

AN ORDER MANAGEMENT METHOD

TECHNICAL FIELD

5 This invention relates generally to an order management method for managing orders for services and goods.

Background

Existing customer service for counter-based or station-based have evolved from issuance of ticket numbers to beepers which customers can carry away with them and be alerted to come
10 back to the station or counter when their turn is due for service or when their orders are ready for collection. However, in situations where the wait is long, this becomes impractical as the holder of the beeper has to stay within range of the counter and be “chained” to its vicinity. Some medical services establishments have addressed this issue by allowing one to provide a phone number which they can send an alert to. This does not address situations when an
15 individual refuses to provide their phone number to the counter and when services are expected from multiple counters at the same place. This can be seen in situations where a patient has to schedule multiple outpatient services on the same day and has to navigate their way to various service points, wards or clinics within a medical center to make sure that their turns are not missed. When applying the same scenario to a food centre or food court with
20 multiple service stations or stall, this can become intimidating as each stall will issue their own beepers and expect you to identify which stall each beeper, most often with worn out markers, belong to. Further, beepers provide alerts in the form of an audible alert and visible light flashes without further indication on where to collect the food, what food is to be collected and in situations where the stall operators have to communicate with the customer
25 on other matters, for example when a certain food item has ran out and an alternative order is expected. Imagine having to go back to the stall expecting to collect food for a family member, only to be told that a particular food item has ran out and you having to walk back to your family member, or call them, to decide on an alternative item that is only displayed at the stall, and having to walk back to place the alternate order. This is such a waste of time
30 and does nothing to improve customer service at any establishments. The latter scenario is

painted for a food centre. Imagine the same thing happening for mega-sized bazaars which have been growing in popularity in recent years. Therefore, there exists a need for a system for addressing the foregoing problems.

5 Summary

In accordance with a first aspect of the invention, there is disclosed an order management method comprising sending task data from a central server to a back-end device of a processing station, the task data being generated by the central server and being indicative of order data received by the central server from a computing device, receiving a completion
10 indicator from processing station on completion of a task described by the task data, and sending an alert indicator to the computing device subsequent to the completion indicator being received from the processing station by the central server.

In accordance with a second aspect of the invention, there is disclosed an order management
15 method comprising providing menu data from a central server to a plurality of computing devices for visually presenting as a plurality of menu items on each thereof, generating order data from user selection of at least one of the plurality of menu items presented for each of the plurality of computing devices, the order data being indicative of one of a plurality of processing stations, the plurality of menu items being presented as an instance of a mobile
20 application on a display of the respective one of the plurality of computing devices, wherein selection of at least one of the plurality of menu items is performed by user interaction with the respective one or more of the plurality of computing devices, sending task data from the central server to one of a plurality back-end devices, each of the plurality of back-end devices being associated with and being disposed at one of a plurality of processing stations, the task
25 data being generated by the central server and being associated with the order data received by the central server from one of the plurality of computing devices, receiving a completion indicator from the one of the plurality of processing stations on completion of a task described by the task data, and sending an alert indicator to the one of the plurality of computing devices indicated by the order data associated with the task data in response to the

completion indicator of completion of the task described by the task data being received from the one of the plurality of processing stations by the central server.

5 In accordance with a third aspect of the invention, there is disclosed an order management method comprising providing menu data from a central server to a plurality of computing devices for visually presenting as a plurality of menu items on each thereof, generating a plurality of order datasets from user selection of at least one of the plurality of menu items, each of the plurality of order datasets being generated from one of the plurality of computing devices and being indicative of one of a plurality of processing stations, the plurality of menu
10 items being presented as an instance of a mobile application on a display of the respective one of the plurality of computing devices, wherein selection of at least one of the plurality of menu items is performed by user interaction respective one or more of the plurality of computing devices, receiving the plurality of order datasets from the plurality of computing devices by the central server, allocating a plurality of task datasets to at least one of a
15 plurality of processing station, each of the plurality of task datasets being indicative of one of the plurality of processing stations and being associated with one of the plurality of order datasets, receiving a completion indicator from one or more of the plurality of processing stations on completion of one or more tasks described by one or more of the plurality of task datasets, and sending an alert indicator to each of the plurality of computing devices
20 indicated by one or more of the plurality of order datasets associated with one or more of the plurality of task datasets wherefrom and in response to the completion indicator of completion of the task described by one or more of the plurality of task datasets received from the one or more of the plurality of processing station by the central server.

25 In accordance with a fourth aspect of the invention, there is disclosed a machine-readable medium having stored therein a plurality of programming instructions, which when executed, the instructions cause the machine to send task data from a central server to a back-end device of a processing station, the task data being generated by the central server and being indicative of order data received by the central server from a computing device, receive a
30 completion indicator from processing station on completion of a task described by the task

data, and send an alert indicator to the computing device subsequent to the completion indicator being received from the processing station by the central server.

5 **Brief Description of the Drawings**

FIG. 1 shows an exemplary process flow diagram of an order management method in accordance with an aspect of the invention;

FIG. 2 shows a system diagram of an order management system implemented by the order
10 management method of FIG. 2; and

FIG. 3 shows a data flow diagram of data flow between a communication device, a central server and a back-end device of the order management system of FIG. 2.

Detailed Description

An exemplary embodiment of the present invention, an order management system 20 and an order management method 100 for management of the order management system 20, is described hereinafter with reference to FIG. 1 to FIG 3.

Depicted is an exemplary system architecture of the order management system 20 that can execute implementations of the present disclosure. The order management system 20 can comprise or be adapted for implementation with a computing device 22 associated with a user and a central server 24. The computing device 22 can communicate with one or more of the central servers 24 over a network 26. The central server 24 can each include one or more servers 28 and one or more datastores 30. Preferably, the order management system 20 further comprises one or more back-end devices 26 in data communication with the central server 24.

Each of the computing device 22 and the back-end device 26 can represent various forms of processing devices including, but not limited to, a desktop computer, a laptop computer, a handheld computer, a personal digital assistant (PDA), a smartphone, a smart tablet, a cellular telephone, a network appliance, a camera, a smart phone, an enhanced general packet radio service (EGPRS) mobile phone, a media player, a navigation device, an email device, a game console, or a combination of any two or more of these data processing devices or other data processing devices. The computing device 22 may access application software on one or more of the central server 24 and have one or more of an image capture device, for example a camera, a scanner for scanning and reading data from a computer readable code, for example a bar code, a 3D code or a QR code, and a near field communication (NFC) module for communicating with other NFC-enabled devices or systems. The central server 24 can represent various forms of central servers including, but not limited to a web server, an application server, a proxy server, a network server, or a server farm.

In some implementations, the computing device 22 may communicate wirelessly through a communication interface (not shown), which may include digital signal processing circuitry

where necessary. The communication interface may provide for communications under various modes or protocols, such as Global System for Mobile communication (GSM) voice calls, Short Message Service (SMS), Enhanced Messaging Service (EMS), or Multimedia Messaging Service (MMS) messaging, Code Division Multiple Access (CDMA), Time Division Multiple Access (TDMA), Personal Digital Cellular (PDC), Wideband Code Division Multiple Access (WCDMA), CDMA2000, or General Packet Radio System (GPRS), among others. For example, the communication may occur through a radio-frequency transceiver (not shown). In addition, short-range communication may occur, such as using a Bluetooth, WiFi, or other such transceiver. The network 26 can be a large computer network, such as a local area network (LAN), wide area network (WAN), low power WAN (LP-WAN), the Internet, a cellular network, or a combination thereof connecting any number of mobile clients, fixed clients, and/or servers.

Preferably, each of the back-end devices 26 is physically disposed at, within or proximal a processing station 28, or a corresponding one of a plurality of processing stations 28, whereat a processing task is performed. 9. Each processing station 28 is one of a stall, an eatery and a kitchen area of a pre-defined area for at least one of processing and preparation of food and food articles.

The order management method 100 comprises providing menu data 30 to the computing device 22 in a step 110 for visually presenting as a plurality of menu items on the computing device 22. Next, order data 34 is generated in a step 112 from user selection of at least one of the plurality of menu items presented on the computing device 22.

Preferably, the plurality of menu items are presented as an instance of a mobile application on a display of the computing device 22 with selection of at least one of the plurality of menu items being performed by user interaction with the display. Further, the mobile application is initiated for presenting the plurality of menu items in response to the computing device 22 scanning a machine readable code. The machine readable code comprises a QR code, a 3D code and a bar code. Hence, a user may utilize the computing device 22, for example the

user's mobile phone, to scan the machine readable code printed on a label that has been adhered to a corner of a table top.

5 The order management method 10 further comprises applying modification to at least a portion of the menu data 30 by the central server 24 in response to an offer event being initiated. Once the offer event is being initiated, the order data 34 from user selection of at least one of the plurality of menu items is based on the applied modification. Preferably, the applied modification is user-defined through user-interaction with the back-end device 26 and the offer event being initiated at least one of by user-interaction with the back-end device 10 26 and at a pre-defined event start time. The applied modification is removable by termination of the offer event through interaction with the back-end device 26, at a pre-defined event end time, and at elapsed of a pre-defined duration from the initiation of the offer event.

15 The order management method 100 further comprises sending task data 42 from the central server 24 to the back-end device 26 of the processing station 28 in a step 114. The task data 42 is generated by the central server 24 and is indicative of and generated from the order data that has been received by the central server 24 from the computing device 22. Once a task described by the task data 42 has been completed by the processing station 28, the central server 24 receives a completion indicator 44 from processing station 28 on completion of a 20 task described by the task data in a step 116. An alert indicator 46 is then sent to the computing device 22 by the central server 24 in a step 118 subsequent to the completion indicator 44 being received from the processing station 28 by the central server 24. Preferably, each of the order data 34 and the alert indicator 46 are indicative of the 25 processing station 28 so that the user may be informed of the processing station 28 to approach subsequent to the alert indicator 46 being received thereby.

The order data 34 and the task data 42 may also be referred to as order dataset 34 and task dataset 42 respectively to indicate the structured/pre-defined fields of data contained in the 30 corresponding data/dataset.

The order management method 100 further comprises receiving a task acceptance indicator 48 from the processing station 28 in response to the task data 42 being sent to the processing station 28 by the central server 24 in a step 120 and sending an order confirmation indicator 50 to the computing device 22 in a step 122 in response to the task acceptance indicator 48 being received from the processing station 28. Alternative to the task acceptance indicator 48, the processing station 28 may instead send a task rejection indicator 52 to the central server 24 in the step 120 which will, in turn, send an order rejection indicator 54 to the computing device in the step 122.

Preferably, the step 114 of sending the task data 42 from the central server 24 to the back-end device 26 of the processing station 28 comprises sending the task data from the central server 24 to the back-end device 26 of the processing station 28 in response to confirmation of payment being transferred from an electronic wallet of a user identifier indicated by the order data to an electronic wallet of a pre-defined merchant in a step 124. Preferably, the pre-defined merchant may be associated with the processing station 28 or a premise where the processing station 28 is located, and the user being the user of the computing device.

Preferably, at least one of an audible alert, a visual alert, a vibratory alert and an alert message by the computing device 22 in a step 126 in response to the alert indicator 46 being received from the central server 24 in the step 118.

The use of the order management system 20 is straightforward should there be only one or more users placing orders with the central server 24 through a plurality of the computing devices 22 when there is only one processing station 28. In such an instance, the processing station 28 will have a single one of the back-end devices 26 but with, for example, multiple user interfaces such as a touch-screen, or a plurality of the back-end devices 26, each with one or more user-interfaces. However, when there are more than one processing station 28 available at a single premise, the right orders need to be sent to the right one of a plurality of the processing stations 28. Further, the central server 24 also needs to make sure that the

right task completion indicator 44 is being associated with the right order so that the alert indicator 46 can be sent to the right one of the plurality of the computing devices.

Hence, the alert indicator 46 needs also to be indicative of the corresponding one of the plurality of processing stations 28 so that the user will know which order is ready and from which one of the plurality of processing station 28 is the order is ready from. The alert indicator 46 may indicate the name and description of the processing station 28, or graphically indicate on a map where the particular one of the plurality of processing stations 28 is located.

In an application of the order management system 20 utilising the order management method 100, a food hall, for example a food court or a self-service cafeteria, has multiple stalls. The multiple stalls are the plurality of processing stations 28 selling various kinds of food items. When customers or smart phone users arrives at the food hall, each customer will use their smart phone, the computing device 22, to scan a QR code, the machine readable code. Through a native, hybrid or web-based app on the respective smart phone, the customers, being the user of the computing device 22, are presented with the plurality of menu items when menu data 30 is received from the central server 24 of the food hall. The menu items 30 presented may be grouped or clustered based on what individual stalls are offering, alphabetical order, popularity, pricing, or the like type of pricing. The user then makes a selection of menu items, which can be from a single stall or from multiple stalls, and the order data 34 is generated and sent to the central server 24. As the order data 34 may contain orders for multiple stalls, the central server then generates the task data 42 for the respective stalls, being the processing stations 28, before sending the task data to the back-end devices 26 corresponding to the respective stalls.

The operators of the individual stalls may choose to accept or reject the order/task. Should the operator of a stall choose to accept the task/order, the operator interacts with the user-interface of the back-end device 26 to accept the order and the task acceptance indicator 48 will be sent to the central server 24 which will in turn send the order confirmation indicator

50 to the user's smart phone. However, should the operator choose to reject the task/order, the operator rejects through interacting with the back-end device 26 which will then send the task rejection indicator 52 to the central server 24 which will, in turn, send the order rejection indicator 54 to the user's smart phone.

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Upon receiving the order confirmation indicators 50 from the central server 24, the user is then required to effect payment through use of a payment gateway or service, for example Visa, WeChat pay, AliPay, through credits or tokens from an electronic wallet or through an on-device credit card profile. Alternatively, payment may be requested at the point of placing the order so that when an order is rejected, the corresponding amount associated with the rejected order is refunded to the user through whichever payment means that has been utilized by the user via the corresponding computing device 22. For a user who is not able to effect payment by electronic means, one or more kiosk may be deployed for collecting cash payment when the user requests for cash payment on the user's smart phone. A payment number and/or a kiosk number may be sent to the user's smart phone for the user to effect cash payment at the one or more kiosk. A service staff may also be made available for collecting payment from the user when the user requests for cash payment.

In some implementation, the order placed by the user is accepted "as is" without need for acceptance confirmation by the operator of the stalls. In such an implementation, an operating hour duration may be defined so that any orders placed within the operating hour duration will be accepted by the central server 24. The order rejection indicator 54 will only be sent when the respective stall runs out of ingredients for preparing the menu item or when a quota for the number of menu items to be sold, or available, for the day or hour, as pre-defined with the central server 24, has been reached.

Upon accepting the task/order, the respective stall, being the respective one of the plurality of processing stations 28 will proceed to prepare the menu items, being food items, specified by the task data 42. Once preparation of the food items have been completed by the stall, the operator interacts with the corresponding back-end device 26 to send the completion

indicator 44 to the central server 24. Once the completion indicator 44 has been received by the central server 24, the central server then generates the alert indicator 46 from the received completion indicator 44 which is indicative of the processing station 28 it was sent from and the menu items it corresponds with together with an identifier that ties the order/task to the order data 34 and the corresponding one of the plurality of computing device 22. The central server 24 then sends the alert indicator 44 to the computing device 22 to alert the user that the order is now ready for collection from the stall, the processing station 28, indicated by the alert indicator 44. Multiple alert indicators 44 to the same computing device may be tracked by the central server so that uncollected orders may be presented in a list or indicated on a map.

The alert indicator 44 may further present a collection code, for example a pin-number a QR code, to be presented, keyed-in or scanned at the respective processing station 28 to either provide proof of order and thereby enabling collection of food items at the stall or to provide proof of collection of the food items from the stall, or both.

During lull periods where the stalls are experience lower number of customers patronizing the stalls, for example after lunch hours, or when the stalls anticipates the slow-down in business and intends to clear the remaining ingredients or food item, the individual stalls may initiate an offer event, as aforementioned, through initiating the offer event through the respective back-end device 26. Each stall vendor is able to determine when the offer event is to happen. For example, a stall may want to apply a \$2 discount on all items sold by the stall, or to provide discounts to only selected items sold thereby. The offer event may be pre-scheduled or may be initiated on-demand. Through a promotions module of the order processing system 20, which is accessible via the respective back-end devices 26, a stall owner will select items to be discounted, the corresponding discounted price for the selected items, determine whether the discounts, applied by way of modifications to existing prices indicated by the menu data 30, should initiate immediately or based on a pre-defined schedule. The offer event may be terminated based on a pre-defined schedule, or at any time via the promotions value. Once the offer event is initiated, details of the offer event will be

provided to and appear on the computing device 22 when the user is browsing the menu items. Details of the offer event may be automatically and selectively summarized by the promotions module or may be provided by the stall owner via the back-end device 26 to indicate the discounts to be provided for which food items as well as name of the stall
5 providing the discount.

Further disclosed herein for use with or in adaptation of aspects of the order processing system 20 and the order processing method 100 is a machine-readable medium having stored therein a plurality of programming instructions, which when executed, the instructions cause
10 the machine to send task data from a central server to a back-end device of a processing station, the task data being generated by the central server and being indicative of order data received by the central server from a computing device, receive a completion indicator from processing station on completion of a task described by the task data, and send an alert
15 indicator to the computing device subsequent to the completion indicator being received from the processing station by the central server.

Aspects of particular embodiments of the present disclosure address at least one aspect, problem, limitation, and/or disadvantage associated with existing order processing systems. While features, aspects, and/or advantages associated with certain embodiments have been
20 described in the disclosure, other embodiments may also exhibit such features, aspects, and/or advantages, and not all embodiments need necessarily exhibit such features, aspects, and/or advantages to fall within the scope of the disclosure. It will be appreciated by a person of ordinary skill in the art that several of the above-disclosed structures, components, or alternatives thereof, can be desirably combined into alternative structures, components,
25 and/or applications. In addition, various modifications, alterations, and/or improvements may be made to various embodiments that are disclosed by a person of ordinary skill in the art within the scope of the present disclosure, which is limited only by the following claims.

Claims

1. An order management method comprising:

5 sending task data from a central server to a back-end device of a processing station, the task data being generated by the central server and being indicative of order data received by the central server from a computing device;

 receiving a completion indicator from processing station on completion of a task described by the task data; and

10 sending an alert indicator to the computing device subsequent to the completion indicator being received from the processing station by the central server.

2. The order management method of claim 1, further comprising:

 receiving a task acceptance indicator from the processing station in response to the task data being sent to the processing station by the central server; and

15 sending an order confirmation indicator to the computing device in response to the task acceptance indicator being received from the processing station.

3. The order management method of claim 1, sending task data from a central server to a back-end device of a processing station comprising:

20 sending the task data from a central server to the back-end device of the processing station in response to confirmation of payment being transferred from an electronic wallet of a user identifier indicated by the order data to an electronic wallet of a pre-defined merchant.

- 25 4. The order management method of claim 1, further comprising:

 providing menu data to the computing device for visually presenting as a plurality of menu items on the computing device; and

 generating the order data from user selection of at least one of the plurality of menu items presented on the computing device.

5. The order management method as in claim 4, further comprising:
applying modification to at least a portion of the menu data by the central server in response to an offer event being initiated,
wherein the order data from user selection of at least one of the plurality of menu items is based on the applied modification.
6. The order management method as in claim 5, the applied modification being user-defined through user-interaction with the back-end device and the offer event being initiated at least one of by user-interaction with the back-end device and at a pre-defined event start time.
7. The order management system as in claim 6, the applied modification being removable by termination of the offer event through interaction with the back-end device, at a pre-defined event end time, and at elapsed of a pre-defined duration from the initiation of the offer event.
8. The order management method of claim 4, each of the order data and the alert indicator further being indicative of the processing station.
9. The order management method as in claim 4, the plurality of menu items being presented as an instance of a mobile application on a display of the computing device, wherein selection of at least one of the plurality of menu items is performed by user interaction with the display.
10. The order management method as in claim 9, the mobile application being initiated for presenting the plurality of menu items in response to the computing device scanning a machine readable code,
wherein the machine readable code comprises a QR code, a 3D code and a bar code.

11. The order management method of claim 1, the processing station being one of a stall, an eatery and a kitchen area of a pre-defined area for at least one of processing and preparation of food and food articles.
- 5 12. The order management method of claim 1, further comprising:
 - generating at least one of an audible alert, a visual alert, a vibratory alert and an alert message by the computing device in response to the alert indicator being received from the central server.
- 10 13. The order management method of claim 1, the alert indicator being indicative of a station identifier associated with the processing station.
14. An order management method comprising:
 - 15 providing menu data from a central server to a plurality of computing devices for visually presenting as a plurality of menu items on each thereof;
 - generating order data from user selection of at least one of the plurality of menu items presented for each of the plurality of computing devices, the order data being indicative of one of a plurality of processing stations, the plurality of menu items being presented as an instance of a mobile application on a display of the
 - 20 respective one of the plurality of computing devices, wherein selection of at least one of the plurality of menu items is performed by user interaction with the respective one or more of the plurality of computing devices;
 - 25 sending task data from the central server to one of a plurality back-end devices, each of the plurality of back-end devices being associated with and being disposed at one of a plurality of processing stations, the task data being generated by the central server and being associated with the order data received by the central server from one of the plurality of computing devices;
 - receiving a completion indicator from the one of the plurality of processing stations on completion of a task described by the task data; and

sending an alert indicator to the one of the plurality of computing devices indicated by the order data associated with the task data in response to the completion indicator of completion of the task described by the task data being received from the one of the plurality of processing stations by the central server.

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15. The order management method of claim 14, sending task data from the central server to one of a plurality back-end devices comprising:

sending the task data from the central server to one of a plurality back-end devices in response to confirmation of payment being transferred from the electronic wallet of a user identifier indicated by the order data associated with the task data to the electronic wallet of a pre-defined merchant,

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wherein the processing station is one of a stall, an eatery and a kitchen area of a pre-defined area for at least one of processing and preparation of food and food articles, and the alert indicator being indicative of a station identifier associated with the processing station and generating at least one of an audible alert, a visual alert, a vibratory alert and an alert message.

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16. An order management method comprising:

providing menu data from a central server to a plurality of computing devices for visually presenting as a plurality of menu items on each thereof;

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generating a plurality of order datasets from user selection of at least one of the plurality of menu items, each of the plurality of order datasets being generated from one of the plurality of computing devices and being indicative of one of a plurality of processing stations, the plurality of menu items being presented as an instance of a mobile application on a display of the respective one of the plurality of computing devices, wherein selection of at least one of the plurality of menu items is performed by user interaction respective one or more of the plurality of computing devices;

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receiving the plurality of order datasets from the plurality of computing devices by the central server, allocating a plurality of task datasets to at least one of a

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plurality of processing station, each of the plurality of task datasets being indicative of one of the plurality of processing stations and being associated with one of the plurality of order datasets;

receiving a completion indicator from one or more of the plurality of processing stations on completion of one or more tasks described by one or more of the plurality of task datasets; and

sending an alert indicator to each of the plurality of computing devices indicated by one or more of the plurality of order datasets associated with one or more of the plurality of task datasets wherefrom and in response to the completion indicator of completion of the task described by one or more of the plurality of task datasets received from the one or more of the plurality of processing station by the central server.

17. A machine-readable medium having stored therein a plurality of programming instructions, which when executed, the instructions cause the machine to:

send task data from a central server to a back-end device of a processing station, the task data being generated by the central server and being indicative of order data received by the central server from a computing device;

receive a completion indicator from processing station on completion of a task described by the task data; and

send an alert indicator to the computing device subsequent to the completion indicator being received from the processing station by the central server.