Restaurant Ordering System for Nando's Restaurant: A proposed conceptual solution (MyRos)

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Abstract— **Players in the hospitality industry have constantly been in search of new ways to improve their daily operations. In order to provide quality service, the utilisation of advanced technology is imperative. In the running of restaurants specifically, the utilisation of technology can increasingly be seen in their daily operations. One such example is the shift from using the traditional paper-based system to Personal Digital Assistants (PDAs) for purposes of taking orders. This technological shift is believed to be able to attract more customers and boost the efficiency of operations in restaurants. Thus, the purpose of this research paper is to provide a solution for the betterment of restaurant services by incorporating a Tablet-based Ordering System (TOS) called Restaurant Ordering System or in short MyROS. This paper proposes the design and implementation of the TOS and discusses its expected effects on the operations of Nando's restaurant outlets. This system requires the installation of tablets at each customer table which have the ability to display the details of the menu and the price, and deliver information into a centralised database. The customer tablet, kitchen display, and the cashier counter connect directly with each other via Wi-Fi. This wireless application is user-friendly, enhances efficiency by saving time, reduces human errors, and has features to enable the collection of customer feedback. This paper is based on a study conducted by Multimedia University on the implementation of the TOS in enhancing dining table services. The conceptual solution suggests that the TOS, if executed properly, can provide better value for both Nando's and its customers.**

Index Terms- Automated food ordering system, Digital dining, E-Restaurant, Multi-touch technology

I. INTRODUCTION: HISTORY OF NANDO'S RESTAURANTS

In 1998, Nando's introduced Malaysians to PERi-PERi flame-grilled chicken at its very first outlet located on Jalan Telawi, Bangsar. However, in 2006, PERi-PERi was better known as a fish dish. At the time, Nando's actually served mainly fish in its restaurants. After several years of experimenting, they decided to serve only poultry dishes and this has been maintained until today. They also produce their own signature PERi-PERi sauces which are available throughout Malaysia. What makes Nando's flame-grilled chicken outstanding lies in the way which the ingredients are prepared. The chickens are marinated with Nando's secret sauce for 24 hours, which ensures that the flavour goes right through the bones. They are then flame-grilled and basted in customer's choice of Nando's PERi-PERi sauce. The result is ultimate perfection.

Nando's philosophy is to have fun while making money. Pride, passion, courage, integrity, and family are the values upheld daily at Nando's. From the quote *"We're always looking for people with fire in their bellies and passion in their souls. If you're that kind of person, then we'd love you to join our Nando's family!"*, we can tell that the team at Nando's strive to work and live in a cheerful environment in order to serve customers happily and wholeheartedly. The warmth is evident through quotes such as *"Our legendary chicken, the one thing you will always find at Nando's is a warm welcome that will make you feel right at home and that's not just because of our PERi-PERi!"*

II. PROGRAM BACKGROUND

This paper proposes the implementation of a TOS for Nando's restaurants, with the objective of enhancing the quality of service provided. The system consists of digital devices, being tablets, which will display a digital menu and allow customers to use it to place orders on their own, without requiring assistance from waiters. The tablet is a convenient tool which is able to provide clear and sharp graphics, displaying the image of each dish on the menu. The idea is that each table is equipped with one tablet. The restaurant's servers will only need to escort customers to their seats when they enter the restaurant. In terms of ordering their food, the whole process can be done by the customers themselves - from searching the menu, looking at the images, exploring details about the dishes, up to the stage where they key in their decided order in the software. The system will then automatically update the kitchen staff and the cashier. In the kitchen and at the cashier's side, designated staff members

will monitor the feed of information. Once the information is received, the orders will be prepared and then served by the waiters when ready.

By setting one tablet on top of each table, customers are given the freedom to explore the menu. They can take their time to decide what to order. The serving time will depend on the time taken by customers to key in their orders. Once customers confirm their orders, the information will be delivered promptly to a centralised database and subsequently reach the kitchen module. After kitchen service has completed the orders, the data pertaining to the orders will be delivered to the cashier module for billing. This helps to improve ticket times from the kitchen and enhance the speed of their services.

In implementing the TOS, it is proposed for Nando's restaurant to use a software known as MyROS. MyROS is the abbreviation for My Restaurant Ordering System, a new software system which key features are created to be compatible with the TOS system. It is suggested for Nando's to install this new software given that it has been specifically designed to simplify the ordering system for a restaurant. The implementation of the TOS and the installation and usage of the MyROS software will help Nando's to improve its management, increase its efficiency in service, reduce errors done by human, and increase the quality of its dishes. In addition, this system can also help Nando's in terms of inventory management, where kitchen module can directly update information on which menu items are out of stocks and which ones are still available. This is an important point as customers can instantly know the availability of every item on the menu when placing their orders by using the MyROS application. By having inventory management features, the system can save customers' time in ordering food as well as shorten the time taken by the kitchen module to prepare the ordered food. By implementing the TOS together with the MyROS software, Nando's restaurants can expect to see a significant improvement in the processing of their customers' orders, where this can now be done more systematically and speedily.

III. PROBLEM STATEMENT

A statement on the official website 'Rate Your Nando's' read *"Nando's **nationwide find it difficult to handle busy periods.** One of the most commonly noticed problems is a slow turnaround of tables on Friday and Saturday nights. In addition, statistics prove that food quality declines as the number of people in the restaurant increases"* (Nando's Statistics, n.d.). This indicated that the service at Nando's is getting slow as the increase in the number of customers has caused a decline in the quality of their food. According to the official Nando's website, Nando's currently applies the traditional paper-based method in taking food orders. When customers arrive, the waiter will provide them with printed menus and then wait for the customers to decide on their orders. The waiter will have to manually write down the orders on a piece of paper, which will then be passed to the kitchen. This traditional method of taking orders causes many problems that adversely affect Nando's quality of service. It also consumes much of the time of the customers, waiters, as well as the kitchen staff since there are several stages involved

in placing orders, preparing the food, and then sending the food out to the customers.

IV. PROGRAM OBJECTIVE

The main objective of the TOS is to reduce the time taken to process customers' orders and getting the food to the customers' table. Through the implementation of the TOS, the waiter's assistance is no longer required for customers to order food from the menu. In the traditional system, sometimes the waiters have to finish entertaining their current customers first before they can start taking orders from other customers who come in later. In this situation, the customer has no choice but to wait for a waiter to come and serve them. In any food outlet, it is quite disappointing for a customer when he or she has to wait for a long time before being served. This situation frequently occurs in the Nando's outlets. One of Nando's customers known as RJW commented on 2 September 2016 that it took 25 minutes for the order to be completed, and she was so disappointed with the very poor management and customer service which she had received on this visit. With a TOS in place, customers are able to place their orders as soon as they have decided on what they would like to eat, without having to wait for a waiter to become available. At the same time, through TOS, it takes less time for the order details to be sent to a centralised database, where it reaches both the kitchen for the preparation of the food as well as the cashier for billing purposes. In this way, the time taken to process orders and serve the food to customers shortens considerably. This is significant as fast service is one of the factors customers use to evaluate the quality of a restaurant's service. If the time taken for the food to be served is short, this will result in positive feedback from customers, hence proving that the TOS is both systematic and efficient.

When using the TOS, customers can freely survey or explore the details of any item on the menu before they key in their orders. Once a customer has chosen a food item, he or she will just have to click the "add" button that appears on each item, and the order will be added to a virtual basket. Subsequently, the customer only has to click the "order" button and key in his or her table number before clicking the "confirm" button. The click on the "confirm" button indicates that the customer has already placed the order which is promptly received by the kitchen module. The steps at this stage are also simple. The basket will appear representing the customer's table number. This means that the data appearing on the kitchen and cashier modules will be recorded according to a table number system. When waiters want to serve the food, they will refer to the customer's table number as stated in the system. Apart from saving time, this system also considerably reduces the usage of paper in Nando's daily operations. The current ordering system makes use of papers for the waiters to write down every order. However, with the tablet-ordering system, such paper usage is no longer necessary. Another important point to highlight is that this system also increases efficiency in billing management and makes it easier for customers to make payment. Without needing to manually input all the details into the cashier machine to calculate the bill amount, the cashier simply needs to click on the billing menu to process the bill and payment.

Consequently, by implementing this system, it is no longer necessary to give physical menus to customers. The

tablet will display information on the various items on the menu such as price, types of chicken, sauces, side dishes, drinks, desserts, and even the ingredients contained in the dishes. Customers also have the option to review the dishes they ordered. While waiting for the food to arrive, customers can freely learn about other dishes on the menu by reading the information provided. The software in the tablet is also equipped with a feature which enables customers to provide feedback regarding the restaurant's level of service.

V. METHODOLOGY

To evaluate and measure the efficiency of the proposed TOS, researchers have adopted a descriptive survey approach including extensive literature review, review of online articles, developing current business model as perceived by the authors utilising Business Model Canvas (BMC) tool, and challenging or improving the current business model with 4 lenses of innovation. MyROS is identified as the new Information System (IS) proposed and represented by the new BMC to transform Nando's business model. The findings of studies on the implementation of TOS offer some guidance, with researchers focusing their research on the influence of TOS on restaurant operations and management.

VI. LITERATURE REVIEW

A. TRADITIONAL SYSTEM

"The food ordering system, till a few years ago, was a completely manual process where a waiter used to note down orders from the customers using pen and paper, take the orders to the kitchen, bring the food and make the bill. Although this system was simple it required extensive investment in purchase and storage of paper, large manpower and also was prone to human errors and greater time consumption" (Paresh.R.Bora, 2012). This traditional system of taking orders on paper is one of the most commonly used systems worldwide. However, this system has led to various problems in terms of the delivery of Nando's services, which are highlighted below:

1) Waiters sometimes make mistakes when they take down customers' orders. At times, a waiter can forget to add a specific food item, forget to record extra food ordered, or forget to pass certain orders to the kitchen, especially when they are handling too many customers at one time.

2) Service is slow because customers have to wait for a waiter to become available to take their orders. Their food may take longer to reach their table if the waiters have many tables to be served. Customers may also get the wrong bill due to inadvertent mix-up with other customers' bills.

3) Impatient customers may be calling over a nearby waiter or waitress several times to find out the status of their orders, which wastes the waiter's service time.

4) Waiters need to constantly check with the chefs in the kitchen to determine whether the food is ready. At the same time, the kitchen has to inform the waiters when the food is ready to be served. This is to prevent the food from getting cold over time which may potentially lead to food-poisoning. This may also lead to dissatisfaction among customers.

5) Waiters need to keep track of empty, clean, and reserved tables within the restaurant.

6) Waiters must always be alert on which tables need clearing. This requires them to be constantly checking the tables, which also consumes their time.

7) Managers need to go through and analyse the paper receipts to determine the most popular food, the busiest hours, and the level of customer satisfaction. Menus would also need to be reprinted if there is a change in the price of any of the items. This can be both costly and troublesome.

B. TECHNOLOGY-BASED SYSTEM

The emergence of technology has led to the automation of the food ordering system. This involves the setting up of a PC connection where the waiter would enter customers' orders into the system. The respective orders will then be displayed on a screen in the kitchen. The kitchen staff prepares the dishes accordingly and, upon completion, notifies the waiter who will then collect and deliver the dishes to the respective tables. The system is also capable of notifying the waiter about the availability of a particular dish. If a certain dish is unavailable, the waiter can ask customers to order another item or can simply delete the order altogether. After the food is served, the bill is generated at the cash counter. All the details entered by the customer are automatically fed into the system, which the management staff has full access to. With the advancement of technology, various systems have been launched in the market for the purpose of automation of the food ordering system. One of these systems is known as the Tablet Ordering System, as described below:

TABLET ORDERING SYSTEM

This system has been implemented in foreign countries but is not yet commonly applied in Malaysia. It primarily consists of multi-touch interactive dining menu which conveniently allows customers to place their orders at the dining table by just clicking with their fingers. In other words, by providing customers at every table with a tabletse, they are now able to order food on their own by using a digital device without the need to call for a waiter. Orders made will then be updated promptly to a centralised database and reach the cashier and the kitchen module. With the implementation of this system, less paper will be wasted, food serving time will be reduced, and long queues at the payment counter can be avoided. The issue of inconsistent food taste and quality can also be overcome.

QORDER

Another technological improvement in the food industry is the Qorder. With the new improvement, waiters no

longer need to write down orders by using pen and paper. Instead, all the orders can be taken by using a handheld device called the 'Qorder'. Qorder can be described as a portable touch screen android device which is used by the waiter to enter the order information, which is then sent to the kitchen to be prepared. Qorder utilises Wi-Fi to easily reach even the most remote corner in the restaurant. Waiters can easily print the receipt out and process the payment with this handheld device.

PORTABLE DEVICES SYSTEM

Another new technology is the PDA (Personal Digital Assistant) system, where this system had been introduced to automate the food ordering process likes I-menu, WOS and FIWOS. All these systems are PDA-based, which enable customers or waiters to key in ordering process. There is easy communication between the PDA and the server due to wireless technology. However, the PDA-based system increases the expenditure of the restaurant, despite no real time feedback from customers having been obtained.

C. TABLET

Tablets are mobile computers which can be operated by touching the screen instead of using a physical keyboard. There are many advantages to using tablets for a restaurant's ordering system. The large size of tablets makes it relatively more comfortable for a waiter to use, as compared to PDAs, especially for those who are accustomed to working on a laptop or a desktop PC. Most tablets are compatible with the Android system. Given that the Android system is open-sourced, there is no need to purchase additional software.

ELASTIC CLOUD COMPUTING

The cloud-based server for storing database makes it secure and inexpensive to use Android application, which is designed to contain details of food items in the restaurant. It allows one to set up servers on the fly with the specifications which one requires. The same service will be used to keep the cost down and to maintain scalability.

D. PROPOSED CONCEPTUAL SOLUTION

As stated by Soon et. al (2010), *"TOS was deployed and tested on the cashier terminal, the kitchen terminal and the multi-touchable dining table that serves both as a dining table as well as input device for customers to order food"*. Figure 1 below shows a comparison of the overall service process when ordering food using a PDA and using a TOS.
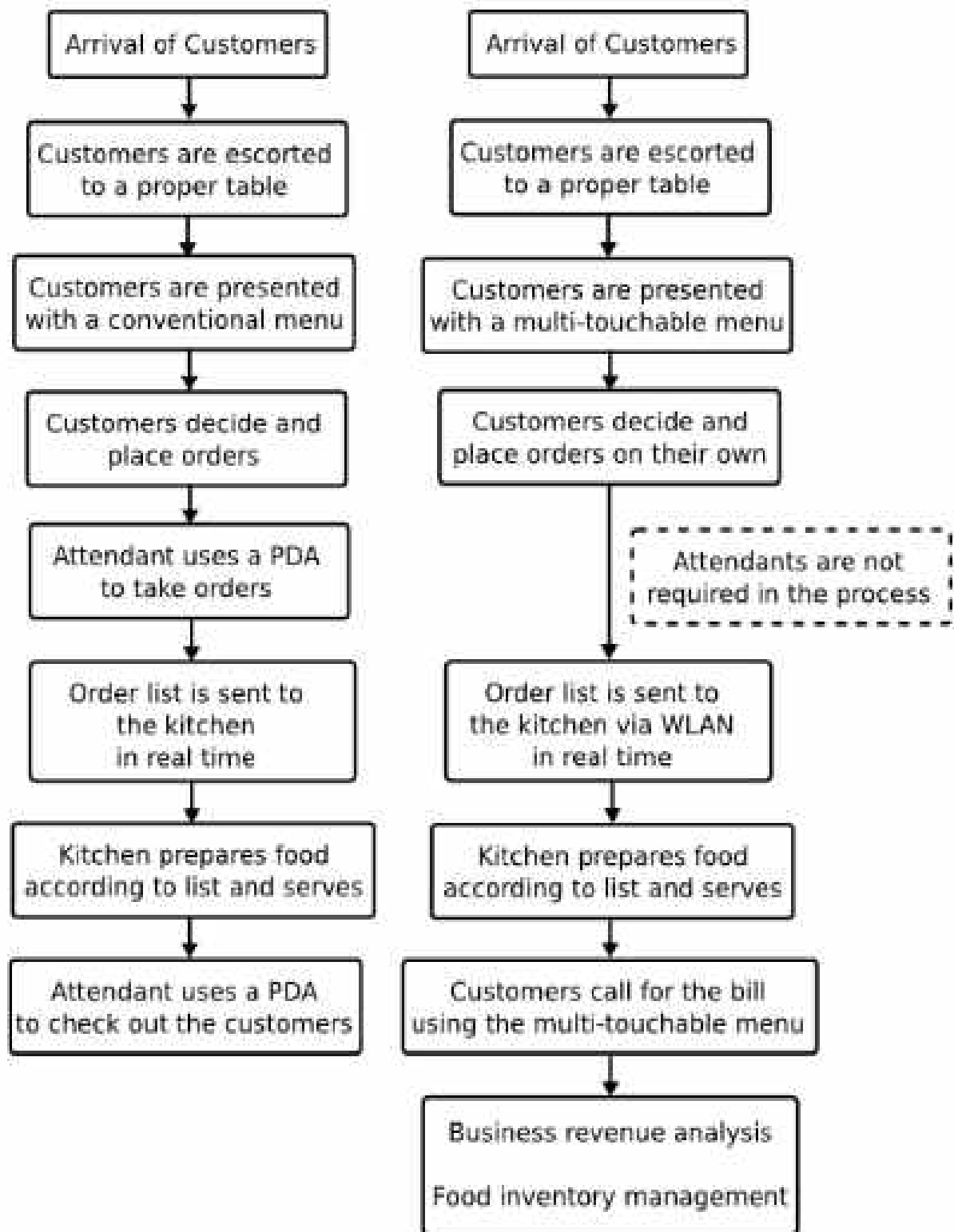
Fig. 1:   A. PDA-based system   B. The proposed TOS

VII. NANDO'S CURRENT BUSINESS MODEL CANVAS

This BMC is based on researchers' understandings of Nando's business operations.

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITION	CUSTOMERS RELATIONSHIP	CUSTOMERS SEGMENT
Nando's is a franchise company and has its own factory and warehouse to supply goods to its franchise outlets	Promotion & advertisement Produce & serve food Provide career opportunities Involved in Corporate Social Responsibility Deliveries	Price affordability Royalty card	PERI-PERI Flame Grilled Chicken Social media Newspapers Advertisement boards	Customer preference via menus Walk-in customers
	KEY RESOURCES Intellectual People Finance Technology		**CHANNELS** Restaurant	

COST STRUCTURE	REVENUE STREAMS
Workers' salaries Production expenses Advertisements Transportation	Sales 6% GST and 10% service charge

VIII. PROPOSED CONCEPTUAL: NANDO'S NEW BUSINESS MODEL CANVAS

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITION	CUSTOMER RELATIONSHIP	CUSTOMERS SEGMENT
Nando's is a franchise company and has its own factory and warehouse to supply goods to it franchise outlets R&D providers Tablet companies	Promotion & advertisement Produce & serve food Provide career opportunities Involved in Corporate Social Responsibility Deliveries	Price affordability Royalty card High taste and quality High quality services Quality design CSR for the poor and the needy	Loyalty Programme Social media Newspapers Advertisement boards Television Radio	Customer preference via menus Walk-in customers Office workers, business meetings, lunches, workshops, conferences Busy housewife
	KEY RESOURCES Intellectual - high IT knowledge People - workers, ~~customers~~, top management Finance - share Technology - Wi-Fi, Tablet, cloud, Big data		**CHANNELS** MyROS Restaurants	

COST STRUCTURE	REVENUE STREAMS
Workers' salaries Production expenses Advertisements Transportation Gadgets expenses	Sales 6% GST and 10% service charge

A.   VALUE PROPOSITION

In simple terms, a value proposition describes the reasons why some customers would choose one product in the market over others. What sets Nando's apart from other restaurants of the same market segment?

Firstly, Nando's is famous for its unique PERi-PERi flame-grilled chicken. The tenderness of the meat captures the hearts of its customers. Nando's also manufactures its own special sauce that comes in various levels of spiciness to suit each individual's tastebud. The unique taste introduced by Nando's brings a whole new level to the poultry food industry, attracting both new customers and loyal long-time customers.

To further enhance value, Nando's has also come up wih a loyalty card system to reward its loyal customers. A customer who has this card will have his or her information, including his or her food preference, collected and stored in a database. Customers can also collect points with this card and will get a free meal once a certain number of points is collected. This is one of the initiatives taken by Nando's to show its appreciation towards its loyal customers.

In addition, customers are also often attracted and inspired by the design of Nando's restaurants. The concept and design of the outlets are simple yet elegant. Natural elements are incorporated where the choice of furniture resembles materials found in the natural environment. This contributes towards the creation of a comfortable, earthy and cozy environment for Nando's customers.

In terms of price, an average meal at Nando's would typically fall within the range of RM20-RM50. This can still be considered reasonable, considering the fair portion of the meal, the taste and quality of the food, as well as the comfortable ambiance experienced by customers who dine at the Nando's outlets. Customers will definitely value their dining experience at Nando's.

With the implementation of the TOS, the service quality at Nando's will definitely receive an upgrade. According to Engku (2012), businesses that employ mobile technologies will be able to see improvements in the effectiveness of their operations and quality of service and will benefiit from lower operational costs. To cite an example, customers will not have to call for the waiter in order to place their orders. They can do this independently, hence enhancing their dining experience.

In terms of corporate social responsibility, Nando's is happy to do its part to contribute towards easing the burden of the poor and needy. For instance, Nando's can donate free food for the poor and can participate in various beneficial charitable and social activities.

B. CUSTOMER SEGMENT

Nando's has implemented the happy hour session in its restaurants, whereby for a set period of time every day, Nando's appetizers and certain selected items on its menu are served at a discounted price. This is one of the marketing strategies adopted by Nando's in order increase its revenue with the new restaurant ordering system. Apart from dining in, customers can also walk into the restaurant, place their orders on the spot and have the food packed for takeaway.

Further, with the implementation of the new system, a wide variety of customers can benefit from Nando's fast and efficient services. For instance, the working segment of society can go to Nando's to have their business meetings, lunches, workshops, gatherings and other events. Meanwhile, busy housewives can sometimes take a day off from preparing meals at home and bring their families to Nando's to experience the good quality services provided through the use of MyROS.

C. KEY RESOURCES

Similar to other businesses, Nando's requires resources in order to create value for its customers. These resources are considered to be among its most valuable assets as they are necessary to support and sustain its business. The resources can be grouped into 5 main categories:

- Physical resources
- Intellectual property resources
- Human resources
- Financial resources
- Technological resources

Currently, the physical resources that Nando's has are its own factory and storage facilities, vehicles for delivery services, machines, buildings, and most importantly its raw materials. In terms of intellectual property resources, they would refer to the brand name, copyright, trademark, partnerships, customer databases, as well as its secret recipe for PERi-PERi sauces.

Nando's also require manpower to manage and run its business. Factory workers are needed for the manufacturing of its products whilst its marketing experts need to ensure that Nando's products are being advertised and promoted effectively. In terms of technological resources, Nando's restaurants are equipped with Wi-Fi connection It also has a website which customers can easily browse to search for menus and place orders for deliveries. Additionally, Nando's social media pages have also been set up in order to attract and inform the local community of the latest events happening at Nando's.

With the introduction of the new TOS into its operations, a few items will be added into Nando's key resources, such as the supply of tablets and the demand for higher IT knowledge among its workers. Given that the new IS system will also result in several of the servers' tasks being eliminated, it is probable that Nando's will also reduce the number of its workers.

D. KEY PARTNERS

Healthy partnerships are crucial as they contribute to the success or failure of a business. In the case of Nando's, which is a franchise company, it has its own factory and warehouse to supply goods to its franchise outlets throughout Malaysia. Its key partners consist of the local community, advertising companies, and suppliers. In terms of delivery service, Nando's has collaborated with Foodpanda as its delivery service provider. In order to implement the new information

system (IS), Nando's will need to build a strong alliance with a reputable IT company in order to get its supply of good quality tablets and internet connection.

E. KEY ACTIVITIES

In order to build a strong and profitable relationship with customers, Nando's has invested a large sum of money in promotion and advertising. Posters, YouTube advertisements, television and billboard advertisements are among the various marketing methods adopted by Nando's to promote its business. In addition to the running of its outlets, Nando's also provide delivery and takeaway services. It also participates in Corporate Social Responsibility (CSR) initiatives in order to connect and give back to society. Meanwhile, Nando's recruitment activities provide career opportunities to those in need of employment.

Not many changes will occur with regards to Nando's activities after the introduction of the new ordering system. However, perhaps more advanced marketing strategies are required in order to expand its reach of targeted audiences. Since the number of orders is expected to go up, the number of deliveries is expected to correspondingly increase.

F. CUSTOMER RELATIONSHIP

Through a loyalty program, Nando's customers can earn points for every Ringgit which they spend in Nando's restaurant and they can turn those collected points into food. A loyalty program can increase value for lifetime customers, which is recognised as one of the important measures of the worth of a customer. Besides, building a relationship with customers lead to improved behavioural loyalty and will increase bottom-line profit. This program will attract new customers and turn them into loyal customers who will tend to buy more and be willing to pay more.

G. COST STRUCTURE

Cost will always remain a major concern for all businesses. One of the costs incurred by Nando's in the running of its operations is labour cost. Labour cost includes salaries, wages, benefits, and service commissions. It can also include miscellaneous smaller items such as the cost of providing employees with uniforms. For most restaurants, labour costs are considered as a variable item. Restaurant managers at each of Nando's outlets have to carefully predict their manpower needs so that they will not make the mistake of hiring too few or too many employees.

Meanwhile, administration costs incurred at Nando's include expenses for telephone charges, electricity, and water. Occupancy expenses is a category of cost which includes all the expenses related to the restaurant's physical building, for example, transportation used by Nando's workers to deliver their products to customers. Its marketing expenses cover the cost for all promotional and marketing activities conducted to entice customers to come and eat in the restaurant, such as advertisement costs and investment in the design and printing of high quality food menus.

Upon the implementation of the TOR, Nando's will have to incur additional costs such as investing in good quality tablets. At the start, Nando's is likely to incur high costs in order to effectively manage the many changes to its day-to-day business operations. However, as the outlets eventually adjust to this new system, the amount of cost incurred is expected to reduce over time.

H. REVENUE STREAM

The term 'revenue stream' refers to the earnings of a business, calculated by subtracting the total cost from the total revenue generated from each customer segment. If customers are generally regarded as the heart of the business, revenue can be likened to the arteries in the heart. Apart from its restaurant services, Nando's earn additional revenue through the sale of its PERi-PERi sauces and also from charging 6% Goods and Service Tax (GST) and 10% service charge.

IX. CONCLUSION AND FUTURE WORK

In conclusion, this paper proposes the implementation of MyROS on top of Nando's current operational framework. This is expected to solve some of the limitations encountered through the use of traditional paper-based ordering method. The TOS is expected to provide a more efficient workflow whereby customers are able to order their food digitally through the use of a tablet. This lessens the burden faced by waiters when serving a large number of customers. Furthermore, this system is clearly advantageous to the customers as it saves their time when placing their orders, especially during peak hours when the servers are often very busy and overwhelmed. Overall, it can be concluded that MyROS would be an effective and suitable system for Nando's to implement. In the future, through proper application of the MyROS system, it is proposed that MyROS be developed and supported with change management, in order for Nando's to improve the overall productivity of its restaurant outlets, decrease labour costs, and provide higher quality of customer and CSR services.

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