METHODS AND SYSTEMS FOR PROCESSING A TRANSACTION AND GENERATING A CONSUMER PATTERN

FIELD OF INVENTION

[0001] The present invention relates broadly, but not exclusively, to methods and systems for processing a transaction and generating a consumer pattern.

BACKGROUND

[0002] A national identification system is a useful tool in the interaction between government agencies and citizens and/or residents of the country. Some national identification systems make use of unique identification numbers to help identify individuals in their activities involving government agencies.

[0003] However, current national identification systems do not naturally provide information to the government about people's behaviour in the relevant sectors, for example, power and utility consumption, environment protection, or spending on sectors conducive to economic growth, or activities threatening law and order, urban planning, etc.

[0004] A need therefore exists to provide methods and/or systems that seek to address the above problem.

SUMMARY

[0005] A first aspect of the present disclosure provides a method for processing a transaction. The method includes receiving, from an acquirer, a payment request message corresponding to a transaction made by a payment card belonging to a consumer. The payment request message includes transaction data and the consumer's national identification data. The method also includes splitting, using a splitter module, the payment request message into the transaction data and the consumer's national identification data, and processing the transaction based on

the transaction data. Processing includes approving or declining the transaction. If the transaction is approved, the method further includes providing the transaction data and consumer's national identification data to a database for generating a pattern associated with the consumer.

[0006] A second aspect of the present disclosure provides a method of generating a consumer pattern. The method includes receiving transaction data and associated consumer's national identification data of an approved transaction. The approved transaction is processed according to the method as defined in the first aspect. The method further includes identifying the consumer based on the consumer's national identification data, and generating a pattern associated with the consumer.

[0007] A third aspect of the present disclosure provides a system for processing a transaction. The system includes a processor, and a memory unit communicatively coupled to the processor. The memory unit is configured to store a payment request message received from an acquirer, the payment request message corresponding to a transaction made by a payment card belonging to a consumer and including transaction data and the consumer's national identification data. The processor is configured to split the payment request message into the transaction data and the consumer's national identification data, and process the transaction based on the transaction data. Processing includes approving or declining the transaction. If the transaction is approved, the processor is configured to provide the transaction data and consumer's national identification data to a database for generating a pattern associated with the consumer.

[0008] A fourth aspect of the present disclosure provides a system for generating a consumer pattern. The system includes a processor and a memory unit communicatively coupled to the processor. The memory unit is configured to receive transaction data and associated consumer's national identification data of an approved transaction from the system as defined in the thirds aspect. The processor is configured to identify the consumer based on the consumer's national identification data and generate a pattern associated with the consumer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] Embodiments of the invention will be better understood and readily apparent to one of ordinary skill in the art from the following written description, by way of example only, and in conjunction with the drawings, in which:

[0010] Figure 1 shows a flow chart illustrating a method for processing a transaction according to an example embodiment.

[0011] Figure 2 shows a schematic diagram illustrating an example flow of information in the method of Figure 1.

[0012] Figure 3 shows a representation of a consumer pattern based on location according to an example embodiment.

[0013] Figure 4 shows a representation of a consumer pattern based on seasonality according to an example embodiment.

[0014] Figure 5 shows a representation of a consumer pattern based on income level according to an example embodiment.

[0015] Figure 6A shows a representation of an application of the consumer pattern over to predict a future trend according to an example embodiment.

[0016] Figure 6B shows the representation of Figure 6A with additional information superimposed to identify a potential issue based on the predicted trend.

[0017] Figure 7 shows a schematic diagram illustrating a computing device configured to implement the methods and systems of the example embodiments.

DETAILED DESCRIPTION

Overview

[0018] Various embodiments provide methods and systems for processing a transaction and generating a consumer pattern based on data from the transaction.

[0019] Certain sectors of the economy may be of particular interest to a government which wants to respond to and plan for different needs of different

groups of people. For example, a person ‘B’ buys compressed natural gas (CNG) from a gas station and pays using his debit/credit card. There is no way the government can track the CNG consumption/demand and give away incentives unless it buys data from different sources and combines the data. Now, if there is a single platform which stores all the information as to who is spending and what amount is being spent by the person, whether on CNG or Diesel, the government can easily track the consumption and give away incentives to the people using cleaner fuels. If bill payments for electricity consumption are linked to the same platform, it will help the government to understand power consumption needs by localities, sectors, time of the year, etc. and plan for supply accordingly.

[0020] According to the example embodiments, the national identification system is used to track transactions in these priority sectors. Methods and systems are provided in which a consumer’s payment card is linked to the consumer’s unique national identification data. When the consumer performs an electronic transaction, the transaction request is processed such that if the transaction is approved, details of the transaction and consumer are provided to a government facility to generate consumer patterns at an individual level or group level. The solution can be extended to other sectors in addition to the above examples, such as water consumption, medical facilities, public welfare, urban development, etc.

[0021] Hence, the government can set certain agenda for the people that promote good habits conducive to sustainable environment and economic development. People may be incentivized for judicious use of resources with rewards on tax exemption, cheaper education, healthcare, etc. The government can also analyse such data to respond to or plan for the needs of the people.

Terms Description (in Addition to Plain and Dictionary Meaning of Terms)

[0022] As used herein, the terms “transaction card,” “financial transaction card,” and “payment card” refer to any suitable transaction card, such as a credit card, a debit card, a prepaid card, a charge card, a membership card, a promotional card, a frequent flyer card, an identification card, a gift card, and/or any other device that may hold payment account information, such as mobile phones, Smartphones, personal digital assistants (PDAs), key fobs, and/or computers. In other words, in some instances, such a payment card may not exist in a physical form, but rather, may be in an electronic form comprising data stored in a digital (i.e. mobile) wallet.

[0023] As used herein, the term “transaction category” or “category” refers to a type of goods or services provided by a merchant. A prescribed list or schedule of categories may be used to identify different industries or sectors.

[0024] As used herein, the term “pattern” can be an individual or aggregated representation in any format. Non-limiting examples include numerical format, graphical format.

Exemplary Embodiments

[0025] Embodiments will be described, by way of example only, with reference to the drawings. Like reference numerals and characters in the drawings refer to like elements or equivalents.

[0026] Figure 1 shows a flow chart 100 illustrating a method for processing a transaction according to an example embodiment. At step 102, a payment request message corresponding to a transaction made by a payment card belonging to a consumer is received from an acquirer. The payment request message includes transaction data and the consumer’s national identification data. At step 104, the payment request message is split using a splitter module into the transaction data and the consumer’s national identification data. At step 106, the transaction is processed based on the transaction data. Processing includes approving or declining the transaction. If the transaction is approved, at step 108, the transaction data and consumer’s national identification data are provided to a database for generating a pattern associated with the consumer.

[0027] In other words, by linking the transaction data and the consumer’s national identification data, it is possible to get real-time and valuable information on spending activities, both at an individual level and at a group level. Such information can be used by a government to understand the people’s behavior and respond and/or plan accordingly.

[0028] According to various embodiments, the method further includes determining a category of the transaction based on the transaction data, and the transaction data and consumer’s national identification data are provided to the database if the transaction belongs to a predetermined category.

[0029] According to various embodiments, determining the category of the transaction based on the transaction data includes identifying selected merchant data from the transaction data. The selected merchant data includes a merchant category code.

[0030] According to various embodiments, the transaction data and consumer's national identification data are encrypted.

[0031] According to various embodiments, the method further includes a preparatory step of associating the consumer's national identification data with the payment card.

[0032] A method of generating a consumer pattern is also disclosed herein. The method includes receiving transaction data and associated consumer's national identification data of an approved transaction. The approved transaction is processed according to the processing method as described above with reference to flow chart 100. The method also includes identifying the consumer based on the consumer's national identification data, and generating a pattern associated with the consumer.

[0033] According to various embodiments, identifying the consumer based on the consumer's national identification data includes decrypting the consumer's national identification data.

[0034] According to various embodiments, generating a pattern associated with the consumer includes adding the transaction to a list of transactions performed by the consumer.

[0035] According to various embodiments, generating a pattern associated with the consumer includes adding the consumer and the transaction to a group of consumers. The group of consumers is based on, for example, geography and/or demography.

[0036] Exemplary embodiments can be implemented in physical systems. According to an example embodiment, a system for processing a transaction includes a processor and a memory unit communicative coupled to the processor. The memory unit is configured to store a payment request message received from an acquirer. The payment request message corresponds to a transaction made by a payment card belonging to a consumer and includes transaction data and the

consumer's national identification data. The processor is configured to split the payment request message into the transaction data and the consumer's national identification data and process the transaction based on the transaction data. Processing includes approving or declining the transaction. If the transaction is approved, the processor is configured to provide the transaction data and consumer's national identification data to a database for generating a pattern associated with the consumer.

[0037] According to another embodiment, a system for generating a consumer pattern includes a processor and a memory unit communicatively coupled to the processor. The memory unit is configured to receive transaction data and associated consumer's national identification data of an approved transaction from the processing system as described above. The processor is configured to identify the consumer based on the consumer's national identification data and generate a pattern associated with the consumer.

[0038] Figure 2 shows a schematic diagram 200 illustrating an example flow of information in the method of Figure 1. Here, a consumer 202 performs a transaction at a merchant 204 using a payment card. As described herein, the consumer 202 may have unique national identification data, e.g. an ID number or social security number. The consumer's national identification data is normally associated with the payment card beforehand, e.g. at the time of the consumer applying for the payment card. This may involve the payment card issuer requiring the consumer to provide the national identification data as part of the application. If the consumer owns a number of different payment cards, the consumer's national identification data is associated with each card such that all electronic transactions made by the same consumer can be appropriately identified and analysed. For example, within the same payment card network (e.g. MasterCard®), each consumer may be assigned a unique ID, which is common across different card types and programs and to which the relevant data is associated.

[0039] Referring to Figure 2, typically, in a payment card transaction, when the consumer 202 (i.e. payment card holder) wishes to purchase a product/service from the merchant 204 at a point of sale (POS), the consumer 202 presents his/her payment card to the merchant 204. The merchant 204 then submits a request to an acquirer 206 (a financial institution such as a bank that processes and settles the merchant's transactions with the help of an issuer). The acquirer 206 then sends the request to the issuer 208 (a financial institution, bank, credit union or company

that issues or helps issue cards to payment card holders) to authorize the transaction. A payment facilitator 210, also known as a card network or card scheme (e.g. MasterCard®), acts as an intermediary between the acquirer 206 and the issuer 208. If the issuer 208 authorizes the transaction, the merchant 204 releases the product/service to the consumer 202.

[0040] In example embodiments, the request message from the merchant 204 includes both transaction data and the consumer's national identification data in an encrypted format. The transaction data include transaction level information (e.g. Transaction ID, Account ID (anonymized), Merchant ID, Transaction Amount, Transaction Local Currency Amount, Date of Transaction, Time of Transaction, Type of Transaction, Date of Processing, Cardholder Present Code, Merchant Category Code (MCC)), Account Information (e.g. Account ID (anonymized), Card Group Code, Card Product Code, Card Product Description, Card Issuer Country, Card Issuer ID, Card Issuer Name, Aggregate Card Issuer ID, Aggregate Card Issuer Name), Merchant Information (e.g. Merchant ID, Merchant Name, MCC / Industry Code, Industry Description, Merchant Country, Merchant Address, Merchant Postal Code, Aggregate Merchant ID, Aggregate Merchant Name, Merchant Acquirer Country, Merchant Acquirer ID), and Issuer Information (e.g. Issuer ID, Issuer Name, Aggregate Issuer ID, Issuer Country).

[0041] Typically, the transaction data may be organised according to a standard, for example, standards promulgated by the International Organization for Standardization (ISO). For example, ISO 8583 defines a message format for financial transaction card originated messages, in which standard fields carrying transaction information are known as data elements. Up to 128 data elements may be defined.

[0042] As shown in Figure 2, the payment facilitator 210 includes a splitter module 212 that is configured to split the request into the transaction data and the consumer's national identification data. The encrypted transaction data is transmitted to the issuer 208 for authorization as described above. If the transaction is authorized/approved, the transaction data and the consumer's national identification data, which are still in an encrypted format, are provided to a database 214 for generating a pattern associated with the consumer.

[0043] According to various embodiments, it is possible to limit the provision of the transaction data and the consumer's national identification data to the database to specific transactions. For example, the transaction data and consumer's national

identification data are provided to the database only if the transaction belongs to a predetermined category. This can be done by the payment facilitator 210 identifying selected merchant data, e.g. merchant category code and/or industry, from the transaction data. For example, the identifying of the selected merchants can be done at the time of authentication or processing. In practical uses, this ability can prevent an unnecessary intrusion of privacy of the consumer, and prevent overloading the database 214 with data that may not actually be useful. For example, if the database 214 serves the government's monitoring in specific sectors such as healthcare, utilities, education, transportation, it is possible to capture transaction details relating to these sectors only, and not other sectors like luxury goods, entertainment, etc.

[0044] The database 214 in the example embodiments can be implemented as a computer system. The database 214 receives the transaction data and associated consumer's national identification data of an approved transaction from the payment facilitator 210. The database 210 then proceeds to identify the consumer 202 based on the consumer's national identification data, e.g. by decrypting the encrypted data, and generate a pattern associated with the consumer 202. Such a pattern can be at an individual level (i.e. specific to the consumer 202). For example, the database 214 can add the transaction to a list of transactions performed by the consumer 202 using various payment cards that he/she may own. Alternatively or in addition, such a pattern can be at a group level (i.e. specific to a group that the consumer 202 belongs). For example, the database 214 can add the transaction to a group of consumers identified with the consumer 202. The group of consumers is based on geography and/or demography (e.g. gender, age, income level, etc.).

[0045] Another possible use of the data involves creating sector and geography level summary reports which can be incorporated into the government's decision making engine, for example, city-wise infrastructure development. Alternatively or in addition, algorithms can be developed (e.g. using Artificial Intelligence or machine learning) to analyse patterns and predict activities or behavioral patterns that may be of the government's interest or need their action. Non-limiting examples include predicting a crime or a terror attack, predicting peak power usage and possibility of grid failure, predicting future travel corridors, etc. The same data may form the underlying base for a smart city. Many small facets like

waste management, town planning, traffic management, efficient power usage may be optimized using regular and real time feed of such consumer data.

[0046] In an example implementation of the methods and systems of the example embodiments, the government identifies specific sectors or merchants that will be included in the collection of consumer data for monitoring and/or analysis. A framework can be created such that all transactions made at such merchants will be processed according to the method as described above with respect to Figure 2. For example, the POS terminals of the merchants can be configured such that all payment request messages sent from these POS terminals are routed and processed appropriately. Alternatively or in addition, certain groups of merchant may be required to accept only payments through payment cards or wallets that are already associated with the consumer's national identification data. Incentives can also be provided to encourage adoption and continual use. Based on the transaction data and consumer's national identification data captured by the database, the government can aggregate the data and analyse the patterns to identify areas that need special attention for development, repair, investment, etc. Further, individual behavior can also be analysed such that desired behavior may be rewarded while undesired behavior may be discouraged or pre-empted.

Example Use

[0047] An example use of the present methods and systems in the utilities sector, specifically electricity consumption, is now described with reference to Figures 3-5 and 6A-6B.

[0048] Figure 3 shows a representation of a consumer pattern based on location according to an example embodiment. Here, the total spend on electricity over a predetermined period (e.g. month or year) is compared across different cities or regions. Such data, together with other data, can be useful in determining whether it is necessary to re-distribute electricity generation capacities among the different cities or regions. For example, a location with low total spend and high capacity can channel excess capacity to a different location with high total spend and low capacity.

[0049] Figure 4 shows a representation of a consumer pattern based on seasonality according to an example embodiment. Here, the monthly spend at one location is analysed over a one-year period. This representation can be used

together with that in Figure 3 to help decide whether capacity should be re-allocated and at which time of the year.

[0050] Figure 5 shows a representation of a consumer pattern based on income level according to an example embodiment. Thresholds can be created to define which consumers are consuming way more than average (or way less). Usage patterns by each demographic group may be identified by merging the usage data to the demographic data. The thresholding may be done in more sophisticated ways such as comparing with average consumption of other consumers belonging to same locality, income and other demographic groups. From these groups and patterns, appropriate actions can be taken. For example, subsidies or rebates can be provided to certain groups with low income whilst surcharges can be levied to other groups with high income and excessive consumption. Further, alternate power sources or additional capacities can be planned accordingly.

[0051] Figure 6A shows a representation of an application of the consumer pattern over to predict a future trend according to an example embodiment. Here, the data on the right side of line 602 represent predicted future demand based on past patterns. Figure 6B shows the representation of Figure 6A with additional information superimposed to identify a potential issue based on the predicted trend. For example, line 604 shows the consumption trend while line 606 shows the capacity trend. It can be observed from Figure 6B that based on the prevailing trends, a capacity shortage is forecast to happen in the future. Preventive measures can be planned accordingly to mitigate this issue.

[0052] It will be appreciated that there can be many other different uses, both at an individual level and at an aggregated/group level, of the transaction data and associated consumer's national identification data.

[0053] Figure 7 depicts an exemplary computing device 700, hereinafter interchangeably referred to as a computer system 700, where one or more such computing devices 700 may be used for the payment facilitator 210 (Figure 2) or the database 214 (Figure 2). The following description of the computing device 700 is provided by way of example only and is not intended to be limiting.

[0054] As shown in Figure 7, the example computing device 700 includes a processor 704 for executing software routines. Although a single processor is shown for the sake of clarity, the computing device 700 may also include a multi-processor system. The

processor 704 is connected to a communication infrastructure 706 for communication with other components of the computing device 700. The communication infrastructure 706 may include, for example, a communications bus, cross-bar, or network.

[0055] The computing device 700 further includes a main memory 708, such as a random access memory (RAM), and a secondary memory 710. The secondary memory 710 may include, for example, a hard disk drive 712 and/or a removable storage drive 714, which may include a floppy disk drive, a magnetic tape drive, an optical disk drive, or the like. The removable storage drive 714 reads from and/or writes to a removable storage unit 718 in a well-known manner. The removable storage unit 718 may include a floppy disk, magnetic tape, optical disk, or the like, which is read by and written to by removable storage drive 714. As will be appreciated by persons skilled in the relevant art(s), the removable storage unit 718 includes a computer readable storage medium having stored therein computer executable program code instructions and/or data.

[0056] In an alternative implementation, the secondary memory 710 may additionally or alternatively include other similar means for allowing computer programs or other instructions to be loaded into the computing device 700. Such means can include, for example, a removable storage unit 722 and an interface 720. Examples of a removable storage unit 722 and interface 720 include a program cartridge and cartridge interface (such as that found in video game console devices), a removable memory chip (such as an EPROM or PROM) and associated socket, and other removable storage units 722 and interfaces 720 which allow software and data to be transferred from the removable storage unit 722 to the computer system 700.

[0057] The computing device 700 also includes at least one communication interface 724. The communication interface 724 allows software and data to be transferred between computing device 700 and external devices via a communication path 726. In various embodiments of the inventions, the communication interface 724 permits data to be transferred between the computing device 700 and a data communication network, such as a public data or private data communication network. The communication interface 724 may be used to exchange data between different computing devices 700 which such computing devices 700 form part an interconnected computer network. Examples of a communication interface 724 can include a modem, a network interface (such as an Ethernet card), a communication port, an antenna with associated circuitry and the like. The communication interface 724 may be wired or may be wireless. Software and data transferred via the communication interface 724

are in the form of signals which can be electronic, electromagnetic, optical or other signals capable of being received by communication interface 724. These signals are provided to the communication interface via the communication path 726.

[0058] As shown in Figure 7, the computing device 700 further includes a display interface 702 which performs operations for rendering images to an associated display 730 and an audio interface 732 for performing operations for playing audio content via associated speaker(s) 734.

[0059] As used herein, the term "computer program product" may refer, in part, to removable storage unit 718, removable storage unit 722, a hard disk installed in hard disk drive 712, or a carrier wave carrying software over communication path 726 (wireless link or cable) to communication interface 724. Computer readable storage media refers to any non-transitory tangible storage medium that provides recorded instructions and/or data to the computing device 700 for execution and/or processing. Examples of such storage media include floppy disks, magnetic tape, CD-ROM, DVD, Blu-ray™ Disc, a hard disk drive, a ROM or integrated circuit, USB memory, a magneto-optical disk, or a computer readable card such as a PCMCIA card and the like, whether or not such devices are internal or external of the computing device 700. Examples of transitory or non-tangible computer readable transmission media that may also participate in the provision of software, application programs, instructions and/or data to the computing device 700 include radio or infra-red transmission channels as well as a network connection to another computer or networked device, and the Internet or Intranets including e-mail transmissions and information recorded on Websites and the like.

[0060] The computer programs (also called computer program code) are stored in main memory 708 and/or secondary memory 710. Computer programs can also be received via the communication interface 724. Such computer programs, when executed, enable the computing device 700 to perform one or more features of embodiments discussed herein. In various embodiments, the computer programs, when executed, enable the processor 704 to perform features of the above-described embodiments. Accordingly, such computer programs represent controllers of the computer system 700.

[0061] Software may be stored in a computer program product and loaded into the computing device 700 using the removable storage drive 714, the hard disk drive 712,

or the interface 720. Alternatively, the computer program product may be downloaded to the computer system 700 over the communications path 726. The software, when executed by the processor 704, causes the computing device 700 to perform functions of embodiments described herein.

[0062] It is to be understood that the embodiment of Figure 7 is presented merely by way of example. Therefore, in some embodiments one or more features of the computing device 700 may be omitted. Also, in some embodiments, one or more features of the computing device 700 may be combined together. Additionally, in some embodiments, one or more features of the computing device 700 may be split into one or more component parts.

[0063] It will be appreciated that the elements illustrated in Figure 7 function to provide means for performing the various functions and operations of the servers as described in the above embodiments.

[0064] In an implementation, a server may be generally described as a physical device comprising at least one processor and at least one memory including computer program code. The at least one memory and the computer program code are configured to, with the at least one processor, cause the physical device to perform the requisite operations.

[0065] Some portions of the description herein are explicitly or implicitly presented in terms of algorithms and functional or symbolic representations of operations on data within a computer memory. These algorithmic descriptions and functional or symbolic representations are the means used by those skilled in the data processing arts to convey most effectively the substance of their work to others skilled in the art. An algorithm is here, and generally, conceived to be a self-consistent sequence of steps leading to a desired result. The steps are those requiring physical manipulations of physical quantities, such as electrical, magnetic or optical signals capable of being stored, transferred, combined, compared, and otherwise manipulated.

[0066] Unless specifically stated otherwise, and as apparent from the following, it will be appreciated that throughout the present specification, discussions utilizing terms such as “scanning”, “calculating”, “determining”, “replacing”, “generating”, “initializing”, “outputting”, or the like, refer to the action and processes of a computer system, or similar electronic device, that manipulates and transforms data represented as physical quantities within the computer system into other data similarly represented as physical

quantities within the computer system or other information storage, transmission or display devices.

[0067] The present specification also discloses apparatus for performing the operations of the methods. Such apparatus may be specially constructed for the required purposes, or may comprise a general purpose computer or other device selectively activated or reconfigured by a computer program stored in the computer. The algorithms and displays presented herein are not inherently related to any particular computer or other apparatus. Various general purpose machines may be used with programs in accordance with the teachings herein. Alternatively, the construction of more specialized apparatus to perform the required method steps may be appropriate. The structure of a computer suitable for executing the various methods / processes described herein will appear from the description herein.

[0068] In addition, the present specification also implicitly discloses a computer program, in that it would be apparent to the person skilled in the art that the individual steps of the method described herein may be put into effect by computer code. The computer program is not intended to be limited to any particular programming language and implementation thereof. It will be appreciated that a variety of programming languages and coding thereof may be used to implement the teachings of the disclosure contained herein. Moreover, the computer program is not intended to be limited to any particular control flow. There are many other variants of the computer program, which can use different control flows without departing from the spirit or scope of the invention.

[0069] Furthermore, one or more of the steps of the computer program may be performed in parallel rather than sequentially. Such a computer program may be stored on any computer readable medium. The computer readable medium may include storage devices such as magnetic or optical disks, memory chips, or other storage devices suitable for interfacing with a computer. The computer readable medium may also include a hard-wired medium such as exemplified in the Internet system, or wireless medium such as exemplified in the GSM, GPRS, 3G or 4G mobile telephone systems, as well as other wireless systems such as Bluetooth, ZigBee, Wi-Fi. The computer program when loaded and executed on such a general-purpose computer effectively results in an apparatus that implements the steps of the preferred method.

[0070] The present invention may also be implemented as hardware modules. More particularly, in the hardware sense, a module is a functional hardware unit designed for use with other components or modules. For example, a module may be implemented using discrete electronic components, or it can form a portion of an entire electronic circuit such as an Application Specific Integrated Circuit (ASIC) or Field Programmable Gate Array (FPGA). Numerous other possibilities exist. Those skilled in the art will appreciate that the system can also be implemented as a combination of hardware and software modules.

[0071] According to various embodiments, a "circuit" may be understood as any kind of a logic implementing entity, which may be special purpose circuitry or a processor executing software stored in a memory, firmware, or any combination thereof. Thus, in an embodiment, a "circuit" may be a hard-wired logic circuit or a programmable logic circuit such as a programmable processor, e.g. a microprocessor (e.g. a Complex Instruction Set Computer (CISC) processor or a Reduced Instruction Set Computer (RISC) processor). A "circuit" may also be a processor executing software, e.g. any kind of computer program, e.g. a computer program using a virtual machine code such as e.g. Java. Any other kind of implementation of the respective functions which may be described in more detail herein may also be understood as a "circuit" in accordance with an alternative embodiment.

[0072] It will be appreciated by a person skilled in the art that numerous variations and/or modifications may be made to the present invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects to be illustrative and not restrictive.

CLAIMS

1. A method for processing a transaction, the method comprising:

receiving, from an acquirer, a payment request message corresponding to a transaction made by a payment card belonging to a consumer, wherein the payment request message includes transaction data and the consumer's national identification data;

splitting, using a splitter module, the payment request message into the transaction data and the consumer's national identification data;

processing the transaction based on the transaction data, wherein processing comprises approving or declining the transaction; and

if the transaction is approved, providing the transaction data and consumer's national identification data to a database for generating a pattern associated with the consumer.

2. The method as claimed in claim 1, further comprising determining a category of the transaction based on the transaction data, and wherein the transaction data and consumer's national identification data are provided to the database if the transaction belongs to a predetermined category.

3. The method as claimed in claim 2, wherein determining the category of the transaction based on the transaction data comprises identifying selected merchant data from the transaction data.

4. The method as claimed in claim 3, wherein the selected merchant data comprises a merchant category code.

5. The method as claimed in any one of the preceding claims, wherein the transaction data and consumer's national identification data are encrypted.

6. The method as claimed in any one of the preceding claims, further comprising a preparatory step of associating the consumer's national identification data with the payment card.

7. A method of generating a consumer pattern, the method comprising:

receiving transaction data and associated consumer's national identification data of an approved transaction, wherein the approved transaction is processed according to the method as claimed in any one of claims 1 to 6;

identifying the consumer based on the consumer's national identification data; and

generating a pattern associated with the consumer.

8. The method as claimed in claim 7, wherein identifying the consumer based on the consumer's national identification data comprises decrypting the consumer's national identification data.

9. The method as claimed in claim 8, wherein generating a pattern associated with the consumer comprises adding the transaction to a list of transactions performed by the consumer.

10. The method as claimed in claim 8, wherein generating a pattern associated with the consumer comprises adding the consumer and the transaction to a group of consumers.

11. The method as claimed in claim 10, wherein the group of consumers is based on geography and/or demography.

12. A system for processing a transaction, the system comprising:

a processor; and

a memory unit communicatively coupled to the processor,

wherein the memory unit is configured to store a payment request message received from an acquirer, the payment request message corresponding to a transaction made by a payment card belonging to a consumer and including transaction data and the consumer's national identification data; and

wherein the processor is configured to:

split the payment request message into the transaction data and the consumer's national identification data;

process the transaction based on the transaction data, wherein processing comprises approving or declining the transaction; and

if the transaction is approved, provide the transaction data and consumer's national identification data to a database for generating a pattern associated with the consumer.

13. The system as claimed in claim 12, wherein the processor is further configured to determine a category of the transaction based on the transaction data, and wherein the transaction data and consumer's national identification data are provided to the database if the transaction belongs to a predetermined category.

14. The system as claimed in claim 13, wherein the processor is further configured to identify selected merchant data from the transaction data to determine the category of the transaction.

15. The system as claimed in claim 14, wherein the selected merchant data comprises a merchant category code.

16. The system as claimed in any one of claims 12 to 15, wherein the transaction data and consumer's national identification data are encrypted.

17. The system as claimed in any one of claims 12 to 16, wherein, in a preparatory mode, the processor is further configured to associate the consumer's national identification data with the payment card.

18. A system for generating a consumer pattern, the system comprising:

a processor; and

a memory unit communicatively coupled to the processor,

wherein the memory unit is configured to receive transaction data and associated consumer's national identification data of an approved transaction from the system as claimed in any one of claims 12 to 17; and

wherein the processor is configured to:

identify the consumer based on the consumer's national identification data; and

generate a pattern associated with the consumer.

19. The system as claimed in claim 18, wherein the processor is further configured to decrypt the consumer's national identification data to identify the consumer.

20. The system as claimed in claim 19, wherein the processor is further configured to add the transaction to a list of transactions performed by the consumer to generate the pattern associated with the consumer.

21. The system as claimed in claim 19, wherein the processor is further configured to add the consumer and the transaction to a group of consumers to generate a pattern associated with the consumer.

22. The system as claimed in claim 21, wherein the group of consumers is based on geography and/or demography.