling. A 60% response rate was attained. For the qualitative part, the study used a qualitative desk research with a total of 80 research paper included in the study. Results of the study indicate that, the restaurant sector in Zimbabwe was in a comatose state and they adopted a limited number of innovations such as the use of disposable food service utensils and the avoidance of externally sourced food and beverage items, while also highlighting differing degrees of alignment with initiatives related to local sourcing, drive-through services, waste recycling, and collaboration with delivery services to pull through the crisis brought by Covid 19 pandemic. However, findings indicates that, the restaurant sector could have done more in terms of technological innovations, social innovations and product innovations. Findings from qualitative data indicates various technological, social and product innovations that restaurants in Zimbabwe could have used. Therefore, the findings from this study are essential in fueling the discourse of innovation and drawing relevant authorities' attention to the need for accentuating and exploiting the potential posed by innovations in solving the challenges posed by pandemics such as Covid 19 in Zimbabwe's restaurant sector.

Keywords: Innovations; Restaurant sector; Pandemics; Covid 19

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## 1. Introduction

Globally, Covid 19 carried the status of a pandemic which has led to a global catastrophe with its impacts on the hospitality industry potentially heavier than those of 9/11 terrorist attack, SARS, and the financial crisis in 2008 (Leta, and Chan 2021; Cheval, Mihai Adamescu, Georgiadis, Herrnegger, Piticar and Legates 2020). It was no longer unthinkable that a virus would affect every corner of the global economy, as

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it has happened with Covid 19. The restaurant industry was not an exception. According to Purwanto 2020, the Covid 19 pandemic disrupted the global food industry as nations closed down restaurants and bars to slow down the spread of the virus. Buttressing the aforementioned sentiment, Lai, Abidin, Hasni, Ab Karim and Ishak 2020 reiterates that, the hospitality industry specifically the restaurant sector, has never experienced a sudden downturn. Placing humans at the center of the situation, the virus generates deep fear, confusion, and impacts us in an extremely emotional manner that this generation has never felt (Mali 2020).

Across the globe, restaurants' daily traffic dropped precipitously compared to the same time last year. On a business level, the impacts of the crisis have reached every industry in the world, with the restaurant sector taking a massive hit (Pedersen, Ritter and Di Benedetto 2020; Xiang, Rasool, Hang, Javid, Javed and Artene 2021). The closure of restaurants caused a ripple impact among related industries such as food production, liquor, wine and beer production, and food and beverage shipping (Purwanto 2020; Amel, Lee, Secatore and Singer 2020). According to Elhini and Kafafy 2021, food traffic into the restaurants and cafes declined by 75% in Latin America whilst North America and Middle East market declined by 90% by end of March 2020. Nonetheless, the dire situation has provided an opportunity for food service teams and chefs around the world to work for the cause by arranging free meals for medical personnel while putting themselves at risk in order to combat the crisis. Buttressing the above statement, Hasan 2020 stated that in France, Christophe Raoux, executive chef at Ecole Ducasse, and Fabrizio Cosso, executive chef at Eataly, prepare meals for medical personnel at the Bichat Hospital in Paris. Another initiative is taken by Fabien Foare and Benoît Carcenat, the executive chef and director of culinary arts and gastronomy at Switzerland's Glion Institute of Higher Education.

In Africa, the restaurant sector will also live to tell its own story. The pandemic is also leaving trails as entities such as bed & breakfast, hostels, pubs & clubs, cafés, restaurants, bistros, and beach bars, to name a few, being small family businesses, are very likely to live the crisis much worse than other actors in the private sector due to their intrinsic vulnerability to change (Hasan 2020). The sector is also been heavily affected by the change in the supply chain, the lesser demand, some of them might partly or even fully pull down curtains until the recovery can take place. Closer home, in South Africa, the restaurant sector has been totally shut down during the lockdown (Bhoola 2022; Stiegler and Bouchard 2021; Nhamo, Dube and Chikodzi 2020; Van Heerden and Roos 2021). This means that, there was a decline in traffic into restaurants. In Zimbabwe, restaurants have bemoaned the impact of COVID-19 on their operations, against the backdrop of an already fragile economy (Machingura 2020). The impact on restaurants as a result of the Covid 19 pandemic, and more directly, the rapidly increasing social distancing requirements and travel restrictions, as well as the growing number of government stay-at-home orders, has been unprecedented in its breadth and

severity (Basera, Chakaipa, Chatiza, Muchongwe, Chibhoyi and Chisiri 2022). Restaurants business volumes had declined considerably due to low demand amid the COVID-19 pandemic (Machingura 2020). Most of full-service restaurants are operating at small fractions capacity if not closed entirely as a directive from the government. Covid 19 had taken hold of in every corner of the country and the restaurant results had been catastrophic (Pérez, Aybar and Pavía 2021; Matsenko, Kubatko, Bardachenko and Demchuk 2021).

However, innovation presents a significant opportunity for the restaurant industry to tell its own story of surviving the catastrophe (Eggers 2020). As the adage said, “necessity is the mother of invention”. In this crisis, this wisdom should bear in real time as restaurants must race to adapt to the Covid 19 crisis. Plumlee 2020 is of the view that, this pandemic is illustrating both the resolve and inexhaustible ability of restaurants to innovate and find new business avenues as they shift their entire sales models overnight. Innovations which are embedded in the strategic plan of restaurants can do much in sustainability of restaurants during and after pandemics (Li, Zhong, Zhang and Hua 2021; Madeira, Palrão and Mendes 2020; Lai et al. 2020). Throughout history, innovation has been playing a critical role in sustainability of firms. It is in this vein that this paper sought to explore innovations in the restaurant sector during the Covid 19 global pandemic.

## 2. Literature review

### 2.1. An overview of innovation

Innovation is a multifaceted concept, encompassing new ideas, practices, and objects that are perceived as novel (Greenhalgh, Robert, Macfarlane, Bate, Kyriakidou and Peacock 2005). It can be driven by market forces or scientific assessment, and is crucial for business success (Faunce 2012). Drolen 1999 argues that, innovation does not require brilliance, nor excessive resources. This implies that, for a business to be innovative, it does not need anything fancy or money to come up with novel products and services. The term innovation implies a new way of doing something, and can lead to incremental, radical, or revolutionary changes in various fields (Scypinski and Drennen 2009). Innovations can be regarded as something new as they bring forward products or services which have not been available before (Schentler, Lindner and Gleich 2010). Sign and Aggarwal 2022 opine that innovation is the operationalization of creative potential with a commercial and/or social motive by implementing new adaptive solutions that create value, harness new technology or invention, contribute to competitive advantage and economic growth. Ultimately, innovation is about introducing something new and can significantly impact performance and efficiency of businesses.

### 2.2. An overview of a pandemic

A pandemic is an epidemic that occurs on a global scale, affecting a large number of people and crossing international boundaries (Mascie Taylor, N and Moji 2021; Ulak 2020). It is characterized by widespread transmission of a disease, often caused by a virus, and can have significant health, economic, and social impacts (Mascie Taylor et al. 2021). The classical definition of a pandemic, particularly in the context of influenza, emphasizes the simultaneous worldwide transmission of the disease (Kelly 2018). Davies 2017

opine that, pandemics do not respect international borders. A pandemic thrives differently, makes differences deeper, overturns consensus, and will have long term structural effects (Alberro 2020; Kashyap 2022). A greater emphasis on severity during an infectious disease outbreak would make pandemics "true global health emergencies." (Undurraga 2020). Despite the lack of a clear definition, certain key features such as geographic extension, disease movement, novelty, severity, high attack rates, and minimal population immunity are often associated with pandemics (Keet 2022).

### 2.3. Impact of pandemics on restaurant sector

The COVID-19 pandemic has had a significant impact on the restaurant sector, leading to concerns about the future, government measures, and strategies (Madeiram 2020). The pandemic has also highlighted the importance of resilience, with a shift towards third-party app delivery models and digital sales tools (Karniouchina, Sarangee, Theokary and Kübler 2022; González Morales and Caverio Rubio 2023). The adaptability of restaurants to these challenges, particularly in terms of consumer demand, corporate strategy, and innovation, has been crucial for survival (Fainshtein, Chkoniya, Serova and Vorobyev 2023). The economic downturn due to the COVID-19 pandemic disproportionately impacted the food service industry (Lippert, Furnari & Kriebel 2021). Wang, Williams, Duarte and Zheng 2022 argues that, visits to chains with higher social indices experienced larger drops as local new cases increased in 2020. To further the debate, Sunthornpan and Hirata 2021 opine that, most participating businesses have been severely affected and faced many problems during the crisis in Bangkok, Thailand. The COVID-19 pandemic led to an unprecedented loss of employment and revenue (Dube, Nhamo and Chikodzi 2020). Restaurant visits significantly decreased during COVID-19 (Ko, Son and Kim 2022). The restaurant industry was hit hardest as it was one of the first to be adversely affected by quarantine restrictions in 2020 (Sardar, Ray, Hasan, Chitra, Parvez and Avi 2022).

### 2.4. Innovations in the restaurant sector during pandemics

The restaurant sector has seen significant innovation during the COVID-19 pandemic, particularly in the use of digital technologies to reduce customer risk perception and enhance safety (Espositom 2022). In Tabasco, Mexico, small and medium-sized restaurants have implemented various innovative practices, including process, organizational, marketing, and product innovations, to overcome the challenges posed by the pandemic (López and Cruzm 2022). In Romania, the use of food order and delivery platforms has been a key innovation, with different types of innovations, such as business strategy, technological, financial, and social, impacting the attitude and intention to use these platforms (Türkeş, Stăncioiu, Băltescu and Marinescu 2021). In China, the restaurant industry has demonstrated resilience and innovation through various strategies, including pandemic prevention and control, cooperation with third parties, customer service and product innovation, and marketing strategies (Li et al. 2021).

The shift toward digitalization is leading the food industry to leverage innovations that can serve the dual purpose of safer and sustainable food operations (Mondejar, Avtar, Diaz et al. 2021). According to O'Neill, Morse and Rowan 2022, internet and communication technologies are the innovations with the highest potential in the new era. To further the debat, Brugarola, Martinez-Carrasco, Rabadan and Bernabeu 2020 discovered that, food production/distribution companies can implement different innovative strategies aimed at decreasing the impact of stockpiling and, therefore, the shortage of food. The biggest investments in this direction are on billing and on Enterprise Resource Planning systems (Brochado, Silva, Silva and Azevedo 2021). Carson and Boege (2020) further discovered that, mobile food pantries may be especially useful for reaching those with transportation limitations, including people with disabilities.

These studies collectively highlight the diverse and impactful innovations that have emerged in the restaurant sector during the pandemic. However, majority of the studies were from Asia, Europe and America. There are limited studies from an African context specifically Zimbabwe.

### 3. Methodology

The study used mixed methods research approach. The study population for quantitative data was derived from Restaurant Operators Association of Zimbabwe (ROAZ) which indicates that there are 900 restaurants in Zimbabwe employing 9000 permanent workers. The study use Taro Yomane sample size determination published table. According to the published table, a population between 5000 and 9999 has a sample size of 380. The study achieved a 60% rate of response. To select the participants, the research adopted a stratified random sampling. Two strata's were used which are fast food restaurants and fine dining restaurants. The researcher collected data in Harare restaurants mainly because of geographical concentration of restaurants. A closed added questionnaire in 5 Likert scale was developed and distributed. Questionnaires which were completed were examined, coded and entered in SPSS version 22 package. Data was analysed using descriptive statistics which are mean and standard deviation of innovations adopted by fast food restaurants and fine dining restaurants in Zimbabwe.

For the qualitative data, the study used qualitative desk research method. Qualitative desk research studies are concerned with unearthing insights of great depth about a people's lifestyle, situations and lived experiences through secondary data (Sileyew 2019). Published articles between 2012 and 2023 were retrieved using Google Scholar, Research Gate and Elicit Research software. The paper used key words such as innovations and pandemics, innovations in the restaurant sector, innovations in the restaurant sector during pandemics. A total of 901 journal papers were retrieve. After data cleaning with Open Refine, 250 journals were retrieved, however, 88 journal papers from developed nations were able to be analysed due to their relevance to study. The analysis was done through journal evaluation and score sheet to note innovations used by restaurant sector in developed nations.

## 4. Findings and discussion

The following sections presents and discuss findings/results of the study.

### 4.1. Representations by type of restaurants

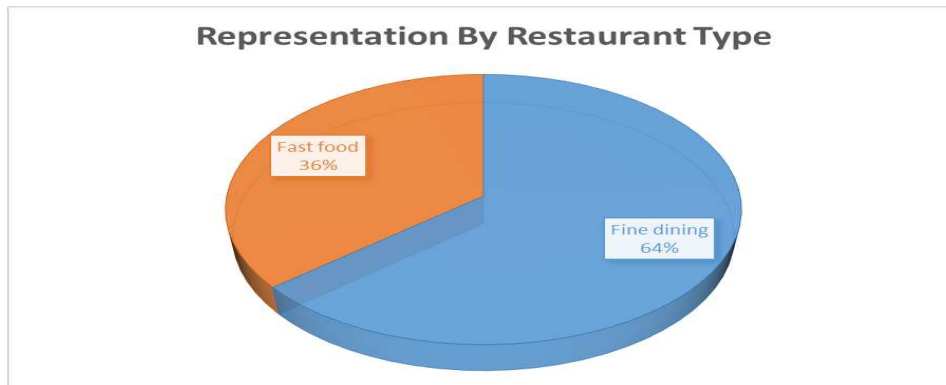


Figure1. Representation of restaurants

The findings of 36% representation of fast food restaurants and 64% representation of fine dining establishments in the Zimbabwean restaurant sector during the Covid-19 pandemic provide valuable insights into the diverse responses and adaptations within the industry. The higher representation of fine dining restaurants suggests a resilience among this segment, as they may have leveraged their existing reputation and customer base to navigate the challenges posed by the pandemic. On the other hand, the significant presence of fast food restaurants reflects their ability to quickly adapt to changing circumstances, such as implementing efficient delivery services and takeout options. This variation in representation underscores the importance of understanding the specific strategies and innovations employed by different types of restaurants in response to the pandemic, providing valuable lessons for the entire industry and guiding future decision-making processes.

### 4.2. Impacts of Covid 19 on restaurants in Zimbabwe

Findings from the study revealed various impacts of Covid-19 pandemic on restaurants in Zimbabwe. Economic, human resources and customer service impacts emerged from the findings.

#### 4.2.1. Economic impacts

The Covid-19 pandemic has caused devastating effects on economic statuses of hotels world over, specifically hotel revenues or income. Majority of hotels agreed that they are facing economic consequences. The views of respondents are presented in Table 1 below.

Table 1. Economic Implications (n=197)

<b>Construct</b>	<b>After 1-3 months</b>	<b>After 4-6 months</b>	<b>After 7-9 months</b>	<b>After more than 9 months</b>
No economic impact	0%	0%	0%	0%
Slight decrease in income	0%	0%	0%	0%
Moderate decrease in income	4.7%	7.0%	7.0%	7.0%
<b>Major decrease in income</b>	<b>76.7%</b>	<b>46.5%</b>	<b>18.6%</b>	<b>16.3%</b>

Participants were asked to evaluate the implications of revenue generation on restaurants should lockdown and Covid restrictions linger. The findings presented in Table 1 indicates that with an extended period of 1 to 3 months of lockdown, 4.7% of participants recorded a moderate decrease in revenue and 76.7% recorded a major decrease in revenue. With an extended lockdown period of between 4 to 6 months, 7% of participants indicated a moderate decrease in revenue, and 46.5% stated a major decrease in income. With a prolongation of lockdown for a further 7 to 9 months, 7% of restaurants in Zimbabwe experienced a moderate decrease in revenue and 18.6% lamented a major drop in revenue. And lockdown linger for more than 9 months, 7% of participants recorded a moderate drop in revenue and 16.3% experienced a major drop in revenue. Findings resonates well with the findings of Nhamo et al. 2020 who also discovered various economic impacts on restaurants during the pandemic.

#### 4.2.2. Human resources impacts

Human resources plays a critical role in the restaurant sector. However, the advent of Covid-19 pandemic placed negative effects on the Zimbabwean restaurant sector talent pool. Findings revealed that restaurants in Zimbabwe experienced human resources challenges during the pandemic. Table 2 presents the findings.

Table 2. Human Resources Impacts (n=197)

	<b>Percentage of staff on reduced wages/salaries</b>	<b>Percentage of staff made redundant</b>
None	16.2%	6.8%
1 to 10%	4.7%	4.7%
11 to 20%	0%	9.3%
21 to 30%	2.3%	7.0%
31 to 40%	4.7%	2.3%
41 to 50%	0%	4.7%
51 to 60%	7.0%	14.0%
61 to 70%	0%	7.0%
71 to 80%	0%	7.0%
81 to 90%	7.0%	11.6%
91 to 100%	55.8%	23.3%
I don't know	2.3%	2.3%

In relation to the percentage of workers on reduced salaries, above half of the restaurants in Harare (55.8%) agreed that about 91% to 100% of hotel workers were on reduced salaries, and 69.8% of restaurants unanimously agreed that more than half their workers were on reduced salaries, whilst 16.2% of the hotel agreed that their workers were not on reduced salaries. Majority of Harare restaurant (62.9%) agreed that over 50% of their workers were made jobless, with 6.8% of hotel endorsing that workers layings-off did not happen. Findings corroborates with the findings of Messabia, Fomi and Kooli, 2022; Nhamo et al. 2020 who also discovered the impact of Covid 19 on restaurants.

#### 4.2.3. Customer service experience impacts

Covid-19 pandemic also impacted customer service in Harare Restaurants. Majority of restaurants indicated a major decrease on hotel customer service. Findings are illustrated in Table 3.



Table 3. Customer service experience (n=197)

Construct	Percent
No impact on customer service	0%
Slight decrease on customer service	0%
Moderate decrease customer service	4.7%
Major decrease customer service	76.7%

Respondents were asked to indicate how customer service has been affected. From the findings, majority of restaurant participants (76.7%) confirmed that they saw a decrease in customer service in their restaurants. On the other hand, merely 4.7% confirmed that they had a moderate decrease in customer service. Findings could be attributed to the fact that, restaurants in Harare were losing in their talent pools. Some key employees may have furloughed, which then lead to poor service delivery. Also the issues of social distancing could be reason for poor customer service. Additionally, employees could be demotivated due to low wages which then also have a bearing on service delivery. Findings resonates well with Yu et al. 2021 who articulates the tourism and hospitality services, especially restaurants, are operating under severe restrictions and a “new normal” needs to be defined because this has impacted service delivery. Zibarzani, Abumalloh, Nilashi et al. 2022 also discovered a negative impact of Covid 19 pandemic on restaurant customer service experience.

#### 4.3. Innovations used by restaurants in Zimbabwe during the pandemic

Table 4 presents the findings on the innovations that the Zimbabwean restaurant sector were using the during the Covid 19 pandemic.

Table 4. Innovations used by restaurants during the pandemic

Variable	Mean	Std. Deviation
Use of disposable food service utensils	4.83	.376
Avoiding the use of food and beverage items and containers brought in by customers	4.40	.960
Dial and delivery services	4.30	.980
Locally sourced ingredients	4.03	1.193
Drive through services	3.97	1.540
Recycling of non-degradable waste	3.50	1.263
Collaboration with delivery services such as Vaya, Tuma Keri etc.	3.50	1.467
Community or employee outreach	2.62	1.617

Production of hand sanitisers	2.60	1.699
Food with a side fun like food plus a movie bundle	2.37	1.832
Moved from molecular gastronomy to comfort food	2.33	1.674
Corporate donations/grants/funds	2.32	1.732
Automated ordering services	2.28	1.728
Provision of Pizza kits	2.22	1.462
I experienced pick and delivery service	2.17	1.748
Provision of baking kits	2.13	1.501
Bulk meal boxes	2.13	1.501
Virtual dining concept	2.05	1.641
Use of robots as waiters	2.05	1.294
Use of QR code menus	1.98	1.347
Selling merchandise such as gift cards, graphic T-shirts, bottled sauces etc.	1.93	1.448
To-go cocktails, beer and wine	1.28	.640

Out of 22 innovations, restaurants in Zimbabwe agreed to have used only 7 innovations. These include:

#### 4.3.1. Use of Disposable Food Service Utensils

The mean score of 4.83 suggests a high level of agreement among the participating restaurants in Zimbabwe regarding the utilization of disposable food service utensils. The standard deviation of 0.376 indicates that there is relatively low variability in the responses, signifying a strong consensus among the restaurants regarding the adoption of this innovation. The high mean score indicates that the majority of the restaurants strongly agree or agree with the implementation of using disposable food service utensils as part of their operational practices. This signifies a shared commitment to environmental sustainability and hygiene within the restaurant industry in Zimbabwe. Findings of the study resonates well with the findings of Todd, 2023 and Obeidat, 2023 who also discovered that during the pandemic, a variety of single-use utensils as well as containers to reduce cross-contamination risks.

#### 4.3.2. Avoiding the Use of Food and Beverage Items and Containers Brought in by Customers

With a mean score of 4.40 and a standard deviation of 0.960, the participating restaurants in Zimbabwe demonstrated a notable level of agreement concerning the avoidance of food and beverage items brought in by customers. The relatively higher standard deviation suggests greater variability in responses compared to the use of disposable food service utensils. However, the mean score still indicates a strong overall agreement with this innovation. This indicates a collective effort among the restaurants to maintain quality control, adhere to health and safety standards, and potentially promote their own offerings over external food and beverages. This resonate well with the views of Janairo, 2021 who opines that the rising need for such kinds of food service during the pandemic was expected to significantly alter restaurant patrons' consumption patterns, potentially increasing the consumption of single-use plastics.

#### 4.3.3. Dial and Delivery Services

The mean score of 4.30 and the standard deviation of 0.980 reflect a significant level of consensus among the restaurants in adopting dial and delivery services. While the standard deviation suggests some variability in the responses, the mean score indicates a clear inclination towards agreement with this innovation. The findings suggest that the participating restaurants recognize the importance of providing convenient ordering and delivery options for their customers, aligning with the evolving preferences and needs of consumers, especially in light of the global shift towards online and delivery-based services. Findings are parallel to views Feizizadeh, Omrazadeh, Ghasemi et al. 2023 who articulates that the COVID-19 pandemic has had a significant impact on the restaurant industry, prompting a shift to online food delivery services. Customers' intentions to use these services are influenced by perceived usefulness, trust, social influence, and value co-creation (Kautsar, Siallagan and Palumian, 2023). On-demand delivery platforms assisted restaurants keep consumer demand and the number of employees, with fast-food chains benefiting the most due to a greater price sensitivity (Li et al., 2020). However, curbside regulations that limit the number of delivery drivers at restaurants might enhance safety and efficiency (Fotouhi et al., 2021).

#### 4.3.4. Locally Sourced Ingredients

The mean score of 4.03 and the standard deviation of 1.193 indicate a relatively high level of agreement, but with greater variability, among the restaurants regarding the use of locally sourced ingredients. The slightly lower mean score in comparison to the previous innovations suggests a marginally lower consensus on this particular practice. However, the adoption of locally sourced ingredients still demonstrates a strong inclination towards promoting sustainability, supporting local producers, and potentially offering fresher and more authentic culinary experiences. Literature also indicates that the COVID-19 pandemic has caused a shift in consumer food habits, with a preference for locally sourced items (Alsetoohy, Ayoun and Abou-Kamar, 2021). This trend is motivated by health consciousness, intrinsic quality, and process proximity, with health consciousness serving as the primary motivator (Ghali-Zinoubi, 2021). To support local food supply chains, low-cost ICT solutions for farmers' markets and food hubs have been developed. Luković, Kostić and Dajić Stevanović, 2023 notes a growing interest in traditional and natural products, particularly in rural areas, which can be used to improve food tourism offerings.

#### 4.3.5. Drive-Through Services

With a mean score of 3.97 and a standard deviation of 1.540, the implementation of drive-through services shows a moderate level of agreement among the participating restaurants. The lower mean score and higher standard deviation suggest a wider range of opinions and potentially more diverse considerations regarding the integration of drive-through facilities. This finding reflects a lesser consensus compared to the previously discussed innovations, indicating varying perceptions and readiness to adopt drive-through services within the restaurant industry in Zimbabwe. Findings corroborate with literature which highlighted that, the use of on-demand delivery platforms has had a disproportionate impact, favoring fast-food chains over independent restaurants (Li et al., 2020). Curbside regulations have been proposed to improve safety and efficiency in meal delivery operations during the pandemic (Fotouhi et al., 2021).

#### 4.3.6. Recycling of Non-Degradable Waste

The mean score of 3.50 and the standard deviation of 1.263 demonstrate a moderate level of agreement, along with notable variability, regarding the recycling of non-degradable waste. The lower mean score signifies a comparatively lower level of consensus among the participating restaurants on this sustainability practice. This observation suggests that while some restaurants are proactive in implementing waste recycling initiatives, others may exhibit differing levels of commitment or face challenges in fully embracing this aspect

of environmental stewardship. Findings are similar to the views of Vinck, 2019 who emphasizes the importance of optimizing design in food waste recycling systems, taking into account cost, space, and hygiene. Huang, Hall and Chen, 2023 also emphasizes the environmental benefits of using biodegradable and compostable tableware, along with organic recycling, in quick service restaurants and events.

#### 4.3.7. Collaboration with Delivery Services

The mean score of 3.50 and the standard deviation of 1.467 show a moderate level of consensus, coupled with variability, among the restaurants in collaborating with delivery services such as Vaya and Tuma Keri. The lower mean score and higher standard deviation suggest a mixed response and a wider spectrum of attitudes towards collaborating with external delivery services. This finding reflects varying perspectives on the benefits, challenges, and implications of engaging with external delivery partners, highlighting the need for further investigation into the underlying factors influencing this innovation adoption. Research on restaurant-delivery service collaboration during pandemics suggests that such partnerships can be beneficial, especially when demand is high and delivery distances are long (Chan, Cheung, Choi and Sheu, 2023). The spatial distribution of delivery areas, as well as service quality, influence the success of these collaborations (Feizizadeh, Adabikhosh and Panahi, 2023).

#### 4.4. Innovations that could have been used by Zimbabwean restaurant sector during the pandemic

This section used a desk research method to discover various innovations that were used by restaurants in developed world during the pandemic. Table 5 presents the findings.

Table 5: Innovations in restaurants in developing countries during the pandemic

Major themes	Sub themes	Authors
Technological innovations	• Use of mobile applications in virtual objects	Davydova, Tomalia,
	• Use of telegram bots for ordering	Prylepa, Hryzovska and
	• Implementation of RFID technologies	Borutska 2022; Alkan,
	• Use of high tech devices	Ozbilgin and Kamasak
	• Use of podcasts in the culinary field	2022; Türkeş et al.
	• Use of pre-prepared kits for interactive online culinary experiences	2021; Polese, Botti and
	• Transformation of restaurants into cloud kitchens	Monda 2022; Botti and
	• Use of augmented reality applications by restaurants	Monda 2021; Esposito et al., 2022; Korede, Al
	• Online gastronomy festivals	Mamun, Lassalle and
	• Use of drones and robots for food deliveries	Giazitzoglu 2023;
	• Using online sales services	Matsenko et al. 2021;
		Staverska 2022;
		Brochado et al. 2022

	<ul style="list-style-type: none"> <li>• Introduction of vending machines in the catering industry</li> <li>• Virtual reality tours</li> <li>• Online cooking sessions and tutorials</li> <li>• Mobile-based Queueing and Virtual Queue System</li> <li>• Air purification innovations</li> </ul>	
Social innovations	<ul style="list-style-type: none"> <li>• Remote social eating and drinking</li> <li>• Use of innovative service practices to reduce interaction and empower cleanliness levels</li> <li>• Time-Slot Reservations</li> <li>• Social distancing markers</li> <li>• Dine-in Bubbles or Pods</li> </ul>	Garibaldi and Pozzi 2020; Cruz-May and May-Guillermo 2021; Esposito et al. 2022; Fainshtein et al. 2023; Türkeş et al. 2021
Organisational innovations	<ul style="list-style-type: none"> <li>• Establishment of new types of external network relations with other firms and/or public organizations by food banks</li> <li>• Restaurant managers to support changes in their business models during the Covid-19 pandemic</li> <li>• Platforms to enable antifragility, resilience and value co-creation in restaurant management</li> <li>• Management of risk perception through digital technologies to help the restaurant sector recover.</li> <li>• Transformation of activities, resources, and skills to adapt to the COVID crisis</li> <li>• Development of new internet-based business models</li> </ul>	Polese et al. 2022; Capodistrias, Szulecka, Corciolani and Strøm-Andersen 2022; Cruz-May and May-Guillermo 2021; Esposito et al. 2022; Szyda 2022;
Marketing innovations	<ul style="list-style-type: none"> <li>• Use of digital technologies to preserve customers' intention to go to restaurants</li> </ul>	Cruz-May and May-Guillermo 2021,

Process innovations	<ul style="list-style-type: none"> <li>• Use of the internet for marketing communication</li> <li>• Adaptation of sales channels</li> <li>• Change in supplier profiles due to the introduction of a take away offer</li> <li>• Acquisition of new recipients and materials to adapt to the take away offer</li> <li>• Farm-to-Table Initiatives</li> </ul>	Esposito et al. 2022; Szyda 2022; Matsenko et al. 2021 Cruz-May and May-Guillermo 2021; Türkeş et al. 2021; Mitrofanova, Chernova, and Batmanova 2022; Shtal, Staverska, Svitlichna, Kravtsova, Kraynyuk and Pokolodna 2021; Huang and Siao 2023
Financial innovations	<ul style="list-style-type: none"> <li>• Reinforcement of the revenue model and beneficiaries to keep the business running</li> <li>• Simplified terms for renting premises</li> </ul>	Cruz-May and May-Guillermo 2021; Türkeş et al. 2021;
Product and/Services innovations	<ul style="list-style-type: none"> <li>• Restaurant meal kit services</li> <li>• Digital and single-use menu innovations</li> <li>• pop-up dining experiences</li> <li>• Drive through service innovation</li> <li>• Take away alcohol; sales</li> </ul>	Tuomi, Tussyadiah and Ashton 2021; Türkeş et al. 2021; Cruz-May & May-Guillermo 2021; Li et al. 2021; Prasetyo, Tanto, Mariyanto et al. 2021

The findings from the qualitative desk research demonstrate a notable lack of innovation in the restaurant industry in Zimbabwe during the pandemic. The research revealed six major themes of innovation, including technological, social, organizational, marketing, process, product/service, and financial innovations. The majority of the sub-themes of innovation identified were related to technological innovations, accounting for approximately 14 out of 41 sub-themes. This suggests that restaurants in developing countries relied heavily on technology as a means of innovation to address the challenges posed by the pandemic and its impact on the industry. This could have been also used by the restaurant sector in Zimbabwe so as to avoid closure of so many restaurants. Which according to ROAZ, 2022 a total of 600 restaurants in Zimbabwe face closure due to the effects of the pandemic. If they have been adopted various technologies during the pandemic, they could have avoided the threat of closure. The prevalence of technological innovations as a dominant theme and the significant number of sub-themes under this category highlight the pivotal role of technology in the restaurant industry's response to the pandemic (Prylepa, 2021; Cherednyk and Varyvonchyk, 2022). It also underscores

the adaptability and resilience of restaurants in developing countries, particularly in leveraging technological solutions to navigate the challenges brought about by the pandemic.

#### 4.5. Conclusions

In conclusion, the examination of the seven innovations adopted by restaurants in Zimbabwe reveals a mixture of uniformity and disparity in their execution. The findings indicate a strong adherence to certain practices, such as the utilization of disposable food service utensils and the avoidance of externally sourced food and beverage items. Simultaneously, they underscore varying levels of conformity with initiatives pertaining to local sourcing, drive-through services, waste recycling, and collaboration with delivery services. The research underscores a conspicuous dearth of innovation in the restaurant industry in Zimbabwe during the pandemic. However, desk research reveals six major themes of innovation encompassing technological, social, organizational, marketing, process, product/service, and financial innovations used by restaurant sector in developed world. Notably, the prevalence of technological innovations, constituting about 14 out of 41 sub-themes, suggests a pervasive reliance on technology among restaurants in developed countries as a means of innovation to confront the challenges brought about by the pandemic's impact on the industry. These findings imply a heterogeneous response within the restaurant industry in Zimbabwe, indicating a spectrum of approaches to innovation adoption. While certain practices reflect a consensus, others reveal divergent strategies and priorities among establishments. Moreover, the dominance of technological innovations used by restaurants in developed world signifies an inclination toward leveraging digital solutions and advancements to address the challenges posed by the pandemic.

#### 4.6. Areas of further research

Ultimately, the insights highlight the need for further investigation into the factors driving the observed patterns of innovation adoption and the potential implications for the resilience, sustainability, and competitive positioning of restaurants in Zimbabwe and similar developing country contexts.

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