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Point Of Sale Device for Food and Beverage Retail Shops

[0001] The present invention relates to a Point of Sale (POS) device for food and beverage retail shops or outlets. In particular, the POS device has an electronic menu that can be accessed by an external computer, tablet or mobile device with wired or wireless communication capability.

[0002] In a typical restaurant, the process of ordering food involves following steps. Firstly, a waiter guides a customer to their seats and brings them the menu. The customer will read the menu and call the waiter if he has already chosen items for ordering, make the order, the waiter will finally process the order by bringing it to the kitchen and/or keying it in the restaurant management system, for example a Point-of-Sale (POS) system. This current process flow depends heavily on the waiter to take the order from the customer, but the waiter has other tasks on hand such as delivering ready dishes to the customers, clearing tables, and topping up customers' drinks. Customer frustration arises when customers are unable to get the attention of the waiter when they are ready to order. There will also be instances when customers are not ready to order but the waiter stands at the table waiting, therefore wasting time where the waiter can be engaging in other productive activities.

[0003] To expedite the ordering process, some restaurants provide computers having electronic menus to customers for ordering. An electronic menu has many advantages compared to a paper menu. The electronic menu has the capacity to contain more information, such as pictures, description and ratings, of the dishes. The electronic menu reduces the need for extensive training of new waiters about every item on the menu as the customer can have access to this information on the menu, this can help reduce training costs which is significant as there is a high turnover rate of wait staff and high number of part timers and temporary workers. Communication errors between waiter and customer will be minimised and therefore decrease wastage due to wrong orders. Updating the menu will be easier and less costly as it does not incur printing costs. It also offers more flexibility, for example, the ability to hide items on the menu if they are sold out, and also hide or unhide time sensitive items on the menu when required.

[0004] There are some existing electronic menu solutions, one of which involves computers or tablets being attached at the restaurant tables, and customers can browse and order from it. The main shortcomings of this approach are high startup costs of buying a device for every table and some spares for emergencies, as well as the logistical challenge of storing, charging, powering the devices and measures to prevent theft by both staffs and customers. A device at each table also means only one customer can view the menu and order at a time, which is not efficient.

[0005] The present invention aims to provide a new and useful device or method. Essential features of the invention are provided by independent claims, whilst advantageous features are presented by dependent claims.

[0006] According to a first aspect, the application provides a Point of Sale device for food and beverage retail shops or outlets. The POS device comprises a Central Processing Unit (CPU) for handling digital data; one or more computer memories (e.g. RAM, EPROM) connected to the central processing unit (e.g. Microprocessor) for storing operation system(s), software programmes or the digital data; an user interface device (e.g. touchscreen) connected to the central processing unit, the computer memory or both for handling the digital data; and a network communication device (e.g. wireless router) connected to the central processing unit, the computer memory, the interface or a combination of any of these components for communication between the Point of Sale device and an external electronic device (e.g. mobile phone of a customer). The network communication device is configured to broadcast the electronic menus to the external electronic device for receiving orders of food and beverage from the customer. In particular, the external electronic device is conditionally connected to the POS device depending authorization of the POS device. For example, a customer having the external electronic device is only allowed to view the electronic menu when making orders. The external electronic device may be denied connection to the POS device after departing from the premise of the POS device.

[0007] Since a customer can view and order food and beverage via the electronic menu received by the external electronic device, an owner or user of the POS device can avoid or be alleviated from sending waiters to the customer for taking orders.

Since the external electronic device does not belong to the owner of user of the POS device, the owner or user of the POS device will not be required to spend time, money and labour to maintain or upgrade the electronic devices. Accordingly, not only the efficiency of ordering has been improved, but also the cost of providing food and beverage service can be reduced.

[0008] Alternatively, the POS device can receive the electronic menus from the cloud and distribute the electronic menus to the external electronic devices. Restaurant managers can connect to the cloud via a web interface for editing the electronic menus. Moreover, local (onsite) or remote (offsite) computer servers can broadcast the electronic menus to the external electronic devices via the network communication device, 3G network or 4G network directly. Here, the cloud refers to computers connected through a real-time communication network (e.g. internet).

[0009] Moreover, the POS device may include a local computer terminal (e.g. cash register) and a remote computer server that are connected together. The electronic menus can be distributed wirelessly from the remote computer server to the external electronic devices via the network communication device, 3G or 4G network.

[0010] The network communication device may be configured to broadcast the electronic menus locally around premises of the food and beverage retail outlets. If the electronic menus are more relevant to a geographically focused area, such as at a table of a retail shop, the network communication device can distribute the electronic menus via wired connections (e.g. Ethernet, ADSL, USB, FireWire IEEE 1394 interface) or wireless connections (e.g. 3G, 4G, WiFi, Bluetooth, Near Field Communication).

[0011] The network communication device can comprise a router for transmitting data packets between the computer terminal and the external electronic device. Since the router facilitates and manages communication between the POS device and multiple external electronic devices, delay of service due to shortage of manpower is greatly reduced.

[0012] The network communication device may further comprise an antenna for wireless communication between the Point of Sale device and the external electronic device. For example, the wireless communication comprises Wi-Fi or WLAN based on the “Institute of Electrical and Electronics Engineers” (IEEE) 802.11 standards". Wi-Fi signals are suitable to be broadcasted by a wireless router over a local area (e.g. within a diameters of 100 meters) for food and beverage outlets.

[0013] The network communication device can further comprise a Network Interface Unit for transmitting data between the Point of Sale device and a remote computer server or data storage device (cloud). Often, enterprise resource planning application systems and management (e.g. SAP ERP) data are stored offsite and are further connected to the POS device. The Network Interface Unit provides secured data communication between the POS device and the remote server. Nevertheless, the network communication device and the Network Interface Unit may be integrated as one physical unit onsite or offsite.

[0014] The Point of Sale device may further comprise a network security module for checking identity of the external electronic device. Since the external electronic device does not belong to the owner of the POS device, the POS device is required to recognize, verify and track the electronic device for receiving orders, as well as preventing intrusions from a hacker for breaching computer security. For example, USB hardware keys may be presented to customers of the external electronic devices at a retail shop such that only customers having the hardware keys can download the electronic menus to their electronic devices (e.g. tablet computers).

[0015] The network security module can comprise one or more sockets for connecting to the external electronic device. One simple approach is to provide one USB socket at each table of a restaurant such that only a single user/customer with a USB cable/connector is allowed to order through the electronic menu at the table.

[0016] The user interface device may comprise a computer mouse, a computer keyboard, a display screen, a touchscreen, a printer, a switch, a loudspeaker, a microphone, a light indicator, a gesture recognition device or a combination of any of these for managing the electronic menus. These types of user interface device allow

users of the POS device (e.g. restaurant manager, chef or waiter) to manage the order easily. For example, a chef may give notice for finishing an ordered dish by giving a shout (voice input) in the kitchen, instead of using his oily finger for touching a keyboard.

[0017] The Point of Sale device can further comprise a cash register for providing business transactions. Accordingly, the POS device can handle billing, as well as giving the electronic menus to customers.

[0018] The application further provides a Point of Sale device network that comprises one or more of the Point of Sale devices, and one or more computer servers having enterprise data warehouse. The one or more of the Point of Sale devices are connected to the one or more computer servers. Hence, the multiple POS devices at different physical locations (POS devices of a restaurant chain) can share stock, sales and staff roaster information for improving operational efficiency.

[0019] According to a second aspect, the application also provides a Point of Sale system for managing electronic menus of food and beverage retail outlets. The Point of Sale system comprises a computer terminal for loading electronic menus of food or beverages, a network communication device connected to the computer terminal for broadcasting the electronic menus to external electronic devices, and an operating system on the Point of Sale system for editing the electronic menus depending on inputs from the external electronic devices. The Point of Sale system includes a local computer having the operating system for handling the electronic menus, or a server together with a local computer terminal.

[0020] Alternatively, the POS device can receive the electronic menus from the cloud and distribute the electronic menus to the external electronic devices. Restaurant managers can connect to the cloud via a web interface for editing the electronic menus. Moreover, local (onsite) or remote (offsite) computer servers can broadcast the electronic menus to the external electronic devices via the network communication device, 3G network or 4G network directly. Here, the cloud refers to computers connected through a real-time communication network (e.g. internet).

[0021] According to a third aspect, the application provides a method for handling food and beverage orders. The method comprises a step of transmitting one or more electronic menus to an external electronic device, a step of receiving the orders from the external electronic device, and a step of communicating the orders to a service provider of the food and beverage. The external electronic device can be provided with temporary access to the electronic menus within premise(s) of a food and beverage retail shop. For example, a customer with the external electronic device enters a restaurant, one or more Wi-Fi devices of the restaurant will transmit a message directly (or giving SMS via a telecom indirectly) to the external electronic device. The electronic menus will be received and displayed on the customer's electronic device after given authorization by the customer at the external electronic device. The instant display of electronic menu is both efficient and update-to-date, which does not require labour intensive personal service from a waiter of the restaurant.

[0022] The method can further comprise a step of verifying identities of the external electronic device before receiving the orders. For example, a service staff or POS device of the restaurant checks location of the external device (e.g. via multilateration) or unique identity information of a mobile phone (e.g. International Mobile Station Equipment Identity) so that the POS device can grant or deny orders from the external electronic device.

[0023] The step of verifying identity may comprise a step of checking password entry from the external electronic device. One easy way of verifying identify is to request a customer at a table to send his table number to the POS device via a web browser at the external electronic device. Electronic menus can be promptly dispatched to the external electronic device upon receiving the correct table number.

[0024] The step of verifying the identity can further comprise a step of receiving acceptance from the external electronic device. Since there may be several restaurants near a customer of the external electronic device, acceptance from the electronic device will prevent unwanted information being displayed at the external electronic device.

[0025] The step of verifying identity may further comprise a step of assigning a location of the external electronic device. In typical situations, a POS device can confirm orders from a customer if electronically detected location and customer's table number match/tally, having no conflict with other customers' order information (e.g. table number).

[0026] The step of verifying identity can further comprise a step of assigning the location to multiple electronic devices. Sometimes, groups of friends can share one table such that a common table/location may be shared by multiple customers having external electronic devices.

[0027] The transmitting of one or more electronic menus may comprise a step of presenting the electronic menus on a website browser at the external electronic device. Since most mobile phones or tablet computers are installed with web browsers, the electronic menus can be easily accessed by majority of customers.

[0028] The step of transmitting one or more electronic menus further can comprise a step of providing the electronic menus via an application software package on the external electronic device. Mobile phones or tablet computers can have the onboard application software that facilitates ordering, sales, promotion, customer feedback and data analytics.

[0029] The method may further comprise a step of sending third parties information to the external electronic devices. The third parties include credit card companies for providing promotion information, food producers for giving nutrition information or event organizers for prompting party information.

[0030] The method can further comprise a step of giving different levels of authorization to the external devices for editing the electronic menu. A POS device can grant access to electronic menus to customers for viewing, give authorization to managers of a restaurant for editing the electronic menus, or permit chefs of the restaurant to mark completion of an order. Alternatively, a remote server can grant the authorizations to the customers, managers or chefs.

[0031] The method may further comprise a step of tracking the orders of the external electronic device. A manger of a restaurant can monitor waiting time of the orders, or grant discounts to customers of repeated orders.

[0032] The method can further comprise a step of receiving a service request from the external electronic device, a step of identifying location of the external electronic device, and a step of sending information of the location to a service staff. The service staff will be notified immediately on an exact location of a customer with the external electronic device such that immediate and efficient attention is made to the customer.

[0033] The method may further comprise a step of conveying messages to a service staff, the electronic device or both for listing outstanding orders, unsettled payments or health related information. Sometimes, a customer leaves a restaurant without paying, the service staff will be promptly alerted by the POS device if the non-paying customer leaves the restaurant due to the location-tracking of the external electronic device.

[0034] Alternatively speaking, this electronic menu system will allow customers to view the menu and make orders by their own computer, tablet or mobile device, via an internet browser or a native application. The customer's device will join a pre-determined wireless network broadcast by a router within the restaurant, the menu will then be accessed on a webpage served by our main server, on a browser or through a native application. The customer can now browse and get more information on a dish on the menu by tapping on the item, and can proceed to order by selecting the desired quantity and specify any special request.

[0035] There will be an authentication process to prevent abuse of the menu system. After the first order input, the customer will be required to specify if he is creating a new table or joining an existing table. In the case of a new table, the customer needs to input the table number and mobile number to receive a message containing the authentication code. The user keys in the PIN to verify his identity and he will be provided with a 4 letter table code. To join an existing table, the customer needs to input the 4 letter table code and mobile number to receive a message from our

server, containing the authentication code. The user then keys in the PIN to verify his identity. In both cases, after the customer keys in the PIN, the dishes ordered will be stored in the shopping cart. The customer may carry on adding items to the cart and once the customer is ready, he can confirm his orders and it will be sent to the restaurant management system. The restaurant management system will process the order according to existing workflow in the kitchen.

[0036] The customer is identified by a cookie and will not need to verified again for further orders after making the first order, unless the bill has already been paid and the table is closed by the restaurant management system. The customers will also be able to view the table's order history and know the table's bill amount. Once the customer has finished his meal, he may settle the payment on his own device by using an online payment application and the bill will be settled and recorded by the restaurant management system. This will also work for food establishments where a prepaid system is used. And the customer only collects the food only after payment is made.

[0037] A menu management module is available for the manager to make modifications to the menu when required. This may include adding and removing items from the menu, adjusting the prices of the items, as well as setting time sensitive menu, and time sensitive discounts.

[0038] A customer relationship management program will also capture customers' information, which include but not limited to dishes ordered, frequency of visits, total amount spent. This information may be used for marketing purposes like customer loyalty programs.

[0039] Embodiments of the invention allow the external electronic devices to access an electronic menu within the premises of a food and beverage retail shop, and the ability to order from it. This increases operation efficiency of the shop and is more cost efficient than the current methods of attaching a device on each table.

[0040] The accompanying figure (Fig.) illustrates an embodiment and serves to explain principles of the disclosed embodiment. It is to be understood, however, that

the figure is presented for purposes of illustration only, and not for defining limits of relevant inventions.

[0041] In particular, Fig. 1 illustrates a schematic diagram of an embodiment. Fig.2 illustrates an order process of a customer using an electronic menu. Fig.3. illustrates an authentication process for preventing abuse of the menu system.

[0042] Exemplary, non-limiting embodiments of the present application will now be described with references to the above-mentioned figure.

[0043] According to Fig.1, customers *(2) are in the seated in the restaurant and they have their own wireless enabled devices *(3). The devices will connect to a wireless network broadcast by a router *(4), and then open a browser window, or start a native application to access the menu *(5). The menu is served through a server (9) and is administered by any authorised personnel, including the restaurant manager (6), where he can make modifications to the menu remotely on a browser or the application provided (7).

[0044] According to Fig.2, the customer can scroll through the menu and tap on any item to find out more about it. To make an order, the customer has to select the quantity and tap to order. The customer has to choose if he's starting a new table or joining an existing table opened by another customer at the same table. The authentication program (8) will send a message to the customer to verify his device, and this message may be a SMS or any other form of messaging. The customer has to key in the verification code in his device and his order will be sent through the server (9) to the outlet's POS *(10). The POS will handle the subsequent workflow. When the customer has finished his meal, he may settle payment on his own device with an online payment application (13) and once the payment is approved, it will be recorded in the POS.

[0045] Information such as the customer's order history, amount spent, and time visited will be captured by our CRM (Customer Relationship Management) program (11) and stored in our CRM server (12). They may be used for marketing purposes such as a customer loyalty program or for analysis such as industry benchmarking.

In addition to this, there may be messages sent to customers' devices to promote discounts that might be available in the shop by participating merchant banks or payment providers. This provides the customers with relevant and useful information during the visit to the restaurant,

[0046] (2) customers can be seated or at a queue just outside a restaurant so they may browse the menu or pre-order

(3) these devices include but not limited to the categories of laptops, netbooks, tablets, and smart phones. Waiters may also hold devices acquired by the restaurant to order on behalf of the customers.

(4) Network may be secured or unsecured.

(5) Web browsers include Firefox, Chrome, Opera, Internet Explorer, Safari and their mobile versions and any other proprietary browsers of the device manufacturer or operating system manufacturer. This may also be served by a captive portal.

(10) POS is used interchangeably with restaurant management system

[0047] In the application, unless specified otherwise, the terms "comprising", "comprise", and grammatical variants thereof, intended to represent "open" or "inclusive" language such that they include recited elements but also permit inclusion of additional, non-explicitly recited elements.

[0048] As used herein, the term "about", in the context of concentrations of components of the formulations, typically means +/- 5% of the stated value, more typically +/- 4% of the stated value, more typically +/- 3% of the stated value, more typically, +/- 2% of the stated value, even more typically +/- 1% of the stated value, and even more typically +/- 0.5% of the stated value.

[0049] Throughout this disclosure, certain embodiments may be disclosed in a range format. The description in range format is merely for convenience and brevity and should not be construed as an inflexible limitation on the scope of the disclosed ranges. Accordingly, the description of a range should be considered to have specifically disclosed all the possible sub-ranges as well as individual numerical values within that range. For example, description of a range such as from 1 to 6 should be considered to have specifically disclosed sub-ranges such as from 1 to 3,

from 1 to 4, from 1 to 5, from 2 to 4, from 2 to 6, from 3 to 6 etc., as well as individual numbers within that range, for example, 1, 2, 3, 4, 5, and 6. This applies regardless of the breadth of the range.

[0050] It will be apparent that various other modifications and adaptations of the application will be apparent to the person skilled in the art after reading the foregoing disclosure without departing from the spirit and scope of the application and it is intended that all such modifications and adaptations come within the scope of the appended claims.

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Claims

1. Point of Sale device for food and beverage retail outlets, the device comprising:
   - A central processing unit for handling digital data,
   - A computer memory connected to the central processing unit for storing software programmes or the digital data,
   - An user interface device connected to the central processing unit, the computer memory or both for using the software programmes, and
   - A network communication device connected to the central processing unit, the computer memory, the interface or a combination of any of these components for communicating the digital data between the Point of Sale device and an external electronic device,

   Wherein the network communication device is configured to communicate the electronic menus to the external electronic device for receiving orderings from the external electronic device.

2. The Point of Sale device of Claim 1, wherein
   The network communication device is configured to broadcast the electronic menus locally around premises of the food and beverage retail outlets.

3. The Point of Sale device of Claim 1 or 2, wherein
   The network communication device comprises a router for transmitting data packets between the Point of Sale device and the external electronic device.

4. The Point of Sale device of any of the preceding Claim 3, wherein
   The router comprises an antenna for providing wireless communication between the Point of Sale device and the external electronic device.

5. The Point of Sale device of any of the preceding Claims 1 to 4, wherein
   The network communication device further comprises a network interface unit for transmitting data between the Point of Sale device and a remote computer.

6. The Point of Sale device of any of the preceding Claims 1 to 5 further comprising

A network security module for checking identity of the external electronic device.

7. The Point of Sale device of Claim 6, wherein

The network security module comprises at least one socket for connecting to the external electronic device.

8. The Point of Sale device of any of the preceding Claims, wherein

the user interface device comprises a computer mouse, a computer keyboard, a display screen, a touchscreen, a printer, a scanner, an OCR (Optical Character Recognition) reader, a switch, a loudspeaker, a microphone, a light indicator, a gesture recognition device or a combination of any of these for managing the electronic menus.

9. The Point of Sale device of any of the preceding Claims further comprising

A cash register for providing business transactions.

10. Point of Sale device network comprising

- At least one of the Point of Sale device according to any of the preceding Claims,
- A computer server having enterprise data warehouse, the at least one of the Point of Sale device being connected to the computer server.

11. Point of Sale system for managing electronic menus of food and beverage retail outlets, the Point of Sale system comprising

- A computer terminal for loading electronic menus of food or beverages,
- A network communication device connected to the computer terminal for communicating the electronic menus to external electronic devices, and
- An operating system on the computer terminal or a remote computer server for editing the electronic menus.

12. Method for handling food and beverage orders, the method comprising:
    - Transmitting at least one electronic menu to an external electronic device of a customer,
    - Receiving the orders from the external electronic device, and
    - Transferring the orders to a service provider of food and beverage.

13. Method of Claim 12 further comprising
    Verifying identity of the external electronic device before accepting the orders.

14. Method of Claim 13, wherein
    The verification of identity comprises checking password entry from the external electronic device.

15. Method of Claim 12 or 14, wherein
    The verification of identity further comprises receiving confirmation from the external electronic device.

16. Method of any of the preceding Claims 12 to 15, wherein
    The verification of identity further comprises assigning a location of the external electronic device.

17. Method of Claim 16, wherein
    The verification of identity further comprises assigning the location to multiple external electronic devices.

18. Method of Claim 12, wherein
    The transmission of at least one electronic menu comprises presenting the electronic menu via a website browser at the external electronic device.

19. Method of Claim 12 or 18, wherein
    The transmission of at least one electronic menu further comprises providing the electronic menu via a mobile application software package on the external electronic device.

20. Method of any of the preceding Claims 12 to 19 further comprising
Sending third parties information to the external electronic device.

21. Method of any of the preceding Claims 12 to 20 further comprising
Giving different levels of authorization to the external device for editing the electronic menu.

22. Method of any of the preceding Claims 12 to 21 further comprising
Analyzing ordering behavior of the external electronic device.

23. Method of any of the preceding Claims 12 to 22 further comprising:
Receiving a service request from the external electronic device,
Identifying a location of the external electronic device, and
Sending information of the location to a service staff.

24. Method of any of the preceding Claims 12 to 23 further comprising
Conveying messages to a service staff, the external electronic device or both for outstanding orders, feedback on service quality, unsettled payments or health related information.