

Apparatus And Method For Record Management

Field

- 5 The present invention relates to an apparatus and method for record management, in particular, for updating inventory and managing transaction records.

Background

- 10 In the retail industry, departmental stores carry a lot of products. Each product is tied to a certain vendor of the departmental stores. The departmental stores and their vendors share revenue through a "trade margin" system. That is, for every product to be sold in the departmental store, the departmental store and/or the vendor will decide how much of the profits of the product sold will go to the departmental store and how much of the
- 15 profits of the sold product will go to the vendor. Different products may have different trade margins.

- To track sales and inventory of every product purchased, tracking or stock taking systems are used. An existing tracking system may use codes, typically in the form of
- 20 barcodes. A correct barcode needs to be printed and pasted on each product to reflect the trade margin associated with the product. However, it has been observed that sales staff sometimes pastes printed barcodes with wrong trade margin on certain products accidentally, resulting in inaccurate profit sharing between the departmental store and the vendor. Some products may be priced the same but have different trade margins.
- 25 Hence, pasting a right barcode on a product is very important.

- Each department store functions differently in terms of their tracking system. Hence, currently, a vendor having multiple outlets in different departmental stores has difficulty keeping track of purchases from multiple outlets as the vendor has to adapt to different
- 30 tracking systems of different departmental stores.

- There is a high chance of human error in existing tracking systems as they are usually manually operated and use paper records. For instance, to process a product purchase, a sales staff would paste a printed barcode associated with a product onto a
- 35 handwritten memo and write a "X 2" (Times two) beside the barcode to indicate to a cashier that a customer is purchasing 2 products at a price indicated by the barcode. The barcode also determines how profit sharing (trade margin) between the

departmental store and the vendor is carried out for the product. However, while processing the purchase, the sales staff has a tendency to write wrong quantity of products sold or may have illegible hand writing in a paper memo that would result in the cashier inaccurately entering the wrong quantity into a tracking database.

5 Furthermore, the sales staff may paste wrong barcode stickers which might be of different trade margins that would result in inaccurate profit sharing.

A common approach to the solution is to indicate to the salesgirl to write more legibly. Also, to tell the sales staff to double check a receipt printed by the cashier based on
10 information provided by the sales staff before handing over the purchased product or goods to the customer. However, this can be time consuming and will not always work against human error.

Summary

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In accordance with one aspect of an example of the present disclosure, there is provided an apparatus for record management, the apparatus comprising: a processor; and a storage accessible by the processor, the processor being configured for generating a record having status data for indicating a current status of the record, data
20 of a machine readable code associated with the record, and data of one or more second machine readable code associated with data of one or more items obtained by the processor, the record being generated by generating data of the machine readable code upon receiving an input to generate the machine readable code, processing the data of the one or more items to obtain the data of the one or more second machine
25 readable code; storing data of the generated record into the storage; retrieving the record by receiving an input to retrieve the record from the storage; updating the status data of the record to another status by receiving an input to update the status data after the record is retrieved; and instructing adjustment of a value associated with quantity of the one or more items after the status data of the record is updated.

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In accordance with another aspect of an example of the present disclosure, there is provided a method for record management, the method comprising: generating a record having status data for indicating a current status of the record, data of a machine readable code associated with the record, and data of one or more second machine
35 readable code associated with data of one or more items obtained by the processor, the record being generated by generating data of the machine readable code receiving an

input to generate the machine readable code, processing the scan data to obtain the data of the one or more second machine readable code; storing data of the generated record into a storage; retrieving the record by receiving an input to retrieve the record from the storage; updating the status data of the record to another status by receiving
5 an input to update the status data after the record is retrieved; and instructing adjustment of a value associated with quantity of the one or more items after the status data of the record is updated.

Brief Description of the Drawings

10 Various embodiments of the present disclosure will now be described, by way of example only, and with reference to the accompanying drawings in which:

Figure 1 illustrates an apparatus of an example of the present disclosure.

15 Figure 2 illustrates a method of an example of the present disclosure.

Figure 3 illustrates a medium containing printed information generated by the apparatus.

Figure 4 illustrates a medium containing printed information generated by the apparatus.

20 Figure 5 illustrates architecture of a processor, a work station and a mobile device.

Description

With reference to Figure 1, there is shown an example of an apparatus for record
25 management in the form of an integrated mobile point of sale (POS) system 100. The example may include a plurality of mobile devices 106 (which can have a portable power supply, for example, battery operated), a wireless network 108 (which can be based on a cloud system), a processor 102 (which can be a backend server) for accessing and storing data in a first storage 104, and a workstation 110 for accessing
30 and storing data stored in a second storage 114.

Each mobile device 106 is connected to a scanner 112 for obtaining information from items scanned. The reference numeral 106 is used herein for convenience to also refer
35 to one of the plurality of mobile devices 106. The workstation 110 is similarly connected to a scanner 116 for obtaining information from items scanned.

The scanner 112 may be integrated with the mobile device 106 or separated from it, and similarly, the scanner 116 may be integrated with the workstation 110 or separated from it. The scanners 112 and 116 can be the type for scanning barcodes, Quick Response (QR) codes, and for reading Radio Frequency Identification (RFID) tags containing codes, and the like.

The plurality of mobile devices 106 may belong to a vendor of a departmental store, which sells items at the departmental store. The processor 102 may belong to the vendor, the departmental store or co-owned by both of them. Although it is indicated which party the components in the integrated mobile point of sale (POS) system 100 belongs to in the present example, it is appreciated that each of the components can also be owned by the vendor, departmental store, co-owned by both the vendor and the departmental store, or even owned by a third party.

The mobile device 106 may be a smartphone, tablet, laptop, and the like. The workstation 110 may similarly be like the mobile device 106 or may further be a desktop computer and the like. In the present example, the mobile device 106 is an inventory and sales tracking device used by a sales staff of a vendor and the workstation 110 having a second processor 122 is a cash register terminal operated by a cashier at the departmental store.

In the present example, the first storage 104 is for storing data of inventory and payment (sales) records of one or more items for the vendor's record and the second storage 114 is for storing data of inventory and payment (sales) records of one or more items for the departmental store's record. The items are products carried by the vendor but being sold at the departmental store. It is appreciated that the first storage 104 and the second storage 114 can be the same storage in another example. In this case, advantageously, the departmental store can access inventory and sales information of the vendor and vice versa via, for instance, a web portal run by the processor 102. The processor 102 can be a server running the web portal and the web portal can be made accessible by staff of the vendor and/or the departmental store via workstations (For example, 110) and mobile devices (For example, 106) having network access.

The wireless network 108 can be a cloud based system that includes a telecommunication network such as GSM/CDMA 2G, 3G, 4G, or further generations and/or similar networks, Wireless Local Area Network, satellite based

telecommunication network, and the like. In the present example, the wireless network 108 is GSM 3G/4G.

Each mobile device 106 includes a minimum set of features required of the apparatus
 5 for record management, and amongst other things, each mobile device 106 has
 features for generating a record, storing data of the record, retrieving the record, and
 updating status of the record. More specifically, the mobile device 106 includes a
 processor 118 and a storage 120 accessible by the processor 118. The storage 120 in
 the present example refers to on-board memory of the mobile device 106, which can be
 10 flash memory based, a hard disk drive, and the like.

The processor 118 is configured for the following:

- generating a record having
 - status data for indicating a current status of the record,
 - 15 data of a machine readable code associated with the record, and
 - data of one or more second machine readable code associated with data of
 - one or more items obtained by the processor 118,
 - the record being generated by
 - generating data of the machine readable code upon receiving an
 - 20 input to generate the machine readable code, and
 - processing the scan data to obtain the data of the one or more
 - second machine readable code;
- storing data of the generated record into the storage 120 (it is appreciated
 that other storage may also be used in other examples);
- 25 - retrieving the record by
 - receiving an input to retrieve the record from the storage 120;
- updating the status data of the record to another status by
 - receiving an input to update the status data after the record is retrieved;
 - and
 - 30 - instructing adjustment of a value associated with quantity of the one or more
 - items after the status data of the record is updated.

The record in the present example refers to a record of sales or transactions of the one
 or more items at the departmental store. When printed, it resembles a transaction
 35 receipt and it may contain more information than what is indicated as generated by the

processor 118 above. Examples of the record and what it may contain will be described with reference to Figures 3 and 4 later.

5 The machine readable code in the present example can be said to be used for tracking inventory movement and sales of products or items carried by the vendor and sold at the departmental store. It can also be referred to as a transaction code and it is associated with the record.

10 The one or more second machine readable code in the present example refers to one or more item reference codes used for identifying each item to be purchased by a customer. The item reference code in the present example is a code predefined by the departmental store.

15 The data of the one or more items obtained by the processor 118 may be scan data obtained by scanning the machine readable code using the scanner 112 and/or text associated with the machine readable code obtained by a user entering the text through an Input/Output interface (not shown in Figure 1; See Figure 5 and corresponding description for an example) of the processor 118. In the case that scan data of the one or more items are obtained by the processor 118 using the scanner 112, the scanner
20 112 may for example be used to scan a tag adhered or attached to an item being sold in the departmental store. The tag may include a bar code, Quick Response (QR) code, or be in the form of an Radio Frequency Identification (RFID) tag.

25 The data of each of the one or more second machine readable code may include data identifying an entity for disposing the item and/or a value associated with the item. In some instances, the data of each of the one or more second machine readable code may include data of a ratio apportioning the value associated with the item. An entity for disposing the item in the present example refers to a vendor or retailer that is a seller of the item. In another example, the entity may be the departmental store. The value
30 associated with the item in the present example refers to the selling price of the item. The data of the ratio apportioning the value associated with the item in the present example refers to a trade margin negotiated between the vendor and the departmental store. The trade margin sets out a ratio or percentage of profit going to the vendor and to the departmental store from earnings due to sale of the item. Furthermore, the data
35 of each of the one or more second machine readable code may also include a unique string of text pre-defined for the one or more items and/or one or more graphical

representations of the one or more second machine readable code, for instance, a barcode, a QR code, and the like.

The processing of the scan data of the one or more items to obtain the data of the one or more second machine readable code may include searching a database to obtain data of the one or more second machine readable code indicated in the database as associated with the scan data of the one or more item being processed. Parameters used to search the database may include one or more selected from a list as follows:

- value associated with the one or more item or the price of the one or more item,
- category of the one or more item (for instance, the respective item may be a cosmetics product and thus categorised under cosmetics), and
- data of the ratio apportioning the value associated with the one or more item or the trade margin of the one or more item.

The first storage 104, the storage 120 and/or the second storage 114 may include the database.

There are different ways and formats adopted by departmental stores in setting item reference codes, which as mentioned is also known as the one or more second machine readable code in the present example, for every item sold. For instance, the one or more second machine readable code may contain a first set of digits or code for identifying a vendor and a second set of digits or code for indicating price of the item. In another departmental store, there may be two separate second machine readable codes, one for identifying a vendor and one for identifying price of the item. In yet another departmental store, there may further be a second machine readable code for identifying trade margin, and/or a unique second machine readable code for every item. Hence, by implementing each mobile device 106 to be able to process the scan data of the one or more items to obtain the data of the one or more second machine readable code that may include the data identifying an entity for disposing the item and/or a value associated with the item and/or data of the ratio apportioning the value associated with the item, the mobile device 106 would be usable for different departmental stores. Furthermore, the use of the database as mentioned above will come in handy in situations where every item has a unique code.

The processing of the scan data of the one or more items to obtain the data of the one or more second machine readable code in the present example may include use of an

algorithm for decoding the scan data of the one or more items in a manner pre-defined for an entity selected from a list of entities. In this case, each entity is a specific departmental store. In the retail industry, it is common for different departmental stores to apply different algorithms to decode the scan data of each item sold in the departmental store to obtain the data of the second machine readable code, which is the item reference code for that item. As an example, a departmental store may set first six digits of a second machine readable code to indicate a pre-designated reference number of a vendor and a second set of six digits of the second machine readable code for indicating price of a specific item associated with the second machine readable code. In this case, the algorithm would be configured to look to the second set of six digits for extracting at least the price of the specific item as the data of the second machine readable code.

During implementation, a plurality of mobile device 106 to be used at a specific departmental store can advantageously be configured to run the pre-defined algorithm applied by the specific departmental store. There may be included a settings interface made available to and accessible from each of the plurality of mobile devices 106. The settings interface enables a user to select the specific departmental store so that the right pre-defined algorithm for the selected departmental store will be used for obtaining the right second machine readable code for each item to be purchased. At present, there is no automated processing to obtain the second machine readable code for any item to be purchased. The process to obtain the second machine readable code, which is basically an item reference code, for any item to be purchased is done manually by a sales staff and is prone to human errors.

It is appreciated that in another example, the processor 118 of each mobile device 106 may be configured to automatically output the right one or more second machine readable code without need for pre-selecting the entity from the list of entities using the settings interface. To do this, for example, the processor 118 may first apply respective algorithms applicable to the list of entities for each set of data of the one or more items, check each output after running a respective algorithm to determine whether the output is in accordance with an expected output of one of the algorithms, and output only the one or more second machine readable code determined to be in accordance with the expected output.

In yet another example, the mobile device 106 allows manual entry or input of details through a keyboard, key pad, touchscreen keyboard or keypad and the like by a user to enable generation or obtaining of the one or more second machine readable code (item reference code) associated with the one or more items to be purchased by a customer.

5 For instance, a user may enter text associated with the one or more items in the form of a string of numerals, alphabets, characters, or alphanumeric text and a barcode, QR code, and the like to enable the one or more second machine readable code to be generated or obtained. The keyboard, key pad, touchscreen keyboard or keypad and the like provides user input to the Input/Output interface of the processor 118. In this
10 case, the user input is entered by the sales staff of the vendor.

Receiving an input to retrieve the record from the storage 120 may include steps of user selections made on the mobile device 106 through the Input/Output interface of the processor 118 to enable retrieval of the record and can include, for instance, a click of a
15 confirmation button or trigger. The input to retrieve the record from the storage 120 may be scan data obtained by scanning the machine readable code (transaction code) using the scanner 112. The input to retrieve the record from the storage 120 may also be entry of text associated with the machine readable code.

20 The status data of the record in the present example first generated by the processor 118 will be an "On-hold" status. This is to indicate that a transaction to purchase one or more items is incomplete and pending. Updating the status data of the record to another status is done by receiving an input to update the status data after the record is retrieved. In the present example, the updated status data will refer to a "Paid" status to
25 indicate that the transaction to purchase the one or more items has completed and payment has been made. The input received by the processor 118 in the present example refers to a user input received through the Input/Output interface of the processor 118 and can be in the form of a click of a confirmation button or trigger. In this case, the user input is triggered by the sales staff of the vendor.

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In the present example, the value associated with quantity of the one or more items is data stored in the first storage 104 and the value associated with the quantity of the one or more items is updated after the status data is updated. The value associated with the quantity of the one or more items in this case refers to inventory quantity of the one or
35 more items. If the value is zero for an item, the item will be regarded as out of stock. It is appreciated that in other examples, the value associated with quantity of the one or

more items may be stored in, for instance, the storage 120 and/or the second storage 114, and the storage 120 and/or the second storage 114 are made remotely accessible to the processor 118 for updating the value associated with the quantity of the one or more items.

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It is appreciated that in another example the storage 120 and the first storage 104 may be one and the same, wherein the storage 120 is part of the first storage 104, which is accessible by the processor 102 remotely through the wireless network 108. In this case, the processor 102 will be able to communicate with the processor 118 to allow the processor 118 to access the first storage 104 for storing any data or to update any data stored in the first storage 104.

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In the present example, the workstation 110 may be used for generating and storing a second record. The workstation 110 includes the second processor 122. The second storage 114 is accessible by the second processor 122. The second processor 122 is configured for the following:

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- generating a second record (also known herein as payment record) having
 - data of a third machine readable code; and
 - data of the one or more second machine readable code,
- the second record being generated by
 - generating data of the third machine readable code upon receiving an input to generate the third machine readable code,
 - and
 - processing scan data of the one or more second machine readable code obtained using the scanner 116 to obtain the data of the one or more second machine readable code; and
- storing data of the second record into the second storage 114 accessible by the second processor 122.

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In the present example, the second record generated by the second processor 122 is retrievable at a terminal. The workstation 110 is one such terminal. The terminal of the present example has access to the second storage 114 and can retrieve the second record by processing data associated with the third machine readable code. In some instances, the terminal may retrieve the second record by processing scan data obtained by scanning the third machine readable code using the scanner 116.

The third machine readable code in the present example is usable as a proof of payment for the one or more items purchased. It may be called a "receipt code". The third machine readable code is generated by a cashier only after payment has been made by a customer buying the one or more items. In the present example, the third machine readable code is generated after scanning the one or more second machine readable code of a record using the scanner 116. In another example, the third machine readable code may be generated once a payment session is initiated, for instance, by the cashier making certain selections on the workstation 110 without need for the scanning of the one or more second machine readable code to be done first. In the present example, the second storage 114 is a Payment and/or Inventory database maintained by the departmental store. The third machine readable code is stored into the second storage 114 for further use, such as for future retrieval of the proof of payment for the one or more items.

In addition, the processor 118 configured for generating the record (not the second record) may be further configured for

- processing scan data of the third machine readable code obtained using the scanner 112 to obtain the data of the third machine readable code;
- storing the data of the third machine readable code into the storage 120 (and/or the first storage 104) accessible by the processor 118; and
- associating the data of the third machine readable code with the record generated by the processor 118.

After the third machine readable code is associated with the record, the record generated by the processor 118 can also be retrieved using the third machine readable code instead of the machine readable code. It is appreciated that in another example, instead of processing scan data of the third machine readable code obtained using the scanner 112 to obtain the data of the third machine readable code, the processor 118 is configured for processing data of the third machine readable code obtained from user entry of text associated with the third machine readable code (receipt code) into the mobile device 106 through the Input/Output interface of the processor 118.

In the present example, the processor 118 is configured for printing the machine readable code and the one or more second machine readable code of a record on a medium using a printer 124. The second processor 122 is configured for printing the third machine readable code and data of the one or more second machine readable code of a second record on a medium using a printer 126. The printing may be carried

out by a sales staff holding each mobile device 106 comprising the processor 118, or carried out by a cashier operating the terminal, which in this case is the workstation 110. The medium in both instances refers to, for instance, paper, printable plastic sheet, and the like. The printer 124 may be integrated with the mobile device 106 or separated
 5 from it. The printer 126 may be integrated with the workstation 110 or separated from it. The printers 124 and 126 may be a laser or ink based printer. The alternative to printing the respective codes is to display a graphical representation of them on a monitor, a screen or an electronic display.

10 The machine readable code, the one or more second machine readable code and the third machine readable code can be a barcode, a QR code or a Radio Frequency Identification (RFID) Code that can be read by the scanners 112 and 116. Some or all the scan data mentioned above may be data obtained from one or more of a barcode, a QR code or a Radio Frequency Identification (RFID) tag.

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In the present example, the step of generating a record performed by the processor 118 is done by a sales staff holding one mobile device 106 when a "purchase" transaction is about to take place. The "purchase" transaction takes place when a customer decides to purchase one or more items. The machine readable code is generated as a
 20 transaction code for identifying the record and the transaction. The sales staff then uses the scanner 112 to scan tags adhered or attached to the one or more items to obtain scan data of the one or more items. Alternatively, the sales staff may manually enter into the Input/Output interface of the processor 118 text associated with the one or more items that is copied from the tags to obtain the data of the one or more items.

25 Processing of the scan data of the one or more items (or the data of the one or more items in the case of manual text entry) is then performed to obtain data of the one or more second machine readable code. The one or more second machine readable code is/are the item reference code(s) of the items. As mentioned above, there can be different ways of processing the scan data (or data of the one or more items in the case
 30 of manual text entry) to obtain the data of the one or more second machine readable code due to differences in how departmental stores allocate item reference code(s) for the items.

After a record is generated, it may be printed out on a medium or displayed on a
 35 display, such as a monitor or screen of a device, which may include the mobile device 106, or a screen connected to the processor 122 of the workstation 110, or on any other

device, including a smartphone, a tablet computer, a laptop, or desktop computer, and the like. The machine readable code in the form of, for instance, a barcode, the one or more second machine readable code, in the form of, for instance, a barcode, and the data of the one or more second machine readable code contained in the record will be

5 printed or displayed.

With the printed receipt or displayed record, the customer can proceed to a cash register terminal such as the workstation 110 to make payment. During payment, a cashier operating the cash register terminal will scan the one or more second machine readable code in the printed receipt or displayed record to generate a third machine readable code, which is a "receipt code", and thereafter generate a payment record (also known herein as a second record), which is also regarded as a proof of payment receipt that contains at least the third machine readable code and data of the one or more second machine readable code. The data of the one or more second machine readable code may include a designated vendor code, price of the one or more items and/or trade margin of the one or more items.

The proof of payment receipt can be printed or displayed on a monitor, a screen, an electronic display and the like. The payment record in the present example contains similar information as the record generated by the processor 118, which may include, for instance, description associated with the one or more items having the one or more second machine, price of the one or more items and other details illustrated in Figures 3 and 4.

25 The customer then brings the printed or displayed proof of payment receipt back to the sales staff to confirm that payment has been made. In the present example, the sales staff then scans the transaction code in the form of a barcode, QR code and the like using the scanner 112 to retrieve the record at the mobile device 106. Although in the present example, the sales staff scans the transaction code using the scanner 112 to retrieve the record at the mobile device 106, it is appreciated that in another example, the sales staff may also retrieve the record by manually entering text associated with the machine readable code (transaction code) into the mobile device 106.

After the record is retrieved, the sales staff scans the receipt code to associate the third machine readable code with the retrieved record using the scanner 112. This concludes the transaction as the third machine readable code is proof of payment. Once

associated, the receipt code may also assist in the retrieval of the record in future. It is possible that in another example the receipt code and the transaction code are the same.

5 Furthermore, after retrieving the record on the mobile device 106, the sales staff can make selections on the mobile device 106 to change the status and the corresponding status data of the record to "Paid" status to indicate that the customer has paid for the one or more items purchased. It could be that the status is automatically changed after the third machine readable code is associated with the record.

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Thereafter, the sales staff can hand the purchased one or more items to the customer. In addition, the processor 118 of the mobile device 106 is configured to either automatically or upon user input to instruct adjustment of a value associated with quantity of the one or more items purchased after the status data of the record is
15 updated. This updates the inventory of the one or more items sold to the customer.

An example of a method 200 for record management of the present example, amongst other things, involves generating a record, retrieving the record, updating status of the record, and adjustment of a value associated with quantity of one or more items
20 purchased. The method 200 is described as follows with reference to Figure 2. There are three parties involved, that is, a sales staff 202 working for a vendor, a customer 204 and a cashier 206 working for a departmental store.

Generally, the method has the steps of:

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- generating a record having
 - status data for indicating a current status of the record,
 - data of a machine readable code associated with the record, and
 - data of one or more second machine readable code associated with data of one or more items obtained by the processor,

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- the record being generated by
 - generating data of the machine readable code receiving an input to generate the machine readable code,
 - processing the scan data to obtain the data of the one or more second machine readable code;

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- storing data of the generated record into a storage;
- retrieving the record by

receiving an input to retrieve the record from the storage;

- updating the status data of the record to another status by

receiving an input to update the status data after the record is retrieved;

and

- 5 - instructing adjustment of a value associated with quantity of the one or more items after the status data of the record is updated.

The method 200 is further discussed as follows.

- 10 At step 1, the customer 204 confirms he/she wants to purchase one or more items belonging to a vendor at a departmental store.

At step 2, the sales staff 202 scans tags containing codes of the one or more items to be purchased into a mobile Point Of Sales (POS) device (e.g. 106 in Figure 1) using a scanner (e.g. scanner 112) connected to the mobile POS device and a processor (e.g. 118 in Figure 1) of the mobile POS device receives scan data associated with the one or more items. Each of the tags are adhered or attached to each item. The processor generates a machine readable code for the transaction, which is also called a transaction code or transaction ID, and in this case, the transaction code is in a form of a barcode. In another example, the codes on the tags can be available in text form and the sales staff 202 manually enters the text into the mobile Point Of Sales (POS) device as input.

The processor then processes the scan data (or entered text input in some examples) to obtain specified barcodes of the one or more items (these specified barcodes refer to the one or more second machine readable code as discussed previously) used by the departmental store for the particular vendor. The sales staff 202 generates an "On-Hold" record (also known herein as a record), which is also regarded as a receipt (an example is shown in Figure 3) containing at least the transaction code and the specified barcodes of the one or more items. This "On-Hold" receipt is then printed using a printer (e.g. 124 in Figure 1) connected to the mobile POS device and the printed "On-Hold" receipt is passed to the customer 204. The "On-Hold" receipt will contain a status field indicating "On-Hold". This step does not deduct quantity of the one or more items to be purchased from an inventory database (e.g. 104 in Figure 1) of the vendor.

The generated "On-Hold" record is stored by the processor into a storage (e.g. 120 and/or 104 in Figure 1).

At step 3, the customer 204 takes the "On-Hold" receipt and proceeds to make payment
5 to a cashier 206.

At step 4, the cashier 206 scans each barcode of the one or more items listed in the "On-Hold" receipt using a scanner (e.g. scanner 116). After scanning, the prices are reflected in a payment system (e.g. 110 in Figure 1) of the departmental store i.e. the
10 prices are displayed on a display (not shown in the Figures; refers to a monitor, a screen or an electronic display) of the payment system (e.g. workstation 110). The customer 204 then makes payment based on the prices displayed. Each barcode in this case includes details of the price of the item to be purchased.

15 After payment, the cashier 206 makes a selection on the payment system to generate a payment record (also known herein as second record), which may be regarded as a proof of payment receipt containing a receipt number (this receipt number refers to the third machine readable code as discussed previously). The proof of payment receipt can be printed using a printer (e.g. 126 in Figure 1) connected to the payment system.
20 In this case, the receipt number appears in a form of a barcode and the proof of payment receipt containing the receipt number is printed. It is possible that in other examples, the receipt number is not represented in the form of a barcode but appear as a string of alphabets, numerals, characters and/or alphanumerical characters. Thereafter, the cashier 206 returns both the "On-Hold" receipt together with the printed
25 proof of payment receipt to the customer.

An example of the proof of payment receipt is shown in Figure 4 except that the proof of payment receipt does not contain a status field. Furthermore, it is possible that the proof of payment receipt does not contain the specified barcodes but just contains a
30 description of the one or more items sold. In the present example, the design of the proof of payment receipt is up to the departmental store to set and may appear differently for different departmental stores.

At step 5, the customer 204 hands the "On-Hold" receipt and the proof of payment
35 receipt to the sales staff 202.

At step 6, the sales staff scans the transaction code on the "On-Hold" receipt using the scanner (e.g. 112 in Figure 1) connected to the mobile POS device. The processor of the mobile POS device retrieves the "On-Hold" record from the storage by searching using the transaction code. After retrieval of the "On-Hold" record, the sales staff 202 scans the barcode of the receipt number on the proof of payment receipt. This associates the receipt number with the "On-Hold" record. This confirms that payment has been made for the "On-Hold" record. In another example, it is possible that the sales staff 202 manually enters into the mobile POS device text of the receipt number that is printed together with its barcode. The processor of the mobile POS device stores the scanned (or manually entered in another example) receipt number so that it can be a reference to the payment record stored in the payment system of the departmental store in future. Thereafter, the sales staff makes some selections on the mobile POS device to update status of the "On-Hold" record from "On-Hold" to "Paid". It is appreciated that in another example, the mobile POS device may be configured to update the status automatically after the receipt number is scanned by the sales staff 202.

Printing of the "Paid" record in the form of a "Paid" receipt (an example is shown in Figure 4) is optional. The "Paid" receipt can be printed and passed to the customer 204, if desired. The "Paid" receipt will contain a status field indicating "Paid" and the receipt number on the proof of payment receipt. The sales staff may be prompted to make the selections by an operating system of the mobile POS device to decide whether to print the "Paid" receipt using the printer connected to the mobile POS device. The mobile POS device is configured to send an instruction, in this case, wirelessly to a server operated by the vendor to deduct quantity of the one or more items sold recorded in an inventory database. The instruction can be sent after updating the record status to "Paid" status. The one or more items sold is/are then handed over to the customer 204.

The present example is dynamic in such a way that a type of departmental store is identified and a mobile POS device will adapt to a particular tracking or barcoding system the departmental store adopts. In a way, the present example customizes itself to operate based on specifications of an existing tracking or barcoding system used by the departmental store.

The apparatus of the present example includes a pending sales payment module operated in a manner such that when a sales staff makes a sale in a departmental

store, the sales transaction is considered to be "on hold" and no product is given to the customer until proof of payment is shown. The apparatus operates electronically and no memo or records are handwritten anymore. Neither does a sales staff has to paste barcodes onto a memo. Also, inventory of a vendor is not considered sold until a final
 5 proof of payment is shown.

Figure 3 shows an example 300 of the "On-Hold" Receipt described with reference to Figure 2.

10 The example 300 includes the following:

- A departmental store name/Logo field 302 for indicating name or logo of a departmental store.
- A Vendor Name field 304 for indicating name of a vendor of the departmental store.
- 15 - A Status field 306 for indicating transaction status. In this case, the status is "On-Hold"
- A Transaction ID field 308 for indicating numbers or alphanumeric characters relating to the Transaction ID (e.g. the first code, transaction code as described earlier with reference to Figures 1 and 2).
- 20 - A Transaction Time & Date field 310 for indicating time and date of the transaction pertaining to the present receipt.
- Quantity fields 312 and 324 for indicating a quantity of the respective items to be purchased. In this case, there are two items purchased and the quantity for each item is one each.
- 25 - Product Reference number fields 314 and 326 for indicating reference numbers associated to the respective items to be purchased.
- Product 1 and 2 Descriptions fields 318 and 330 for describing what the purchased items are.
- Product Price fields 316 and 328 to indicate price of the items to be purchased.
- 30 - Original Price and discount (if any) fields 320 and 332 to indicate the original price of the items to be purchased along with discount, if any.
- Departmental store barcodes 322 and 334 of the respective Products 1 and 2 shown in Figure 3, which are the items to be purchased.
- Total Items field 336 to indicate number of total items to be purchased.
- 35 - Total amount including GST field 338 for indicating total price of the items to be purchased.

- Goods & Service Tax (or any other form of tax) field 340 for indicating the percentage of the total price to be taxed and the amount of the tax.
- Name of Staff field 342 for indicating the name of the sales staff (E.g. 202 in Figure 2).
- 5 - Transaction ID barcode 344 (e.g. the first code as described above with reference to Figures 1 and 2) for use as described in the examples with reference to Figures 1 and 2.

Figure 4 shows an example 400 of the "Paid" Receipt described with reference to
10 Figure 2.

The example 400 is the same as the example 300 except for three parts. The same reference numerals in Figure 3 are used for the same parts. The different parts include the Status field 402, which is indicated as "Paid"; the "Total amount including GST" field
15 404, which is indicated with a lesser amount than the same entry 338 in Figure 3; and a Value Discount field 406, which shows discount to be provided. The "Total amount including GST" field 404 have deducted the amount in the Value Discount field 406. Furthermore, instead of the Transaction ID barcode 344 being shown in Figure 3, a receipt number barcode 408 (e.g. the second identification as described above with
20 reference to Figures 1 and 2) is printed. In this case, the receipt number barcode 408 is the same as the Transaction ID barcode 344 in Figure 3.

In another example, it is possible that authorisation may be required by the departmental store to allow a vendor to re-print codes of the departmental store on a
25 medium.

Examples of the present disclosure may have the following advantages.

A main advantage of an example is that handwritten memos are eliminated and records
30 would be electronic. Another advantage would be that an apparatus of an example integrates with a departmental store barcoding system so that barcodes can be printed as and when a purchase is made. This avoids a lot of unnecessary barcode printing. With the apparatus of the example, the approach now is "print as you need it", which is to print when there is a purchase, as oppose to the old "print because you may need it"
35 approach. To elaborate, the old "print because you may need it" approach is such that many barcodes of items are printed in the form of stickers for sales staff to paste onto

handwritten memos indicating items to be sold so that a cashier can scan the barcodes in the memos during customer payment to obtain at least price information from the barcodes.

5 Figure 5 shows in more detail an example of the processor 102, the processor 118 of one of the mobile devices 106 and the processor 122 of the work station 110 as described with reference to Figure 1. The processor 102, the processor 118 of one of the mobile devices 106 and the processor 122 of the work station 110 may each comprise a processing unit 502 for processing software including one or more
10 computer programs for running one or more computer/server applications to enable a backend logic flow or the method as described earlier.

Furthermore, the processing unit 502 may include user input modules such as a computer mouse 536, keyboard/keypad 504, and/or a plurality of output devices
15 such as a display device 508. The display of the display device 508 may be a touch screen capable of receiving user input as well.

The processing unit 502 may be connected to a computer network 512 via a suitable transceiver or transmitter device 514 (i.e. a network interface), to enable
20 access to e.g. the Internet or other network systems such as a wired Local Area Network (LAN) or Wide Area Network (WAN). The transceiver or transmitter device 514 can, for instance, be used for wirelessly communicating data relating to adjustment of the value associated with the quantity of the one or more items transmitted by the processing unit 102 in Figure 1. The processing unit 502 may also
25 be connected to one or more external wireless communication enabled devices 534 via a suitable wireless transceiver device 532 e.g. a WiFi transceiver, Bluetooth module, Mobile telecommunication transceiver suitable for Global System for Mobile Communication (GSM), 3G, 3.5G, 4G telecommunication systems, and the like. Through the computer network 512, the processing unit 502 can gain access to one
30 or more storages i.e. data storages, databases, data servers and the like connectable to the computer network 512 to retrieve and/or store data in the one or more storages.

The processing unit 502 may include a processor 518, a Random Access Memory (RAM) 1120 and a Read Only Memory (ROM) 522. The processing unit 502 may
35 also include a number of Input/Output (I/O) interfaces, for example I/O interface 538

to the computer mouse 536, a memory card slot 516, I/O interface 524 to the display device 508, and I/O interface 526 to the keyboard/keypad 504.

5 The components of the processing unit 502 typically communicate via an interconnected bus 528 and in a manner known to the person skilled in the relevant art.

10 The computer programs may further include one or more software applications for e.g. instant messaging platform, audio/video playback, internet accessibility, operating the processor 102, the processor 118 of one of the mobile devices 106 and the processor 122 of the work station 110 (i.e. operating system), network security, file accessibility, database management, which are applications typically equipped on a desktop, electronic apparatus, mobile device or portable computer.

15 The computer programs may be supplied to the user of the processor 102, the processor 118 of one of the mobile devices 106, or the processor 122 of the work station 110 encoded on a data storage medium such as a CD-ROM, on a flash memory carrier or a Hard Disk Drive, and are to be read using a corresponding data storage medium drive of a data storage device 530. Such computer or
20 application programs may also be downloaded from the computer network 512. The application programs are read and controlled in its execution by the processor 518. Intermediate storage of program data may be accomplished using RAM 520.

25 In more detail, one or more of the computer or application programs may be stored on any non-transitory machine- or computer- readable medium. The machine- or computer- readable medium may include storage devices such as magnetic or optical disks, memory chips, or other storage devices suitable for interfacing with a general purpose computer. The machine- or computer- readable medium may also include a hard-wired medium such as that exemplified in the Internet system, or wireless medium
30 such as that exemplified in the Wireless LAN (WLAN) system and the like. The computer program when loaded and executed on such a general-purpose computer effectively results in an apparatus that implements the steps of the computing methods in examples herein described.

35 Many modifications and other examples can be made to the method and apparatus for record management by those skilled in the art having the understanding of the above

described disclosure together with the drawings. Therefore, it is to be understood that the method and apparatus for record management is not to be limited to the above description contained herein only, and that possible modifications are to be included in the claims of the disclosure.

Claims

1. An apparatus for record management, the apparatus comprising:
a processor; and
5 a storage accessible by the processor,
the processor being configured for
generating a record having
status data for indicating a current status of the record,
data of a machine readable code associated with the record, and
10 data of one or more second machine readable code associated with data
of one or more items obtained by the processor,
the record being generated by
generating data of the machine readable code upon receiving an
input to generate the machine readable code,
15 processing the data of the one or more items to obtain the data of
the one or more second machine readable code;
storing data of the generated record into the storage;
retrieving the record by
receiving an input to retrieve the record from the storage;
20 updating the status data of the record to another status by
receiving an input to update the status data after the record is retrieved;
and
instructing adjustment of a value associated with quantity of the one or more
items after the status data of the record is updated.
25
2. The apparatus as claimed in claim 1, wherein the data of one or more items is scan
data of the one or more items obtained by the processor from a scanner.
3. The apparatus as claimed in claim 1 or 2, wherein the input to retrieve the record
30 from the storage includes scan data obtained by scanning the machine readable code
using a scanner.
4. The apparatus as claimed in any one of the preceding claims, wherein data of each
of the one or more second machine readable code includes data identifying an entity for
35 disposing the item and/or a value associated with the item.

5. The apparatus as claimed in any one of the preceding claims, wherein data of each of the one or more second machine readable code includes data of a ratio apportioning the value associated with the item.

5 6. The apparatus as claimed in any one of the preceding claims, wherein processing the scan data of the one or more item to obtain the data of the one or more second machine readable code includes searching a database to obtain data of the one or more second machine readable code indicated in the database as associated with the scan data of the one or more items being processed.

10

7. The apparatus as claimed in claim 6, wherein search parameters used for searching the database includes at least one or more in a list having

a value associated with the one or more items;

a category of the one or more items; and

15

data of a ratio apportioning the value associated with the one or more items.

8. The apparatus as claimed in any one of the preceding claims, wherein the processing of the scan data of the one or more items to obtain the data of the one or more second machine readable code may include use of an algorithm for decoding the scan data of the one or more items in a manner pre-defined for an entity selected from a list of entities.

20

9. The apparatus as claimed in any one of the preceding claims, wherein the record management apparatus comprising:

25

a transmitter for wirelessly transmitting data relating to adjustment of the value associated with the quantity of the one or more items to another device.

10. The apparatus as claimed in any one of the preceding claims, wherein the generated machine readable code and/or the generated one or more second machine readable code is in the form of a barcode, QR code or code readable from a Radio Frequency Identification (RFID) tag.

30

11. The apparatus as claimed in any one of the preceding claims, wherein the processor is configured for printing the record on a medium through a printer.

35

12. The apparatus as claimed in any one of the preceding claims, wherein the apparatus is a mobile device having a portable power supply.

13. The apparatus as claimed in any one of the preceding claims, the apparatus
5 further comprising:

a second processor; and

a second storage accessible by the second processor,

the second processor being configured for

generating a second record having

10 data of a third machine readable code; and

data of the one or more second machine readable code,

the second record being generated by

generating data of the third machine readable code upon

receiving an input to generate the third machine readable code,

15 and

processing scan data of the one or more second machine

readable code obtained using a scanner to obtain the data of the

one or more second machine readable code; and

storing data of the second record into the second storage accessible by the

20 second processor.

14. The apparatus as claimed in claim 13, wherein the processor configured for generating the record is further configured for

processing scan data of the third machine readable code obtained using a

25 scanner to obtain data of the third machine readable code;

storing data of the third machine readable code into the storage accessible by the processor; and

associating data of the third machine readable code with the record generated by the processor.

30

15. A method for record management, the method comprising:

generating a record having

status data for indicating a current status of the record,

data of a machine readable code associated with the record, and

35 data of one or more second machine readable code associated with data of one or more items obtained by the processor,

the record being generated by

generating data of the machine readable code receiving an input

to generate the machine readable code,

processing the scan data to obtain the data of the one or more

5 second machine readable code;

storing data of the generated record into a storage;

retrieving the record by

receiving an input to retrieve the record from the storage;

updating the status data of the record to another status by

10 receiving an input to update the status data after the record is retrieved;

and

instructing adjustment of a value associated with quantity of the one or more
items after the status data of the record is updated.

15