

SPECIFICATION

POST-PAID TRANSACTION DATA PROCESSING METHOD AND DEVICE, PROCESSING APPARATUS, AND SERVER

5 Technical Field

[01] This specification belongs to the technical field of risk prevention and control, and in particular, relates to a post-paid transaction data processing method and device.

Background

[02] With the development of science and technology, there are more and more users
10 who use e-wallets to conduct buy-now-pay-later transactions. After merchants activate buy-now-pay-later services, they can collect money through third-party e-wallets.

[03] Since a user may have many fund channels in an e-wallet, and information cannot be communicated between an e-wallet and a merchant, in the buy-now-pay-later mode, the merchant cannot determine whether all the fund channels in the user's e-wallet can pay for the
15 purchase of a commodity. A fraudster may use an e-wallet account having little or no money to purchase a buy-now-pay-later service or commodity from a merchant. When the merchant requests deduction from the e-wallet platform, deduction failure may occur.

Summary of the Invention

[04] This specification aims to provide a post-paid transaction data processing method
20 and device, which improve the reliability of risk prevention and control for post-paid transactions, reduce the risk of post-paid transactions, reduce the loss of funds of post-paid transactions, and improve the user experience of post-paid transactions.

[05] In a first aspect, an embodiment of this specification provides a post-paid transaction data processing method, including:

25 [06] receiving risk search information which includes a transaction amount and a transaction user identifier;

[07] acquiring a payment channel corresponding to the transaction user identifier according to the transaction user identifier;

[08] determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount; and

5 [09] determining a default evaluation result of a post-paid transaction according to the predictive affordable value.

[10] Furthermore, in another embodiment of the method, the risk search information further includes a commodity type;

[11] accordingly, the method further includes:

10 [12] determining a risk coefficient corresponding to the commodity type; and

[13] accordingly, the determining a default evaluation result of a post-paid transaction includes:

[14] determining a default evaluation result of the post-paid transaction according to the risk coefficient and the predictive affordable value.

15 [15] Furthermore, in another embodiment of the method, the determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount includes:

[16] acquiring historical bill data of the payment channel;

[17] determining a predictive amount of funds corresponding to the payment channel at
20 a transaction time according to the historical bill data; and

[18] determining a predictive affordable value of the payment channel for the transaction amount according to the transaction amount and the predictive amount of funds of the payment channel.

[19] Furthermore, in another embodiment of the method, the determining a predictive
25 affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount further includes:

[20] acquiring a transaction behavior of a transaction user corresponding to the payment channel according to the historical bill data; and

[21] determining a predictive affordable value of the payment channel for the transaction amount according to the transaction behavior, the transaction amount, and the predictive amount of funds of the payment channel.

[22] Furthermore, in another embodiment of the method, the determining a risk coefficient corresponding to the commodity type includes:

[23] acquiring historical transaction data, and acquiring a default transaction ratio corresponding to the commodity type according to the historical transaction data; and

[24] determining a risk coefficient corresponding to the commodity type according to the default transaction ratio.

[25] Furthermore, in another embodiment of the method, the determining a default evaluation result of a post-paid transaction according to the predictive affordable value includes:

[26] determining a default evaluation result of a post-paid transaction according to the predictive affordable value by using at least one method of decision tree and logistic regression.

[27] Furthermore, in another embodiment of the method, the method further includes:

[28] sending the default evaluation result to a post-paid transaction data processing terminal which corresponds to a transaction merchant of the post-paid transaction; and

[29] receiving request information approving the post-paid transaction, and performing payment processing on the post-paid transaction.

[30] In a second aspect, this specification provides a post-paid transaction data processing device, including:

[31] the method further including:

[32] sending the default evaluation result to a post-paid transaction data processing terminal which corresponds to a transaction merchant of the post-paid transaction; and

[33] receiving request information approving the post-paid transaction, and performing payment processing on the post-paid transaction.

[34] Furthermore, in another embodiment of the device, the risk search information further includes a commodity type;

5 [35] accordingly, the device further includes:

[36] a commodity risk analysis module for determining a risk coefficient corresponding to the commodity type; and

[37] accordingly, the decision-making module is specifically used for:

[38] determining a default evaluation result of the post-paid transaction according to the
10 risk coefficient and the predictive affordable value.

[39] Furthermore, in another embodiment of the device, the amount prediction module is specifically used for:

[40] acquiring historical bill data of the payment channel;

[41] determining a predictive amount of funds corresponding to the payment channel at
15 a transaction time according to the historical bill data; and

[42] determining a predictive affordable value of the payment channel for the transaction amount according to the predictive amount of funds of the payment channel and the transaction amount.

[43] Furthermore, in another embodiment of the device, the amount prediction module
20 is specifically used for:

[44] acquiring a transaction behavior of a transaction user corresponding to the payment channel according to the historical bill data; and

[45] determining a predictive affordable value of the payment channel for the transaction amount according to the transaction behavior, the transaction amount, and the predictive amount
25 of funds of the payment channel.

[46] Furthermore, in another embodiment of the device, the commodity risk analysis module is specifically used for:

[47] acquiring historical transaction data, and acquiring a default transaction ratio corresponding to the commodity type according to the historical transaction data; and

5 [48] determining a risk coefficient corresponding to the commodity type according to the default transaction ratio.

[49] Furthermore, in another embodiment of the device, the decision-making module is specifically used for:

[50] determining a default evaluation result of a post-paid transaction according to the
10 predictive affordable value by using at least one method of decision tree and logistic regression.

[51] Furthermore, in another embodiment of the device, the device further includes a payment processing module for:

[52] sending the default evaluation result to a post-paid transaction data processing terminal which corresponds to a transaction merchant of the post-paid transaction; and

15 [53] receiving request information approving the post-paid transaction, and performing payment processing on the post-paid transaction.

[54] In a third aspect, an embodiment of this specification provides a post-paid transaction data processing apparatus, including: at least one processor and a memory for storing processor-executable instructions which, when executed by the processor, implement the post-paid
20 transaction data processing method of the above first aspect.

[55] In a fourth aspect, an embodiment of this specification provides a post-paid transaction data processing system, including a post-paid transaction data processing device, a risk inquiry interface, and a payment interface, wherein the post-paid transaction data processing system includes at least one processor and a memory for storing processor-executable instructions
25 which, when executed by the processor, implement the post-paid transaction data processing method of the above first aspect.

[56] In a fifth aspect, an embodiment of this specification provides a post-paid transaction data processing method, including:

[57] receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

[58] receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device; and

[59] sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

[60] In a sixth aspect, an embodiment of this specification provides a post-paid transaction data processing terminal, including:

[61] a search information sending module for receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

[62] a default information receiving module for receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device; and

[63] a transaction approving module for sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

[64] In a seventh aspect, an embodiment of this specification provides a post-paid transaction data processing apparatus, including: at least one processor and a memory for storing processor-executable instructions which, when executed by the processor, implement:

[65] receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

[66] receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device; and

[67] sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

[68] In an eighth aspect, an embodiment of this specification provides a computer storage medium having stored thereon a computer program which, when executed, implements the following method:

[69] receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

[70] receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device; and

[71] sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

[72] In a ninth aspect, an embodiment of this specification provides a data processing server for e-wallets, including: at least one processor and a memory for storing processor-executable instructions which, when executed by the processor, implement the post-paid transaction data processing method of the above first aspect.

[73] With the post-paid transaction data processing method and device, processing apparatus, and server provided in this specification, before a post-paid transaction is concluded, an analysis is performed on a payment channel of a transaction user of the post-paid transaction to

determine a predictive affordable value of the payment channel for a transaction amount; and a default evaluation result of whether an account of the transaction user can afford the transaction amount of the post-paid transaction is determined according to the predictive affordable value of the payment channel. By performing a prediction analysis of payment possibility based on a payment channel, the accuracy and precision of default prediction for a post-paid transaction are improved, the reliability of risk prevention and control for a post-paid transaction is improved, the risk of a post-paid transaction is reduced, the loss of funds of a post-paid transaction is reduced, and the user experience of a post-paid transaction is improved.

Brief Description of the Drawings

[74] In order to illustrate the technical solutions in the embodiments of this specification or the prior art more clearly, a brief introduction to the drawings required for the description of the embodiments or the prior art will be provided below. Obviously, the drawings in the following description are merely some embodiments recorded in this specification, and those of ordinary skill in the art would also have been able to obtain other drawings according to these drawings without any creative effort.

[75] FIG. 1 is a schematic flowchart of a post-paid transaction data processing method in an embodiment provided in this specification;

[76] FIG. 2 is a schematic flowchart of a post-paid transaction data processing method in another embodiment of this specification;

[77] FIG. 3 is a schematic diagram of a modular structure of an embodiment of a post-paid transaction data processing device provided in this specification;

[78] FIG. 4 is a schematic diagram of a modular structure of a post-paid transaction data processing device provided in another embodiment of this specification;

[79] FIG. 5 is a schematic diagram of a modular structure of a post-paid transaction data processing device provided in another embodiment of this specification;

[80] FIG. 6 is a schematic structural diagram of a post-paid transaction data processing system in an embodiment of this specification;

[81] FIG. 7 is a block diagram of a hardware structure of a data processing server for e-wallets, in which an embodiment of the present invention is applied;

5 [82] FIG. 8 is a schematic flowchart of a post-paid transaction data processing method in another embodiment of this specification; and

[83] FIG. 9 is a schematic structural diagram of a post-paid transaction data processing terminal in an embodiment of this specification.

Detailed Description

10 [84] In order to enable those skilled in the art to better understand the technical solutions in this specification, the technical solutions in the embodiments of this specification will be described clearly and completely in conjunction with the drawings in the embodiments of this specification. Obviously, the described embodiments are only a part of, not all, the embodiments of this specification. Based on the embodiments in this specification, all other embodiments
15 obtained by those of ordinary skill in the art without creative effort shall fall within the protection scope of this specification.

[85] More and more merchants may provide buy-now-pay-later services. When using buy-now-pay-later services, merchants will usually access a third-party e-wallet as one of payment methods. In order to improve users' shopping and payment experience, users, merchants, and e-
20 wallets will sign deduction-without-password agreements, thus allowing merchants to automatically deduct users' assets in third-party e-wallets. When conducting a buy-now-pay-later transaction, a user can first try out a product for a certain period of time. After the certain period of time, if the user does not return the product, a merchant can automatically deduct a corresponding amount from a third-party e-wallet through the e-wallet.

25 [86] Since the merchant and the third-party e-wallet platform are independently operating entities, data information is not interoperable. When deduction-without-password is

performed, there may be a situation where funds in the e-wallet are insufficient, leading to a deduction failure and thus resulting in the merchant's NSF (Non-sufficient fund risk) loss of funds.

[87] With the post-paid transaction data processing method provided in the embodiments of this specification, when conducting a buy-now-pay-later transaction, transaction data can be processed before the transaction is concluded, so as to determine a default (failure to fulfill an obligation) evaluation result of the current transaction, and then a merchant can determine whether to approve the current buy-now-pay-later transaction according to the default evaluation result. Therefore, the effort of risk prevention and control for buy-now-pay-later transactions is improved, the loss of funds is reduced, and the user experience is improved.

[88] In the embodiments of the present application, the buy-now-pay-later transaction data processing method can be performed on a client terminal, such as a smart phone, a tablet computer, a smart wearable device (a smart watch, virtual reality glasses, a virtual reality helmet, etc.), and other electronic devices.

[89] Specifically, FIG. 1 is a schematic flowchart of a post-paid transaction data processing method in an embodiment provided by this specification. As shown in FIG. 1, the post-paid transaction data processing method provided in the embodiment of this specification includes:

[90] S2, receiving risk search information which includes a transaction amount and a transaction user identifier.

[91] In a specific implementation process, after receiving a post-paid service request, a merchant may first invoke a risk inquiry interface of a post-paid transaction data processing system, and send risk search information to a post-paid transaction data processing device through the risk inquiry interface. The risk search information may include relevant information about the current post-paid transaction, such as a transaction amount, a transaction user identifier, a transaction merchant identifier, a transaction time, a transaction location, etc. The transaction user identifier may include: an account name of a transaction user (for example: an account name of an e-wallet, an account name of a transaction platform, etc.), and the transaction merchant identifier may

include an account name of a transaction merchant (for example: an account name of a transaction merchant). Of course, the risk search information may further include other information, such as a commodity type, and the specific content of risk search information may be adjusted according to actual needs, which is not specifically limited in the embodiments of this specification.

5 [92] The risk search information can be sent and received through wireless network transmission, Bluetooth, wired networks, etc. and can be specifically set according to actual needs, which is not specifically limited in the embodiments of this specification.

 [93] S4, acquiring a payment channel corresponding to the transaction user identifier according to the transaction user identifier.

10 [94] In a specific implementation process, after receiving the risk search information, a payment channel of an account of a transaction user corresponding to the transaction user identifier may be searched according to the transaction user identifier in the risk search information. The payment channel may include payment channels in an e-wallet, such as bank card accounts, credit card accounts, prepaid cards, red envelope coupons, etc., which have been bound.

15 [95] S6, determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount.

 [96] The predictive affordable value may indicate a capacity of the payment channel to pay the transaction amount of the post-paid transaction. The predictive affordable value may be expressed as a percentage or a multiple value, and of course, it may also be expressed in other
20 ways. After acquiring the payment channel corresponding to the transaction user identifier, the predictive affordable value of the payment channel for the transaction amount can be determined according to the flow of funds or other information in the payment channel and the transaction amount of the current post-paid transaction. For example, if the amount in the payment channel is half of the transaction amount, it can be considered that the account of the user of the post-paid
25 transaction may only pay half of the transaction amount, and then the predictive affordable value can be determined as 50%.

[97] In an embodiment of this specification, the determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount includes:

[98] acquiring historical bill data of the payment channel;

5 [99] determining a predictive amount of funds corresponding to the payment channel at a transaction time according to the historical bill data; and

[100] determining a predictive affordable value of the payment channel for the transaction amount according to the transaction amount and the predictive amount of funds of the payment channel.

10 [101] In a specific implementation process, historical bill data may indicate the flow of funds in the payment channel within a specified time, and may include the inflow and outflow of funds in the payment channel, such as the flow of funds of bank card A within one month before the transaction time. The historical bill data of the payment channel can be acquired by acquiring bill records of the payment channel within a preset time period before the transaction time. After
15 finding the payment channel of the transaction user identifier through searching, the historical bill data of the payment channel can be acquired, the history of fund flow of the payment channel can be acquired, and the predictive amount of funds in the payment channel at the current transaction time can be predicted according to the history of fund flow of the payment channel. For example, based on the history of fund flow in the payment channel, timing analysis and prediction algorithms
20 (such as regression methods, averaging methods, model prediction, etc.) can be used to calculate a coverable position of the payment channel for the transaction amount at the current transaction time, to obtain the predictive amount of funds in the payment channel. Timing analysis can be used to calculate a relationship between current values and past values of a variable. Timing analysis can be used to predict the predictive amount of funds in the payment channel at the current
25 transaction time according to the past fund flow in the payment channel. The predictive affordable value of the payment channel for the transaction amount can be determined according to a

comparison between the determined predictive amount of funds in the payment channel and the transaction amount of the post-paid transaction.

[102] If there are multiple payment channels in the account of the transaction user who conducts the post-paid transaction, historical bill data of each payment channel can be acquired respectively, and according to the historical bill data of each payment channel, a predictive amount of funds corresponding to each payment channel at the transaction time can be determined, and then the predictive affordable value of each payment channel can further be determined. The predictive affordable values of all the payment channels can be added to determine a total predictive affordable value of all payment channels of the transaction user. Of course, the total predictive affordable value of the payment channels can also be determined according to the total sum of the predictive amounts of funds corresponding to all the payment channels.

[103] A fund amount prediction model can be constructed according to the historical bill data of the payment channel in advance, that is, the relationship between the amount of funds in the payment channel and time is analyzed and summarized. The fund amount prediction models for different payment channels may be the same or different. Specifically, the prediction model can be constructed according to a transaction habit and characteristics of the flow of funds of each payment channel. The constructed fund amount prediction model is used to predict the amount of funds in each payment channel.

[104] For example, if there are two payment channels in the account of the transaction user of the post-paid transaction, bank card A and credit card B, historical bill data of bank card A and historical bill data of credit card B can be acquired respectively, and the histories of fund flow of bank card A and credit card B can be acquired respectively based on the acquired historical bill data. Timing analysis and prediction algorithms can be used to draw the curves of funds in bank card A and credit card B over time. The relationships between fund flow in bank card A and credit card B and time can be analyzed according to the curves of funds over time, so as to predict the predictive amounts of funds in bank card A and credit card B at the current transaction time. The

predictive affordable values of bank card A and credit card B are determined respectively according to the transaction amount of the post-paid transaction and the predictive amounts of funds of bank card A and credit card B. The predictive affordable values of bank card A and credit card B are added to determine the total predictive affordable value of the account of the transaction user of the current post-paid transaction.

[105] By analyzing the historical bill data of each payment channel, the predictive affordable value of each payment channel for the current post-paid transaction is accurately determined, which provides an accurate data basis for subsequent prediction of a default evaluation result of the current post-paid transaction.

[106] In an embodiment of this specification, the determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount further includes:

[107] acquiring a transaction behavior of a transaction user corresponding to the payment channel according to the historical bill data; and

[108] determining a predictive affordable value of the payment channel for the transaction amount according to the transaction behavior, the transaction amount, and the predictive amount of funds of the payment channel.

[109] In a specific implementation process, a transaction behavior of using each payment channel to conduct transactions by the transaction user of the post-paid transaction can be acquired according to the historical bill data of the payment channel. The transaction user may indicate a user who purchases a commodity in the post-paid transaction, that is, the user corresponding to the transaction user identifier. The transaction behavior may include: the sustainability of consumption, whether there has been a default transaction (such as overdue payment), and so on. The predictive affordable value of the payment channel for the transaction amount can be determined by using the acquired transaction behavior, the predictive amount of funds of the payment channel, and the transaction amount. For example, a functional relationship between the

transaction behavior and the predictive amount of funds of the user and a final affordable amount can be analyzed based on historical data, and a prediction model for predictive affordable values can be constructed through model training or other methods. The affordable amount of the payment channel can be determined using the prediction model, and the predictive affordable value of the payment channel for the transaction amount can be further determined.

[110] For example, if it is learned from the historical bill data of the payment channel that the payment channel of the transaction user has no fixed inflow of funds, the amount of funds in the payment channel fluctuates greatly, and the discontinuity of the user's consumption time is obvious, then it can be considered that the consumption sustainability of the user is poor. If the predictive amount of funds corresponding to the payment channel is A, it can be determined, by comprehensively considering the user's transaction behavior, that the actually affordable amount of funds of the payment channel of the transaction user is lower than A. Prediction algorithms can be used to comprehensively analyze the predictive amount of funds and the user's transaction behavior, so as to determine the predictive coverable value of the payment channel for the transaction amount.

[111] In addition, a credit rating or credit score of the transaction user can also be determined according to the transaction behavior of the transaction user, which provides a reference basis for determining the predictive coverable value of the payment channel for the transaction amount.

[112] In the embodiment of this specification, by acquiring the historical bill data of the payment channel of the transaction user and analyzing the transaction behavior of the transaction user, the predictive affordable value of the payment channel for the transaction amount is predicted based on the transaction behavior and the predictive amount of funds in the payment channel. In conjunction with the user's transaction behavior, the probability that the user may default can be analyzed more accurately, which provides an accurate data basis for risk prevention and control for the post-paid transaction.

[113] S8, determining a default evaluation result of a post-paid transaction according to the predictive affordable value.

[114] The default evaluation result may indicate the possibility that the transaction user of the post-paid transaction has insufficient funds or has no payment amount in the account when making a payment. The default evaluation result may be in the form of default probability or default level. For example, the default level can be divided into 10 levels, and the higher the level, the greater the risk of default in the transaction. Alternatively, the default evaluation result can be expressed in the form of a probability value, and the greater the probability, the greater the risk of default in the transaction. After determining the predictive affordable value of the payment channel for the payment amount, a prediction algorithm or other methods can be used to determine the default evaluation result of the current post-paid transaction. For example, a functional relationship between predictive affordable values and default probabilities can be analyzed by means of numerical simulation, model analysis, etc. For example, a default probability prediction model can be constructed through model training based on historical transaction data of post-paid transactions. The default probability prediction model may include a functional relationship between predictive affordable values and default probabilities. A predictive affordable value of a current post-paid transaction can be input into the default probability prediction model to determine a corresponding default probability.

[115] In an embodiment of this specification, the default evaluation result of the post-paid transaction can be determined by using at least one method of decision tree and logistic regression. The decision tree can represent a prediction model, and can represent a mapping relationship between object attributes and object values. Logistic regression is a generalized linear regression analysis model, which is commonly used in fields such as data mining, automatic disease diagnosis, and economic prediction, and can be used to predict the probability of occurrence of an event. Using the decision tree or logistic regression method can achieve an accurate prediction of the

default evaluation result of the post-paid transaction, which provides an accurate data basis for risk prevention and control for the post-paid transaction.

[116] In an embodiment of this specification, after predicting the default evaluation result corresponding to the post-paid transaction, the obtained default evaluation result may be sent to a post-paid transaction data processing terminal corresponding to the transaction merchant in the post-paid transaction, wherein the post-paid transaction data processing terminal may be a smart phone, a tablet computer, or other electronic devices. After receiving the default evaluation result, the post-paid transaction data processing terminal can determine whether the risk of the current default evaluation result is acceptable, and if acceptable, it can send request information approving this post-paid transaction to the post-paid transaction data processing device. The post-paid transaction data processing device can perform payment processing on this post-paid transaction. For example, it can deduct the transaction amount from the account of the transaction user at a payment time scheduled in the post-paid transaction and transfer the transaction amount to the account of the transaction merchant.

[117] With the post-paid transaction data processing method provided in the embodiment of this specification, before the post-paid transaction is concluded, the payment channel of the transaction user of the post-paid transaction is analyzed to determine a predictive affordable value of the payment channel for the transaction amount; and a default evaluation result of whether the account of the transaction user can pay the transaction amount of the post-paid transaction is determined according to the predictive affordable value of the payment channel. By performing a prediction analysis of payment possibility based on a payment channel, the accuracy and precision of default prediction for a post-paid transaction is improved, the reliability of risk prevention and control for a post-paid transaction is improved, the risk of a post-paid transaction is reduced, the loss of funds of a post-paid transaction is reduced, and the user experience of a post-paid transaction is improved.

[118] FIG. 2 is a schematic flowchart of a post-paid transaction data processing method in another embodiment of this specification. As shown in FIG. 2, on the basis of the above embodiment, in an embodiment of this specification, the post-paid transaction data processing method may further include:

5 [119] B2, receiving risk search information which includes a commodity type, a transaction amount, and a transaction user identifier.

[120] B4, determining a risk coefficient corresponding to the commodity type.

[121] In a specific implementation process, the commodity type may indicate the type or category of a commodity, such as a certain brand of mobile phones, a certain brand of clothing,
10 etc., and may also include the type of a service, such as housekeeping service, travel service, etc. Different commodity types may correspond to different risk coefficients, that is, the risks of default of different commodity types may be different. Risk situations of different commodity types can be analyzed according to historical transaction data of post-paid transactions, and different risk coefficients can be set for different commodity types.

15 [122] In an embodiment of this specification, the determining a risk coefficient corresponding to the commodity type may include:

[123] acquiring historical transaction data, and acquiring a default transaction ratio corresponding to the commodity type according to the historical transaction data; and

[124] determining a risk coefficient corresponding to the commodity type according to
20 the default transaction ratio.

[125] In a specific implementation process, the historical transaction data may include transaction data of post-paid transactions within a preset time period (e.g., within one month before a current transaction time). For example, the transaction data may include: commodity types, transaction amounts, default situations, etc. of the post-paid transactions within the preset time
25 period. A default transaction ratio of a commodity type of a current post-paid transaction in the historical transaction data can be analyzed, and a risk coefficient of the commodity type of the

current post-paid transaction can be determined according to the default transaction ratio. For example, if the default ratio of the commodity type of the current post-paid transaction is 50%, the risk coefficient corresponding to this commodity type can be determined as 0.5. Of course, a risk coefficient of a commodity type can also be determined according to other methods. The risk coefficient can also be adjusted and updated based on real-time historical transaction data.

[126] The analysis on risk coefficients corresponding to different commodity types provides a more accurate data basis for subsequent determination of a default evaluation result of a current post-paid transaction.

[127] B6, acquiring a payment channel corresponding to the transaction user identifier according to the transaction user identifier.

[128] All payment channels of the account of the transaction user of the post-paid transaction in the e-wallet can be scanned.

[129] B8, determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount.

[130] According to historical bill data of each payment channel, the timing analysis method and prediction algorithm can be used to respectively calculate a predictive affordable value of each payment channel for the transaction amount at a current transaction time, and to further calculate a predictive affordable values corresponding to all payment channels. Reference may be made to the introduction to the above embodiment for the method of determining a predictive affordable value corresponding to a payment channel, which will not be repeated here.

[131] B10, determining a default evaluation result of the post-paid transaction according to the risk coefficient and the predictive affordable value.

[132] After determining the risk coefficient corresponding to the commodity type of the current post-paid transaction and the predictive affordable value corresponding to the payment channel, a default evaluation result of the post-paid transaction can be predicted, by comprehensively considering the risk coefficient of the commodity type and the predictive

affordable value of the payment channel, with a method such as decision tree or logistic regression. Reference may be made to the records in the above embodiment for the expression form of the default evaluation result, which will not be repeated here. For example, the default evaluation result of the current post-paid transaction can be predicted through prediction models or algorithms based on historical transaction data, risk coefficients of constructed commodity types, predictive affordable values of payment channels, and prediction models or algorithms for default evaluation results of post-paid transactions.

[133] In the embodiments of this specification, before conducting a post-paid transaction, the risk coefficient of the commodity type of the post-paid transaction and the situation of funds in the transaction channel corresponding to the transaction user are comprehensively considered, so that the default evaluation result of the post-paid transaction can be accurately determined, and therefore, the risk prevention and control for the post-paid transaction can be improved, the loss of funds can be reduced, and the user experience of the post-paid transaction can be improved.

[134] The embodiments of the above methods in this specification are all described in a progressive manner, and for the same or similar parts between the embodiments, reference can be made to each other. Each embodiment focuses on the differences from other embodiments. For the relevant parts, reference can be made to the description of part of the method embodiments.

[135] Based on the above-mentioned post-paid transaction data processing method, one or more embodiments of this specification further provide a post-paid transaction data processing device. The device may include a system (including a distributed system), software (an application), modules, components, servers, client terminals, etc. using the method described in the embodiments of this specification in combination with necessary hardware implementation devices. Based on the same innovative concept, the devices in one or more embodiments provided by the embodiments of this specification are as described in the following embodiments. Since the implementation solution of the device to solve problems are similar to the method, for the implementation of the specific device in the embodiments of this specification, reference can be

made to the implementation of the foregoing method, and repeated parts will not be repeated here. As used below, the term "unit" or "module" may implement a combination of software and/or hardware having a predetermined function. Although the devices described in the following embodiments are preferably implemented in software, the implementation of hardware or a combination of software and hardware is also possible and conceived.

[136] Specifically, FIG. 3 is a schematic diagram of a modular structure of an embodiment of a post-paid transaction data processing device provided in this specification. As shown in FIG. 3, the post-paid transaction data processing device provided in this specification includes information receiving module 31, payment channel search module 32, amount prediction module 33, and decision-making module 34, wherein

[137] information receiving module 31 can be used for receiving risk search information which includes a transaction amount and a transaction user identifier;

[138] payment channel search module 32 can be used for acquiring a payment channel corresponding to the transaction user identifier according to the transaction user identifier;

[139] amount prediction module 33 can be used for determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount; and

[140] decision-making module 34 can be used for determining a default evaluation result of a post-paid transaction according to the predictive affordable value.

[141] With the post-paid transaction data processing device provided in the embodiment of this specification, before a post-paid transaction is confirmed, a payment channel of a transaction user of the post-paid transaction is analyzed to determine a predictive affordable value of the payment channel for the transaction amount; and a default evaluation result of whether the account of the transaction user can pay the transaction amount of the post-paid transaction is determined according to the predictive affordable value of the payment channel. By performing a prediction analysis of payment possibility based on a payment channel, the accuracy and precision of default

prediction for a post-paid transaction are improved, the reliability of risk prevention and control for a post-paid transaction is improved, the risk of a post-paid transaction is reduced, the loss of funds of a post-paid transaction is reduced, and the user experience of a post-paid transaction is improved.

5 [142] FIG. 4 is a schematic diagram of a modular structure of a post-paid transaction data processing device provided in another embodiment of this specification. As shown in FIG. 4, on the basis of the above embodiment, the risk search information further includes a commodity type;

[143] accordingly, the device further includes:

[144] commodity risk analysis module 41 which can be used for determining a risk
10 coefficient corresponding to the commodity type; and

[145] accordingly, decision-making module 34 is specifically used for:

[146] determining a default evaluation result of the post-paid transaction according to the risk coefficient and the predictive affordable value.

[147] With the post-paid transaction data processing device provided in the embodiment
15 of this specification, before conducting a post-paid transaction, a risk coefficient of a commodity type of the post-paid transaction and the situation of funds in a transaction channel corresponding to the transaction user are comprehensively considered, so that a default evaluation result of the post-paid transaction can be accurately determined, and therefore, the risk prevention and control for the post-paid transaction can be improved, the loss of funds can be reduced, and the user
20 experience of the post-paid transaction can be improved.

[148] On the basis of the above embodiment, the amount prediction module is specifically used for:

[149] acquiring historical bill data of the payment channel;

[150] determining a predictive amount of funds corresponding to the payment channel at
25 a transaction time according to the historical bill data; and

[151] determining a predictive affordable value of the payment channel for the transaction amount according to the predictive amount of funds of the payment channel and the transaction amount.

[152] With the post-paid transaction data processing device provided in the embodiment of this specification, by analyzing the historical bill data of each payment channel, the predictive affordable value of each payment channel for the current post-paid transaction is determined, which provides an accurate data basis for subsequent prediction of a default evaluation result of the current post-paid transaction.

[153] On the basis of the above embodiment, the amount prediction module is specifically used for:

[154] acquiring a transaction behavior of a transaction user corresponding to the payment channel according to the historical bill data; and

[155] determining a predictive affordable value of the payment channel for the transaction amount according to the transaction behavior, the transaction amount, and the predictive amount of funds of the payment channel.

[156] In the embodiment of this specification, by acquiring the historical bill data of the payment channel of the transaction user and analyzing the transaction behavior of the transaction user, the predictive affordable value of the payment channel for the transaction amount is predicted based on the transaction behavior and the predictive amount of funds in the payment channel. In conjunction with the user's transaction behavior, the probability that the user may default can be analyzed more accurately, which provides an accurate data basis for risk prevention and control for the post-paid transaction.

[157] On the basis of the above embodiment, the commodity risk analysis module is specifically used for:

[158] acquiring historical transaction data, and acquiring a default transaction ratio corresponding to the commodity type according to the historical transaction data; and

[159] determining a risk coefficient corresponding to the commodity type according to the default transaction ratio.

[160] In the embodiment of this specification, the analysis on risk coefficients corresponding to different commodity types provides a more accurate data basis for subsequent
5 determination of a default evaluation result of a current post-paid transaction.

[161] On the basis of the above embodiment, the decision-making module is specifically used for:

[162] determining a default evaluation result of a post-paid transaction according to the predictive affordable value by using at least one method of decision tree and logistic regression.

10 [163] In the embodiment of this specification, using the decision tree or logistic regression method can achieve an accurate prediction of the default evaluation result of the post-paid transaction, which provides an accurate data basis for risk prevention and control for the post-paid transaction.

[164] FIG. 5 is a schematic diagram of a modular structure of a post-paid transaction data
15 processing device provided in another embodiment of this specification. As shown in FIG. 5, on the basis of the above embodiment, the device further includes payment processing module 51 for:

[165] sending the default evaluation result to a post-paid transaction data processing terminal which corresponds to a transaction merchant of the post-paid transaction; and

[166] receiving request information approving the post-paid transaction, and performing
20 payment processing on the post-paid transaction.

[167] In the embodiment of this specification, the default evaluation result determined based on the commodity type of the post-paid transaction, the transaction amount, relevant information about the payment channel of the transaction user, etc. is sent to the client terminal of the transaction merchant, so that the transaction merchant can determine whether to approve this
25 transaction according to the default evaluation result of the current post-paid transaction, thereby

improving the accuracy of risk prevention and control for the post-paid transaction and reducing the loss of funds of the transaction merchant.

[168] It should be noted that the description of the above-mentioned device according to the method embodiments may further include other implementations. For specific
5 implementations, reference may be made to the description of relevant method embodiments, and details are not repeated herein.

[169] An embodiment of this specification further provides a post-paid transaction data processing apparatus, including: at least one processor and a memory for storing processor-executable instructions which, when executed by the processor, implement the post-paid
10 transaction data processing method of the above embodiment, for example:

[170] receiving risk search information which includes a transaction amount and a transaction user identifier;

[171] acquiring a payment channel corresponding to the transaction user identifier according to the transaction user identifier;

[172] determining a predictive affordable value of the payment channel for the transaction
15 amount based on the payment channel and the transaction amount; and

[173] determining a default evaluation result of a post-paid transaction according to the predictive affordable value.

[174] The storage medium may include a physical device for storing information, which
20 usually digitizes the information and then stores the same in a medium in an electrical, magnetic, or optical manner. The storage medium may include: a device that stores information by means of electrical energy, such as various types of memories, for example, a RAM and a ROM; a device that stores information by means of magnetic energy, such as a hard disk, a floppy disk, a magnetic tape, a magnetic core memory, a bubble memory, and a USB disk; and a device that stores
25 information by optical means, such as a CD or a DVD. Of course, there are other forms of readable storage media, such as quantum memory, graphene memory, and so on.

[175] It should be noted that the description of the above-mentioned processing apparatus according to the method embodiments may further include other implementations. For example, the default evaluation result of the transaction can also be comprehensively predicted by combining the risk coefficient corresponding to the commodity type of the post-paid transaction and the predictive affordable value of the payment channel. For specific implementations, reference may be made to the description of relevant method embodiments, and details are not repeated herein.

[176] This specification further provides a post-paid transaction data processing system. The system can be a separate post-paid transaction data processing system, or can be applied in a variety of data analysis and processing systems. The system may be a separate server, or may include a server cluster, a system (including a distributed system), software (an application), an actual operating device, a logic gate circuit device, a quantum computer, etc. using one or more of the methods or one or more embodiment devices of this specification in combination with necessary hardware implementation terminal devices. The system for generating off-line shopping recommendation content may include at least one processor and a memory storing computer-executable instructions which, when executed by the processor, implement the steps of the method as described in any one or more of the above embodiments.

[177] FIG. 6 is a schematic structural diagram of a post-paid transaction data processing system in an embodiment of this specification. As shown in FIG. 6, the post-paid transaction data processing system in the embodiment of this specification may represent an e-wallet system in FIG. 6, which may specifically include a post-paid transaction data processing device, a risk inquiry interface, and a payment interface. The post-paid transaction data processing system may further include a post-paid transaction data processing terminal corresponding to a transaction merchant. The post-paid transaction data processing device may include a commodity risk analysis module, an amount prediction module, and a decision-making module. The risk inquiry interface and the payment interface are used for data communication with the post-paid transaction data processing terminal corresponding to the transaction merchant. The post-paid transaction data

processing system includes at least one processor and a memory for storing processor-executable instructions which, when executed by the processor, implement the post-paid transaction data processing method of the above embodiment, for example:

[178] receiving risk search information which includes a transaction amount and a transaction user identifier;

[179] acquiring a payment channel corresponding to the transaction user identifier according to the transaction user identifier;

[180] determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount; and

[181] determining a default evaluation result of a post-paid transaction according to the predictive affordable value.

[182] The method embodiments provided in the embodiments of this specification can be executed in a mobile terminal, a computer terminal, a server, or a similar arithmetic device. Take running on a server as an example, FIG. 7 is a block diagram of a hardware structure of a data processing server for e-wallets, in which an embodiment of the present invention is applied. As shown in FIG. 7, server 10 may include one or more (only one is shown in the figure) processors 100 (processor 100 may include, but is not limited to, a processing device such as a microprocessor (MCU) or a programmable logic device (FPGA)), memory 200 for storing data, and transmission module 300 for communication functions. Those of ordinary skill in the art may understand that the structure shown in FIG. 7 is merely illustrative, which does not limit the structure of the above electronic devices. For example, server 10 may also include more or fewer components than those shown in FIG. 7. For example, it may also include other processing hardware, such as a database or a multi-level cache, a GPU, or may have a configuration different from that shown in FIG. 9.

[183] Memory 200 can be used to store software programs and modules of application software, such as program instructions/modules corresponding to the post-paid transaction data processing method in the embodiments of this specification, and processor 100 performs various

functional applications and data processing by running the software programs and modules stored in memory 200. Memory 200 may include a high-speed random access memory, and may also include a non-volatile memory, such as one or more magnetic storage devices, a flash memory, or another non-volatile solid-state memory. In some examples, memory 200 may further include
5 memories remotely arranged with respect to processor 100, and these remote memories may be connected to computer terminal 10 through a network. Examples of the above-mentioned network include, but are not limited to, the Internet, an intranet, a local area network, a mobile communication network, and a combination thereof.

[184] Transmission module 300 is used to receive or send data via a network. Specific
10 examples of the above-mentioned network may include a wireless network provided by a communication provider of computer terminal 10. In one example, transmission module 300 includes a Network Interface Controller (NIC), which can be connected to other network devices through a base station so as to communicate with the Internet. In one example, transmission module 300 may be a Radio Frequency (RF) module, which is used to communicate with the Internet in a
15 wireless manner.

[185] It should be noted that the description of the above-mentioned processing system and server according to the method embodiments may further include other implementations. For example, the default evaluation result of the transaction can also be comprehensively predicted by combining the risk coefficient corresponding to the commodity type of the post-paid transaction
20 and the predictive affordable value of the payment channel. For specific implementations, reference may be made to the description of relevant method embodiments, and details are not repeated herein.

[186] FIG. 8 is a schematic flowchart of a post-paid transaction data processing method in another embodiment of this specification. As shown in FIG. 8, an embodiment of this
25 specification further provides a transaction data processing method at a transaction merchant side of a post-paid transaction, including:

[187] T2, receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier.

[188] After receiving the post-paid transaction service, the transaction merchant can send
5 a risk search request to a post-paid transaction data processing device, such as an e-wallet system or a post-paid transaction data processing system, through a post-paid transaction data processing terminal corresponding to the transaction merchant, such as a smart phone, a tablet computer, or a smart portable device. For example, after receiving the post-paid transaction service request, the post-paid transaction data processing terminal can send risk search information to the post-paid
10 transaction data processing system through the risk inquiry interface in FIG. 6, and the post-paid transaction data processing system sends the received risk search information to the post-paid transaction data processing device. The risk search information may include: a commodity type, a transaction amount, and a transaction user identifier. For the specific content of the risk search information, reference can be made to the records in the above embodiment, and details will not
15 be repeated here.

[189] T4, receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device.

[190] After the transaction merchant sends the risk search information to the post-paid transaction data processing device, the post-paid transaction data processing device predicts the
20 default evaluation result of the current post-paid transaction based on the received risk search information, and sends the determined default evaluation result to the post-paid transaction data processing terminal of the transaction merchant.

[191] T6, sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data
25 processing device.

[192] The transaction merchant can determine whether to accept the current post-paid transaction according to the default evaluation result received by the post-paid transaction data processing terminal, for example, determining whether to accept the post-paid transaction based on sizes of the default evaluation result and a preset probability threshold. If the default evaluation result is less than the preset probability threshold, and the transaction merchant can accept such a risk, request information approving the current post-paid transaction can be sent to the post-paid transaction processing device through the post-paid transaction data processing terminal. The post-paid transaction data processing device can perform payment processing after receiving the request information approving the post-paid transaction sent by the transaction merchant through the post-paid transaction processing terminal. For example, it can deduct the transaction amount from the account of the transaction user at the payment time scheduled in the post-paid transaction and transfer the transaction amount to the account of the transaction merchant.

[193] If the received default evaluation result is relatively high, and the transaction merchant believes that the default risk of the current post-paid transaction cannot be accepted, it can reject this post-paid transaction, and can send request information rejecting the post-paid transaction to the e-wallet system through the post-paid transaction terminal.

[194] In the embodiment of this specification, by analyzing the transaction commodity type of the post-paid transaction and the payment channel of the transaction user before the post-paid transaction is concluded, the default evaluation result of the post-paid transaction is determined, and the transaction merchant determines whether to accept this post-paid transaction based on the determined default evaluation result. The accuracy of risk prevention and control for the post-paid transaction is improved, the loss of funds of the transaction merchant is reduced, and the user experience of the post-paid transaction is improved.

[195] FIG. 9 is a schematic structural diagram of a post-paid transaction data processing terminal in an embodiment of this specification. As shown in FIG. 9, an embodiment of this specification may provide a post-paid transaction data processing terminal, including:

[196] search information sending module 91 which can be used for receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

5 [197] default information receiving module 92 which can be used for receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device; and

[198] transaction approving module 93 which can be used for sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-
10 paid transaction to the post-paid transaction data processing device.

[199] In the embodiment of this specification, by analyzing the transaction commodity type of the post-paid transaction and the payment channel of the transaction user before the post-paid transaction is concluded, the default evaluation result of the post-paid transaction is determined, and the transaction merchant determines whether to accept this post-paid transaction
15 based on the determined default evaluation result. The accuracy of risk prevention and control for the post-paid transaction is improved, the loss of funds of the transaction merchant is reduced, and the user experience of the post-paid transaction is improved.

[200] An embodiment of this specification may further provide a post-paid transaction data processing apparatus (such as a smart phone terminal, a tablet computer, or a smart portable
20 device), including: at least one processor and a memory for storing processor-executable instructions which, when executed by the processor, implement the post-paid transaction data processing method of the above embodiments, for example:

[201] receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information
25 includes a commodity type, a transaction amount, and a transaction user identifier;

[202] receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device; and

[203] sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

[204] An embodiment of this specification may further provide a computer storage medium having stored thereon a computer program which, when executed, implements the video data processing method in the above embodiment. For example, the following method can be implemented:

[205] receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

[206] receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device; and

[207] sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

[208] The storage medium may include a physical device for storing information, which usually digitizes the information and then stores the same in a medium in an electrical, magnetic, or optical manner. The storage medium may include: a device that stores information by means of electrical energy, such as various types of memories, for example, a RAM and a ROM; a device that stores information by means of magnetic energy, such as a hard disk, a floppy disk, a magnetic tape, a magnetic core memory, a bubble memory, and a USB disk; and a device that stores information by optical means, such as a CD or a DVD. Of course, there are other forms of readable storage media, such as quantum memory, graphene memory, and so on.

[209] The foregoing describes specific embodiments of this specification. Other embodiments are within the scope of the appended claims. In some cases, the actions or steps recorded in the claims can be performed in an order different from the orders in the embodiments and can still achieve desired results. In addition, the processes depicted in the drawings do not necessarily require the particular order shown or a sequential order to achieve the desired results. In certain implementations, multitasking and parallel processing are also possible or may be advantageous.

[210] The methods or devices described in the above embodiments provided in this specification can implement business logic through a computer program and record the same on a storage medium. The storage medium can be read and executed by a computer to achieve the effects of the solutions described in the embodiments of this specification.

[211] The above-mentioned post-paid transaction data processing methods or devices provided in the embodiments of this specification can be implemented by a processor executing corresponding program instructions in a computer, such as being implemented at a PC end by using the C++ language of the windows operating system, being implemented in a linux system, or in other manners, for example, being implemented at a smart terminal by using the programming languages of the android and iOS systems, being implemented based on the processing logic of a quantum computer, etc.

[212] It should be noted that the description of the above-mentioned devices, processing apparatuses, computer storage media, and systems according to the relevant method embodiments in this specification may also include other implementations. For specific implementations, reference may be made to the description of the method embodiments, which will not be repeated here.

[213] The embodiments in this specification are all described in a progressive manner, and for the same or similar parts between the embodiments, reference can be made to each other. Each embodiment focuses on the differences from other embodiments. In particular, for hardware

+ program embodiments, since they are basically similar to method embodiments, the description is relatively simple. For the relevant parts, reference can be made to part of the description of the method embodiments.

[214] The embodiments of this specification are not limited to the situations that must
5 comply with industry communication standards, standard computer data processing and data storage rules, or the situations described in one or more embodiments of this specification. Some industry standards, or implementation solutions obtained through slight modifications in a customized manner or based on implementations described in the embodiments can also achieve the same, equivalent, or similar implementation effects of the above embodiments, or predictable
10 implementation effects after variations. Embodiments acquired by applying these modified or deformed data acquisition, storage, determination, processing manners, etc. can still fall within the scope of optional implementation solutions of the embodiments in this specification.

[215] In the 1990s, it can be obviously distinguished whether an improvement to a technology is an improvement in hardware (e.g., an improvement to a circuit structure, such as a
15 diode, a transistor, or a switch) or an improvement in software (an improvement to a process). However, with the development of technologies, nowadays, the improvement to many method flows can be regarded as a direct improvement to a hardware circuit structure. Almost all designers program improved method flows into hardware circuits to obtain corresponding hardware circuit structures. Therefore, it cannot be said that an improvement to a method flow cannot be
20 implemented by hardware physical modules. For example, a Programmable Logic Device (PLD) (e.g., a Field Programmable Gate Array (FPGA)) is such an integrated circuit, of which the logic function is determined by a user through programming the device. Designers "integrate" a digital system onto a piece of PLD by independent programming without asking a chip manufacturer to design and manufacture a dedicated integrated circuit chip. Moreover, at present, instead of
25 manually making an integrated circuit chip, this programming is also implemented mostly using "logic compiler" software, which is similar to a software compiler used for program development

and compilation. However, the original code before compilation also has to be compiled using a specific programming language, which is known as a Hardware Description Language (HDL). There is not only one, but many kinds of HDLs, such as ABEL (Advanced Boolean Expression Language), AHDL (Altera Hardware Description Language), Confluence, CUPL (Cornell University Programming Language), HDCal, JHDL (Java Hardware Description Language), Lava, Lola, MyHDL, PALASM, and RHDL (Ruby Hardware Description Language). At present, VHDL (Very-High-Speed Integrated Circuit Hardware Description Language) and Verilog are the most commonly used. Those skilled in the art should also know that a hardware circuit for implementing a logic method flow can be easily obtained by slightly logically programming the method flow using the above several hardware description languages and programming it into an integrated circuit.

[216] A controller may be implemented in any suitable manner. For example, a controller may be in the form of a microprocessor or processor and a computer-readable medium storing computer-readable program code (such as software or firmware) executable by this (micro)processor, a logic gate, a switch, an Application Specific Integrated Circuit (ASIC), a programmable logic controller, and an embedded microcontroller. Examples of the controller include, but are not limited to, the following microcontrollers: ARC 625D, Atmel AT91SAM, Microchip PIC18F26K20, and Silicone Labs C8051F320. A controller of a memory may also be implemented as part of the control logic of the memory. Those skilled in the art also know that, in addition to implementing a controller in the form of pure computer-readable program code, the method steps can absolutely be logically programmed to enable the controller to realize the same function in the form of logic gates, switches, special integrated circuits, programmable logic controllers, embedded microcontrollers, or the like. Therefore, such a controller can be regarded as a hardware component, and the devices included therein for realizing various functions can also be regarded as the structure within the hardware component. Alternatively, the devices for realizing

various functions can even be regarded as both a software module for implementing a method and a structure within a hardware component.

[217] The systems, devices, modules, or units explained in the above embodiments may be specifically implemented by a computer chip or entity, or by a product with a certain function.

5 A typical implementation apparatus is a computer. Specifically, the computer may be, for example, a personal computer, a laptop computer, an on-board human-machine interaction device, a cellular phone, a camera phone, a smart phone, a personal digital assistant, a media player, a navigation device, an email device, a game console, a tablet computer, a wearable device, or a combination of any of these devices.

10 [218] Although one or more embodiments of this specification provide method operation steps as described in the embodiments or flowcharts, more or fewer operation steps may be included based on conventional or non-creative means. The sequence of steps listed in the embodiments is only one of many sequences of execution of the steps, and does not represent a unique sequence of execution. When an actual device or terminal product is executed, it can be
15 executed sequentially or in parallel according to the method shown in the embodiments or the drawings (for example, a parallel processor or multi-thread processing environment, or even a distributed data processing environment). The terms "include," "comprise," or any other variations thereof are intended to cover non-exclusive inclusion, so that a process, method, product, or device including a series of elements not only includes the elements, but also includes other elements not
20 clearly listed, or further includes elements inherent to the process, method, product, or device. Without more restrictions, it is not excluded that there are other identical or equivalent elements in the process, method, product, or device including the elements. Words such as first and second are used to indicate names, and do not indicate any particular order.

[219] For ease of description, when describing the apparatus above, it is divided into
25 various units based on functions for separate description. Of course, when implementing one or more of this specification, the functions of the various modules can be implemented in the same

one or more pieces of software and/or hardware, or the modules that realize the same function can be implemented by a combination of multiple submodules or subunits. The device embodiments described above are only schematic. For example, the division of the units is only a logical function division. In actual implementations, there may be another division manner. For example, multiple units or components may be combined or integrated into another system, or some features can be ignored or not implemented. In addition, the displayed or discussed mutual coupling or direct coupling or communication connection may be indirect coupling or communication connection through some interfaces, devices, or units, and may be in electrical, mechanical, or other forms.

[220] The present invention is described with reference to flowcharts and/or block diagrams of methods, devices (systems), and computer program products according to embodiments of the present invention. It should be understood that each flow and/or block in the flowcharts and/or block diagrams and a combination of flows and/or blocks in the flowcharts and/or block diagrams may be implemented by computer program instructions. These computer program instructions can be provided to a processor of a general-purpose computer, a special-purpose computer, an embedded processor, or another programmable data processing device to produce a machine, so that the instructions executed by the processor of the computer or another programmable data processing device produce an apparatus for realizing the functions specified in one or more flows of the flowcharts and/or one or more blocks of the block diagrams.

[221] These computer program instructions may also be stored in a computer-readable memory that can direct a computer or another programmable data processing device to work in a specific manner, so that the instructions stored in this computer-readable memory produce an article of manufacture including an instruction apparatus which implements the functions specified in one or more flows of the flowcharts and/or one or more blocks of the block diagrams.

[222] These computer program instructions can also be loaded onto a computer or another programmable data processing device, so that a series of operation steps are performed on the computer or another programmable device to produce computer-implemented processing, so that

the instructions executed on the computer or another programmable device provide steps for implementing the functions specified in one or more flows of the flowcharts and/or one or more blocks of the block diagrams.

[223] In a typical configuration, the computing device includes one or more central
5 processing units (CPUs), an input/output interface, a network interface, and a memory.

[224] The memory can include a volatile memory, a Random Access Memory (RAM), and/or non-volatile memory in computer-readable media, e.g., a Read-Only Memory (ROM) or a flash RAM. Memory is an example of the computer-readable medium.

[225] The computer-readable medium, including permanent and non-permanent,
10 removable and non-removable media, can implement information storage by means of any method or technology. The information may be computer-readable instructions, data structures, program modules, or other data. Examples of a storage medium of a computer include, but are not limited to, phase change memory (PRAM), static random access memory (SRAM), dynamic random access memory (DRAM), other types of random access memory (RAM), read-only memory
15 (ROM), electrically erasable programmable read-only memory (EEPROM), flash memory or other memory technologies, read-only compact disc read-only memory (CD-ROM), digital versatile disc (DVD) or other optical storage, magnetic tape cassettes, magnetic tape magnetic disk storage, graphene storage, or other magnetic storage devices, or any other non-transmission medium, and can be used to store information that can be accessed by computing devices. As defined herein, the
20 computer-readable medium does not include temporary computer-readable media (transitory media), such as a modulated data signal and a carrier.

[226] Those skilled in the art should understand that one or more embodiments of this specification may be provided as a method, system, or computer program product. Therefore, one or more embodiments of this specification may be in the form of an entirely hardware embodiment,
25 an entirely software embodiment, or an embodiment combining software and hardware aspects. Moreover, one or more embodiments of this specification may be in the form of a computer

program product which is implemented on one or more computer-usable storage media (including, but not limited to, disk storage, CD-ROM, optical storage, etc.) containing computer-usable program code.

[227] One or more embodiments of this specification may be described in the general context of computer-executable instructions executed by a computer, such as a program module. Generally, the program module includes a routine, a program, an object, an assembly, a data structure, and the like used for executing a specific task or implementing a specific abstract data type. One or more embodiments of this specification may also be practiced in distributed computing environments in which tasks are performed by remote processing devices connected through a communication network. In the distributed computing environments, the program module may be located in local and remote computer storage media including a storage device.

[228] The embodiments in this specification are all described in a progressive manner, and for the same or similar parts between the embodiments, reference can be made to each other. Each embodiment focuses on the differences from other embodiments. In particular, for the system embodiment, since it is basically similar to the method embodiment, the description is relatively simple. For the relevant parts, reference can be made to part of the description of the method embodiment. In the description of this specification, the description with reference to terms "one embodiment," "some embodiments," "example," "specific example," or "some examples" means specific features, structures, materials, or characteristics described in conjunction with the embodiment or example are included in at least one embodiment or example of this specification. In this specification, the schematic expression of the above terms does not necessarily refer to the same embodiment or example. Moreover, the specific features, structures, materials, or characteristics described may be combined in any suitable manner in any one or more embodiments or examples. In addition, without contradicting each other, those skilled in the art may combine and assemble different embodiments or examples and features of different embodiments or examples described in this specification.

[229] The above description is only implementations of one or more embodiments of this specification and is not intended to limit one or more embodiments of this specification. For those skilled in the art, various modifications and changes can be made to one or more embodiments of this specification. Any modifications, equivalent replacements, improvements, etc. made within
5 the spirit and principle of this specification shall be included in the scope of the claims.

CLAIMS

1. A post-paid transaction data processing method, comprising:

receiving risk search information which includes a transaction amount and a transaction user

5 identifier;

acquiring a payment channel corresponding to the transaction user identifier according to the transaction user identifier;

determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount; and

10 determining a default evaluation result of a post-paid transaction according to the predictive affordable value.

2. The method of claim 1, wherein the risk search information further comprises a commodity type;

accordingly, the method further includes:

15 determining a risk coefficient corresponding to the commodity type; and

accordingly, the determining a default evaluation result of a post-paid transaction comprises:

determining a default evaluation result of the post-paid transaction according to the risk coefficient and the predictive affordable value.

3. The method of claim 1, wherein the determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount includes:

acquiring historical bill data of the payment channel;

determining a predictive amount of funds corresponding to the payment channel at a transaction time according to the historical bill data; and

25 determining a predictive affordable value of the payment channel for the transaction amount according to the transaction amount and the predictive amount of funds of the payment channel.

4. The method of claim 3, wherein the determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount further includes:

acquiring a transaction behavior of a transaction user corresponding to the payment channel

5 according to the historical bill data; and

determining a predictive affordable value of the payment channel for the transaction amount according to the transaction behavior, the transaction amount, and the predictive amount of funds of the payment channel.

5. The method of claim 2, wherein the determining a risk coefficient corresponding to the commodity type comprises:

acquiring historical transaction data, and acquiring a default transaction ratio corresponding to the commodity type according to the historical transaction data; and

determining a risk coefficient corresponding to the commodity type according to the default transaction ratio.

6. The method of claim 1, wherein the determining a default evaluation result of a post-paid transaction according to the predictive affordable value comprises:

determining a default evaluation result of a post-paid transaction according to the predictive affordable value by using at least one method of decision tree and logistic regression.

7. The method of any one of claims 1-6, the method further comprising:

20 sending the default evaluation result to a post-paid transaction data processing terminal which corresponds to a transaction merchant of the post-paid transaction; and

receiving request information approving the post-paid transaction, and performing payment processing on the post-paid transaction.

8. A post-paid transaction data processing device, comprising:

25 an information receiving module for receiving risk search information which includes a transaction amount and a transaction user identifier;

a payment channel search module for acquiring a payment channel corresponding to the transaction user identifier according to the transaction user identifier;

an amount prediction module for determining a predictive affordable value of the payment channel for the transaction amount based on the payment channel and the transaction amount; and

5 a decision-making module for determining a default evaluation result of a post-paid transaction according to the predictive affordable value.

9. The device of claim 8, wherein the risk search information further comprises a commodity type;

accordingly, the device further comprises:

10 a commodity risk analysis module for determining a risk coefficient corresponding to the commodity type; and

accordingly, the decision-making module is specifically used for:

determining a default evaluation result of the post-paid transaction according to the risk coefficient and the predictive affordable value.

15 10. The device of claim 8, wherein the amount prediction module is specifically used for:

acquiring historical bill data of the payment channel;

determining a predictive amount of funds corresponding to the payment channel at a transaction time according to the historical bill data; and

20 determining a predictive affordable value of the payment channel for the transaction amount according to the predictive amount of funds of the payment channel and the transaction amount.

11. The device of claim 10, wherein the amount prediction module is specifically used for:

acquiring a transaction behavior of a transaction user corresponding to the payment channel according to the historical bill data; and

25 determining a predictive affordable value of the payment channel for the transaction amount according to the transaction behavior, the transaction amount, and the predictive amount of funds of the payment channel.

12. The device of claim 9, wherein the commodity risk analysis module is specifically used for:

acquiring historical transaction data, and acquiring a default transaction ratio corresponding to the commodity type according to the historical transaction data; and

5 determining a risk coefficient corresponding to the commodity type according to the default transaction ratio.

13. The device of claim 8, wherein the decision-making module is specifically used for:

determining a default evaluation result of a post-paid transaction according to the predictive affordable value by using at least one method of decision tree and logistic regression.

10 14. The device of any one of claims 8-13, wherein the device further comprises a payment processing module for:

sending the default evaluation result to a post-paid transaction data processing terminal which corresponds to a transaction merchant of the post-paid transaction; and

15 receiving request information approving the post-paid transaction, and performing payment processing on the post-paid transaction.

15. A post-paid transaction data processing apparatus, comprising: at least one processor and a memory for storing processor-executable instructions which, when executed by the processor, implement the method of any one of claims 1-7.

20 16. A post-paid transaction data processing system, comprising a post-paid transaction data processing device, a risk inquiry interface, and a payment interface, wherein the post-paid transaction data processing system includes at least one processor and a memory for storing processor-executable instructions which, when executed by the processor, implement the method of any one of claims 1-7.

17. A post-paid transaction data processing method, comprising:

receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction
5 data processing device; and

sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

18. A post-paid transaction data processing terminal, comprising:

a search information sending module for receiving a post-paid transaction service request, and
10 sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

a default information receiving module for receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device; and

15 a transaction approving module for sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

19. A post-paid transaction data processing apparatus, comprising: at least one processor and a memory for storing processor-executable instructions which, when executed by the processor,
20 implement:

receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction
25 data processing device; and

sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

20. A computer storage medium having stored thereon a computer program which, when executed, implements the following method:

5 receiving a post-paid transaction service request, and sending risk search information to a post-paid transaction data processing device, wherein the risk search information includes a commodity type, a transaction amount, and a transaction user identifier;

receiving a default evaluation result of a post-paid transaction sent by the post-paid transaction data processing device; and

10 sending, if the default evaluation result is less than a preset probability threshold, request information approving the post-paid transaction to the post-paid transaction data processing device.

21. A data processing server for e-wallets, comprising: at least one processor and a memory for storing processor-executable instructions which, when executed by the processor, implement the method of any one of claims 1-7.