



Restoring Restaurant Design and Layout: Towards Safer Dining Out Experience

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ABSTRACT

An explosion of COVID-19 virus has engulfed the world unsparingly and various industries were affected by this pandemic at different levels. The restaurant industry in Malaysia has faced huge obstacles in applying the COVID-19 safety guidelines while maintaining its business operations. However, these guidelines have influenced restaurants' business and forced restaurants to modify their design and layout to comply with the SOPs. In addition, restaurateurs were found to creatively implement SOPs and take extra precautions to prevent deadly virus infection within their restaurants' environments. Hence, this study aimed to 1) Identify the impact of COVID-19 on restaurants' design and layout and 2) Explore the implementation of safe dining features in restaurants. Semi-structured interviews were conducted among 10 owners and managers of casual dining restaurants in Johor Bahru, Malaysia. The interview sessions were recorded and transcribed, whereas the data collected were analyzed using thematic analysis. The findings of this research concluded that the impact of COVID-19 on the restaurants' design and layout were found most in the reduced number of customers, influence on restaurant design and alteration of restaurant layout. Moreover, the safe dining features implemented in restaurants were the basic SOPs practices, including wearing masks, restaurant sanitation, social distancing and making good use of heating, ventilation and air-conditioning (HVAC) systems. This research filled the study gaps by extending the impact of COVID-19 on restaurant businesses and restaurant designs and layouts. This research also helped the restaurateurs to improve their establishments and create an environment that is least susceptible to diseases. Moreover, the significant findings from this study will be able to help flatten the curve of coronavirus disease and protect the public from the infection.

1. Introduction

The widespread global impact of the COVID-19 pandemic has caused disruption in numerous sectors, with the restaurant industry being no exception. This impact has been felt at both global and local levels, as evidenced by the experience in Malaysia, where approximately 2,000 food service

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establishments were forced to close their doors following the enforcement of the Movement Control Order (MCO) in March 2020 [1]. However, in the midst of this crisis, the National Recovery Plan (NRP) initiated a second phase that allowed fully vaccinated patrons to dine again [2]. While this reauthorization was a relief to the industry, it required strict adherence to specific standard operating procedures (SOPs) to ensure the safety of the diners. These SOPs resulted in necessary adjustments to restaurant design and layout that required measures such as one metre spacing between tables, improved ventilation and capacity restrictions for patrons to maintain spacing [3].

Beyond borders, the impact of the pandemic on the global restaurant landscape was also undeniable. In Taiwan, forced indoor closures significantly impacted the profitability of the restaurant industry and exacerbated its pre-existing problems [4,5]. The closures primarily affected cafés and casual restaurants, but well-established restaurants were also forced to close due to dwindling patronage [5]. Similarly in Malaysia, a drastic 90 % drop in restaurant revenues was attributed to the decline in customer flow during the MCO period [6]. Amidst this turmoil, the importance of adapting to new service models such as takeaway and delivery became clear. However, the correlation between rising COVID-19 cases and declining restaurant demand highlighted the ongoing challenges faced by the industry [7,8]. Despite these obstacles, a return to restaurant dining was predicted [9].

Amid these seismic shifts, the impact of the pandemic has affected multiple dimensions of the restaurant industry, including the design and layout of establishments. The critical role of social distancing in mitigating the risk of infection led to fundamental changes in this area [10]. Restaurants, as enclosed spaces conducive to infection, were forced to adhere to social distancing guidelines that require maintaining a six-foot distance between seated patrons [11,12]. Supplementary measures such as physical barriers and floor markings have been proposed to support distancing efforts [12]. However, implementation of these protective measures invariably resulted in reductions in restaurant capacity, often ranging from 50 – 70 %, which in turn impacted customer flow and revenue [13,14]. The balancing act between protecting public health and maintaining financial viability has emerged as a key concern for restaurateurs navigating this complicated environment [13,15].

However, the prevailing research on the impact of COVID-19 has largely focused on the impact on various sectors of the restaurant industry, including fast-food chains [16,17], small- to medium-sized businesses [10] and street vendors [18]. Regrettably, there have been few comprehensive studies addressing the impact of COVID-19 regulations and SOPs on restaurant operations in Malaysia. This lack prompted Malaysian restaurateurs to examine their operations in the face of the pandemic and their concerted efforts to comply with SOPs [19]. In addition, some studies examined the application of social distancing in foodservice operations [11,13,14], but they rarely addressed how COVID-19 protocols influence the design, layout, theme and decorative elements of restaurants. Numerous concerns were expressed that SOP guidelines would detract from the original ambiance of restaurants [20].

In addition, the prevailing research extensively addressed customers' post-pandemic perceptions and motivations regarding dining out in restaurants during the reopening phase [21-24]. However, limited attention was given to the potential positive impacts of COVID-19 on restaurant operations. Several pertinent issues were identified, including the innovative ways in which SOPs were implemented in restaurants [25,26] and the additional disease prevention measures taken by restaurateurs [18].

This research seeks to fill a gap in existing studies by focusing on the complicated relationship between COVID-19 and restaurant design and layout. It is intended to complement previous work that examined the broad influences of COVID-19 on the restaurant industry, including how social distancing policies affect facility design. In addition, this study will provide valuable insights to

restaurateurs to help them improve disease prevention protocols and create environments that are less prone to health risks in their establishments. Hence, this study aimed to identify the impact of COVID-19 on restaurant design and layout and to explore the implementation of safe dining features in restaurants.

From a theoretical standpoint, the significance of this study lies in its contribution to understanding how government-mandated SOP improvements have influenced restaurant operations, design and layout. The study not only identifies elements that restaurateurs have employed to mitigate viral transmission in their establishments but also examines how these features promote customer and staff health and safety in a post-pandemic environment. The findings go beyond COVID-19 potentially informing strategies to mitigate the spread of other airborne diseases such as colds, influenza and measles. In addition, the lessons learned from this study can help both current and future restaurateurs in designing establishments that prioritize disease prevention.

2. Methodology

Utilizing a qualitative research approach with phenomenological design is the most appropriate method for this study as it aligns with the objectives of uncovering the impact of COVID-19 on restaurant design and layout and investigating the implementation of safety measures in dining establishments. Qualitative research was particularly suited in exploring and understanding informants' experiences and differs from quantitative research in its ability to empathize with their perspectives [27]. As Vibha *et al.*, [28] pointed out, qualitative research allows informants to authentically share their experiences, which is important to the aims of this study. In addition, phenomenological design lends itself to this study because it elicits informants' experiences and perceptions from their unique perspectives [29-31].

This study focused on data collection in Johor, Malaysia, with particular emphasis on Iskandar Puteri City Council. Iskandar Puteri City Council was selected due to its status as the administrative capital of Johor [32] and was formed in the 1960s from the establishment of eight local councils under the Town Board Enactment 118 [33]. This location is known as a well-developed culinary hub in Johor Bahru and hosts a diverse array of specialty restaurants, including ethnic, fast food, casual and upscale restaurants, making it an ideal setting for this study. Casual restaurants, which are particularly popular due to their affordability, convenience and appeal for group or solo dining [34], were selected as the focus. As stated by Ha and Jang [35], these restaurants were characterized by mid-range pricing, quality cuisine, positive experiences and a welcoming atmosphere, which guided the researcher's choice in exploring the impact of COVID-19 on both business operations and the design layouts, along with the investigation of safe dining features.

Given the qualitative nature of this study, an appropriate approach to sample selection was to use nonprobability sampling with a purposive method. To recall, this study aimed to identify the impact of COVID-19 on restaurants' design and layout, as well as to explore information about the implementation of safe dining features in restaurants. Therefore, a purposive sampling method with specific characteristics was used to select informants. The selected informants were owners or managers of casual restaurants that have suffered from restaurant design and layout problems after the outbreak of COVID-19. At the same time, their restaurant must strictly comply with the government's tightened safety guidelines for COVID-19. Hence, 10 casual dining restaurant owners and managers were interviewed, where it reached data saturation. The researcher constructed an interview protocol with some key questions to guide the informants to share their experiences and opinions during the interview sessions with the aid of non-participant observation as part of the data collection method to explore more information about the objectives of this study, which helped the

researcher to justify and explain the facts in detail [36]. The data was then analyzed using thematic analysis where codes, nodes, categories and themes were formed to make sense of the data.

3. Results

3.1 The Impact of COVID-19 on Restaurant Design and Layout

Figure 1 shows the research findings for the first research objective: The impact of COVID-19 on the restaurant design and layout. Malaysia's restaurant industry has been restricted to complying with the COVID-19 SOPs in order to flatten the COVID-19 curve [9]. Many kinds of research state that among the COVID safety guidelines, social distancing is one of the most effective ways to reduce the infection of COVID-19 within a close environment, including in restaurants [5,12,37-39]. However, it was hard to find related research studies that discuss the application of COVID-19 rules and SOPs to the restaurants' design, layout, theme and decoration, which made this issue one of the problem statements and the main objective of this research.

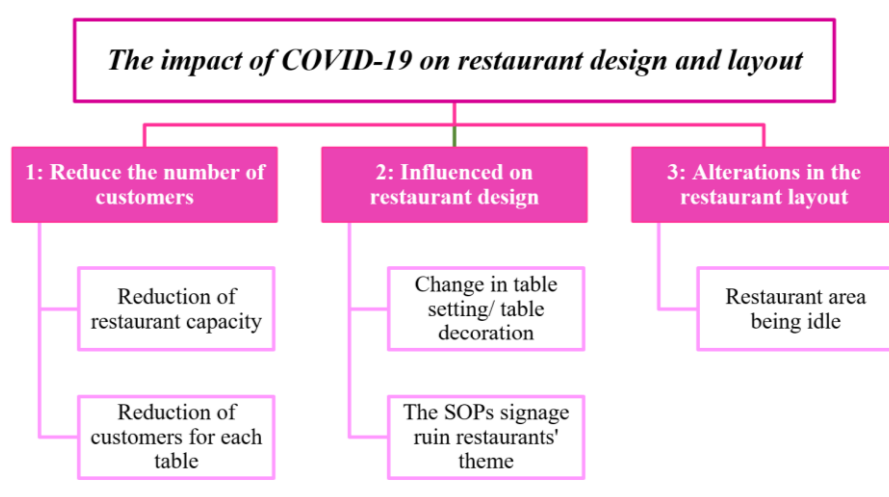


Fig. 1. Findings of the impact of COVID-19 on restaurant design and layout

Results show that there were three issues under this theme, which were: 1) Reduced number of customers; 2) Influence of restaurant design and 3) Alteration in restaurant layout. Firstly, one of the largest impact of COVID-19 on restaurant design and layout was the reduction in the number of customers. According to MKN [40], in the dine-in SOPs under the second phase of NRP, the restaurants were allowed to operate at 60 % of their restaurant capacity only when 40 % of their employees were fully vaccinated. Thus, all of the informants from this research said that their restaurant capacity was reduced by half in order to comply with the dine-in SOPs.

Aside from the restaurant capacity, the SOPs under the second phase of NRP also required the restaurateurs to reduce 50 % of their seating capacity to maintain the physical distance between individuals when dining-in [40]. Most informants indicated that their seating capacity had decreased since they needed to comply with the SOPs. Thus, the total number of customers that could be catered to at the same time was also decreasing, which led to a decrease in their restaurant revenue.

"I1: Yeah, this is the required arrangement actually, at least a meter away from other tables. This small table is for 2 now. The last time it was for 4. And then the big one for 8, so now it is for 4. So, now there is less seating capacity."

The interior design of a restaurant, including colours, lighting and decoration, is important in influencing social dining behaviour [42]. However, the COVID-19 outbreak influenced the restaurant's design through decoration. During the interview session, the researcher found that there were informants who changed the table decorations after the COVID-19 outbreak. For example, Informant 1 mentioned that before the COVID-19 pandemic, they had a small plant in the centre of the tables for decoration, but they had to remove the plant during the COVID-19 pandemic because of sanitation purposes.

"1: The last time I could have the plant in the centre of each table. During the pandemic, I have to get rid of those. It is not required by the government but it is for sanitation."

In addition, the COVID-19 pandemic also influenced the restaurant design through the changes in table settings. For instance, Informant 8 stated that during pre-COVID, their restaurant had set some cutlery and flatware on the tables. However, after the COVID-19 outbreak, they did not do any setting on the tables because they were worried about the viruses that might be present in the air.

"18: Previously, yes, we got a table setting. But now, not at all. After the COVID outbreak, we did not do any table setting because the utensils were placed in the open air. We were worried about this because the customers used the utensils to eat. So, when the customers were already seated, we will be setting the tables."

Starting from the second phase of the NRP, dine-in activities were allowed. The marking and signage for SOPs were compulsory for all the restaurants to comply with [41]. The SOPs signage, like the marks for unavailable seats and the marking for physical distance on the floor, also influenced the restaurant's design. From the data collected, the informants shared that the SOP signage had ruined the theme and the atmosphere of their restaurant. An informant further responded that when the government loosened the dining SOPs and did not limit the number of customers per table, they removed the signage.

"16: Yes, of course. It is very ugly, especially... because in our restaurant, we used red tape to make the marks. We did not buy or make the beautiful one, so it is very spoiled for me. So, now we also removed that one."

The researcher also found that there were impacts of COVID-19 on the layout of restaurant dining areas after interviewing the informants. The informants shared that the dining area in their restaurant was idle after the COVID-19 outbreak. The dining area of a restaurant was provided for customers to dine-in. Since dine-in activities were banned during MCO, the dining area became idle during that period. There was an informant who arranged the chairs on the table to represent that the area was not open for customers (Figure 2). However, with the leniency of the SOP restriction, the informant has also reopened those areas for customers to use.



Fig. 2. The dining area that was idle during the pandemic [43]

3.2 Safe Dining Features in Restaurants

The secondary aim of this study pertained to an examination of the incorporation of safe dining features in dining establishments. Therefore, Figure 3 emphasizes some crucial elements that contributed to a safer eating environment. Jeong *et al.*, [44] stated that the restaurant's dining environment, communication and hygiene were essential predictors of customers' perceived trust toward the restaurant as well as the key factors that drove the customers' behaviour towards dining during the COVID-19 pandemic. Zhang *et al.*, [45] further explained that the customers were sensitive about the quality and taste of food before the COVID-19 pandemic. However, after the COVID-19 outbreak, they became more concerned about the changes and set up dining environments towards pandemic prevention. Hence, safe dining features in restaurants have become important in motivating customers to dine out.

3.2.1 Theme 1: SOPs practices in restaurants

Four features fell under the SOPs practiced by the informants as part of the safe dining features in their restaurant. The basic COVID-19 precautions that were practiced by the informants included wearing masks, hand washing and application of hand sanitizer, as well as restaurant and seat sanitation. Besides, the application of social distancing rules and making good use of the heating, ventilation and air-conditioning (HVAC) system in restaurants were also features of SOPs that were practiced by the informants. The informants also extended the SOPs practices by practicing extra COVID-19 prevention in creating a safe dining and working environment for their customers and employees.

The informants stated that wearing masks was one of the important precautions in reducing the risk of getting infected by the coronavirus within restaurants. The informants also believed that wearing masks was the most effective way of protecting ourselves from the infection.

"I1: This is the new normal nowadays you need to adapt, wearing the mask. This is the most effective way to protect you. Nothing else. Putting on a mask... Before you eat, you have to put on your mask

and after you eat, you have to put your mask back. Whether somebody sneezes or what is very important to put on a mask all the time.”

Apart from wearing masks, the informants also emphasized hand washing and the usage of hand sanitizer as the basic precautions for COVID-19 prevention within restaurants. The informants stated that hand sanitation was very important, especially after the COVID-19 outbreak. They always prepared hand sanitizer for their customers and required them to use it before they entered their restaurant.

“I1: Yes, it is important. That’s why I always put the hand sanitizer there. Sometimes, when the customers come in, I will ask them to wash their hands first. I point out the hand sanitizer is there. If they don’t want, I will ask them to wash their hands with the water before they touch the menu. ”

Aside from that, restaurant and seat sanitation were also some of the basic precautions that were emphasized by the informants in their restaurants. Most of the informants in this research would apply seat sanitation every time the customers left. Besides, they would also spray the sanitizer through the whole dining room every time after peak hours as well as every time before and after their restaurant operation hours.

“I8: We will apply sanitation every time customers leave. We will also spray the sanitizer every 1 or 2 hours. But for spraying, we will see the crowd as well. When there are fewer customers, or after lunchtime, we will spray. Then, after dinner time, we spray again.”

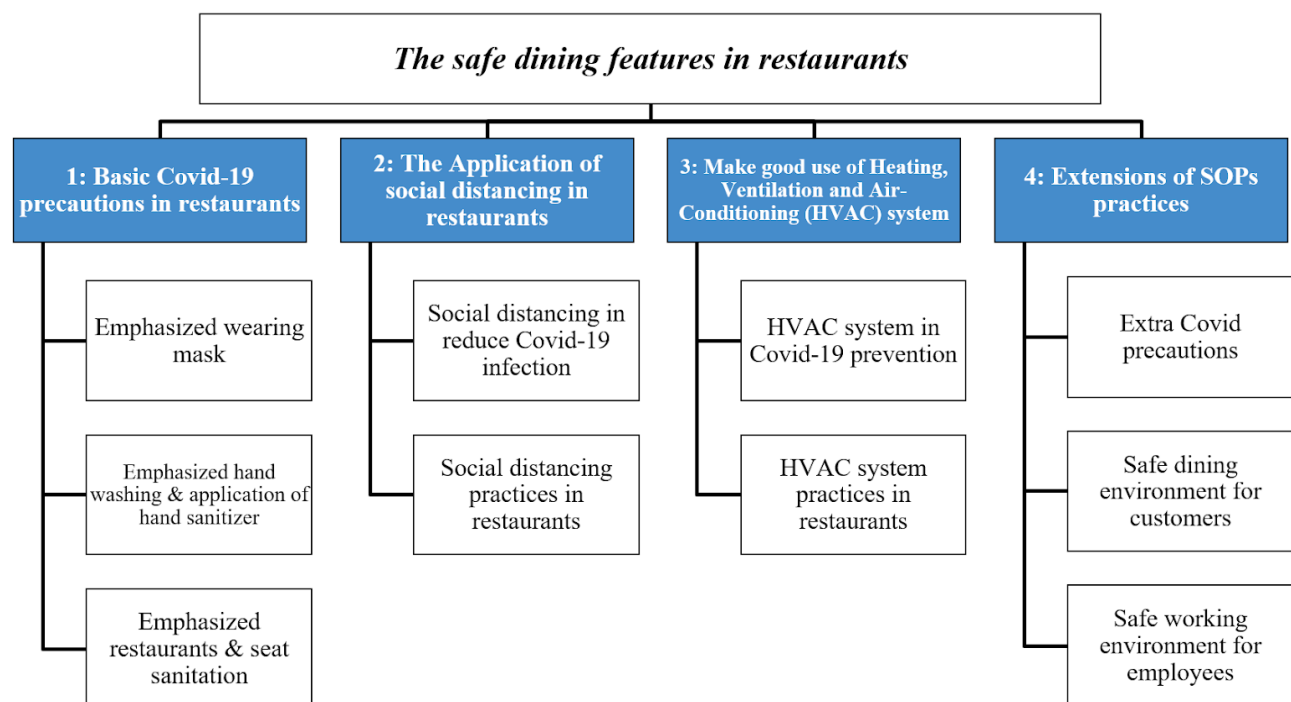


Fig. 3. Findings of safe dining features in restaurants

In addition, informants responded that the application of social distancing was useful in reducing the risk of being infected by COVID-19 within restaurants. Some informants expressed that by having social distancing, the environment in the restaurant would not be too crowded since the social

distancing was able to help reduce the total number of people in the restaurant during the same period, which was able to reduce the chance of spreading viruses.

"16: Yes, it is useful, I think. If, let's say, there is a positive person here, or the customers bring the virus in, at least we have a 1-meter social distance away from them, we will not easily be infected."

The informants also shared some of the practice of social distancing in their restaurants. There were some informants who placed the social distancing marks on the tables to indicate the seats were unavailable to sit in when applied with social distancing rules. Usually, the informants requested their customers to sit two per table, so when the customers came with two or more, they needed to sit at separate tables. However, the informants further stated that most of the customers did not care about the signage and sat together without social distancing.

"13: We have the distancing marks on tables and we did not remove them as well until now, but the customers also did not care about that; they will just sit together."

Other than that, there were informants applied social distance in their restaurants by reducing the total capacity of their restaurants through the arrangement of seats. For example, some informants stated that they would get rid of some tables and chairs to comply with the social distancing rules. However, with the reduction of the seating capacity, the total restaurant capacity for the customers was reduced during the COVID-19 pandemic.

"17: Before COVID, we had many more seats for our customers. Once the COVID outbreak hit, we needed to comply with social distancing, and we had to shorten some of the tables and chairs. So, our restaurant will have fewer seats for customers to dine in."

Besides that, a study from the European Center for Disease Prevention and Control [45] found that HVAC systems in restaurants play a significant role in reducing COVID-19 transmission. The Malaysian government also stated in the dine-in SOPs that the restaurateurs needed to ensure they had a good ventilation system in their restaurants in order to reduce the COVID-19 infection [46]. From the interviews, most of the informants agreed that the HVAC system was efficient in COVID-19 prevention. Some of them stated that a restaurant is a closed environment. If the ventilation system in the restaurant was not good enough, the airflow would continue circulating in the same area, and the risk of the virus spreading among people was high.

"16: Yes, it is important because I think the airflow is important in reducing COVID. If, let's say, there are many people in a close area, then the circulation of airflow is not good enough. It will easily... the virus in the air will easily be inhaled by other people."

Apart from that, the informants also shared information about how the HVAC system worked in their restaurants as well as some of the practices that they had adopted in improving their HVAC system. The researcher found that different informants had different ways of improving the HVAC system in their restaurants in order to reduce the infection of COVID-19. There were informants who would regularly change the filter of the air-conditioning machine. However, the reason that they were doing so was not only due to the COVID-19 pandemic but also to prevent other possible diseases that could be transmitted in their restaurant.

“I2: Like the ventilation here, in our restaurant, we have to use the air-conditioner, so every 2 to 3 months we will change the air filter. Although changing the filter is costly, but we have to protect ourselves and our customers, so we did that laa. Not only for COVID, we did that before COVID also. Every 2 to 3 months we will change the filter.”

On top of the basic COVID-19 precautions, the social distancing rules, and the HVAC system, the researcher also discovered that most of the informants in this research not only followed the SOPs enhanced by the government but also had some extensions to the SOPs practices in their restaurants in order to create a safe environment for themselves, their customers and employees from the infection of COVID-19. The extra COVID-19 precautions taken by the informants in their restaurants varied according to different informants, which included body temperature scanning and vaccination status checking, shoe sanitizing mats at the entrance of the restaurant, robot waiters and digital table menus.

Aside from the extra COVID-19 precautions, in the restaurant industry, the restaurateurs need to worry about the safety and health of two parties: The customers and their employees. Some informants always did sanitation in their restaurants in order to create a safe dining environment that was least exposed to the coronavirus for their customers. The informants explained that sanitation was very important, especially in the air-conditioning area, in order to prevent the infection of COVID-19 within restaurants. Another informant further explained that since we were not able to see the virus, hence, sanitation was important.

“I6: For customers, what we can do is always sanitize our restaurant. We cannot make sure this area is free from the virus because we are not able to see it, but sanitation we still do.”

In conclusion, informants agreed that the social distancing rules were helpful in COVID-19 prevention within restaurants. Besides, there were also informants who decided to apply the social distancing rules in their restaurant for the future, although the government was not restricted to that. Moreover, the researcher believed that every restaurateur should ensure their restaurants had a good HVAC system not only in the kitchen but also in the dining room to create a safe environment in their restaurants and gain back the trust of their customers, especially after the COVID-19 outbreak.

4. Conclusion

In conclusion, this research identified five issues that were the impacts of COVID-19 on the restaurant businesses and their design and layout. According to the issues, it provided insight into the knowledge about how the COVID-19 rules and SOPs had affected the Malaysian restaurant industry. These issues also reflected similar problems that would be faced by the restaurants if there was an explosion of other infectious diseases and MCO was implemented again. People from all levels of society must work together to restore the hard-hit that COVID-19 has done to the restaurant industry.

From the theoretical aspect, this study filled the study gaps between past studies that discussed the influences of COVID-19 on the restaurant industry, including the impacts of social distancing on restaurant design and layout [5,10,11,18,47-49]. This research also added extra knowledge about the SOPs enhancement in Malaysia and its effects on the Malaysian restaurant industry, including the restaurant design and layout. Aside from that, this study also identified the elements that the restaurant operators used in creating safe dining features in their restaurants. From the practical

aspect, this study was able to help the restaurateurs improve their current restaurant businesses as well as improve their restaurant design and layout that were affected by the COVID-19 pandemic. Additionally, the findings from the safe dining features in restaurants can assist the restaurateurs in adapting their restaurants to the new normal situation. The findings also provided valuable knowledge for both existing and future restaurateurs in Malaysia to improve their restaurants by creating an environment that is least exposed to other diseases that are transmitted by airborne, such as the common cold, influenza and measles.

Although this study made contributions, there were still several limitations that must be considered. First of all, this study was limited to the location, which was the Iskandar Puteri City Council. It can be stated that the findings were only able to reflect the problems and issues in a small area. Thus, future research can be conducted similarly in other parts of Malaysia in order to better represent the overall F&B industry in Malaysia. Moreover, the casual dining restaurant was the only type of restaurant focused on in this study. This also contributed to only a small range of problems and issues that were addressed in the findings. For future research, it is recommended to focus on other types of F&B establishments in Malaysia, such as fine-dining restaurants, fast-food restaurants and street food vendors, to compare and contrast the elements used in creating a safe dining environment. In addition, the research design for this study was a qualitative research by interview, which studies the perspectives of the restaurateurs. Future research can be conducted through different research designs for data collection from customers' and employees' perspectives. Future research can also study the opinions of restaurants' customers and employees about the COVID-19 pandemic and their perceptions of the safe dining features in restaurants.

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