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Abstract. Online platforms have become a focus nowadays as an instrument to help expedite some daily routines such as e-commerce including food ordering, online banking, social networking, and many more. Food ordering through online platforms, for instance, have evolved due to the growing numbers of users of digital platforms, restaurant-goers, and many more. The recent pandemic of coronavirus has changed the scenario of brick-and-mortar businesses while most governments forced to shut down and impose strict regulations of lockdown and social distancing among citizens. Although this situation hit most businesses, statistics have shown there is an increasing amount of E-Commerce spending globally. There has been several commercial systems and studies in the market and literature related to food ordering platforms and processes discussed in the study. However, most systems focusing on order-to-delivery and imposed a higher price for delivery. This study introduces an O2O food ordering concept aiming the takeout customers segment and targeting to optimised orders that can be made in advanced and on-the-go. The concept generates models of a new O2O and distance food ordering for potential E-Commerce implementations. Out of the models, process improvement is analysed and suggest that customers would save time, effort, and able to maintain social distancing among citizens. The models can be generalised to be implemented in various industries and situations, depending on in-depth analysis that would be carried out in future studies.

1. Introduction
The recent pandemic situation of the coronavirus outbreak has drawn massive challenges to businesses globally, which affects most businesses. Business sectors in the epicentre, for instance, are declining where they encounter financial problems due to the effects of the coronavirus pandemic [1]. Most governments impose rapid regulations such as the closure of non-essential businesses and lockdown while highly encouraging social distancing among the citizens. These regulations are predicted to safeguard greater opportunities in suppressing the outbreak of the virus [2]. While observing this situation thoroughly, digital applications such as E-Commerce would be an effective medium to reduce operational volatility and improve the survival rate, even after the outbreak [3]. Food ordering and online groceries are among the popular applications currently used by many customers until today [4]. Although customer confidence may affect the overall performance of E-Commerce in developing

countries such as Malaysia [5], it is generally observed that customers may choose to retain social distancing for a while after the outbreak. Italy, who has been hardly hit by the virus has shown rocketed figure of online sales of 90% increase between February and March 2020 [6]. There has been a large group of online users in the Middle East and North Africa countries reported using E-Commerce to purchase products more frequently which they normally would have bought from a store since the outbreak of the coronavirus [7]. These pieces of evidence suggest E-Commerce would gain even more control over the market, and more businesses would join digital platforms with the existence of new business opportunities and horizons in the near future.

The food ordering application that uses E-Commerce is a type of application which typically allow customers to place orders on-the-go over the internet [8]. In this environment, the customer is one of the actors that play important roles so that a positive sales growth can be achieved [9], among others. The following scenario can be drawn to show how this application tap various segments of businesses:

> *"Distance food ordering using digital platforms could maintain social distancing and customers do not have to wait physically at the location. Customers can place orders electronically, which they will be notified if the orders are rejected, completed or ready for collection. Both businesses and customers are in a win-win situation in terms of the capacity of preparing space and wait time, accordingly. Consequently, they still can save for delivery charges."*

In the literature, many research providing insights into E-Commerce before the event of pandemic coronavirus happens [10,11]. However, up to our knowledge, there is a lack of research evidence about going beyond the outbreak. Businesses should remain strong and resilience at the same time by exploiting technological advantages to move forward. Customers are still able to enjoy food prepared by the restaurants and save some money and time for delivery which is costly [12]. This research is proposing a concept of takeout food ordering and proposing important elements of E-Commerce. Although almost similar concept is successfully implemented in retail operations [13], different industries may lead to different implementation strategies. This study generally would contribute to multiple perspectives on academic research and practical implementation. Current E-Commerce market should be beneficial when implementing this concept to change scenarios of businesses upon and after recouping from natural disasters such as pandemic Coronavirus. The new horizon may boost local businesses, especially for locals and tourist to find local foods nearby their place whenever and wherever they are [14].

2. Related Studies

In recent times, the food service industry has changed dramatically. This industry, which a huge business market, has undergone a constant and exciting movement, moving fast forward from conventional-operated business to technology-based-operated business and handles millions of transactions over the internet [15]. The fast movement of such business is due to the growing numbers of user demands [16] and facilities such as payment gateways [17] and delivery system and partners [18]. The technology enables not only the customer to order food over a platform, but it also allows the restaurant or shop owners to manage orders and deliveries [11]. Nowadays, many direct-to-consumer (D2C) companies even sell exclusively online. O2O is an acronym used in digital marketing that simultaneously stands for "online to offline" and "offline to online," describing how retail and e-commerce companies manage their customers both on the internet and in the physical world [19]. There are mainly two market segments of the on-the-go food ordering system. The "order-delivery" system targets a particular market segment where customers place orders of their desired food based on the menu available and expect for the food to food to be delivered at their doorstep [20]. On the other hand, the "order-takeout" is a business model that combines online and offline means in the business, known as O2O [21]. In the scenario of food ordering, the customers would purchase the food online, and they can collect the food

in-store. Figure 1 shows an improved model of O2O takeaway. The model that is originally introduced by [13] showing the flow between users, platforms and restaurants or merchants.
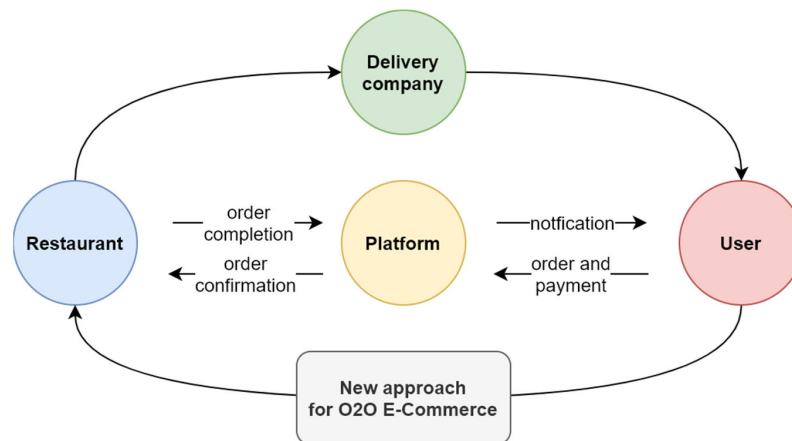

Figure 1. Takeaway O2O model, derived from [22]

In the literature, there are several discussions on food ordering applications, processes and their requirements. The Z language specification feature is used for analysing the commercial application of online food ordering system to improve the order details accuracy and efficiency [23]. An application of Android-based operating system for restaurants is introduced, exploiting recommender systems in providing food suggestions [24]. The study shows the perspectives of Software Engineering practices in building the software system by providing requirements and interface modelling to give insights about its basic architecture. Social Media platforms and various operating systems are proposed in the study that plans to help restaurant in receiving orders and courier companies while doing delivery [25]. In this study, various functions and user interface design were presented to establish fundamentals of system features. Table 1 lists a comparison of food ordering commercial platforms in developing countries of Malaysia and Saudi Arabia. The comparison was made based on common factors of E-Commerce implementation. Click & Collect (C&C) is a facility for users to place orders online via platforms and going offline in collecting foods. Consequently, most platforms accepting different kind of payment, both digital (e.g., online banking payment, debit, or credit cards) and manual payments using cash. Order and track constitute facilities for customers to place orders in advance and the ability to track orders over platforms. These elements show almost half of the listed platforms accept advance orders and allow customers to track their respective orders. In the table, most platforms charge customers separately for deliveries, and only some companies offer communication via chat over platforms.

E-Commerce in this era should allow customers to have sufficient information before making purchase decisions. Such platforms would also be beneficial for sellers to perform business according to information strategies [26]. Reviews and ratings are a set of information that contain customers expressions and feelings towards products, services or merchants over the platform [13,27,28] that is useful in creating interests of a product and recommender systems [29,30]. Notifications such as out-of-stock is an appealing element for E-Commerce to mitigate customer frustration earlier as possible [13]. The notifications are expected to be delivered electronically to customers devices to notify service information such pickup or drop-off time window, and pickup or drop-off location of the most recent shipping and delivery activities [31]

Table 1. Existing commercial platforms of food ordering

Platform	C&C	Payment	Order	Track	Charge	Chat	Location
Foodpanda [1]	No	Digital & manual	No	No	Inclusive	No	Malaysia
Dahmakan [2]	No	Manual	No	No	Inclusive	Yes	Malaysia
Mammam [3]	No	Digital & manual	Yes	No	Exclusive	No	Malaysia
Cooked [4]	No	Digital & manual	Yes	No	Exclusive	Yes	Malaysia
McDelivery [5]	No	Digital & manual	Yes	Yes	Exclusive	No	Malaysia
HungerStation [6]	No	Digital & manual	Yes	Yes	Exclusive	No	Saudi Arabia
CareemNow [7]	No	Digital & manual	Yes	Yes	Exclusive	No	Saudi Arabia
Talabat [8]	No	Digital & manual	No	No	Exclusive	No	Saudi Arabia
Ubereats [9]	No	Digital & manual	No	Yes	Exclusive	No	Saudi Arabia
Jahez [10]	No	Digital & manual	No	Yes	Exclusive	No	Saudi Arabia
KFC [11]	No	Digital	No	Yes	Exclusive	No	Saudi Arabia

3. Proposed Improvement & E-Commerce O2O Model

The current scenario of food ordering via E-Commerce platforms in Malaysia and Saudi Arabia, as listed in Table 1 suggests an improvement plan of such system as presented in Figure 1. Users able to work cooperatively with platforms to manage orders and payments, platforms send order confirmation to merchants, and the merchants transmit order completion to platforms. Consequently, platforms would notify users about the completion of their orders. Typically, orders will be physically delivered by third-party companies to customers. Adding a new approach along with this existing O2O model, customers should be prompted with another option to collect their orders in-store. This approach inclined to overcome issues of costly delivery charge and wait times while customers physically wait for their orders at the restaurants. Figure 2 that depicts the distance food ordering model using the O2O approach tilts to adapt important variables to improve current E-Commerce platforms performance. Numerous ratings such as restaurants, food, and services are deemed useful to give prior information to customers before they make purchases. Online ordering is a process where customers able to secure their orders via platforms and make payments using a variety of banking facilities. Finally, the electronic notification would serve as reminders for both customers and sellers, reminding about order completion activities.

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[1] https://www.foodpanda.my/

[2] https://dahmakan.com/

[3] https://www.mammam.com.my

[4] http://www.cookedapp.com/

[5] http://mcdelivery.com.my/

[6] https://hungerstation.com/sa-en

[7] https://www.careem.com/en-sa/careem-now/

[8] https://www.talabat.com/ksa

[9] https://www.ubereats.com/sa-en

[10] https://www.jahez.net/index-en.html
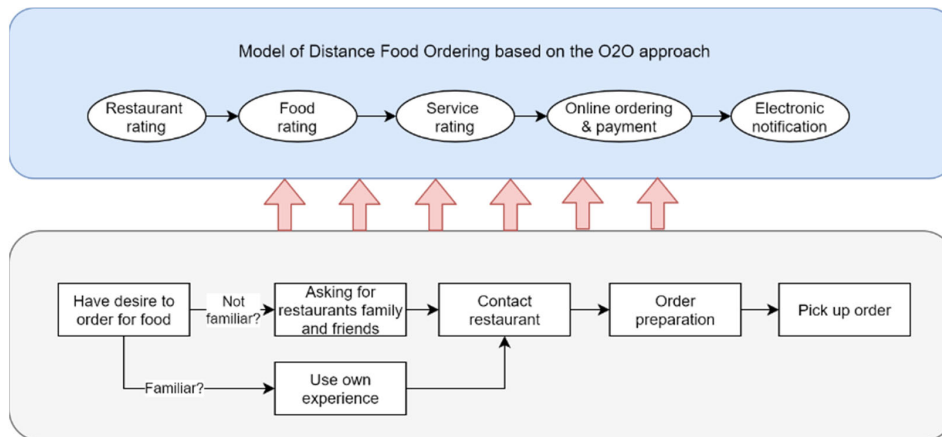
[11] https://www.saudi.kfc.me/en/home

Figure 2. The model of distance food ordering

Having these variables in place, Figure 3 indicates potential improvements in time and physical visits potentially performed by customers, an approach that is used in healthcare [32]. The improvement is analysed according to the timeline that utilises a conventional process of food ordering. The analysis suggests that customers would be able to safe a significant amount of time and effort while making orders online over platforms and get notified electronically if the orders are completed. Then, customers can visit the restaurants to collect the orders without having to spend so much time and maintain good social distancing among other customers.
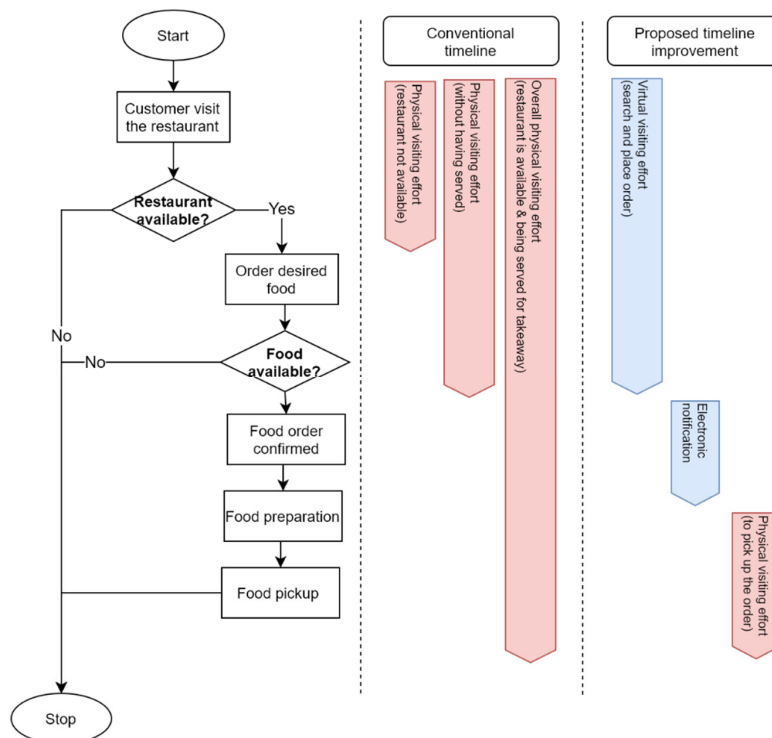

Figure 3. Conventional food ordering process and timeline against the proposed timeline improvement

4. Conclusions

This study proposes an initial concept of food ordering model by utilising the existing O2O model. The existing O2O model has limitations which it promotes food delivery heavily without considering Click and Collect concept that is useful to elevate issues of expensive food delivery charges, wait times, and inflexibilities of giving options to customers over the E-Commerce platform. Various studies on food ordering have suggested processes and models which are focusing only on E-Commerce implementations and are mainly applicable for markets with food delivering options. Some commercial platforms in the market compared in this study show their inadequate capability to support this concept. Improvements proposed in this study utilises variables such as physical visit and effort, time, and information strategies such as ratings, online orderings, online payments, and electronic notifications. These variables deemed beneficial to improve E-Commerce performance for distance food ordering in the new norms after the pandemic Coronavirus, which may also be applied to other situations and industries. The analysis of such improvements suggests that customers would save an optimum amount of time and effort visiting the restaurants without having served by the restaurants due to many reasons. Although this initial concept is limited for actual implementation in E-Commerce, it would certainly lead to further studies in collecting data using questionnaires, in-depth analysis of existing commercial platforms, designing software requirements, prototypes, and verification activities of software system approach.

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