A System For Acquiring First – Person Consumer Data From Receipts And Sending Digital Rewards

Field of Utility Model:

The present utility model refers to a system for acquiring first-person consumer data from receipts and sending digital rewards, particularly through the use of instant messengers.

Background of the Utility Model:

Fast-moving consumer goods (FMCG) brands do not directly interact with consumers. The present utility model enables FMCG brands to build a one-on-one relationship with consumers.

Receipts carry information that describes a commercial transaction between consumers and companies. Receipts are generally printed on paper or available as non-structured images like JPGs or PDFs. Companies traditionally use Optical Character Recognition (OCR) techniques to extract data from physical receipts for input into a database. However, traditional OCR techniques are both difficult and expensive to maintain. Each new receipt format needs a new set of OCR training rules. Variations in layouts, fonts and sizes across all receipts is all but impossible to manage in traditional OCR.

The present utility model allows consumer brands to acquire first party data from receipts and documents without any mobile application or backend integration.

The present utility model uses instant messenger to send photos of receipts to a cloud-based proprietary machine vision and machine learning engine. There are existing solutions but these

solutions require the consumers to download a mobile application which increases usage friction. More so, consumer brands have to convince consumers to download an application for Apple's App Store or GooglePlay.

Summary of the Invention:

Several loyalty platforms would require the consumer to download a particular application affiliated with a particular FMCG. This practice would often result in the consumer downloading several loyalty platforms just to avail of a particular reward system.

It is the objective of this utility model to acquire real, purchase-based, first-party data using messenger.

To solve this, the present utility model enables the consumer to shop wherein the consumer buys the products from a participating store, scans the receipt and sends the receipt via instant messenger, consumer redeems rewards. It has the advantage of tracking repeat purchases based on redeemed points, thus establishing brand loyalty. It also has the advantage of not having the need to download a particular application resulting in zero integration to retailers.

A system for acquiring first-person consumer data from receipts and sending digital rewards, comprising a consumer module, a customer relationship management module and an AI module configured to allow a user to take a photographic image of a receipt, upload a photograph via instant messenger, earn and redeem points.

A system for acquiring first-person consumer data from receipts and sending digital rewards, comprising the steps of creating a personalized account, taking a photographic image of a receipt, uploading digital image, earning rewards point in a reward-based digital wallet.

These and other objects and advantages of the present utility model will become more apparent upon a reading of the ensuing detailed description taken in conjunction with the appended drawings.

Brief Description of the Drawings:

Figure 1	A system for acquiring first-person consumer data from receipts and sending digital rewards
Figure 2	Process flow for a system for acquiring first-person consumer data from receipts and sending digital rewards

Detailed Description:

Before describing the present utility model in detail, it is to be understood that the phraseologies and terminologies used herein are for the purposes of description and should not be regarded as limiting.

Referring now to the different views of the drawings, wherein like reference numerals designate the components or elements and active steps throughout the ensuring enabling description, there is shown the present utility model for a system for acquiring first–person consumer data from receipts and sending digital rewards.

The information printed on a receipt is a source of rich data for consumer brands, retail channels, advertising agencies and social media companies. Data extracted from paper receipts has been used for consumer, retailer and brand analytics. However, the current process of using receipt data across brands, retailers and agencies is sub-optimal. Manual entry processes are used by different organizations in this chain to process only part of the data that is needed. Take for example, a simple purchase based raffle promotion. A consumer typically has to present a receipt to customer care in a supermarket or drugstore. The customer care representative hands over raffle forms which have to be filled up manually by a consumer. The raffle forms are entered, drawn, and processed manually, with the consumer waiting for weeks to be notified via a phone call. This entire manual process would have to be repeated multiple times by different brands and companies.

In contrast, the system described is capable of automatically acquiring, analyzing, and processing the information printed on a receipt in real-time. Unstructured receipt data is cleansed and organized into structured key-value pairs using a cloud-based data lake. Detailed analytics are made available to brands, retailers, and key account partners. Finally, a rules-based engine is implemented to deliver instant digital rewards or incentives to consumers in response to the retail data captured from the receipt. Consumer first-person data is gathered when the consumer gives positive confirmation and agrees the required data privacy and sharing terms.

Referring to figure 1 a system for acquiring first–person consumer data from receipts and sending digital rewards comprising a consumer module 102, a customer relationship management 104 module functionally connected to a consumer module 102 and an AI module 106 operationally connected to a customer relationship management module 104 wherein the first–person consumer data

from receipts is uploaded through instant messengers such as Facebook Messenger, Viber, Instagram, and WhatsApp.

The consumer module 102 functions as an interface for the consumer. It enables the consumer to agree to the terms and conditions, submit consumer data, send photos of receipts, and earn and use reward points by choosing from menu options.

The customer relationship management (CRM) 104 module is a repository for first-person data, purchase data, and consumer and campaign analytics. The module maps all receipt data to consumer data and maintains the consumer rewards wallet.

The AI module 106 implements machine vision and machine learning algorithms. It transforms the printed text on a receipt to useful consumer and purchase data. The built in rewards module is a rules based and events based digital wallet. Digital products like raffle points, loyalty points, prepaid load, e-wallet credits and game codes can be disbursed in real time based on the rules and event defined by clients.

Figure 1 refers to a system for acquiring first-person consumer data from receipts and sending digital rewards, comprising a consumer module 102 configured to enable the consumer to agree to the terms and conditions, submit consumer data, send photos of receipts, earn and use rewards points, a customer relationship management 104 module, operationally connected to said consumer module 102, configured to be a repository for first-party data, purchase data, consumer and campaign analytics, map receipt to consumer data and rewards wallet and an AI module operationally connected

to said CRM module configured to transform the printed text on a receipt to useful consumer and purchase data.

A system for acquiring first–person consumer data from receipts and sending digital rewards, the process comprising the steps of creating a user ID, taking a digital photographic image of a receipt with a smartphone, uploading said digital photographic image, Image processing of said digital photographic image, determining entries associated with said digital photographic image of a receipt, validating associated entries with said user ID, sending reward points to a reward-based digital wallet, receiving reward points in said digital wallet and updating reward points in said digital wallet.

Figure 2 refers to the process flow for a system for acquiring first-person consumer from receipts and sending digital rewards.

While browsing through a Facebook or Instagram ad from a consumer brand, the consumer initiates the system 202 by clicking on the ad, agreeing with the data privacy and sharing policy 204, submitting personal information 206, and taking a digital photographic image of a receipt 208 with a smartphone. The previous steps would now lead to creating a user ID 302. Upon taking a digital photographic image of receipt 208, the system receives the captured image 402, and converts the captured image 404 into black and white, wherein black characters are extracted from the white background. This is followed by image pre-processing 406, wherein characters are de-skewed to compensate for rotated images and oriented in a straight line. Black spots and other image artifacts are also digitally removed. Bounding box creation 408 wherein characters in the photo receipt are defined by grids. This would be followed by pattern 410 and word matching 412, wherein each character is compared to a known character dictionary, matched, and given a score. Analysis 414

would mean analyzing semantic meaning by looking at the relationship of characters identified in the grids. Lastly, data extraction 416 by the AI module 106 is done to help build the database.

Following data extraction, the AI module 106 sends the extracted data to CRM module 104, wherein the said CRM module 104 maps 304 the extracted receipt data and assigns reward points 306 to user ID 302. The consumer then receives an update with a point accumulation 210. Consumer can then use points 212 to redeem rewards 214. An update 308 of reward points will be done consequently.

A system for acquiring first–person consumer data from receipts and sending digital rewards, comprising the steps of creating a user ID, taking a digital photographic image of a receipt with a smartphone, uploading said digital photographic image, image processing of said digital photographic image, determining entries associated with said digital photographic image of a receipt, validating associated entries with said user ID, sending reward points to a reward-based digital wallet, receiving reward points in said digital wallet and updating reward points in said digital wallet.

The AI module 106 receives the digital photographic image of a receipt and are converted to black and while where black characters are extracted from the white background. Characters are de-skewed to compensate for rotated images and are then oriented in straight lines. Character edges are smoothened, black spots and other image artifacts are digitally removed. Image filters remove color differentials from aged, damaged or folded receipts.

In order to determine the text content of said receipt, a two-dimensional grid of bounding boxes is defined for every character in the photo receipt wherein the grids capture the coordinates and spatial relationship of every character in the image. Each of the identified characters are compared to a

known character dictionary is given a score. A character with a confidence score of 90% are reverse matched to known characters. The process, as claimed in claim 1, wherein said digital photographic image of a receipt entry is associated with time, date, and place of purchase information.

Characters of a defined spacing or pitch are grouped into words, compared with known word dictionary and likewise given a confidence score. Variations in word formats and spelling are defined into known formats. Lastly processed characters are analyzed for semantic meaning through word meaning and spatial relationships within the bounding box grids.

Received photo of receipts undergo post-processing wherein extracted data would have a confidence score of 90% for high confidence and below 90% confidence score indicative of low confidence. Human operators will manually edit low confidence data to correct these values. Low confidence values are entered into the database for correct reference of future entries. The CRM module maps the extracted receipt data to identified user ID and assigns rewards points based on campaign rules. Rewards points are then updated again.

Receipt entries are associated with time, date, and place of purchase information. Reward points are based on stored information on sales of products based on advertisements.

Claims

1. A system for acquiring first-person consumer data from receipts and sending digital rewards, comprising the steps of:
    a. Creating a user ID;
    b. Taking a digital photographic image of a receipt with a smartphone;
    c. Uploading said digital image photographic image;
    d. Image processing of said digital photographic image;
    e. Determining entries associated with said digital photographic image of a receipt;
    f. Validating associated entries with said user ID;
    g. Sending reward points to a reward-based digital wallet;
    h. Receiving reward points in said digital wallet; and
    i. Updating reward points in said digital wallet

2. The system, as claimed in claim 1, wherein the digital photographic image of a receipt is uploaded through instant messengers such as Facebook messenger, Viber, Instagram, and WhatsApp.

3. The system, as claimed in claim 1, wherein said digital photographic image of a receipt is processed by remove color differentials from aged, damaged or folded receipts.

4. The system, as claimed in claim 1, wherein said digital photographic image of a receipt entry associated with time, date, and place of purchase information.

5. The system, as claimed in claim 1, comprising of:

a consumer module configured to enable the consumer to agree to the terms and conditions, submit consumer data, send photos of receipts, and earn and use rewards points;

a customer relationship management module, operationally connected to said consumer module, configured to be a repository for first-party data, purchase data, consumer and campaign analytics, map receipt to consumer data and rewards wallet; and

an AI module operationally connected to said CRM module configured to transform the printed text on a receipt to useful consumer and purchase data.