ANONYMOUS COLLECTION, PRESENTMENT AND REVERSE AUCTION OF PAYMENT RECEIPT ITEMS

BACKGROUND

[001] For every retail transaction a buyer performs, seller is obligated to provide a payment receipt that is normally in paper form and optionally in paperless digital form that is sent to a location based on buyer's preference. Systems may capture buyer's choice of location either during the act of purchase or prior to purchase involving a registration process or issuing of member cards. The preferred digital receipt location may be either an email address or a mobile number to receive such receipts. The above method of obtaining digital receipt location during the act of transaction is cumbersome and does not expedite buyer's wait time in the queue or getting one during registration process is also tedious due to filling forms with lots of information manually or electronically.

[002] Obtaining a member card and becoming a member in a seller's organization divulges precious buyer information and moreover this needs to be repeated in each seller organization the buyer transacts to get a digital receipt or any associated loyalty rewards. With the buyer's information known upfront, sellers can capture precious buying pattern data and do trend analysis without buyer's consent and buyer has no control on this act. Providing state-of-art biometric data to replace cards that a buyer carries also doesn't help in this regards to provide sufficient privacy.

[003] Acquiring receipt information from Point-of-Sale (POS) systems is not easy given the manufacturers manage these systems as proprietary or closed and sellers may not want to change the system for various reasons and risks involved. Prior art has provided ways to acquire receipt data from print queues or directly hooking on to the print data interface mechanisms to siphon off printable American Standard Code for Information Interchange (ASCII) characters that forms the printed receipt information. Template based receipt data extraction is available but not easy enough to quickly decipher the information presented in various receipt formats from different sellers. A simple yet consistent methodology and tool for sellers to capture their receipt format in eXtensible Markup Language (XML) is not available so that receipts may be quickly processed and extracted for receipt items and constituent data elements from different receipts formats of various sellers.

[004] Buyers as they patronize different sellers, have no control over price, feature set of the items bought, essentially they don't have a competitive edge on price offers and desired feature sets of a given product. If anonymous group of buyers can place a reverse auction bid on a product where sellers can compete, provides tremendous cost savings for buyers. Similarly a group of buyers can collaborate on a particular item to determine its makeup to force sellers to bring those items to market rapidly and

cost effectively. Social networking on purchased items, sharing feature preferences is a powerful collaborative platform yet to be capitalized to the benefits of buyer.

SUMMARY

[005] The present invention relates to system and method that may be used to collect receipts autonomously from POS devices through a receipt acquisition and processing device which comprises of a mobile device capable of near field communication (NFC) and a means to communicatively intercept and capture printed receipt content from POS device to printer when a transaction between a seller and a buyer occurs. Captured receipt content is reconstructed in the mobile device for display and verification by buyer to further provide anonymous identity and consent by swiping a passive near field communication tag or an active near field communication tag from a device carried by buyer. Anonymous identity is associated with the receipt content including consent date and time, seller's location, and receipt acquisition and processing device identifier as a prepared receipt for transfer to a receipt store residing in the cloud or within the mobile device. Anonymous identity may comprise a combination of unique identifiers plus issuing provider URL, date and time, and a signature hash imprinted on a NFC tag or as generated by an active NFC reader and writer available in a mobile device carried by buyer. Receipt store may be implemented as a service in cloud. Receipt acquisition and processing device comprising a mobile device may download and install app from an app store or website to perform acquisition and processing of receipts.

[006] Receipt store service further extracts receipt items and constituent information based on receipt XML template created by importing and superimposing printed receipt file or image onto a calibrated ASCII text cell using a software modeling and template generation tool. Receipt content may be imported as in any format including text, image and portable document format (PDF) to model, test, generate and version the templates to be associated with a particular seller and a receipt acquisition and processing device. Extracted receipt items are stored in a database in receipt store and further collated, aggregated, mined and formatted. A receipt presentment service will display the receipts as captured and categorized based on the presentment options set by buyer. Further this service displays categorized and aggregated spending view with comparative trend analysis among same product buyers and allows social networking based on receipt items. A receipt reverse auction service allows a buyer or a group of buyers to perform reverse auction of receipt items targeted to prospective sellers based on the reverse auction options set in the service.

[007] Buyer and seller may have a subscription arrangement with a provider of system performing receipt store, presentment and reverse auction service implemented in cloud and/or on premise computing systems. They may maintain all the options associated to various functions performed through the service. Programs performing said functions may be downloaded into the mobile and computing devices of the buyer and seller from an app store or a website.

[008] This summary is provided as a preamble to a selection of concepts in a simplified form that are further elaborated in the detailed description. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is intended to be used to limit the scope of the claimed subject matter.

BRIEF DESCRIPTION OF DRAWINGS

[009] FIG. 1 is a block diagram of an example system in which a device may be used to acquire payment receipt autonomously along with an anonymous identity information from buyer and place it on a receipt store associated to a reverse auction, presentment and collaboration service.

[010] FIG. 2 is a block diagram of an example device that may be used to acquire receipt content, visually show reconstructed receipt, audibly prompt buyer on the readiness to swipe a NFC tag or a mobile device with active NFC tag to provide anonymous identity and also provide consent during this very act.

[011] FIG. 3 is a diagram of an example content of buyer's anonymous identity information as issued by a provider and the buyer's registration information with the receipt store, presentment and reverse auction service.

[012] FIG. 4 is a diagram of an example representation of a sample receipt in terms of ASCII character cell matrix by superimposing an ASCII receipt content onto a grid demarcated and calibrated cell by cell.

[013] FIG. 5 is a flow diagram of an example process in which receipt content is collected off a POS device and printer, anonymous identity information is collected from a NFC tag and receipt is prepared

[014] FIG. 6 is a diagram of an example illustration of cell matrix, receipt content superimposed on one such cell matrix, element structure of XML template - root element and detailed elements of each parent element. Diagram also illustrates relation between receipt matrix content and corresponding XML template sections and elements.

[015] FIG.7 is a diagram of an example illustration of the tool that may be used to convert an image, PDF and text file of a printed receipt into its constituent ASCII cell matrix template to capture corresponding XML template data.

[016] FIG.8 is a flow diagram of an example process in which prepared receipt payload is received at a receipt store, processed, extracted for receipt items based on the receipt templates and options maintained. Further the example process exemplifies the flow of how extracted receipts are categorized, aggregated, presented and how collaboration, social networking and reverse auction on receipt items performed.

[017] FIG. 9 is a block diagram of an example actions that can be performed related to buyer in receipt store, presentment and reverse auction service.

[018] FIG. 10 is a bock diagram of an example actions that can be performed related to seller in receipt store, presentment and reverse auction service.

[019] FIG. 11 is a block diagram of example components that may be used in connection with the implementation of services comprising the receipt store, presentment and reverse auction.

DETAILED DESCRIPTION

[020] Seller issues receipts to buyer that memorializes every transaction. This has been traditionally in paper form and with the advent of mobile devices; electronic receipts may be a must. Buyer may ask seller to route the electronic receipts to an email address or may receive it in a mobile device. The problem with these two receiving mechanisms is change in email addresses and mobile devices which the buyer needs to constantly update seller. Seller's POS systems are much closed and proprietary that any modification to accommodate above feature is a hassle. Also to constantly change recipient addresses in their frontend and backend systems is a time consuming process. Accommodating a change in recipient email address during the very act of transaction makes other buyers in the queue restless and also impacts productivity for both buyer and seller. Some mobile devices possess NFC (near field communication) capability but lacks sufficient throughput to transfer long receipts to quickly expedite buyer's transaction time, hence not hold the next buyer in queue. Mobile devices have other communication methods like WiFi or Bluetooth, but they need explicit permission to be given by buyer before any data transmission can happen.

[021] Buyer can preemptively provide his preferences to route the electronic receipts which may happen when seller provides membership cards to buyer or through a web frontend. Buyer need to provide lots of details as part of membership process and cannot maintain his anonymity to seller. This problem is compounded when the buyer needs to repeat this for every seller and may be a hassle carrying every seller's membership card. With this data, seller can mine and predict the buying pattern without buyer's full knowledge. Instead, if buyer's biometric data is collected to tag every transaction uniquely may provide a trouble free experience for buyer but this creates an even more serious breach of privacy. Buyer lacks a credible anonymous experience in buying from different sellers and unable to enjoy the benefits of loyalty claims and competitive prices for items purchased.

[022] Seller's POS systems are closed and proprietary. These POS systems may not have requisite mechanism to safely capture anonymous identity of a buyer and combine that with electronic form of printed receipt without appropriating buyer's anonymous data. Moreover every seller may not implement modifications in the POS system to accommodate such feature to guarantee buyer's privacy.

Capturing printed receipts in duplicate electronic form with additional information is also a huge change on part of POS system, that seller may not implement. Non-invasive and autonomous capture of printed receipts from POS systems solves the problem but making this device universal and providing a seamless app maintenance experience in this device is equally significant to ensure adoption and maintaining consistency for various sellers. Also buyer needs a visual and audio cue of the printed receipt in order to swipe his anonymous identity tag as consent and provide it to seller. This provides a facility to opt in and opt out seamlessly for a buyer who deems which purchase needs to be tagged and sent to a receipt store maintaining anonymity and which ones not be tagged and discarded.

[023] Receipt formats may be different among sellers and hence receipts collected in a receipt store from various sellers, needs to be mined accurately to provide aggregated receipt presentment to buyer. There's no consistent methodology and tool for sellers to capture their print receipt formats, so that a versioned but latest template can be applied to captured receipts in the receipt store to process and extract receipt item data. Further a comparative trend analysis may be performed to apprise each buyer on the market trend apart from normal bill presentment and aggregation which is missing. Based on the buyer's purchase preference, social networking features can be enabled within the service and may be integrated with an existing dedicated social networking platform.

[024] Apart from extracting data from receipts, buyers don't have the ability to use the valuable data that they possess to their benefit by grouping like-minded anonymous buyers in launching a reverse auction to their receipt items wherein prospective sellers may compete and offer a best price. Also product feature sets as collaboratively decided by like-minded anonymous or socially networked group of buyers can propose this to a seller or to a manufacturer.

[025] Referring to the diagrams, FIG. 1 shows an example system 100 in which a receipt may be generated, captured by a device and prepared by obtaining an anonymous identity of the buyer, sent to receipt store where it may be persisted, extracted, presented and allowed to perform reverse auction and social networking on each receipt item. POS device 105 is the transaction entity that provides a receipt to buyer that transacts with seller. Printer 110 is the receipt printer that issues a paper receipt that could be connected by any printer interface mechanism to POS device 105, as described in prior art. Receipt acquisition and processing device 120 is a mobile or tablet or computing device capable of downloading and installing apps from public or private app store is described in detail in FIG. 2. In an example scenario depicted in FIG.1, a seller may possess a POS device 105 and printer 110 and a provider given receipt acquisition and processing device 120 connected as shown, wherein device 120 could be connected to USB or RS232 or parallel port splitter interface between devices 105 and 110 or directly to device 105. In another example, device 120 may be connected communicatively to receive the printed receipt content over WiFi, Bluetooth, Zigbee or wireless USB mechanisms. A buyer may initiate a transaction in the seller's premises in person by buying goods or services, for example a buyer

could by goods at supermarket, a sundry item at local store, a spa service from a spa outlet, a lunch or a meal at a restaurant, laundry services from a Laundromat, money drawn from an Automatic Teller Machine, goods obtained from a self-service vending machine, tickets issued by an airline ticketing machine, etc. Foregoing are transactions that could be between a seller and buyer, are examples, although any type of transactions can be performed, upon which the seller issues a receipt printed off the printer 110 by sending printer commands.

[026] Buyer may be in possession or associated with a device 140. FIG 2. shows an example of device 140 that may contain an active Near Field Communication (NFC) reader and writer 142 conforming to International Organization for Standardization (ISO) 14443 for proximity cards, ISO 18092 for near field communication interface and protocol-1, ISO 21481 for NFC interface and protocol-2, and NFC Forum defined common data format called NFC Data Exchange Format. If the mobile device is not equipped with a NFC chip, it may also carry a passive ISO 14443 defined proximity tag or sticker that may contain buyer anonymous information, for example buyer's anonymous identity or financial information or any arbitrary information as imprinted on these tags or stickers. Device 140 may contain a memory facility 146 to download app from an app store administered by 3rd party mobile operating system providers or by the provider of system 100. Using this app, buyer can manage device's active NFC reader and writer to make available the appropriate non-modifiable and read only NFC tags through a selection process within this app. In another example, device 144, as possessed by the buyer, may be simply a key fob or a container that may be pasted with an ISO 14443 compatible NFC tag 146, containing impressed information conforming to NFC Data Exchange Format.

[027] FIG. 2 shows an example of device 120 that may be associated with the receipt acquisition and processing functions. This device may hold a Transceiver 122, Radio interface 124 to perform communication and actively establish an internet connection, a processor 126 with associated Memory 128 capable to download and install apps from app store, NFC Reader and Writer 134 conforming to ISO standards 14443, 18092, 21481 and NFC forum defined data exchange formats, Input Interface 130 & output interface 132 to allow any user and system to interact with the device visually, audibly and through other possible communication channels including USB host connectivity and a Print Interface Converter 136 that may convert RS232, Parallel or USB feed. In one example, buyer possessing NFC tag 146 may swipe against the device 120 within few centimeters, so that the device reader may read the information as stored in mobile device 140 with an active NFC reader/writer bearing the buyer anonymous identity information and in another example, such information may be provided from the passive NFC tag 146 pasted on any artifact 144. However foregoing are merely examples, the receipt acquisition and processing device 120 could read any type of device using any type of technology or communication mechanism bearing the said buyer anonymous identity information.

[028] FIG. 1 shows an example of mobile or tablet or computing device app store 180 available for different target operating system environments as supported by devices 120, 140 and 195. App store 180 may support public or private app download areas and authentication mechanisms for seller, buyer to download apps 181, 182 and 192 to respective devices. In one example scenario, device 120, 140 and 195 may be a mobile or tablet or computing device with operating systems and supported by app stores. Examples of such providers of operating system and app stores include Microsoft, Apple, Android and any such provider that provide all or some functions. App 181 may be an example of an app for buyer device 140 to generate the buyer anonymous identity information and to view the receipts individually with categorized and aggregated spending view with comparative trend analysis for each receipt item. App 182 may be an example of app for receipt acquisition and processing device 120 to acquire printed receipts in an example over a splitter connected or through any other communication mechanism between POS device 105 and a printer 110. App 182 communicates with receipt store 185 by sending the receipt payload 184 described in FIG. 4. App 192 may be an example of an app for seller or buyer's mobile or tablet or computing device 195 to allow buyer to reverse auction or social network based on receipt items aggregated and collated across group of anonymous buyers or individually. App 192 may allow seller to bid, fulfill and complete the transactions on buyer reverse-auctioned items. App 192 may integrate with social networking applications. Examples of such applications on the web include Facebook, Google+, LinkedIn and any other social network networking platforms. Apps 181, 182 and 192 may be uploaded to app store 180 by provider of an example system 100.

[029] In one example, receipt store 185, and receipt presentment and reverse auction service 195, shown in FIG. 1 could be implemented in cloud as a service or a web application using a cloud platform. Microsoft Windows Azure, Amazon Web Services, Salesforce.com Cloud Platform Services, Google App Engine etc. are examples of cloud platform. However foregoing are merely examples, wherein 185 and 195 may be implemented using on premises servers running cloud platforms or any other custom built web application and services running on computing devices.

[030] As part of participating in system 100 processes, shown in FIG. 3, buyer may need to register with provider by providing an email address 162. For example, when the buyer browses the web and visits the receipt presentment and reverse auction service 190, need to create an account by providing a valid email address wherein provider will send an email to the said email address to verify and ask the buyer to activate the account by a hyperlink appended in the email sent. Windows Live Hotmail account name, Google Gmail account name, Yahoo Mail account name are some examples of identifiers that could be associated to valid email addresses and could be used by various system 100 components. When buyer registers with provider, a randomized unique number is issued to buyer either through email or SMS or mail which can be used to claim an electronic tag 146 that may contain buyer anonymous identity information 148 from a seller or designated distributor. This unique number will be used to reconcile the proper distribution of electronic tag 146. Electronic tag claiming can be managed from service 190 or

app 181 and in one example may restrict, charge and sponsor from seller the number of such claims being maiden, additional or replacement as the case may be. As in one example, during registration of buyer with provider, buyer may provide valid social networking account names 164 and credentials to integrate buyer's existing information with social networking sites with service 190 to allow buyer or group of identified buyers from these social networking sites to perform actions 700 explained in FIG 9. Upon claiming such an electronic tag, buyer in one example may use the software app in device 120, 140, 195 and service 190 to instantly create link 166 between buyer anonymous identity information electronic tag with valid email address registered previously and manage any loss and additions. Further buyer in above example, may use service 190 to manage receipt presentment options 168 and reverse auction options 170.

[031] In one example, receipt presentment options 168 may include how buyer would want to handle unidentified receipt items, identify junk receipts tagged with unidentified anonymous tags, group receipt items according to personalized lifestyle categories, manage alerts and triggers on particular group's receipt item totals exceeding preset levels, manage redeem choices on the loyalty points issued by various sellers, allow which receipt items may be viewed and posted that friends in social networking have access, manage advertising and coupon presentment. However foregoing are mere examples, the receipt presentment service 190 might collect further options and preferences from buyer for receipt presentment.

[032] In one example, reverse auction options 170 may include how buyer and seller want to manage selective identification of receipt items, supplier and buyer groups, geographies, bid, fulfillment including preparation, expediting, shipment, delivery, and payment. The receipt presentment & reverse auction service 190 might collect further options and preferences from buyer and seller with respect to reverse auction on receipt items.

[033] FIG. 3 shows an example of buyer anonymous identity information 148 presented by 142 from device 140 or available as a passive tag 146 pasted in any artifacts 144 possessed by buyer. Anonymous identity information may include a combination or one of 2 universally unique identifier (UUID) 150 and 152, and a randomized integer number 153 not more than 2 to the power of 63 minus 1. UUID is an identifier standard used in software construction, standardized by the Open Software Foundation (OSF) as part of the Distributed Computing Environment (DCE) and ISO 11578:1996. Above combination of numbers may be issued by a provider who may possess a valid URL with a valid date and time of issue signified by the information represented by 156. Information 157 may represent the signed hash using the private key of Public Key Infrastructure (PKI) issued digital certificate for the selective combination of 150, 152, 154 and 156. Device 140 with NFC component 142 or artifact 144 with NFC passive tag 146 may communicate this buyer anonymous identity information to device 120.

[034] In one example transaction scenario, a purchase can be accomplished through a plurality of different components, including the receipt acquisition and processing device 120 and POS component devices 105 and 110. POS component may be a cash register, a retail kiosk, a computer, or any other type of device of a system that could facilitate a sale. POS component devices may be dot-matrix, thermal, laser, ink-jet or any other system that facilitates printing of the receipt of the sale performed. Typically, POS component devices 105 and 110 are situated where the buyer is physically present at the premises wherein transaction occurs and could be in a designated cashier location – e.g. as in the instance of a restaurant, a spa, a local thrift store, a departmental store, etc. A scenario of physical presence is in contrast to online transaction wherein buyer is not physically in a store and is conducted virtually and performed over a communications network and software application. Hence in FIG. 1, device 105 and 110 may be present in a physical location. If the device 105 is the POS device, for any items purchased by buyer, 105 may send printed receipt 115. In one example printed receipt 115 may include description, quantity, price of purchased items and any other info as described in one example in FIG. 4. In one example, receipt acquisition and processing device 120 and POS component devices 105 and 110 are separate components that are attached to each other. In another example, device 120 may be built into POS component 110 or 105.

[035] In FIG. 4, printed receipt 115 is shown, by way of example, is superimposed on a cell matrix for clarity to be used subsequently to describe a method of template generation for any receipt formats issued by sellers. Receipt 115 comprises of header information that may be the physical store name or an internet storefront name with address 210, date and time of purchase 212, body header for itemization 214, individual purchased items 216, subtotal 218, tax charged 220, discount if any offered 222, total due from buyer in all 224, mode of payment involved in this transaction 226, balance due to buyer from seller 228 and footer message 230. In another example of receipt 115 may include other relevant details as appropriate to the context of the transaction. In one example different POS component devices 105, 110 and device 120 may be together in a whole unit but separately fitted, in another example they all can be a homogenous device, in another example device 120 may be connected to either 105 or 110 or both. Wherever device 120 fits in, receipt 115 obtained thus and prepared as receipt payload 184 may be sent to a service in cloud, the receipt store 185. In one example, device 120 may transmit full or partial receipt payload 184 to buyer's mobile device 140 through NFC peer-to-peer, Bluetooth, wireless or any other compatible communication methods so that receipt can be received and managed by the app 181 which may further request for a full receipt securely from receipt store 185.

[036] In FIG. 4, prepared receipt payload 184 is shown, by way of example, as receipt information appended with other identifiers by app 182 in device 120 which may be sent to receipt store 185. This receipt payload may include receipt acquisition and processing device's unique identity number 250, seller's unique registration identity number 255, negotiating hash 260 is assigned by receipt store's

application when device app 182 logs into receipt store service, unique serial number 265 is generated by app 182 for each receipt payload to be sent, buyer anonymous identity information 148, buyer's consent date and time may be the date and time buyer swiped the device 140 or artifact 144 against the receipt acquisition and processing device 120, receipt content 115 as captured from POS 105 sent to printer 110 and check sum or control total information 275 may include a MD5 hash of the entire or subset of the information contained in the receipt payload 184. In one example, app 182 may generate and prepare all above constituent information in 184 and in another example may prepare any combination of constituent information in 184 and send it to receipt store securely. App 182 may restrict the number of receipt payloads that a device 120 may send depending on the contractual agreement between seller and system 100 providers. App 182 may also delay the sending of receipt payloads in the event of communication failure between device 120 and receipt store 185 and may resume once connectivity is established in batch mode or may abandon depending on the case. Some of the receipt payload constituent information like 250, 255 may be preset in the device 120 or may be downloaded by app 182. Content of 184 may be packaged as a XML document, delimited text file, json data format and any other electronic data interchange formats.

[037] FIG. 5 and 8 shows various processes. Before proceeding to a description of FIG. 5 and 8, it may be noted that the flow diagram contained in these figure described, by way of example, with reference to components shown in FIGS. 1 to 4, although these processes may be carried out in any system and are not limited to the scenarios shown in FIG. 1 to 4. Additionally, flow diagram in FIG. 5 and 8 shows an example in which stages of a process may be carried out in a particular order, as indicated by the lines connecting the blocks, but the various stages shown in these diagrams can be performed in any order, or in any combination or sub-combination.

[038] FIG. 5 shows an example process 300 wherein buyer performs a transaction at seller's premises, resulting in capture of printed receipt along with buyer's anonymous identity information available through a swipe, which is further prepared as a receipt payload to be sent to receipt store. The columns in FIG. 5 (as shown by vertical dashed lines that signify separate spaces of columns) indicate particular components shown in FIGS. 1 to 4 (POS device 105, receipt acquisition and processing device 120, POS printer 110, mobile device 140 and buyer being one of the actors in this process) at which particular stages of the process could be performed. However the stages shown could be performed using any other components (whether or not shown in the FIGS. 1 to 4)

[039] At 305, POS device 105 either during or at the end of the transaction transmits full or partial receipt to printer 110 through a compatible wired or wireless connection established between them. In one example, wired connection may be through RS232, parallel port, USB or any custom wired connection whereas wireless connection may be through WiFi, Bluetooth, wireless USB, ZigBee, NFC or any compatible connectivity mechanisms. At 307, printer 110, receives the output printer commands

and prints a paper receipt. At 310, receipt acquisition and processing device 120, captures this print commands comprising print content or print ASCII file either by converting all wired and wireless connections to a USB host based connection in device 120. Alternatively all wired and wireless connections can be directly interfaced to device 120 to acquire printed receipts. At 315, app 182, may reconstruct the captured printed receipt content 115 into a decipherable receipt that can be viewed by buyer with a visual or audible cue (a flash or beep can be presented as an alert) to gain buyer's attention involved in the transaction at device 105. At 325, buyer may act to swipe and provide consent for transmission of buyer's receipt data. At 330, buyer's mobile device 140 or artifact 144 containing the electronic tag information representing the buyer's anonymous identity information 148 is presented. At 335, device 120 acquires this data securely and may use app 182 to prepare final receipt payload 184 by working in tandem with service application in receipt store 185. At 340, device 120 transmits the prepared receipt payload. At 345, mobile device 140 receives either full or partial receipt payload using any compatible wireless communication technologies. At 350, device 120 sends the receipt payload 184 through any communication mechanisms to receipt store 185.

[040] Single receipt content 115, as captured from the POS 105 may contain typically two components: a plain text component (typically in ASCII), and print formatting control data specific to printer 110. With prior knowledge of print format control data, plain text data can be extracted and receipt content may be reconstructed by app 182 to be displayed in device 120. Further, this displayed receipt content may act as an input for the receipt payload 184. In another example receipt data may be obtained from the printer queue directly or reconstructed by using an Optical Character Recognition engine on a print receipt image captured by digital camera or transmitted by any computing device. Every POS device or e-commerce system that provides a memorialization (receipt) for transaction conducted between a buyer and seller may require a specific set of templates for a particular format receipt to extract receipt items from them as accurately as possible. In prior art, receipt templates have been generated to act as a parser reference to extract data and store receipt items in database. Presently, this invention simplifies such template creation to be intuitive yet easily maintainable for each seller participating in system 100 operations.

[041] FIG. 6 illustrates an example 400 that may used to model a plain ASCII text extracted from receipt content 115 to a receipt map template 450. Rectangular matrix 402 is a sample representation of a cell matrix comprising individual cells marked by their row and column number prefixed with R and C respectively. By above rule, R1C1 represents a cell 405 designated by row 1 and column 1, whereas cell 410 may be indicated by RnC1 wherein n is an integer representing the maximum number of rows. Similarly cell 415 may be indicated using R1Cn and cell 420 as RnCn. Essentially this cell matrix representation may be superimposed on a physical printed receipt for calibrating the maximum number of ASCII text characters that can be printed in a row for a given font size of the character printed. On the corollary, for a given physical receipt height, number of rows (each row comprising of ASCII characters)

may be determined if the font size is known. Hence any printed receipt content 115 can be overlaid on a matrix 402 to be modeled for their different rows and columns of data.

[042] Illustration 422, as shown in FIG. 6, in one example, represents the superimposition of a receipt ASCII data on to a cell matrix 402 comprising of 32 x 25 ASCII character cells. Row 2, marked 425, may consist of seller's name followed by another row of ASCII characters representing an underline for previous row and information contained may not be restrictive but include other details such as address, city, country, etc. Row 2 and 3 information occupies 11 columns or cells. Row 5, marked 430, may depict date of purchase followed by time and cashier's name. Evidently each row for their corresponding information, occupy a definitive number of cells or in some case a variable number of cells with a maximum limit. In one example all these rows can be grouped collectively as a header of a receipt. Row 9, marked 435, may indicate a header for a tabular data to follow. Row 11 to 14, may indicate the receipt items that a buyer purchased from seller, in tabular format, where the column header starts at a particular cell and ends with maximum cell count limit thereon. Row 16, marked 440, may depict the sub-total cost of all the purchases itemized, followed by discount offered, total due for payment, mode of payment, amount of payment with balance due to buyer. In one example, rows 9 to 27, may be grouped as body of the receipt. Row 30, marked 445, may be the thank you message printed on all receipts and grouped as footer comprising two rows and specific cells. With this example, we may show that receipt content 115, may be calibrated on cell matrix with each row's information – constant ones mapped to a specific start and end cell location and variables one characterized by a starting cell location with a maximum cell number limit. For free flowing receipt items or similar information, number of rows may be indicated as a variable.

[043] A template for illustration 422, as captured in illustration 450, typically comprises preferably of a number of elements (sections) :

[044] RECEIPT-MAP
[045] RECIPT-ASCII-DIMENSION
[046] RECEIPT-FORMAT
[047] LOGO
[048] HEADER
[049] BODY
[050] FOOTER
[051] PROCESSING

[052] Each element may consist of nested elements for defining to receipt store 185 and buyer device 140 how an instance of a receipt is to be parsed and then processed. The bare skeleton of a template is illustrated in FIG. 6, marked as 450, showing the nodal elements or sections of a template. A template may contain comments as per XML specifications and these lines are not parsed. It is clear to a person

skilled in the prior art that the order of these sections in a template may be various; the order need not be set out above.

[053] XML illustration 450, may be one example of high level XML data node representation of a template modeled from superimposing receipt data on to a cell matrix. This template might contain root node element RECEIPT-MAP that encompasses elements [045] to [051].

[054] RECEIPT-ASCII-DIMENSION element may define the cell matrix dimension in terms of ASCII characters and this may be possibly obtained by a modeling tool to superimpose receipt ASCII content onto a calibrated cell matrix or by any other means to calibrate the receipt content in terms of ASCII character cells. It comprises of ROW and COLUMN elements which may specify the dimension count as an integer to be absolute or character N to indicate it is a variable number.

[055] RECEIPT-FORMAT element may contain formatting information pertaining to a receipt. Essentially may define whether a receipt format comprises of its four constituent elements namely LOGO, HAEDER, BODY and FOOTER that may be indicated by character Y or N.

[056] LOGO element may contain the dimensional aspects of the logo printed in terms of ASCII character cell dimensions.

[057] HEADER element may contain sections (rows and columns) printed in each receipt generated from POS device 105 that may remain intact. Illustration 460, in one example, further explains the makeup of three element types namely HEADER, BODY and FOOTER elements of the XML template 450 generated. Each of these elements at the core may contain a SECTIONS element wherein multiple SECTION element nodes hold different metadata information for data in a receipt. Every SECTION, representing a line or row of the printed receipt, may have a NUMBER to indicate serial position of the section, NAME to describe the section content, MULTI-ROW to indicate whether the content is single row or multi-row content and ROW to specify further elements. Each ROW element node may contain COLUMN-PARTS element which in turn may contain multiple COLUMN-PART elements. Each COLUMN-PART may contain different elements describing the data parts for a row in a receipt, like, a PART-NUMBER element to indicate which serialized column segment, START to indicate starting cell number, END to indicate ending cell number, KEYWORDS to describe the data segment in detail, REMARKS to capture descriptive remarks for reference, IGNORE to indicate whether this segment to be ignored or not for data processing, PROCESSHANDLE to indicate the function entry point for the processing entry point algorithm specified in 455. In another example, each receipt template may contain multiple SECTION elements under SECTION element for elements HEADER, BODY and FOOTER.

[058] PROCESSING element, represented in detail at 455, may contain processing information for this receipt template that includes platform of computing, version, language of computing instructions,

computing assemblies comprising byte-code instructions' file name, runtime involved, entry point and parameters used which may provide programmatic and processing input information for said receipt format when receipts adhering to said format processed.

[059] In one example, the receipt format template thus generated as per above illustration 450 may be referred with a file extension RCPTXML and generally referred as RCPTXML template. A reference is made in this document to XML content. The XML specification and related material may be found at the website of the World Wide Web Consortium (W3C).

[060] In FIG. 7, receipt template modeling and generation software program 500, may illustrate the general screen display outline of the client user interface comprising of various display areas dedicated to provide specific information for intuitive collection, modeling and submission of receipt format template by sellers to system 100. Those of ordinary skill in the art may appreciate that display area size, color and appearance may vary but comprises of a ribbon interface panel 510, a grid cell view panel 520, grid display window 530, dropdown context menu 540, RCPTXML template view & edit panel 550 and a status bar panel 560 at the bottom.

[061] In one example of software program 500, the client user interface can be invoked in different ways. FIG. 7 may represent an example wherein the user interface may be displayed as an web application in the browser hosted in cloud, in another may be stand-alone software program run on any computing, tablet or mobile device either as app downloaded from app store or installed from any media. Any other software program or device may invoke the functions of software program 500 through an Application Programming Interface (API) as may be clearly known to the skilled in the art. Software program 500 may accept ASCII plain text, image and PDF formats of the print content 115 as input to model and when imported, may appear in the panel 530 with cell calibration, each cell signifying an ASCII character. Using Graphical User Interface pointing mechanisms, dropdown context menu 540 and functions available in the ribbon interface panel 510, RCPTXML content may be generated, edited, tested, and versioned and may be stored in receipt store 185.

[062] FIG. 8 shows an example process 600, wherein receipt payload 184, accepted by receipt store 185, undergoes a series of actions for the receipt items to be extracted using appropriate version of RCPTXML template tied to a seller and may be prepared for buyer's viewing through the presentment service. Further receipt items may be collated and aggregated individually or as part of anonymous group of buyers, to understand the trend and decide, and to initiate reverse auction on selected receipt items. The columns in FIG. 8 (as shown by vertical dashed lines that signify separate spaces of columns) indicate particular components shown in FIGS. 1 to 4 (Receipt acquisition and processing device 120, mobile device 140, receipt presentment and reverse auction service 190, and buyer and seller being one of the actors in this process) at which particular stages of the process could be performed. However the stages shown could be performed using on any components (whether or not shown in the FIGS. 1 to 4)

[063] At 605, device 120 may send the receipt payload as per process flow 300. Device 120 may use any communication channels or methodologies to transmit the receipt payload. At 620, receipt store 185 or mobile device 140, may receive this securely to perform validation and pre-processing using the presentment options 168. Further receipt payload may be parsed, as at 630, to extract receipt items using RCPTXML template generated from illustration 400 and software program 500. At 635, extracted and curated receipt items may be stored and linked to buyer's subscription account. At 640, presentment options from buyer at 610 and seller at 660 may be maintained and similarly the reverse auction options at 645. At 650, seller and/or buyer may maintain the receipt templates in RCPTXML format. At 665, buyer can view the receipts through the receipt presentment service user interface 655, wherein buyer may be able to use the business intelligence functions as known to skilled in the art, to view receipt items collated, aggregated and categorized as per their options maintained. Further buyer may social network with other buyers based on the data from receipt items on interest, form groups, chat on features and post comments and opinions on the receipt items within service 195 or through external social networking websites. At 670, buyer can initiate reverse auction on selected receipt items using the reverse auction user interface 675. At 615, seller may monitor, bid and fulfill the receipt items reverse auctioned.

[064] Various actions as shown in one example in FIG. 9 may be performed to set up, maintain and operate receipt store, receipt presentment and reverse auction service for buyer. One such operation 705 may be to arrange with a buyer to act as a receipt storage, presentment and reverse auction service provider. This leads to operation 710, wherein a buyer may need to provide a unique buyer identity by means of a unique email address or any other uniquely identifiable yet reachable mechanism. Unique anonymous identity information as in 148 imprinted on NFC tags can be mass produced separately and distributed to buyers through sellers. Further to a buyer claiming such unique anonymous identity information 148 tag, may need to link this tag with unique buyer identity at service 195. Further any loss reporting, re-linkage; request for new, purchase of additional anonymous identity 148 tags may be performed. Operation 720 may allow buyer to be routed to an app store or a URL for the target mobile, tablet or computing device 140 to download and install app that provide various functionalities that may include anonymous identity, receipt store, presentment and reverse action client access interface programs. After a receipt store has started to receive receipts, various actions may be performed with respect to those receipts. For example, the customer may request to see the receipts. As another example various receipt items extracted contains facts like item description, quantity, price, cost, etc. and those facts, as well as conclusions from these facts, might be mined, as in 730. One such conclusion is if the buyer purchases bulk quantity of an item frequently or periodically, then that item is a good candidate for reverse auction with fairly enough quantity that a seller may want to bid for. The foregoing are examples of facts and conclusions about a particular buyer that might be mined from the buyer's receipts. However, since a receipt store may store receipts from many different buyers, facts

and conclusions from anonymous buyers may also be mined in tandem to provide trend analysis of how a particular item is bought in total against an individual's buying pattern as in 740. Each buyer as they patronize different sellers and may frequent them, receipts can be presented in a categorized manner based on the presentment options maintained by buyer either for an individual receipt or a collection of receipts across different timelines for a particular or group of sellers or in any other manner.

[065] Further action 760 is reverse auction that may be performed on selected receipt items using the app in device 140 held by buyer or in any computing device capable of holding such app 181. In one example, buyer, in the app, may select the recommended high quantity purchased items to a selective or preset group of sellers to start bid for a price set by buyer that may be suggested by service 190. Sellers can monitor such reverse auctions and as appropriate may lower bid price amongst them, to win the buyer's auction set in motion and fulfill the transaction getting payment and ship the items to buyer or provide a mechanism for buyer to collect the items from seller's premises. All or any operation mentioned in 700 may be performed securely and anonymity protected as required.

[066] Various actions as shown in one example in FIG. 10 may be performed to set up, maintain and operate receipt store, disbursement of apps, maintenance of receipt formats and reverse auction service for seller. One such operation 810 may be to arrange with a seller to act as a preferred receipt storage and presentment provider for a buyer who transacts with seller and further as a reverse auction provider to facilitate and provide a service where buyer and seller may collaborate and fulfill reverse auction operations. In operation 820, arrangement with seller may include registering seller to system 100 and its components, to obtain details of branches wherein device 120 may be installed and operated and to manage seller side presentment options. In another operation 830, seller may need to model, create, version and designate a version of receipt template RCPTXML for receipt store to parse and extract receipt items. In operation 840, provision apps for sellers and route them to download app either from an app store or from a URL and install the app to device 120. Further sellers may download reverse auction app also to device 195. Apps mentioned may be uploaded to Windows Phone App Store, Apple App Store, Google Android App Store, Amazon App Store which are examples of an app store or to any other custom app store maintained by provider or to a website that may have these apps hosted that can be downloaded securely. In operation 850, seller may monitor actively on the selected items already configured through reverse auction options. When such receipt items appear for reverse auction initiated by individual buyer or a group of anonymous buyers, seller may use the service 190 to bid online to offer best price to buyer(s). Upon successful bidding amongst all sellers, winning seller may further enter into an agreement with buyer(s) to fulfill the offer by getting payment routed through this service. Upon receiving payment, seller may prepare the logistics and send the receipt item goods to provider who may in turn ship directly or ask seller to ship or through a 3rd party shipper. During this process of reverse auction, service 190 may suggest optimal pricing from which the auction price may start. This can be arrived based on the mining inputs provided to a software suggestion engine program

that can deduce a price using comparative algorithms. In one example of operation 860, statistical and operation reports may be provided to seller to reconcile, ship and fulfill his obligations to buyer.

[067] FIG. 11 shows an example environment 900 in which aspects of the subject matter described herein may be deployed.

[068] Computer 910 includes one or more processors 930 and one or more data storage components 940. Processors 930 are typically microprocessor chips, such as those found in a laptop or personal desktop, a server, a PDA, a mobile computer, a server in the cloud available on demand or another kind of computing device. Data storage components 940 are components that are capable of storing data for either short or long duration. Examples of data storage components 940 include hard disks, removable disks (including magnetic and optical disks), volatile and non-volatile random-access memory (RAM), read-only memory (ROM), flash memory, magnetic tape, etc. Data storage components are examples of computer readable storage media. Computer 910 may comprise, or be associated with, display 950, which may be a Light Emitting Diode (LED) monitor, liquid crystal display (LCD), or any other type of monitor.

[069] Software may be stored in data storage components 940, and may be executed on the one or more processors 920. An example of such software are receipt storing, handling software part of 185, apps 181, 182 and 192, receipt modeling tool 500 and presentment and reverse auction service 190, which may implement some or all of the functionality described in connection with FIGS. 1 to 10, although any type of software may be used. All above software may be implemented, for example, through one or more components, which may be components in a distributed system, separate files, separate functions, separate objects, separate lines of code, etc. A computing device in which a program stored on storage component, loaded into device's memory, and executed on the computer's processors exemplifies the scenario depicted in FIG. 11, although the subject matter described in not limited to this example.

[070] The subject matter described herein may be implemented as software that is stored in one or more of the data storage components 930 and that executes on one or more of the processors 920. In one example, the subject matter can be implemented as software having instructions to perform one or more acts or events of a method, where the executing instructions are stored on one or more computer-understandable storage media. The instructions to perform the acts or events could be persisted on one medium, or could be spread out across plural media, so that the instructions might appear collectively on one or more computer-understandable storage media, regardless of whether all of the instructions happen to be on the same medium. In one example environment, computer 910 may be connected to one or more other devices through network 960 by any communication channels and/or methodologies. Computer 970 which may be similar in structure to computer 910 , is an example of a device that can be connected to computer 910, although other types of devices may also be so connected.

[071] Although the subject matter that has been described is disclosed in terms specific to structural and/or methodological acts, it will be apparent to those skilled in the art that various modifications and variations may be made in the subject matter without departing from the scope or spirit, and such modifications and variations are within the scope and spirit of implementing the subject matter as disclosed and claimed, whether or not expressly described.

What is claimed is:

1. A method for managing electronic receipts related to transactions conducted between a seller and buyer, wherein the method comprising:
   generating purchase receipt data from POS device at a receipt acquisition and processing device communicatively connected to POS device;
   providing a visual display of the reconstructed receipt data at the receipt acquisition and processing device to prompt for verification and providing consent for receipt data preparation and sending;
   transmitting readable electronic anonymous identity information to the receipt acquisition and processing device using short range communication for consent and associating it with the receipt data;
   causing the prepared receipt at the receipt acquisition and processing device to be sent to a receipt store;
   generating and transmitting a summary of the receipt to acknowledge receipt preparation and transmission;
   extracting receipt items from received receipts using ASCII cell matrix dimensional receipt format template;
   presenting receipt items and allowing reverse auction on extracted receipt items through receipt presentment and reverse auction service; and
   facilitating social networking based on receipt items.

2. A method of claim 1, wherein the anonymous identity is electronically transmitted through near field communication, comprising:
   swiping said anonymous identity held information in an electronic storage medium; and
   verifying said anonymous identity issued through an online password verification mechanism.

3. A method of claim 1, wherein buyer has a subscription relationship to acquire anonymous identity and to use receipt store, presentment and reverse auction service, wherein said anonymous identity is provided to buyer while forming such relationship comprising:
   buyer provides an identity that includes at least one of the following: email address, mobile phone number or user identity from major cloud services, wherein:
   buyer identity and anonymous identity is linked;
   buyer is routed to download mobile app that generates anonymous identity to be available through mobile device NFC chip; and

if mobile device is not equipped with NFC chip, a unique serial number is provided for claiming a passive NFC tag at the seller's premises or designated distributor.

4. A method of claim 3, wherein a link is established between buyer's identity with an anonymous identity claimed and collected at seller or designated distributor, further comprising:
seller mapping and reconciling the unique number from buyer for the distributed anonymous identity tag using the receipt presentment and reverse suction service; and
buyer providing information associated to anonymous identity tag claimed and collected at the receipt presentment and reverse suction service.

5. A method of claim 4, wherein buyer manages the link between buyer's identity and anonymous identity held by buyer at receipt presentment and reverse auction service comprising:
updating for new, lost, additional and changes in anonymous identities associated to the buyer's identity.

6. A method of claim 1, wherein the anonymous identity further comprising:
Two universally unique identifiers;
a unique integer which is not more than 2 to the power of 63 minus 1;
a Universal Resource Locator entry;
issue date and time string; and
a digital certificate private key signed hash of part or full of above and verifiable by its public key.

7. A method of claim 1, wherein the receipt acquisition and processing device upon acquiring receipt content, processes the receipt, further comprising:
reconstructing and displaying the printed receipt data;
receiving anonymous buyer identity information over NFC;
resolving multiple tag collision reads;
verifying the validity of issue of anonymous identity by checking the signature hash using the public key of the published digital certificate; and
verifying the validity of issue of anonymous identity by allowing buyer to enter a password to be checked online.

8. A method of claim 1, wherein generating and transmitting a summary of the receipt to acknowledge receipt preparation, further comprising:
generating a summary of receipt comprising a unique identifier, seller name, date, time, total amount and signature hash;

transmitting said summary through NFC from receipt acquisition and processing device to buyer's mobile device; and

transmitting said summary from receipt store service using at least one of the following - short messaging service (SMS), multimedia messaging service (MMS) and email.

9. A method of claim 1, wherein said prepared receipt processed and compiled by receipt acquisition and processing device, further comprising:

receipt acquisition and processing device identifier;

seller identifier;

negotiating hash with the receipt store service;

session unique serial identifier assigned to each receipt uploaded;

buyer anonymous identity;

buyer consent date and time as captured when buyer swipes the anonymous identity at the said receipt acquisition and processing device;

receipt content as ASCII text data; and

checksum cryptographic hash of above content.

10. A method of claim 1, wherein the seller stores the receipt associated with the anonymous identity of buyer, further comprising:

storing said receipts within seller's computing devices;

assigning loyalty points for receipt items;

presenting said loyalty points to buyer via presentment and reverse auction service to be claimed, wherein, said service provides a redemption claim unique identifier to buyer and seller; and

providing redemption and discount on transactions conducted by buyer when said unique identifier is validated by said receipt acquisition and processing device at seller's premises wherein such device is located.

11. A method of claim 10, wherein said redemption claim unique identifier presented to seller, further comprising:

entering said unique identifier at the receipt acquisition and processing device for online verification;

transmitting said unique identifier to receipt acquisition and processing device through short range communication comprising NFC; and

transmitting said unique identifier to seller's POS device by any communications means.

12. A method for parsing and extracting receipt items from prepared receipt data by receipt acquisition and processing device at receipt store using a template, further comprising:
generating ASCII cell matrix dimensional receipt format template using a modeling tool as an XML document;
referring said template as RCPTXML template and represented with a file extension RCPTXML;
maintaining versions of templates for types of receipts generated by sellers' POS devices;
associating a template to a seller and receipt acquisition and processing device;
extracting constituent receipt item data comprising quantity, purchased item, price and total cost using said associated template; and
storing and formatting said receipt items extracted in receipt store database.

13. A method of claim 12, wherein managing said ASCII cell matrix dimensional receipt format template using the software template modeling and generation tool, further comprising:
creating said template superimposing ASCII receipt data onto a cell matrix where in each cell is represents ASCII character holding area devoid of font size, further comprising:
importing said receipt data as ASCII text file
importing said receipt data as a scanned image file and using optical character recognition (OCR) to extract ASCII text data;
importing said receipt data as PDF document to extract ASCII text data; and
importing any file type containing the said receipt data and extracting the ASCII text data.

14. A method of claim 12, wherein describing the constitutive elements of the RCPTXML template sets out receipt content description, content length and pattern of the receipt on a group of cell basis for each line and/or group of lines of the printed receipt.

15. A method of claim 12, wherein the RCPTXML template further comprising:
root XML element RECIPT-MAP further comprising XML elements and sub-elements within elements; and
high level XML elements comprising RECIPT-ASCII-DIMENSION, RECEIPT-FORMAT, LOGO, HEADER, BODY, FOOTER and PROCESSING comprising dimensional, format and processing information.

16. A method of claim 15, wherein the RCPTXML template further comprising:
computer executable instruction entry point against each section of the element for parsing and processing every element.

17. A method of claim 1, wherein receiving prepared receipts in a receipt store and presenting receipts through presentment and reverse auction service, further comprising:
receiving, from a buyer whose transaction generated receipts, a request to view some or all of received receipts and wherein actions include displaying and communicating those ones of receipts that are received, processed and persisted in the receipt store;
communicating or storing receipt items data from receipts in a spreadsheet format to allow what if analysis on the quantity, price and make across different sellers for the same receipt item;
mining receipts stored in receipt store to obtain information about buying pattern of similar anonymous buyers about how much of the same receipt item is transacted in a given timeline wherein buying pattern information analyzed comprising price, quantity and make across different sellers; and
identifying a seller among the receipts, and providing to buyer whose transaction generated the said receipt, a survey to enlist new features on the receipt items.

18. A method of claim 1, wherein conducting reverse auction on the receipt items, further comprising:
listing receipt items based on high volume transacted receipt items for an individual buyer or among a group of anonymous buyers for same or similar receipt items;
suggesting a reverse auction start price based on the least price in transactions for same or similar type of receipt items as captured in receipts from sellers; and
setting a predetermined acceptance price range for said receipt items as bid by sellers.

19. A method of claim 18, wherein reverse auction can be initiated by buyer based on conditions comprising:
according to preset recurring intervals;
according to need basis; and
meeting a predetermined reverse auction price barrier set for a receipt item among sellers from previous reverse auction bids.

20. A method of claim 18, wherein information provided to each seller during the reverse auction, further comprising:
Total number of repeat bidders compared to previous such reverse auction;
Total number of buyers who purchased same or similar receipt items from another seller compared to previous such reverse auction;
Total number of said receipt items bought previously from the seller from those buyers in the said reverse auction; and

Total amount transacted with the seller previously from those buyers individually and collectively.

21. A method of claim 18, wherein consummating a reverse auction, further comprising:
providing a unique identifier for buyer to purchase said receipt items at seller's premises;
holding a deposit money to be forfeited failing to purchase said receipt items from said seller in a specified time;
tracking non purchase of said auction items for predetermined number of times; and
increasing deposit money failing to purchase after predetermined number of times.

22. A system for managing electronic receipts related to transactions conducted between a seller and buyer, further comprising:
a POS device that performs at a location at which said buyer and said POS device are physically present that generates content relating to the said transaction and a printer device that receives receipt data for printing;
a receipt acquisition and processing device that acquires receipt data from POS device and buyer anonymous identity information through short range communication, prepares receipt data to be sent;
a receipt store that receives said prepared receipts;
a presentment and reverse auction service that processes, extracts, presents receipt items from prepared receipt data, further allowing social networking and reverse auction on receipt items;
a mobile device configured to receive part of the prepared receipt data from receipt acquisition and processing device; and
a computing device configured to run receipt store service, presentment and reverse auction service software programs.

23. A system of claim 22, wherein the receipt acquisition and processing device, communicatively connected to POS device, further comprising:
a mobile computing device;
a serial port splitter as a conduit between POS device and printer to collect printed receipt data and provide to mobile computing device through wired or wireless communication;
a parallel port splitter as a conduit between POS device and printer to collect printed receipt data and provide to mobile computing device through wired or wireless communication;
a NFC reader and writer attached or in-built in mobile computing device; and
redundancy for all above components.

24. A system of claim 23, wherein the mobile device comprising a computer readable medium tangibly embodying a program of instructions executable by a processor to perform, comprising:
acquiring receipt data;
reconstructing and displaying the printed receipt content;
receiving anonymous buyer information over NFC;
resolving multiple anonymous identity NFC tag collision reads;
verifying validity of issue of anonymous identity by checking the signature hash using the public key of the published digital certificate;
preparing receipt data for sending to receipt store wherein prepared receipt data is uploaded to receipt store in batch or online mode over a computer network;
allowing online verification of issue of anonymous identity through password checking;
transmitting summary of the receipt content to mobile device over NFC; and
transmitting summary of the receipt content through email, short messaging service (SMS) or multi-media messaging service from receipt store.

25. A system of claim 22, wherein the anonymous identity information is
a passive NFC tag pasted on the buyer's mobile device or personal artifacts; and
an active electronic NFC tag generated by the active NFC reader and writer available in the mobile device.

26. A system of claim 22, wherein the receipt store implemented as a service in a plurality of computing devices comprising a computer readable medium tangibly embodying a program of instructions executable by a processor running in cloud and on premises, further comprising:
establishing connection with plurality of receipt acquisition and processing devices over a computer network at various seller locations;
authenticating seller and receipt acquisition and processing device identities;
receiving prepared receipts securely from plurality of request acquisition an processing devices;
processing received receipts using the appropriate RCPTXML templates maintained by sellers wherein running computer executable instructions as indicated in RCPTXML templates' for different sections; and
extracting, storing aggregating, mining receipt items and constituent data from the prepared receipts.

27. A system of claim 26, wherein creating and managing RCPTXML templates in receipt store service, further comprising:
modeling and generating RCPTXML templates from receipt data adhering to the RCPTXML template standard.

28. A system of claim 22, wherein the presentment and reverse auction is implemented as a service in a plurality of computing devices running in cloud and on premises, further comprising:
allowing registration of buyer and seller;
maintaining buyer presentment and reverse auction options;
maintaining seller presentment and reverse auction options, receipt acquisition and processing device assignment details;
presenting receipts to buyer's request based on presentment options;
allowing to social network based on receipt items extracted;
integrating to social networking sites; and
allowing reverse auction and fulfillment on receipt items

29. A system of claim 22, wherein buyer and seller modules of programs related to receipt store, receipt presentment and reverse auction services can run in computing and mobile devices, further comprising:
downloading and installing apps distributed and maintained by online websites that include app stores; and
updating the apps as required and pushing updates to mobile and computing devices.