

METHOD AND SYSTEM FOR PROVIDING MERCHANT TRANSACTION CONTROL

Technical Field

[0001] The present disclosure relates to a computer-implemented method and a system for providing merchant transaction control.

Background

[0002] Traditionally, in order to conduct a purchase transaction at a shop, a consumer is required to carry cash or a physical bank card to make the payment, which sometimes is onerous, and may lead to safety issues such as enhancing the risk of losing the cash or the bank card.

[0003] Digital payment techniques have been developed to provide simpler and securer payment solutions. One known way of making digital payments is mobile payment technique, which allows a consumer to conduct payments using a mobile device, such as a smart phone or a featured phone.

[0004] One of the known mobile payment techniques is quick response (QR) mobile payment solution, which typically requires both the consumer and the merchant to install a mobile transaction application (app) on their smart phones. When conducting the payment, the consumer may use his/her phone to scan or capture a QR code displayed on the screen of the merchant's smart phone or other digital device, which allows the mobile transaction app to initiate a payment transaction. When the transaction is completed, a confirmation message will be sent to the merchant's smart phone and displayed in the mobile transaction app, so that the merchant can confirm that the payment has been completed, and can then release the goods or provide the service that has been paid for to the consumer.

[0005] However, it is sometimes onerous for the merchant to install the mobile transaction app, especially when the use of the app is limited to confirming the completion of transactions. Further, installing and running the mobile transaction app usually requires extra data storage space and extra power consumption on the mobile phone of the merchant, which may also be undesirable. Furthermore, the merchant is unable to define the type of transactions that can be carried out in accordance to their preferences.

[0006] It is desired to address or ameliorate one or more disadvantages or limitations associated with the prior art, or to at least provide a useful alternative.

Summary

[0007] In one aspect, there is provided a system for providing merchant transaction control, the system including at least one computer processor configured to:

- capture, at a merchant device, a machine readable code for registration of merchant transaction control and merchant identification, the machine readable code having encoded data;

- transmit, to a payment network, the data decoded from the machine readable code;

- extract, at the payment network, parameters from the data;

- process, at the payment network, the parameters to determine a merchant identifier;

- define, at the payment network, merchant transaction controls associated with the merchant identifier;

- trigger, at the payment network, an active status of the merchant identifier; and

- transmit, to a database, the merchant identifier and an associated status of the merchant identifier.

[0008] In another aspect, there is provided a computer processor implemented method for providing merchant transaction control, the method comprising:

- capturing, at a merchant device, a machine readable code for registration of merchant transaction control and merchant identification, the machine readable code having encoded data;

- transmitting, to a payment network, the data decoded from the machine readable code;

- extracting, at the payment network, parameters from the data;

- processing, at the payment network, the parameters to determine a merchant identifier;
- defining, at the payment network, merchant transaction controls associated with the merchant identifier;

- triggering, at the payment network, an active status of the merchant identifier; and

- transmitting, to a database, the merchant identifier and an associated status of the merchant identifier.

[0009] In a final aspect, there is provided a payment network configured for providing merchant transaction control, the server including at least one computer processor configured

to:

receive, data decoded from a machine readable code, the machine readable code being for registration of merchant transaction control and merchant identification;

extract, parameters from the data;

process, the parameters to determine a merchant identifier;

define, merchant transaction controls associated with the merchant identifier;

trigger, an active status of the merchant identifier; and

transmit, to a database, the merchant identifier and an associated status of the merchant identifier.

Brief Description of the Drawings

[0010] Some embodiments of the present invention are hereinafter further described, by way of example only, with reference to the accompanying drawings, in which:

[0011] Fig 1 is a schematic diagram of an example of a system for providing merchant transaction control;

[0012] Fig 2 is a flow chart of an example of a method for enabling merchant on-boarding to the system of Fig 1;

[0013] Figs 3A and 3B show an example of a sequential integration of the system of Fig 1 and the method of Fig 2;

[0014] Fig 4 is an example of a PAN-IMEI table;

[0015] Fig 5 is an example of a PAN-IMEI-OST table;

[0016] Fig 6 is a schematic diagram of an example of a computing system forming one or more components of the system of Fig 1;

[0017] Fig 7 is a schematic diagram showing components of a mobile device of the system of Fig 1;

[0018] Fig 8 is a flow chart of an example of a method for providing transaction notifications; and

[0019] Fig 9 is a flow chart of another example of the method for providing transaction notifications.

Detailed Description

[0020] At least in some embodiments, the method and system proposed in the present disclosure provides a merchant with transaction control without requiring installation of a mobile transaction app on the merchant's mobile device.

[0021] In the following description, the term "consumer" is intended to refer to a person or entity wishing to purchase goods or service. The term "merchant" is intended to refer to a person or entity selling the goods or service. The term "issuer" is intended to refer to a financial institution and related data processing infrastructure which has issued the financial account used by the consumer in the transaction, e.g., for making a payment. Finally, the term "acquirer" is intended to refer to a financial institution and related data processing infrastructure which has issued the financial account used by the merchant in the transaction, e.g., for receiving the payment.

[0022] An example of a system 100 for merchant transaction control will now be described with reference to Fig. 1.

[0023] System 100 includes at least one consumer mobile device 102 used by a consumer, at least one merchant mobile device 122 used by a merchant, and a plurality of servers.

[0024] In some embodiments, the whole or part of a machine readable code may be allocated to the merchant when the merchant registers to a transaction control and notification service (in addition to registration to receive electronic payments) with a payment network service provider. In some embodiments, the merchant accesses a registration graphical user interface and provides requisite information identifying a financial account used by the merchant, the requisite information including, for example, the merchant's name, the merchant's mobile phone identification number(s) (for example, IMEI or MEID), the merchant's date of birth, the merchant's national identification number, the merchant's passport number, the merchant's home address, operating system used on a merchant device 122, and any combination of the aforementioned. In some embodiments, the merchant receives a unique machine readable code upon completion of the registration or the requisite information identifying a financial account used by the merchant is obtained directly from information input via the graphical user interface. The graphical user interface can be, for example, an online registration portal or a registration app.

[0025] During the registration, the merchant is able to define desired transaction controls, such as, for example, transaction quantum limits, transaction currency preferences, and the like. The transaction controls enable the merchant to define preferred types of transactions.

[0026] In some embodiments, each merchant may receive a unique machine readable code to distinguish from other merchants. Further details of the merchant registration method will be provided in a subsequent portion of the description, for example, with reference to Fig. 2.

[0027] Alternatively, the machine readable code may be a static or dynamic machine readable symbol displayed on the screen of a digital device of the merchant, such as the merchant mobile device 122. The static or dynamic machine readable symbol may be generated based on a unique identifier such as a symbol or a user ID allocated to the merchant during the merchant's registration to the transaction control and notification service.

[0028] Scanning or capturing the image of the machine readable code may cause the consumer device 102 to initiate a payment transaction, by sending a payment request to an issuer 106. The issuer 106 is associated with a financial account used by the consumer for making the payment (which may be referred to hereinafter as the "consumer account").

[0029] Through a payment network 108, the issuer 106 is allowed to send transaction requests to an acquirer 112 that is associated with the financial account used by the merchant to receive the payment (which may be referred to hereinafter as the "merchant account").

[0030] The payment network 108 communicates with a notification gateway 114. The notification gateway 114 is in communication with a notification server 118A, which can send notifications to the merchant device 122 via a communication network.

[0031] In an exemplary process of conducting a purchase, the consumer operates the consumer mobile device 102 to send a payment request. This payment request is sent to the issuer 106. The payment request includes information representing the consumer account, such as an account number or a unique identifier associated with the consumer which can be used by the issuer 106 to determine the consumer account. The payment request also includes payee information representing the merchant account, and the amount of the payment. The payment request may further include additional information, such as information indicating the goods or service to be purchased. Based on the information in the payment request, the issuer 106 also receives a transaction request.

[0032] The issuer 106 then determines whether the payment is allowable, for example by checking the account balance of the consumer account. If the issuer 106 determines that the payment is allowable, the issuer 106 then sends the payment information to the acquirer 112 via the payment network 108. The payment network 108 routes information regarding the payment between the issuer 106 and the acquirer 112. The payment network 108 is a system or network that uses a variety of different protocols and procedures in order to process the transfer of money for various types of transactions, including product or service purchases, credit purchases, debit transactions, fund transfers, account withdrawals, etc. Examples of networks or systems configured to perform a payment network 108 include those operated by, for example, MasterCard, Visa, American Express, and Union Pay. Use of the term “payment network” may refer to both the payment network 108 as an entity, and the physical payment network, such as the equipment, hardware, and software comprising the payment network 108. The payment network 108 also determines if a transaction is allowable, in accordance with merchant preferences defined during the aforementioned registration for the transaction control and notification service.

[0033] When the payment transaction is successfully processed by the acquirer 112, a notification is transmitted from the acquirer 112 to the payment network 108 to send a transaction confirmation to the notification gateway 114, including merchant account information associated with the merchant account. The notification gateway 114 may further be in communication with a local or remote database 116. It should be appreciated that the notification gateway 114 is also administered by the payment network service provider.

[0034] Based on the merchant account information, the notification gateway 114 determines a mobile device identifier which is uniquely associated with the merchant mobile device 112, and sends a notification request to the notification server 118A, the notification request including the mobile device identifier. The mobile device identifier is an identifier that is uniquely associated with a mobile device, for example, an international mobile equipment identity (IMEI), a mobile equipment identifier (MEID), an electronic serial number (ESN), or a mobile phone number. The mobile device identifier may be determined by the notification gateway 114 through accessing the database 116, which stores corresponding relationships between: (i) a plurality of merchant account information pieces and (ii) a corresponding plurality of mobile device identifiers.

[0035] Upon receiving the notification request, the notification server 118A identifies the merchant mobile device 112 based on the mobile device identifier, and accordingly sends a notification to the merchant mobile device 112. The notification indicates the completion of the payment. The notification server 118A may be, for example: an Apple Push Notification Service (APNS) server if the operating system of the merchant mobile device is iOS, Google Cloud Messaging (GCM) server if the operating system of the merchant mobile device is Android, or Windows Push Notification Service (WNS) server if the operating system of the merchant mobile device is Windows Phone. Alternatively, the notification server 118A may be any other suitable server that can send real-time notifications to the merchant mobile device 112. While in the examples described hereinbefore, the notification gateway 114 is in communication with one notification server 118A, the notification gateway 114 may alternatively be in communication with a plurality of notification servers. For example, as shown in Fig. 1, in addition to the notification server 118A, the notification gateway 114 may further be in communication with notification servers 118B and 118C.

[0036] The notification, when received at the merchant device 122, may be displayed on a screen of the merchant device 122, so that the merchant can confirm the completion of the payment, and can then release the goods or provide the service that has been paid for to the consumer. It should be noted that the transactions that are able to be carried out are determined by the merchant's preferences, as defined during the registration for the transaction control and notification service as described earlier. Preferably, the notification is a push notification, which for example may be in any of the following forms: a banner displayed on the top the screen, a pop up "bubble" from the button task bar, a dialog box that interrupts and blocks the view of the front running application. The push notification may include a brief message indicating that a payment to the merchant's account has been completed successfully. Alternatively, the push notification may further include detailed information in relation to the payment transaction, such as the amount of payment, the name or other identification representing the consumer, the partial or whole account number used by the consumer to make the payment. In some embodiments, the push notification may pop up with alert sounds to attract user's attention. In some embodiments, the push notification may further include a link associated with a webpage which contains the detailed information of the transaction. Alternatively, the notification may be in any other suitable form that

indicates completion of a transaction. For example, displaying a predefined image icon on the screen of a mobile device. The notification may alternatively indicate failure of a transaction.

[0037] Further, while in the embodiments described hereinbefore the notification is sent to the merchant mobile device, the provided method may alternatively be used for sending transaction notifications to a consumer mobile device, e.g., for notifying the consumer that a payment has been completed. In some embodiments, this is possible if the consumer has registered for a transaction notification service similar to the process carried out by the merchant.

[0038] It will be appreciated that according to at least one embodiment, a fast and secure system of providing transaction notifications and controls is provided. The system allows the provision of transaction notifications and controls to the merchant mobile device without requiring the installation of mobile transaction apps, which may simplify and facilitate merchant's participation into digital transactions.

[0039] An example of a computer-implemented method 200 for enabling merchant on-boarding (registration) to the system 100 will now be described with reference to Fig. 2. Once the merchant is registered, the merchant is able to obtain transaction notifications and transaction control functionalities. The method 200 is performed at least in part using one or more electronic processing devices forming part of the system 100 of Fig. 1. In the following exemplary process, the one or more electronic processing devices include at least the merchant device 122, and the payment network 108 as shown in Fig. 1.

[0040] As illustrated in Fig. 2, at step 205, the one or more electronic processing devices of the merchant device 122 capture a QR code to enable registration with the payment network service provider for transaction control and to receive notifications at the merchant device 122 in accordance with the system of Fig. 1. While QR code is indicated in the description, it should be appreciated that other forms of information embedded visual indicia or machine readable codes may also be used. In some embodiments, the QR code is specific for a particular merchant, and the QR code is configured to enable the particular merchant to receive payments. The QR code can be either a static or a dynamic indicia. The static or dynamic indicia is machine readable and may be generated based on a unique identifier such as a symbol or a user ID allocated to the merchant during the merchant's registration to receive payments.

[0041] At step 210, the one or more electronic processing devices of the merchant device 122 decodes the QR code to obtain data for transmission to the payment network 108 for registration of transaction control and for receiving transaction notifications at the merchant device 122. In some embodiments, the data includes information pertaining to the merchant.

[0042] At step 220, the one or more electronic processing devices of the payment network 108 extract parameters from the decoded data, the parameters including merchant account information. The payment network 108 also obtains device information from the merchant device 122 transmitting the image of the QR code. The merchant account information can include, for example, a permanent account number (PAN) associated with an account, other information that can be used by the payment network 108 to uniquely identify the merchant account, such as, the merchant's name, the merchant's mobile phone identification number(s) (for example, IMEI or MEID), the merchant's date of birth, the merchant's national identification number, the merchant's passport number, the merchant's home address and any combination of the aforementioned. The device information can include the operating system and network information used on the merchant device 122.

[0043] For example, the merchant account number received may be in the form of a permanent account number (PAN), and the mobile device identifier may be in the form of an IMEI. As shown in Fig. 4, an exemplary PAN-IMEI table 400 includes: a data field 410 including a plurality of PANs; and a data field 420 including a plurality of IMEIs, each corresponding to a unique PAN.

[0044] For example, based on the type of the operating system used on the merchant device 122, a corresponding notification server 118 can be allocated to the merchant mobile device. For example, for a mobile device with iOS operating system, Apple Push Notification Service (APNS) server may be used for sending notifications to that device, while for a mobile device having Android operating system, Google Cloud Messaging (GCM) server may be used for sending notifications to that device. The information representing the operating system or the corresponding notification server is stored in the database 116 together with the merchant account number and the IMEI or MEID of the merchant mobile device, for example in the form of Operating System Type (OST) information.

[0045] As described hereinbefore, the merchant account number received may be in the form of a permanent account number (PAN). Accordingly, the associated IMEI and OST information may be stored together with the PAN in a PAN-IMEI-OST table. As shown in

Fig. 5, an example of a PAN-IMEI-OST table 500 includes: a data field 510 including a plurality of PANs; a data field 520 including a plurality of IMEIs, each corresponding to a unique PAN; and a data field 530 including the OST information corresponding to each PAN.

[0046] Upon extracting the parameters from the data, at step 230, the one or more electronic processing devices define merchant transaction controls associated with a merchant identifier derived from the merchant account information. The merchant transaction controls are based on information provided by the merchant when registering for the transaction control and notification service. The merchant transaction controls include indications of, for example, types of notifications desired by the merchant, format of notifications that can be received by the merchant, transaction quantum limits, transaction currency preferences and so forth.

[0047] At step 240, the one or more electronic processing devices process the merchant identifier to an active state, such that notifications can begin to be transmitted to the merchant device 122 and such that transaction controls can be implemented for transactions involving the merchant identifier. In some embodiments, the merchant identifier is unable to be processed to an active state if at least one aspect of the merchant account information associated with the merchant identifier is questionable, for example, if the financial account used by the merchant is inactive. When the merchant identifier is unable to be processed to an active state, it may be possible to make another attempt from step 220.

[0048] Subsequently, at step 250, the one or more electronic processing devices stores the merchant identifier in a manner which maintains the active state of the merchant identifier.

[0049] It should be appreciated that the method 200 ensures that the merchant is able to receive notifications on the merchant device 122 and enjoy transaction controls without having to input substantial amounts of information subsequent to the registration process. This is advantageous and convenient for the merchant. Furthermore, the merchant is able to receive the notifications and control transactions while initially just seeking to receive payments. This is helpful for the merchant.

[0050] Figs. 3A and 3B show a possible embodiment of a sequential integration of the system 100 of Fig. 1 and the method 200 of Fig. 2. The labels depicted in Fig. 1 and Fig. 2 are repeated in Figs. 3A and 3B. Generally, steps (1) to (9) of Fig. 3B are numerically ordered, but the steps need not be sequentially carried out and some steps can be carried out simultaneously. The steps are broadly described as follows:

[0051] (1) A QR code is captured at a consumer device 102, sending a payment request to an issuer 106.

[0052] (2) The issuer 106 then sends a transaction request to a payment network 108, which processes the request to determine if the transaction is of an allowable type as defined by the merchant, which depends on what occurs in Fig.3A.

[0053] (3) If the transaction is allowable, the payment network 108 then transmits the transaction information to an acquirer 112.

[0054] (4) The acquirer 112 processes the payment transaction and transmits a confirmation to the payment network 108.

[0055] (5) The payment network 108 then transmits the confirmation to a notification gateway 114.

[0056] (6) The payment network 108 transmits the confirmation to the issuer 106.

[0057] (7) The issuer 106 then transmits the confirmation to the consumer device 102.

[0058] (8) The notification gateway 114 processes the confirmation and determines from a database 250 if the merchant device 122 is registered to receive a transaction notification.

[0059] If the merchant device 122 is registered to receive the transaction notification, the notification gateway 114 then transmits the transaction notification to the merchant device 122.

[0060] It should be appreciated that the steps 205 (occurs at merchant device 122), 210 (occurs at merchant device 122 and transmitted to payment network 108), 220 (occurs at payment network 108), 230 (occurs at payment network 108), 240 (occurs at payment network 108) and 250 (occurs at database 116) in Fig. 3A are as per the earlier description in Fig. 2 for on-boarding the merchant to receive transaction notifications and enable transaction controls. Typically, the merchant carries out the steps shown in Fig. 3A before the steps shown in Fig. 3B can be carried out.

[0061] An example of a computer-implemented method 800 for providing transaction notifications will now be described with reference to Fig. 8. The method 800 is performed at least in part using one or more electronic processing devices forming part of the system 100 of Fig. 1. In the following exemplary process, the one or more electronic processing devices include at least the notification gateway 114 shown in Fig. 1.

[0062] At step 810, the one or more electronic processing devices receive a transaction confirmation from a payment network 108, the transaction confirmation including merchant account information.

[0063] The transaction confirmation includes merchant account information associated with the merchant account, for example, a permanent account number (PAN) associated with an account. The merchant account information may alternatively include other information that can be used by the notification gateway 114 to uniquely identify the merchant account, for example one or more of the following: the merchant's name, the merchant's mobile phone number, the merchant's date of birth, the merchant's national identification number and/or passport number, the merchant's home address, a merchant identifier allocated to the merchant when the merchant registered to the transaction notification service.

[0064] The transaction confirmation may further include additional information, for example, transaction amount information indicating an amount of the transaction, and/or payer information associated with the consumer or the consumer account.

[0065] Upon receiving the transaction confirmation, the one or more electronic processing devices proceed to step 820 to determine a mobile device identifier based on the merchant account information. The mobile device identifier is an identifier that is uniquely associated with a mobile device, for example, an international mobile equipment identity (IMEI), a mobile equipment identifier (MEID), an electronic serial number (ESN), or a mobile phone number.

[0066] The mobile device identifier may be determined by the notification gateway 114 through accessing the database 116, which stores corresponding relationships between: (i) a plurality of merchant account information pieces and (ii) a corresponding plurality of mobile device identifiers.

[0067] For example, when a merchant registers to the transaction notification service, the merchant may be required to provide the account number of their financial account, and the IMEI or MEID of their mobile device. The merchant account number and the corresponding IMEI or MEID are then stored in the database 116. When receiving the transaction confirmation from the acquirer device 112, the notification gateway 114 extracts the merchant account number from the transaction confirmation, and retrieves the corresponding IMEI from the database 116 based on this merchant account number.

[0068] For example, the merchant account number received may be in the form of a permanent account number (PAN), and the mobile device identifier may be in the form of a IMEI. Accordingly, a PAN-IMEI table may be stored in the database 116. As shown in Fig. 4, an exemplary PAN-IMEI table 400 includes: a data field 410 including a plurality of PANs; and a data field 420 including a plurality of IMEIs, each corresponding to a unique PAN. Based on the received PAN, notification gateway 114 accesses the PAN-IMEI table 400 to identify the corresponding IMEI. For example, if the PAN included in the transaction confirmation is “3249681195”, by accessing the PAN-IMEI table 400, the notification gateway 114 identifies that the corresponding IMEI is “490154203237518”. In some embodiments, the plurality of mobile device identifiers stored in the database 116 may include different types of mobile device identifier. For example, some account number may be associated with an IMEI, while some other account number may be associated with an MEID.

[0069] In another example, the merchant account number received may be in the form of a permanent account number (PAN). Accordingly, the associated IMEI and OST information may be stored together with the PAN in a PAN-IMEI-OST table, for example in the database 116. As shown in Fig. 5, an example of a PAN-IMEI-OST table 500 includes: a data field 510 including a plurality of PANs; a data field 520 including a plurality of IMEIs, each corresponding to a unique PAN; and a data field 530 including the OST information corresponding to each PAN. For example, if the PAN included in the transaction confirmation is “3249681195”, by accessing the PAN-IMEI table 500, the notification gateway 114 identifies that the corresponding IMEI is “490154203237518”, and that the merchant mobile device is using an Android operating system. Accordingly, the notification gateway 114 sends the notification request to a Google cloud messaging (GCM) server.

[0070] Next, at step 830, the one or more electronic processing devices send a notification request including the mobile device identifier to a notification server 118, to cause the notification server 118 to send a notification to a merchant device 122 associated with the mobile device identifier.

[0071] The notification server may be, for example: an Apple Push Notification Service (APNS) server if the operating system of the merchant mobile device is iOS, Google cloud messaging (GCM) server if the operating system of the merchant mobile device is Android, or Windows Push Notification Service (WNS) server if the operating system of the merchant

mobile device is Windows Phone. Alternatively, the notification server may be any other suitable server that can send real-time notifications to the merchant device 122. The plurality of notification servers may include servers for sending notifications to mobile devices having different operating systems.

[0072] Preferably, the notification is a push notification, which for example may be in any of the following forms: a banner displayed on the top the screen, a pop up "bubble" from the button task bar, a dialog box that interrupts and blocks the view of the front running application. The push notification may include a brief message indicating that a payment to the merchant's account has been completed successfully. Alternatively, the push notification may further include detailed information in relation to the payment transaction, such as the amount of payment, the name or other identification representing the consumer, the partial or whole account number used by the consumer to make the payment. In some embodiments, the push notification may pop up with alert sounds to attract user's attention. In some embodiments, the push notification may further include a link associated with a webpage which contains the detailed information of the transaction. Alternatively, the notification may be in any other suitable form that indicates completion of a transaction. For example, displaying a predefined image icon on the screen of a mobile device.

[0073] Further, in some occasions, the merchant device 122 may be unavailable for receiving notifications from the notification server 114. For example, the device 122 may be switched to a silent mode which does not allow receiving or displaying push notifications, or the merchant may have inadvertently changed the setting of the mobile device leading to the notification function being disabled. The notification gateway 114 may be adapted to these circumstances. For example, in some embodiments, the notification gateway 114 is configured to be able to send Short Message Service (SMS) messages, or is in communication with an SMS server which can send SMS messages to the merchant mobile device. When sending the notification request, the notification gateway 114 determines whether the merchant mobile device is available for receiving notifications from the notification server. For example, after sending the notification request to the notification server 118A, the notification gateway 114 may receive a message from the notification server 118A indicating whether the merchant device 122 is available for receiving notifications via data communication channels at that time.

[0074] It will be appreciated that according to at least one embodiment, a fast and secure method of providing transaction notifications is provided. The method allows the provision of transaction notifications to the merchant mobile device without requiring the installation of mobile transaction apps, which may simplify and facilitate merchant's participation into digital transactions.

[0075] As shown in Fig. 9, in an exemplary working flow 900 of a notification gateway 114, at step 910, the notification gateway 114 receives a transaction confirmation from a payment network 108, the transaction confirmation including merchant account information.

[0076] Upon receiving the transaction confirmation, the notification gateway 114 proceeds to step 920 to determine a mobile device identifier and a notification server based on the merchant account information, for example by accessing the PAN-IMEI-OST table 500 (as shown in Fig. 5) stored in the database 116.

[0077] Next, at step 930, the notification gateway 114 sends a notification request including the mobile device identifier to the determined notification server 118, to cause the notification server 118 to send a notification to the merchant device 122 associated with the mobile device identifier.

[0078] Next, at step 940, the notification gateway 114 receives, from the notification server 118, a response representing whether the notification has been successfully sent by the notification server 118.

[0079] Based on the response received, the notification gateway 114 determines at step 950 whether the notification has been sent by the notification server 118 successfully via data communication channels at step 955.

[0080] If the response indicates that the merchant device 122 is unavailable for receiving notifications from the notification server, the notification gateway 114 then sends an SMS message request to an SMS server at step 960, to cause the SMS server to send an SMS message to the merchant mobile device. Alternatively, in some other embodiments, the notification gateway 114 is integrated with the payment network 108 which routes messages for performing the payment transaction between the issuer 106 and the acquirer 112.

[0081] In addition, the notification to be sent to the merchant device 122 is not limited to notifications indicating completion of a transaction, and is not limited to notifications indicating completion of a payment. For example, the notification may alternatively indicate failure of a transaction. Further, the notification may alternatively indicate completion of a

transaction of another type, such as the completion of validating or redeeming a coupon for a discount or rebate, or validating of an electronic ticket.

[0082] Referring back to Fig. 1, in practice, the communications networks providing communication between the consumer device 102, the issuer 106, the payment network 108, the acquirer 112, the notification gateway 114, the local or remote database 116, the notification servers 118A, 118B, 118C and the merchant device 122 may take any appropriate form of wired or wireless networks, including but not limited to mobile networks, private networks, such as an 802.11 network, the Internet, local area networks (LANs), WANs, as well as via direct or point-to-point connections, such as Bluetooth or near field communication (NFC) connections.

[0083] Preferably, the communications networks providing communication between the consumer device 102, and between the notification servers 118A, 118B, 118C and the merchant mobile device 122 are wireless networks, such as mobile networks that provides data transmission services.

[0084] The communications networks may include different networks. Alternatively, the communications networks may be a single network that provides onward connectivity between different components of system 100. The system 100 may include multiple terminal devices in numerous geographic locations around a country or region.

[0085] An example of a computing device 600 forming one or more components of the system 100 of Fig. 1 is shown in Fig. 6. The computing device 600 may form, for example, any one or more of the following components of the system 100: the notification gateway 114, the notification servers 118A, 118B, 118C, the issuer 106, the payment network 108, and the acquirer 112.

[0086] In this example, the computing device 600 includes at least one processor 601, a memory 602, and an external input/output interface 603, interconnected via a bus 604. In some examples, the computing device 600 may additionally include an input/output device 605, such as a keyboard and/or a display. In this example, the I/O interface 603 can connect the computing device 600 to peripheral devices and/or networks, including other servers, devices, and local or remote databases. Although a single I/O interface 603 is shown, this is for the purpose of example only, and in practice multiple interfaces using different communication protocols (e.g. Ethernet, serial, USB, or wireless) may be provided.

[0087] In use, the processor 601 executes machine-readable instructions stored in the memory 602 to perform at least part of the process described hereinbefore for providing transaction notifications. The machine-readable instructions may include one or more software modules, and may be executed in a suitable execution environment, such as an operating system environment.

[0088] Accordingly, it will be appreciated that the computing device 600 may be formed from any suitable processing system, such as a suitably programmed computer system, PC, web server, or network server. The machine-readable instructions can be embodied in non-transitory computer-readable storage media, e.g., a hard drive.

[0089] The notification servers 118A, 118B and 118C may take any suitable form of known notification servers, such as the apple push notification service (APNS) server, Google cloud messaging (GCM) server, or Windows Push Notification Service (WNS) server.

[0090] An exemplary example of a mobile device 700 depicting the mobile devices 102, 122 of the system 100 of Fig. 1 is shown in Fig. 7. The mobile device 700 is a handheld computer device such as one manufactured by Apple™, LG™, HTC™, Research In Motion™, Samsung™, Huawei™, Asus™, or Motorola™. The mobile device 600 can also include a mobile computer such as a tablet computer, and wearable digital devices like smartwatches. As shown, the device 700 includes the following components in electronic communication via a bus 706:

- [0091] 1. a display 702;
- [0092] 2. non-volatile memory 704;
- [0093] 3. random access memory ("RAM") 708;
- [0094] 4. N processing components 710;
- [0095] 5. a transceiver component 715 that includes N transceivers;
- [0096] 6. image processing components 716; and
- [0097] 7. user controls 714.

[0098] Although the components depicted in Fig. 7 represent physical components, Fig. 7 is not intended to be a hardware diagram; thus many of the components depicted in Fig. 7 may be realized by common constructs or distributed among additional physical components. Moreover, it is certainly contemplated that other existing and yet-to-be developed physical components and architectures may be utilized to implement the functional components described with reference to Fig. 7.

[0099] The display 702 generally operates to provide a presentation of content to a user, and may be realized by any of a variety of displays (e.g., CRT, LCD, HDMI, micro-projector and OLED displays). And in general, the non-volatile memory 704 functions to store (e.g., persistently store) data and executable code including code that is associated with the functional components of a browser component and a digital wallet application (App) or optional merchant app 718. In some embodiments, for example, the non-volatile memory 704 includes bootloader code, modem software, operating system code, file system code, and code to facilitate the implementation of one or more portions of the digital wallet App 718 or merchant App 718 as well as other components well known to those of ordinary skill in the art that are not depicted for simplicity.

[00100] In many implementations, the non-volatile memory 704 is realized by flash memory (e.g., NAND or ONENAND memory), but it is certainly contemplated that other memory types may be utilized as well. Although it may be possible to execute the code from the non-volatile memory 704, the executable code in the non-volatile memory 704 is typically loaded into RAM 708 and executed by one or more of the N processing components 710.

[00101] The N processing components 710 in connection with RAM 708 generally operate to execute the instructions stored in non-volatile memory 704 to effectuate the functional components. As one of ordinary skill in the art will appreciate, the N processing components 710 may include a video processor, modem processor, DSP, graphics processing unit (GPU), and other processing components.

[00102] The transceiver component 715 includes N transceiver chains, which may be used for communicating with external devices via wireless networks. Each of the N transceiver chains may represent a transceiver associated with a particular communication scheme. For example, each transceiver may correspond to protocols that are specific to local area networks, cellular networks (e.g., a CDMA network, a GPRS network, a UMTS networks), and other types of communication networks.

[00103] The image processing component 716 can be used to scan or capture a machine readable code. The code can be, for example, a two dimensional barcode or a matrix barcode. The machine readable code such as a bar code or QR code may be provided by the merchant as a hard copy, e.g., a printed out paper tag attached to the goods or provided at the merchant's cash counter. Also, while embodiments have been described using machine

readable code, the machine readable code is only one format of transmitting and receiving encoded data. For example, the merchant identifier and other parameters may also be encoded and transmitted/received using wireless communication protocols, such as Bluetooth, Bluetooth low energy, NFC, Wi-Fi, or any other suitable wireless communication protocol.

[00104] Throughout this specification and claims which follow, unless the context requires otherwise, the word “comprise”, and variations such as “comprises” or “comprising”, will be understood to imply the inclusion of a stated integer or group of integers or steps but not the exclusion of any other integer or group of integers.

[00105] Many modifications will be apparent to those skilled in the art without departing from the scope of the present invention.

Claims

1. A system for providing merchant transaction control, the system including at least one computer processor configured to:

capture, at a merchant device, a machine readable code for registration of merchant transaction control and merchant identification, the machine readable code having encoded data;

transmit, to a payment network, the data decoded from the machine readable code;

extract, at the payment network, parameters from the data;

process, at the payment network, the parameters to determine a merchant identifier;

define, at the payment network, merchant transaction controls associated with the merchant identifier;

trigger, at the payment network, an active status of the merchant identifier; and

transmit, to a database, the merchant identifier and an associated status of the merchant identifier.

2. The system of claim 1, wherein the machine readable code is either static or dynamic.

3. The system of either claim 1 or 2, wherein the parameters comprises merchant account information.

4. The system of claim 3, wherein the merchant account information is selected from a group consisting of: a permanent account number (PAN) associated with an account, merchant's name, the merchant's mobile phone identification number(s), the merchant's date of birth, the merchant's national identification number, the merchant's passport number, and the merchant's home address.

5. The system of any of claims 1 to 4, wherein the merchant transaction controls are selected from a group consisting of: types of notifications desired by the merchant, format of notifications that can be received by the merchant, transaction quantum limits, and transaction currency preferences.

6. The system of any of claims 1 to 5, wherein the active status is triggered by the registration of merchant transaction control.

7. A computer processor implemented method for providing merchant transaction control, the method comprising:

capturing, at a merchant device, a machine readable code for registration of merchant transaction control and merchant identification, the machine readable code having encoded data;

transmitting, to a payment network, the data decoded from the machine readable code;

extracting, at the payment network, parameters from the data;

processing, at the payment network, the parameters to determine a merchant identifier;

defining, at the payment network, merchant transaction controls associated with the merchant identifier;

triggering, at the payment network, an active status of the merchant identifier; and

transmitting, to a database, the merchant identifier and an associated status of the merchant identifier.

8. The method of claim 7, wherein the machine readable code is either static or dynamic.

9. The method of either claim 7 or 8, wherein the parameters comprises merchant account information.

10. The method of claim 9, wherein the merchant account information is selected from a group consisting of: a permanent account number (PAN) associated with an account, merchant's name, the merchant's mobile phone identification number(s), the merchant's date of birth, the merchant's national identification number, the merchant's passport number, and the merchant's home address.

11. The method of any of claims 7 to 10, wherein the merchant transaction controls are selected from a group consisting of: types of notifications desired by the merchant, format of

notifications that can be received by the merchant, transaction quantum limits, and transaction currency preferences.

12. The method of any of claims 7 to 11, the active status is triggered by the registration of merchant transaction control.

13. A payment network configured for providing merchant transaction control, the server including at least one computer processor configured to:

receive, data decoded from a machine readable code, the machine readable code being for registration of merchant transaction control and merchant identification;

extract, parameters from the data;

process, the parameters to determine a merchant identifier;

define, merchant transaction controls associated with the merchant identifier;

trigger, an active status of the merchant identifier; and

transmit, to a database, the merchant identifier and an associated status of the merchant identifier.

14. The payment network of claim 13, wherein the parameters of the machine readable code comprises merchant account information.

15. The payment network of claim 14, wherein the merchant account information is selected from a group consisting of: a permanent account number (PAN) associated with an account, merchant's name, the merchant's mobile phone identification number(s), the merchant's date of birth, the merchant's national identification number, the merchant's passport number, the merchant's home address, and operating system used on the merchant device.

16. The payment network of any of claims 13 to 15, wherein the merchant transaction controls are selected from a group consisting of: types of notifications desired by the merchant, format of notifications that can be received by the merchant, transaction quantum limits, and transaction currency preferences.