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(54) Title: POS GENERATING RECEIPT WITH ANNOTATION DATA

(57) Abstract: A Point of Sale (POS) terminal is operative to obtain annotation data from a customer or sales associate, and to associate the annotation data with an item in a list of the customer’s purchases. The annotation data may comprise graphic annotations input by the customer or a sales associate on a touch screen display of the POS terminal. The graphic annotation is overlaid on an image of a receipt, such that it is associated with the proper items, prior to printing, e-mailing, or otherwise transferring the receipt to the customer. The annotation data may comprise text extracted from the graphic annotation and associated with an item. The annotation data may comprise a prepared graphic, audio, or media file selected by the sales associate at the POS terminal; the file is rendered when the customer displays the receipt image file received by wireless transmission or email.
before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
POS GENERATING RECEIPT WITH ANNOTATION DATA

RELATED APPLICATIONS
This application claims priority to U.S. Provisional Application No. 61/824,351 filed 16 May 2013, U.S. Provisional Application No. 61/929,544, filed 21 January 2014, and U.S. Patent Application No. 14/230,665 filed March 31, 2014, the disclosures of each of which are incorporated herein by reference in their entirety.

FIELD OF INVENTION
The present invention relates generally to Point of Sale (POS) terminals, and in particular to a POS terminal generating a user receipt having annotation data associated therewith.

BACKGROUND
The retail Point of Sale (POS) terminal has evolved from a mechanical cash register to a sophisticated, networked terminal capable of rapidly identifying selected items for purchase (e.g., via optical scanning or RFID reading), tallying the order, accepting payment in a variety of forms, and generating a customer receipt. Many modern POS terminals have additional capabilities, such as generating and printing coupons "on the fly," based on the items a customer selected, transmitting or e-mailing an electronic version of a receipt to a customer, and the like.

Many customers desire to make notations regarding payments made in retail purchases. For example, most checks have a "memo" line on the face, for the customer's personal use; the contents of the memo line generally are not relevant to the interpretation of the check as a negotiable instrument. As electronic payments (e.g., debt and credit card "swipes") have largely replaced checks in retail transactions, customers no longer have a convenient way of annotating purchases.

Indeed, the traditional "memo" line was deficient as a means of annotation for many customers, as it could only relate to an overall transaction. In many cases, customers may wish to identify or annotate specific items purchased. For example, a grocery shopper picking up a few items for a roommate, in addition to his own groceries, may wish to flag the roommate's individual items, for ease of later reimbursement. As another example, customers at a mixed-goods retail establishment may wish to allocate individual items from a consolidated purchase to different budget categories (e.g., groceries, automotive, clothing). Accordingly, there exists a need in the art for a method for customers to conveniently and flexibly make personal annotations to their purchases at a POS terminal.
It is known for some retail systems to track customers' purchases, and issue reward points based on, e.g., the total amount spent, or the amount spent on selected goods or categories of goods. Some POS terminals add this data to a customer receipt prior to printing it. Additionally, it is known in the art to print advertisements or coupons, which may be based on a customer's buying habits, at the time of printing a receipt, or to add them to the receipt prior to printing. These prior art modifications of a customer receipt are generated by the POS terminal or a transaction processing system, and are not created, selected, or input by the customer or sales associate at the point of sale. As such, they do not assist a customer in annotating his own purchases for his own convenience.

The Background section of this document is provided to place embodiments of the present invention in technological and operational context, to assist those of skill in the art in understanding their scope and utility. Unless explicitly identified as such, no statement herein is admitted to be prior art merely by its inclusion in the Background section.

SUMMARY

The following presents a simplified summary of the disclosure in order to provide a basic understanding to those of skill in the art. This summary is not an extensive overview of the disclosure and is not intended to identify key/critical elements of embodiments of the invention or to delineate the scope of the invention. The sole purpose of this summary is to present some concepts disclosed herein in a simplified form as a prelude to the more detailed description that is presented later.

According to one or more embodiments described and claimed herein, a POS terminal is operative to obtain annotation data from a customer or sales associate, and to associate the annotation data with an item in a list of the customer's purchases. The annotation data may comprise graphic annotations input by the customer or a sales associate on a touch screen display of the POS terminal. The graphic annotation is overlaid on an image of a receipt, such that it is associated with the proper items, prior to printing, e-mailing, or otherwise transferring the receipt to the customer. In one embodiment, the annotation data comprises text extracted from the graphic annotation and associated with an item; the text is merged into text for that item on the receipt image. In one embodiment, the annotation data comprises a prepared graphic, audio, or media file selected by the sales associate at the POS terminal; the file is rendered when the customer displays the receipt image file received by wireless transmission or email.

One embodiment relates to a method of annotating a customer receipt, performed by a processing circuit at a POS terminal. The POS obtains a tally of items purchased by a customer and displays a list of items tallied. The POS accepts a command to associate annotation data with a receipt, obtains annotation data from the customer or a sales associate, and associates
the annotation data with a receipt itemizing the items tallied. The POS terminal outputs the annotation data along with the receipt.

Another embodiment relates to a POS terminal. The POS terminal includes an identifying circuit operative to uniquely identify items selected by a customer for purchase; a user interface operative comprising a touch screen display; and a processor circuit operatively connected to the identification circuit and the user interface. The processor circuit is operative to obtain from the identifying circuit a tally of items selected by a customer for purchase; display, on the user interface, a list of items tallied; accept a command from the user interface to associate annotation data with one or more of the items; obtain annotation data from the customer or a sales associate; associate the annotation data with a receipt itemizing the items tallied; and output the annotation data along with the receipt.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which embodiments of the invention are shown. However, this invention should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

Figure 1 is a functional block diagram of a POS terminal and associated transaction servers.

Figure 2 is a flow diagram of a method of annotating a customer receipt.

Figure 3 is a screen shot of a display depicting identified items for purchase.

Figure 4 is a screen shot of a display depicting user-generated annotations overlaid over the list display of Fig. 3.

Figure 5 is a screen shot of a display depicting a receipt image, with the user-generated annotations of Fig. 4 overlaid thereon.

DETAILED DESCRIPTION

It should be understood at the outset that although illustrative implementations of one or more embodiments of the present disclosure are provided below, the disclosed systems and/or methods may be implemented using any number of techniques, whether currently known or in existence. The disclosure should in no way be limited to the illustrative implementations, drawings, and techniques illustrated below, including the exemplary designs and implementations illustrated and described herein, but may be modified within the scope of the appended claims along with their full scope of equivalents.
Figure 1 depicts a functional block diagram of a representative Point of Sale (POS) terminal 10. POS terminals 10 are well known in the art, and may include a variety of features and components not depicted in Figure 1 for clarity. As germane to embodiments of the present invention, the POS terminal 10 includes a processor circuit 12 connected to memory 14, a communication circuit 16, and identifying circuit 18, and a user interface 20.

The communication circuit 16 is operative to exchange data with a transaction server 40. In various embodiments, various tasks, such as tallying items selected by a customer for purchase, pricing, inventory control, payment processing, and the like, may be performed by the POS terminal 10 or the transaction server 40, or may be split between the two. The transaction server 40 may comprise one or more servers, databases, and the like, and may be located remotely, such as in the "cloud." Communication with a remote transaction server 40 may be via a wired or wireless network connection. The communication circuit 16 may additionally exchange data with a local transaction server 42 - for example, data exchange may "fail over" to the local transaction server 42 if the remote transaction server 40 is unavailable. Upon restoration of service to the remote transaction server 40, the transaction servers 40, 42 may synchronize independently of the POS terminal 10 (as indicated by the dashed communication line between them).

The item identifying circuit 18 performs a core function of the POS terminal 10 - identifying items that a customer presents for purchase. For example, the item identifying circuit 18 may comprise an optical reader operative to detect and interpret an optical code such as a Universal Product Code (UPC), Quick Response (QR) code, or the like. Alternatively, the item identifying circuit 18 may comprise a Radio Frequency Identification (RFID) tag reader operative to detect and read a code from RFID tags embedded in item packaging. In general, the item identifying circuit 18 may comprise any circuit by which items selected by a customer for purchase may be uniquely identified, to enable the POS terminal 10 and transaction server 40, 42 to tally the items and process the customer's purchase.

The user interface 20 may, in various embodiments, comprise a number of components. As one representative, non-limiting example, a POS terminal 10 user interface 20 may include one or more displays 22, one or more keypads 24, a microphone 26, a receipt printer 28, a payment reader 30, and a transmitter 32.

The user interface 20 may include a first display 22 facing the sales associate, and a second display 22 facing the customer. Alternatively, a single display 22 may be pivotable to face either the sales associate or the customer, as desired or required. As discussed further herein, at least one display 22 is a touch screen display operative to display and capture graphic annotations as input by a sales associate or a customer. The touch screen display 22 may include an input device, such as a stylus.
One or more keypads 24 may accept numeric and/or alpha-numeric input from a sales associate and/or a customer. A keypad 24 may be integrated with a display 22, for example comprising a plurality of "soft," or function-reprogrammable buttons, with the transient function of each button being identified by appropriate indicia displayed on the display 22. Alternatively, a keypad 24 may comprise a touch screen display 22 programmed to display, and accept the activation of, soft buttons on the screen of the display 22.

In one embodiment, the user interface 20 includes at least one microphone 26, operative to capture audio, such as speech, from a sales associate or a customer. The audio may be encoded and otherwise processed into an audio data file, such as by the processor circuit 12.

The user interface 20 may additionally include a printer 28, such as a thermal printer operative to present a receipt upon the completion of a purchase transaction. Additional printers 28 may print coupons, advertisements, or the like. In one embodiment, the printer 28 includes processing circuits operative to manipulate image data, such as superimposing layers, or otherwise merging image data, prior to printing the manipulated image.

The user interface 20 additionally includes a payment reader 30, which may for example comprise a magnetic stripe reader operative to read a magnetic stripe on a debit or credit card. In some embodiments, the payment reader 30 may comprise an optical scanner, RFID reader, or the like (in these embodiments, the item identifying circuit 18 may be operative to read customer payment information).

In some embodiments, a transmitter 32 is operative to transmit a receipt image to a customer's portable electronic device, such as a smart phone, or e-mail the receipt image to the customer. In the former case, the transmitter 32 may comply with one or more industry-standard wireless transmission protocols, such as Bluetooth, Wi-Fi, or the like.

According to embodiments of the present invention, annotation data may be added to a customer's receipt by the customer, or by a sales associate. Figure 2 depicts a method 100, performed by a processing circuit 12 of a POS 10, of annotating a customer receipt. A customer presents one or more items at a POS 10 to be tallied, as well known in the retail arts. The items are scanned by an item identifying circuit 18, or otherwise identified, by the POS 10. Either from a database in local memory 14, or through communication with a transaction server 40, 42 via the communication circuit 16, the POS 10 obtains information about each item scanned, such as an identifying name, price, and the like. As the customer or sales associate scans the customer's items, the POS 10 obtains a tally of the items to be purchased by the customer (block 102).

As the POS 10 tallies the items, it displays a list of the customer's selected items, such as on a graphical display 22 (block 104). Figure 3 depicts a representative display 50 of items being listed, including a credit 52, a soft drink 54, and a can of soup 56. If the customer wishes to associate annotation data with the receipt, he or she (or a sales associate) inputs a command

...
to the POS 10, which the POS 10 accepts (block 106). The annotation command input may comprise the customer or sales associate actuating a hard or soft button on the user interface 20, such as the "Start Annotation" soft button 58 on the display 50. Alternatively, the annotation command input may simply comprise the act of drawing a graphic annotation on a touch screen display 22.

Upon detecting the annotation command input, the POS 10 obtains annotation data from the customer to associate with the receipt (block 108). The annotation data may comprise graphical annotations input on a touch screen 22 by the customer. For example, the customer may designate selected items, such as by circling them, placing a checkmark or other icon near or over them, or the like. The customer may make notations that may be useful to him or her at a later time, such as the name of an individual for whom the marked items are purchased. For example, Figure 4 depicts the list of Figure 3, with customer-input annotations 66 circling the soup list item 56, marking it with a check, and adding the text "Mom's." These graphic annotations 66 are preferably entered by the customer on a touch screen display 22 facing the customer, or at least pivotable between the sales associate and the customer. The POS 10 may also be configured to accept annotations from a sales associate. For example, a sales associate may write his or her name, enter a simple graphic such as a smiling face, or the like, as a gesture of goodwill. In this case, the POS 10 preferably has a touch screen display 22 facing the sales associate. The graphic annotations 66 may be cleared, or "erased," such as by actuating the "Erase Annotation" soft button 60 on the display 50, and re-entered as often as required or desired, with final acceptance indicated to the POS 10 by input, such as by actuating the "Save Annotation" soft button 64.

The POS 10 associates the annotation data (i.e., the graphic annotation 66) with a receipt itemizing the items tallied (block 110). The receipt may be in the form of a data structure, including, for each item, information such as the quantity purchased, an identifying label, a per-item cost and/or a sub-total cost, and the like. The receipt data structure also includes the total price of all scanned items, and may include additional information, such as the time and date, store location, and the like. The receipt data structure may be secure, e.g. utilizing cryptographic security means, and not alterable by the customer or a sales associate. The POS 10 logically associates the annotation data with at least one item in the receipt data structure. In one embodiment, the annotation data is associated with the receipt as a whole. In either case, the POS 10 preferably maintains the annotation data separate from the receipt.

In one embodiment, as depicted in Figure 5, the POS 10 displays a graphic receipt image 68, which is an image of a physical receipt that would be printed and given to the customer upon completion of the purchase transaction. The graphic annotation(s) 66 are overlaid on the receipt image 68, in such a manner that the graphic annotations 66 associated with each item in the list 54, 56 are overlaid on corresponding portion of the receipt image 68.
To achieve this, the graphic annotations 66 associated with a particular list item 54, 56 may need to be scaled, translated, rotated, or undergo similar graphic manipulations, as well known in the art, to overlay each annotation 66 over the portion of the receipt image 68 corresponding to the associated list item. The graphic annotations 66 are preferably maintained in a graphics layer, or other data structure, separately from the receipt image 68. The two layers are preferably registered, or aligned, such as by x and y position (e.g., as measured in pixels). This preserves the spatial relationship between the graphic annotation 66 and the receipt image 68 through various graphic manipulations, such as scaling the annotation and image prior to printing them.

Although maintained in separate graphic layers, the graphic annotation 66 is merged with the receipt image 68 upon or prior to outputting the receipt (block 112). In most cases, a receipt will be printed, such as via a thermal printer 28. In this case, the graphic annotation 66 and receipt image 68 are merged, and a single image is printed that comprises the receipt image 68 with the annotations 66 overlaid. Many modern POSs 10 include the ability to transmit the receipt image to the customer, such as via a Wi-Fi or Bluetooth transmission to the customer’s portable electronic device, or by emailing the receipt to the customer’s email address. In this case, graphic annotations 66 and the receipt image 68 are merged, and the merged image processed to generate a graphic file suitable for transmission, such as a file conforming to a well-known graphics file format, e.g., JPEG, GIF, TIFF, BMP, PNG, or the like.

In the case of a graphics file, the graphic annotations 66 may be rendered into a different color than the receipt image 68, to emphasize the difference.

In one embodiment, rather than capturing graphic annotations 66 and associating them with individual list items 54, 56, then overlaying the annotations 66 on a receipt image 68, as described above, the customer inputs graphic annotations 66 directly over a displayed receipt image 68. In this embodiment, the customer (or sales associate) directly annotates the displayed receipt image 68, as depicted in Figure 5. In either embodiment, the POS 10 generates a receipt image 68 from the receipt data structure, and overlays graphic annotations 66 input by the customer (or sales associate) over the receipt image 68, such that the annotations 66 are spatially aligned with the relevant items 54, 56 in the list.

In general, if a customer (or sales associate) is allowed to input graphic annotations 66 over the entire receipt image area, in some cases, the annotations 66 will occlude, or obscure, areas of the receipt image 68 containing information that should remain discernable. The same problem results from overlaying graphic annotations 66 onto a receipt image 68 that were captured when the customer was viewing a list of items 54, 56 (see Figure 4). One purpose of a receipt is to verify purchases, to facilitate returns or exchanges. Thus, it is important that certain information, such as the quantity, price, and/or identifying code (e.g., numeric value of UPC) remain visible in a printed receipt or a receipt image file. Accordingly, in one embodiment,
certain "keep-out," or non-annotatable, areas are predefined on the receipt image 68. These may be indicated when the receipt image 68 is displayed on a touch screen display 22, such as by shading, coloring, or the like. In one embodiment, as a customer (or sales associate) inputs graphic annotations 66 on the touch screen display 22, the POS 10 only renders those annotations 66 that fall outside of the keep-out areas. This provides immediate feedback to the user, who can adjust the annotations 66 accordingly. In another embodiment, annotations 66 input over a keep-out area are rendered differently from other annotations 66, such as by using a lighter color, or by applying a transparency factor so that the annotations 66 are translucent, allowing the underlying receipt image to be at least partially visible. Keep-out areas may be handled similarly in the receipt output to the customer - i.e., a printed receipt or a receipt image file. Various combinations of these embodiments will be apparent to those of skill in the art. For example, keep-out areas may be printed clear of any annotations 66, while a receipt image file transmitted to the customer may render the keep-out areas as either partially or fully obscured by the graphic annotations 66.

In one embodiment, graphic annotation on a touch screen display 22 is only the input mode of the annotation data associated with the receipt. Optical Character Recognition (OCR) may be used to interpret the graphic annotations, and the resulting text associated with the receipt, or with individual items 54, 56 on the receipt. For example, the customer or sales associate may actuate an "OCR Annotations" soft button 62 on the display 50 to indicate this option (see Figures 3, 4). In this embodiment, the annotation layer of graphic information may be discarded, and the annotation data associated with the receipt data structure. One advantage of this embodiment is that annotation data associated with individual items in receipt data structure may be merged with the item data when a receipt image 68 is generated, such that the user annotations appear "in-line" with the text of items in the receipt. In one embodiment, the annotation data may be rendered in a different font, color, or the like, than the item data, to distinguish the two.

In one embodiment, annotation data may comprise a graphic annotation selected by a sales associate from among a plurality of available annotations. The selected graphic is overlaid onto the receipt image as described above. These pre-configured graphic annotations may be in addition to, or in lieu of, the user-generated graphic annotation 66 captured on a touch screen display 22, as described above.

In embodiments where the customer requests a transmission of the receipt image file, annotation data may comprise a media file that is rendered when the customer opens or displays the receipt image file. In one embodiment, the media file may comprise audio captured by a microphone 26 of the POS user interface 20, such as after a customer or sales associate actuates an "Audio Annotation" soft button 65 (See Figure 3). Alternatively, a sales associate may select from among a group of audio files, containing e.g., short spoken greetings, a musical
melody or advertising jingle, or the like. Annotation data is not limited to audio. In one embodiment, the sales associate may select an animation file, video clip, or other media file. These media files may be rendered on a device displaying the receipt image, such as the customer's portable electronic device or computer, after receiving the files via wireless transmission or email.

As used herein, the term "annotation data" is to be construed broadly. It may refer to graphic annotations input to a POS 10 on a touch screen display 22 by a customer or sales associate. Alternatively or additionally, the term may encompass text extracted from a graphic annotation, or a media file operative to display an image or animation, or to play audio, when an associated receipt image is opened. Annotation data is input, or selected, at the POS 10 by the customer or a sales associate. Accordingly, the term does not include an updated tally of customer loyalty or reward points, advertisements, coupons, or the like, that are generated or selected by the POS 10 or a transaction server 40, 42, and added to a customer's receipt.

The present invention may, of course, be carried out in other ways than those specifically set forth herein without departing from essential characteristics of the invention. The present embodiments are to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.
Claims

What is claimed is:

1. A method of annotating a customer receipt, performed by a processing circuit at a Point of Sale (POS) terminal, the method comprising:
   - obtaining a tally of items selected by a customer for purchase;
   - displaying a list of items tallied;
   - accepting a command to associate annotation data with one or more of the items;
   - obtaining annotation data from the customer or a sales associate;
   - associating the annotation data with a receipt itemizing the items tallied; and
   - outputting the annotation data along with the receipt.

2. The method of claim 1 wherein displaying a list of items tallied comprises displaying a graphic receipt image.

3. The method of claim 1 wherein associating the annotation data with one or more of the items comprises associating the annotation data with one or more, but fewer than all, items in the tally.

4. The method of claim 1 wherein accepting a command to associate annotation data with one or more of the items comprises:
   - displaying a prompt to associate annotation data; and
   - receiving an input at the POS terminal indicating annotation data association.

5. The method of claim 1 wherein the annotation data comprises graphic annotations, and wherein obtaining annotation data comprises:
   - displaying the list on a touch screen;
   - displaying graphic annotations overlying items in the list as they are input on the touch screen by the customer or sales associate;
   - capturing the displayed graphic annotations; and
   - associating the captured graphic annotations with the items over which they were input.

6. The method of claim 5 wherein the POS terminal comprises an associate-facing touch screen and graphic annotations are input by a sales associate.
7. The method of claim 5 wherein the POS terminal comprises one of a customer-facing touch screen and a touch screen pivotable to face a sales associate or a customer, and wherein graphic annotations are input by the customer.

8. The method of claim 5 further comprising generating a receipt image, and wherein:
   - displaying the list comprises displaying the receipt image;
   - displaying graphic annotations overlying items in the list as they are input comprises displaying graphic annotations overlying the receipt image; and
   - associating the captured graphic annotations with the items over which they were input comprises substantially maintaining the spatial relationship between the graphic annotations and the receipt image.

9. The method of claim 8 wherein displaying graphic annotations overlying the receipt image comprises not displaying any graphical annotations overlying predetermined keep-out regions of the receipt image.

10. The method of claim 5 further comprising:
    - generating a receipt image; and
    - registering each graphic annotation with the receipt image according to its association to an item such that the graphic annotation overlies the items in the receipt image.

11. The method of claim 10 further comprising displaying the receipt image and graphic annotations together, such that the graphic annotations do not occlude predetermined keep-out regions of the receipt image.

12. The method of claim 5 wherein outputting the annotation data along with the receipt comprises printing both the graphical annotation data and the receipt image.

13. The method of claim 5 wherein outputting the annotation data along with the receipt comprises merging the graphical annotation data and the receipt image into a single image, transmitting the merged image to the customer.

14. The method of claim 13 wherein transmitting the merged image to the customer comprises transmitting the merged image to a portable electronic device of the customer.

15. The method of claim 13 wherein transmitting the merged image to the customer comprises e-mailing the merged image to the customer.
16. The method of claim 5 further comprising:
performing optical character recognition on one or more graphical annotations to obtain
annotation text; and
wherein associating the annotation data with items in the list comprises associating the
annotation text with the items.

17. The method of claim 1 wherein the annotation data comprises audio data.

18. The method of claim 17 wherein obtaining annotation data comprises obtaining audio
from a microphone on the POS terminal and encoding the audio into audio data.

19. The method of claim 17 wherein obtaining annotation data comprises:
accepting audio selection input; and
associating predetermined audio data with the receipt in response to the audio selection
input.

20. The method of claim 1 wherein the annotation data comprises a data file, and wherein
outputting the annotation data along with the receipt comprises transmitting both the receipt and
the annotation data file to the customer.

21. A Point of Sale (POS) terminal, comprising:
an identifying circuit operative to uniquely identify items selected by a customer for
purchase;
a user interface operative comprising a touch screen display; and
a processor circuit operatively connected to the identification circuit and the user
interface, the processor circuit operative to
obtain from the identifying circuit a tally of items selected by a customer for
purchase;
display, on the user interface, a list of items tallied;
accept a command from the user interface to associate annotation data with one
or more of the items;
obtain annotation data from the customer or a sales associate;
associate the annotation data with a receipt itemizing the items tallied; and
output the annotation data along with the receipt.

22. The terminal of claim 21 wherein the processing circuit is operative to display the list of
items tallied by displaying a graphic receipt image.
23. The terminal of claim 21 wherein the processing circuit is operative to associate the annotation data with one or more of the items by associating the annotation data with one or more, but fewer than all, items in the tally.

24. The terminal of claim 21 wherein the processing circuit is operative to accept a command to associate annotation data with one or more of the items by:
   displaying a prompt to associate annotation data; and
   receiving an input indicating annotation data association.

25. The terminal of claim 21 wherein the annotation data comprises graphic annotations, and wherein the processing circuit is operative to obtain annotation data by:
   displaying the list on a touch screen of the user interface;
   displaying graphic annotations overlying items in the list as they are input on the touch screen by the customer or sales associate; and
   capturing the displayed graphical annotations; and
   associating the captured graphic annotations with the items over which they were input.

26. The terminal of claim 25 wherein the user interface comprises an associate-facing touch screen and graphic annotations are input by a sales associate.

27. The terminal of claim 25 wherein the user interface comprises one of a customer-facing touch screen and a touch screen pivotable to face a sales associate or a customer, and wherein graphic annotations are input by the customer.

28. The terminal of claim 25 wherein the processing circuit is further operative to generate a receipt image, and wherein:
   displaying the list comprises displaying the receipt image;
   displaying graphic annotations overlying items in the list as they are input comprises displaying graphic annotations overlying the receipt image; and
   associating the captured graphic annotations with the items over which they were input comprises substantially maintaining the spatial relationship between the graphic annotations and the receipt image.

29. The terminal of claim 28 wherein displaying graphic annotations overlying the receipt image comprises not displaying any graphical annotations overlying predetermined keep-out regions of the receipt image.
30. The terminal of claim 25 wherein the processing circuit is further operative to:
generate a receipt image; and
register each graphic annotation with the receipt image according to its association to an
item such that the graphic annotation overlies the items in the receipt image.

31. The terminal of claim 30 wherein the processing circuit is further operative to display the
receipt image and graphic annotations together, such that the graphic annotations do not
occlude predetermined keep-out regions of the receipt image.

32. The terminal of claim 25 further comprising a printer, and wherein the processing circuit
is operative to output the annotation data along with the receipt by printing both the graphical
annotation data and the receipt image.

33. The terminal of claim 25 further comprising a transmitter operatively connected to the
processing circuit, and wherein the processing circuit is operative to output the annotation data
along with the receipt by merging the graphical annotation data and the receipt image into a
single image, transmitting the merged image to the customer.

34. The terminal of claim 33 wherein transmitting the merged image to the customer
comprises transmitting the merged image to a portable electronic device of the customer.

35. The terminal of claim 33 wherein transmitting the merged image to the customer
comprises e-mailing the merged image to the customer.

36. The terminal of claim 25 wherein the processing circuit is further operative to:
perform optical character recognition on one or more graphical annotations to obtain
annotation text; and
wherein associating the annotation data with items in the list comprises associating the
annotation text with the items.

37. The terminal of claim 21 wherein the annotation data comprises audio data.

38. The terminal of claim 37 further comprising a microphone operatively connected to the
processing circuit, and wherein the processing circuit is operative to obtain annotation data from
the customer or a sales associate by obtaining audio from the microphone, and wherein the
processing circuit is further operative to encode the audio into audio data.
39. The terminal of claim 37 wherein the processing circuit is operative to obtain annotation
data from the customer or a sales associate by:
   accepting audio selection input; and
   associating predetermined audio data with the receipt in response to the audio selection
   input.

40. The terminal of claim 21 further comprising a transmitter operatively connected to the
    processing circuit, and wherein the annotation data comprises a data file, and wherein the
    processing circuit is operative to output the annotation data along with the receipt by
    transmitting both the receipt and the annotation data file to the customer.
FIG. 2

102. Obtain a tally of items selected by a customer for purchase

104. Display a list of items tallied

106. Accept a command to associate annotation data with one or more of the items

108. Obtain annotation data from the customer or a sales associate

110. Associate the annotation data with a receipt itemizing the items tallied

112. Output the annotation data along with the receipt
### Table: TENDER

<table>
<thead>
<tr>
<th>ITEM ID/BARCODE</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>UNIT PRICE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNTDEW</td>
<td>Progresso Lentil Soup</td>
<td>1</td>
<td>$0.99</td>
<td>$0.99</td>
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<td></td>
<td>Mountain Dew Pet</td>
<td>1</td>
<td>$2.19</td>
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</tbody>
</table>

**Balance Due:** $2.18

**Methods of Payment:**
- Cash
- Gift Card
- Credit Card
- Check

**Toshiba Register Number:** T37

**Toshiba Customer Number:** R00001

**Toshiba Store Number:** NC27555

**Toshiba Associate:**

**FIG. 3**
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<th>ITEM ID/BARCODE</th>
<th>ITEM</th>
<th>QTY</th>
<th>PRICE</th>
<th>TOTAL</th>
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<tr>
<td></td>
<td>Mountain Dew</td>
<td>1</td>
<td>$0.99</td>
<td>$0.99</td>
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<td>Progresso Lentil Soup</td>
<td>1</td>
<td>$2.19</td>
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**TENDER**

- Amount Tendered: $1.00
- Amount Tendered: $3.18
- Amount Tendered: $2.18

**FUTURE DEVELOPMENTS**

- Future Development
  - Additional Functionality
  - Improved User Interface
  - Enhanced Security Measures

**FIG. 4**

- Receipt View
- Associate Information
- Customer Information
- Transaction Details

**TOSIBA**

- Leading Innovation
- NC 27555
- CUSTOMER
- ASSOCIATE
- Register Number: 737

**STORE-US-00001**
A. CLASSIFICATION OF SUBJECT MATTER

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<th>INV.</th>
<th>G06Q20/04</th>
<th>G07G5/00</th>
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According to International Patent Classification (IPC) and/or both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06Q G07G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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</table>

Further documents are listed in the continuation of Box C. See patent family annex.

Date of the actual completion of the international search
3 September 2014

Date of mailing of the international search report
12/09/2014

Authorized officer
Van Dop, Erik
<table>
<thead>
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<th>Patent document cited in search report</th>
<th>Publication date</th>
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<tbody>
<tr>
<td>US 2013024282 A1</td>
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