

METHOD AND DEVICE FOR SUPPORTING PAYMENT THROUGH CURRENCY EXCHANGE

BACKGROUND

1. Field of the Invention

The present disclosure relates to a method and device for supporting payment through currency exchange, and more specifically, to a system and method for enabling a currency exchange process to be performed on the basis of transaction-related information obtained from a user account.

2. Discussion of Related Art

Recently, as the use of credit and check cards has increased, the number of customers who do not carry cash is increasing. Therefore, when going abroad, there are cases in which cards are not accepted or cash is required, and thus the number of customers who exchange money is continuously increasing. In this case, as a payment method other than currency exchange, there is a method of opening an account linked to an integrated circuit (IC) card. In relation to this, there is a method of opening a separate payment account and obtaining and using a currency exchange transportation card and the like. In this case, when foreigners come to Korea or when Koreans visit other countries, there is the inconvenience of having to open a separate local account, carry foreign currency, and since money is deposited into the account in a rechargeable manner, continuously recharge the account in local currency whenever money is needed. Further, in an overseas card payment method, when a customer presents an overseas card at an affiliated store, the affiliated store generates full text of payment approval request containing card information read from the overseas card and a payment amount in Korean Won, and when the affiliated store requests payment approval via

a value-added network (VAN), the VAN requests payment approval from a brand company through a statement purchase company, and the brand company's server processes payment approval through an overseas card issuing company according to its own exchange rate at a time point of the payment approval request. When purchasing a statement for an overseas card, it is common for the brand company's server to process statement purchase for the overseas card issuing company according to its own exchange rate at the time point of the statement purchase. However, such a payment method has a problem of high currency exchange fees because it uses an exchange rate of the brand company, and exchange rate risk occurs due to exchange rate fluctuations between a time point of payment approval and a time point of statement purchase. From the perspective of customers issuing overseas cards, there is a problem of not being able to predict how much of the Korean Won payment amount will be exchanged to their own money and charged at a time point of overseas card payment. Therefore, there is a need for a method and system that allows users to more conveniently use a currency exchange process without opening a separate account or to receive services that allow the users to predict a payment amount to be charged.

[Related Art Document]

[Patent Document]

Korean Laid-open Patent Publication No. 10-2022-0107383 (August 2, 2022) Simple Payment and Card Payment Methods and Systems Based On Overseas Currency.

SUMMARY OF THE INVENTION

The present disclosure is directed to providing a system for supporting payment through currency exchange, which is to provide a service that allows an exchange amount corresponding to each transaction to be provided according to a plurality of transactions corresponding to user accounts made overseas.

Objects to be provided by the present disclosure are not limited to the objects described above, and other objects may be provided.

One aspect of the present disclosure provides a method of supporting payment through currency exchange, which includes obtaining, by a reception unit, transaction initiation information including information on an affiliated store handling a transaction subject transacted in a first currency, obtaining, by a processor, a first currency transaction price for the transaction subject on the basis of the transaction initiation information, providing, by the processor, a second currency transaction price for the transaction subject that is determined according to the first currency transaction price and a provided exchange rate, providing, by the processor, an approval inquiry message inquiring whether to approve a transaction proceeding according to the first currency transaction price and the second currency transaction price, and transmitting, by the processor, a funds transfer request according to the first currency transaction price on the basis of an approval response to the approval inquiry message.

The providing of the second currency transaction price may further include determining a provided exchange rate for a second currency relative to the first currency at a time point at which the transaction initiation information is obtained, on the basis of a standard exchange rate, and updating the provided exchange rate according to a partially preferential exchange rate determined based on a preferential level for a user account providing the transaction initiation information, wherein the provided exchange rate may include a cash buying rate and a telegraphic transfer selling rate.

The transaction initiation information may include a quick-response (QR) code used for payment in a separate local payment method.

The method may further include transmitting a funds transfer status inquiry request to a local server after the funds transfer request is transmitted, wherein the transmitting of the

funds transfer status inquiry request is repeatedly performed based on whether a funds transfer status response to the funds transfer status inquiry request is received.

When the funds transfer status response is not received, a frequency and number of repetitions of the transmitting of the funds transfer status inquiry request may be determined based on a communication status with the local server, a time elapsed since the funds transfer status inquiry request was first transmitted, a trust level of the local server, and the second currency transaction price.

The method may further include providing a funds transfer status response when the funds transfer request is transmitted to the local server.

The obtaining of the first currency transaction price may include providing a transaction price input image obtained according to the transaction initiation information, and determining the first currency transaction price on the basis of a user price input obtained based on the transaction price input request image.

The updated cash buying rate updated according to the partially preferential exchange rate may be smaller than the cash buying rate and greater than the telegraphic transfer selling rate.

The preferential level may be determined based on at least one of a total number of transactions, a total amount of transactions, a payment support service usage period, a number of currency exchange transactions, a currency exchange transaction amount, and a currency exchange transaction frequency for the user account.

Another aspect of the present disclosure provides a device for supporting payment through currency exchange, which includes a reception unit configured to obtain transaction initiation information including information on an affiliated store handling a transaction subject transacted in a first currency, and a processor configured to obtain a first currency transaction price for the transaction subject on the basis of the transaction initiation

information, provide a second currency transaction price for the transaction subject that is determined according to the first currency transaction price and a provided exchange rate, provide an approval inquiry message inquiring whether to approve a transaction proceeding according to the first currency transaction price and the second currency transaction price, and transmit a funds transfer request according to the first currency transaction price on the basis of an approval response to the approval inquiry message.

The processor may determine a provided exchange rate for a second currency relative to the first currency at a time point at which the transaction initiation information is obtained, on the basis of a standard exchange rate, and update the provided exchange rate according to a partially preferential exchange rate determined based on a preferential level for a user account providing the transaction initiation information, wherein the provided exchange rate may include a cash buying rate and a telegraphic transfer selling rate.

The transaction initiation information may include a QR code used for payment in a separate local payment method.

The processor may transmit a funds transfer status inquiry request to a local server after the funds transfer request is transmitted, and repeatedly transmit the funds transfer status inquiry request on the basis of whether a funds transfer status response to the funds transfer status inquiry request is received.

When the funds transfer status response is not received, a frequency and number of repetitions of the transmission of the funds transfer status inquiry request may be determined based on a communication status with the local server, a time elapsed since the funds transfer status inquiry request was first transmitted, a trust level of the local server, and the second currency transaction price.

Still another aspect of the present disclosure provides a computer-readable non-transitory recording medium on which a program for implementing the method of the first aspect is recorded.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and advantages of the present invention will become more apparent to those of ordinary skill in the art by describing exemplary embodiments thereof in detail with reference to the accompanying drawings, in which:

FIG. 1 is a schematic configuration diagram illustrating a system for supporting payment through currency exchange using a device and/or a server according to an embodiment;

FIG. 2 is a schematic block diagram illustrating a configuration of a device according to an embodiment;

FIG. 3 is a flowchart illustrating operations in which a device according to an embodiment operates;

FIG. 4 is a schematic diagram illustrating an example of a process in which a device according to an embodiment inquires about whether a transaction is approved;

FIG. 5 is a flowchart illustrating operations in which a device according to an embodiment provides a transaction approval result;

FIG. 6 is a flowchart illustrating operations of an example in which a device according to an embodiment transmits a funds transfer status inquiry request;

FIG. 7 is a flowchart illustrating operations of an example in which a device according to an embodiment provides a transaction approval result when a funds transfer request is transmitted to a local server; and

FIG. 8 is a diagram for describing an example in which a device according to an embodiment performs a payment process through currency exchange on the basis of a partially preferential exchange rate.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

Advantages and features of the present disclosure and methods of achieving the same will be clearly understood with reference to the accompanying drawings and embodiments described in detail below. However, the present disclosure is not limited to the embodiments to be disclosed below, but may be implemented in various different forms. The embodiments are provided in order to fully explain the present embodiments and fully explain the scope of the present embodiments for those skilled in the art.

Terms used herein are provided only to describe the embodiments of the present disclosure and not for purposes of limitation. In this specification, the singular forms include the plural forms unless the context clearly indicates otherwise. It will be understood that the terms “comprise” and/or “comprising” used herein specify some stated components, but do not preclude the presence or addition of one or more other components. Like reference numerals refer to like elements throughout this specification, and “and/or” includes each and every combination of one or more of the mentioned elements. It should be understood that, although the terms “first,” “second,” etc., may be used herein to describe various elements, these elements are not limited by these terms. The terms are merely used to distinguish one element from another element. Therefore, it should be understood that a first element to be described below may be a second element within the technical spirit of the present disclosure.

Unless otherwise defined, all terms (including technical and scientific terms) used herein can be used with meanings commonly understood by those skilled in the art. Also, it

will be further understood that terms, such as those defined in commonly used dictionaries, will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

Spatially relative terms such as “below,” “beneath,” “lower,” “above,” “upper,” etc., may be used to easily describe the correlation between one component and other components as illustrated in the accompanying drawings. Spatially relative terms should be understood to include different directions of the component during use or operation in addition to the direction illustrated in the drawing. For example, when a component illustrated in the drawing is turned upside down, a component described as being “below” or “beneath” another component may be placed “above” another component. Therefore, the exemplary term “below” or “beneath” may include both downward and upward directions. Components may be arranged in different directions so that spatially relative terms may be interpreted according to the arrangement.

Hereinafter, embodiments will be described in detail with reference to the accompanying drawings.

A device for supporting payment through currency exchange according to an embodiment described in embodiments may correspond to a card company server, or may transmit or receive information to or from the card company server, a payment server, an affiliated store server, and a user account (terminal) to obtain transaction initiation information on a user account and perform a payment process through currency exchange.

FIG. 1 is a schematic configuration diagram illustrating a system for supporting payment through currency exchange using a device and/or a server according to an embodiment.

As illustrated in FIG. 1, the system for supporting payment through currency exchange may include a device 100/network, a plurality of user accounts or terminals 101,

102, and 103, and a plurality of local servers 104, 105, and 106, and transaction initiation information on the user account and a plurality of pieces of information related to currency exchange corresponding to overseas payment may be transmitted or received through mobile communication between the respective servers. In the drawing, although three user accounts 101, 102, and 103 or three local servers 104, 105, and 106 are illustrated, but the present disclosure is not limited thereto, and the system for supporting payment through currency exchange may further include a plurality of accounts or a plurality of servers. In an embodiment, the plurality of local servers 104, 105, and 106 may include a plurality of overseas affiliated store servers and include foreign financial servers corresponding to each country. That is, the device 100 may perform a currency exchange process by mobile communication with the plurality of user accounts 101, 102, and 103, the plurality of affiliated store servers, and the plurality of foreign financial servers.

However, it should be understood by those skilled in the art that other general-purpose components other than those illustrated in FIG. 1 may be further included in the system for supporting payment through currency exchange. For example, the system for supporting payment through currency exchange may further include an external server that operates in conjunction with a network. Alternatively, according to another embodiment, it should be understood by those skilled in the art that some components illustrated in FIG. 1 may be omitted.

The device 100 according to the embodiment may include a network and transmit or receive a plurality of pieces of information to or from the plurality of user terminals 101, 102, and 103 and the plurality of local servers 104, 105, and 106.

FIG. 2 is a schematic block diagram illustrating a configuration of the device 100 according to the embodiment.

Referring to FIG. 2, a reception unit 210 according to the embodiment may obtain transaction initiation information including information on an affiliated store handling a transaction subject transacted in a first currency.

A processor 220 according to the embodiment may obtain a first currency transaction price for the transaction subject on the basis of the transaction initiation information. Further, the processor 220 may provide a second currency transaction price for the transaction subject that is determined according to the first currency transaction price and a provided exchange rate. Further, the processor 220 may provide an approval inquiry message inquiring whether to approve a transaction proceeding according to the first currency transaction price and the second currency transaction price. Further, the processor 220 may transmit a funds transfer request according to the first currency transaction price on the basis of an approval response to the approval inquiry message.

Further, it should be noted that in the process in which the reception unit 210 obtains the transaction initiation information and the processor 220 obtains the first currency transaction price, determines the second currency transaction price, and transmits the funds transfer request on the basis of the approval response, the device 100 may be combined by various conventional network combinations, such as an Internet network, a mobile communication network, etc., and there are no special restrictions thereto.

In addition, it should be understood by those skilled in the art that other general-purpose components other than those illustrated in FIG. 2 may be further included in the device 100. For example, the device 100 may further include a transmission unit (not illustrated) for transmitting the funds transfer request, and a memory (not illustrated) for storing the transaction initiation information obtained from the reception unit 210, the first currency transaction price obtained and determined from the processor 220, information on the second currency transaction price, etc. Alternatively, according to another embodiment,

it should be understood by those skilled in the art that some components illustrated in FIG. 2 may be omitted.

The device 100 according to the embodiment may be used by a user, and may be linked to any type of handheld wireless communication devices equipped with a touch screen panel, such as mobile phones, smartphones, personal digital assistants (PDAs), portable multimedia players (PMPs), tablet personal computers (PCs), etc. In addition, the device 100 according to the embodiment may be included in or linked to devices that have a foundation for installing and executing applications, such as desktop computers, tablet computers, laptop computers, or Internet Protocol televisions (IPTVs) including a set-top box.

Further, the device 100 may be implemented as a terminal such as a computer that operates through a computer program for realizing functions described in this specification.

The device 100 according to the embodiment may include a system (not illustrated) that provides a service for supporting payment through currency exchange and a related server (not illustrated), but the present disclosure is not limited thereto. The server according to the embodiment may support an application that provides a service for supporting payment through currency exchange.

Hereinafter, although an embodiment in which the device 100 according to the embodiment independently provides the service for supporting payment through currency exchange is mainly described, the service for supporting payment through currency exchange may be provided through linkage with the server, as described above. That is, the device 100 and server according to the embodiment may be integrated and implemented in terms of their functions, and the server may be omitted, and it can be seen that the device 100 and server according to the embodiment are not limited to any one embodiment.

In an embodiment, the device 100 and the server may be linked, and the configuration of providing the currency exchange service to the user account may be performed by the

server or the device 100 by performing the service for supporting payment through currency exchange and the currency exchange process. For example, the device 100 may operate as a server, and hereinafter, the device 100 and the server will be collectively referred to as the device 100 and described below.

FIG. 3 is a flowchart illustrating operations in which the device 100 according to the embodiment operates.

Referring to operation S310, the device 100 according to the embodiment may obtain transaction initiation information including information on an affiliated store handling a transaction subject transacted in a first currency. In an embodiment, the first currency may include money corresponding to overseas distribution and payment methods. That is, in an embodiment, the affiliated store may include an overseas trading company or a sales company, and the device 100 may obtain transaction initiation information including affiliated store information. The affiliated store information may include information that characterizes the affiliated store, such as the affiliated store's industry, name, location, and the like. Further, the transaction initiation information may refer to information used for starting a transaction for the first time. For example, the transaction initiation information may include a quick-response (QR) code used for payment in a separate local payment method. The local payment method may include a payment method or service that supports payment to be performed in an affiliated store handling a transaction subject transacted in a first currency. For example, the device 100 may obtain transaction initiation information including information on an affiliated store corresponding to a QR code by obtaining the QR code provided at the affiliated store from the plurality of user accounts 101, 102, and 103. That is, a user may recognize the QR code through a user terminal, and the device 100 may obtain the information on the affiliated store at a time point at which the QR code is recognized. The user terminal may be a terminal corresponding to each of the user accounts 101, 102, and 103.

In another embodiment, the device 100 may obtain the transaction initiation information through an affiliated store server. For example, the device 100 may provide a QR code or barcode corresponding to each of the user accounts 101, 102, and 103 to the user terminal, and recognize the QR code or barcode provided to the user terminal by the affiliated store to obtain the transaction initiation information.

Referring to operation S320, the device 100 according to the embodiment may obtain a first currency transaction price for the transaction subject on the basis of the transaction initiation information. In an embodiment, the first currency transaction price may be an amount corresponding to overseas local money that the user wants to pay at an overseas affiliated store. As the device 100 obtains the transaction initiation information, the device 100 may obtain a first currency transaction price for an amount to be paid at the corresponding affiliated store. For example, the device 100 may provide a transaction price input image obtained according to the transaction initiation information to the user terminal. Further, the first currency transaction price may be determined based on a user price input obtained based on the transaction price input image. The device 100 may provide a price input request image for inputting an amount corresponding to the overseas local money to the user terminal, and the device 100 may obtain and determine the first currency transaction price as the user inputs an amount corresponding to the amount to be paid. Further, in an embodiment, the first currency transaction price may be obtained from the affiliated store server. For example, as the device 100 obtains the transaction initiation information, the device 100 may provide the transaction price input image to the affiliated store server or terminal corresponding to the QR code. Further, the first currency transaction price may be obtained and determined based on the user price input obtained from the affiliated store server. That is, the device 100 may determine the first currency transaction price according to the user price input that is input through the user terminal or the affiliated store server.

Referring to operation S330, the device 100 according to the embodiment may provide a second currency transaction price for the transaction subject that is determined according to the first currency transaction price and a provided exchange rate. In an embodiment, the second currency may include money corresponding to a distribution and payment method in the user's home country (domestic) corresponding to the user accounts 101, 102, and 103. The second currency transaction price may be an exchange amount in the user's home country (domestic) corresponding to the first currency transaction price abroad. That is, the device 100 may determine an exchange amount according to the provided exchange rate for the first currency transaction price as the second currency transaction price. In an embodiment, the provided exchange rate may include a cash buying rate and a telegraphic transfer selling rate. The device 100 according to the embodiment may determine a provided exchange rate for the second currency compared to the first currency at a time point at which the transaction initiation information is obtained, on the basis of a standard exchange rate. In an embodiment, the standard exchange rate may be an exchange rate applied when exchanging, buying, or selling currencies between the country corresponding to the first currency and the country corresponding to the second currency. Further, the device 100 may update the provided exchange rate according to a partially preferential exchange rate determined based on a preferential level for the user accounts 101, 102, and 103 providing the transaction initiation information. In an embodiment, the cash buying rate may be a ratio of the second currency to the first currency according to the bank's exchange rate standard applied when buying cash at the time point at which the transaction initiation information is obtained. Further, the telegraphic transfer selling rate may be a ratio of the second currency to the first currency according to the bank's exchange rate standard applied when transferring the amount at the time point at which the transaction initiation information is obtained. Further, the partially preferential exchange rate may be an

exchange rate adjusted to be applied less than the cash purchase rate and telegraphic transfer selling rate determined according to the bank's exchange rate standards, depending on the preferential level corresponding to the user accounts 101, 102, and 103. In an embodiment, the updated cash buying rate that is updated according to the partially preferential exchange rate may be smaller than the cash buying rate at the time point at which the transaction initiation information is obtained and may be greater than the telegraphic transfer selling rate. Generally, when buying cash at an announced exchange rate (basic sales rate) according to the standard exchange rate, the cash buying rate depending on an additional amount granted at the time when transferring may be greater than the telegraphic transfer selling rate. Therefore, the device 100 may use the size of the cash buying rate and the telegraphic transfer selling rate at the time point at which the transaction initiation information is obtained in updating the provided exchange rate so that fees incurred during currency exchange according to the bank's exchange rate standard can be reduced. For example, the device 100 may determine a value between the cash buying rate and the telegraphic transfer selling rate corresponding to the bank's standard exchange rate as the updated cash buying rate. Therefore, the device 100 may provide a service that allows the size of the currency exchange amount charged to the user accounts 101, 102, and 103 to be reduced. In an embodiment, the preferential level may be determined based on at least one of a total number of transactions, a total transaction amount, a payment support service usage period, the number of currency exchange transactions, a currency exchange transaction amount, and a currency exchange transaction frequency for the user accounts 101, 102, and 103. In an embodiment, the preferential level may be an element to ensure that an exchange rate smaller than the size of the exchange amount charged to the user accounts 101, 102, and 103 may be applied according to the bank's standard exchange rate, and in determining the preferential level, as past payment

history information corresponding to the user accounts 101, 102, and 103 is used, the size of the updated provided exchange rate may be flexibly determined.

For example, the device 100 according to the embodiment may determine the preferential level on the basis of weights assigned to be higher in the order of the number of currency exchange transactions, the currency exchange transaction frequency, the currency exchange transaction amount, the total transaction amount, the total number of transactions, and the payment support service usage period. For example, the number of currency exchange transactions and the currency exchange transaction frequency may be the number and frequency of currency exchange processes performed as the user accounts 101, 102, and 103 use the currency exchange service supported by the device 100. Since a large number of currency exchange transactions mean that users regularly use the currency exchange process during the entire period, the preferential level may be determined to be high by assigning the highest weight to the number of currency exchange transactions. Further, the currency exchange transaction frequency may also be a factor that determines how often the currency exchange process is used, and the frequency may be interpreted as including the overall number of times. However, since the frequency is a concept that indicates the degree of number of times during a certain period of time, when the certain period is 6 months because there is a high probability of being concentrated in a certain section (e.g., travel period), a frequency from January to June may be significantly different from a frequency from July to December, and thus it may be desirable to assign a lower weight than the number of transactions, and a second highest weight may be assigned to the currency exchange transaction frequency. Further, the currency exchange transaction amount may include the total transaction amount for which the user has performed currency exchange, and may be an important factor in that the larger the currency exchange transaction amount, the higher the probability that the user has mainly used the currency exchange service supported by the

device 100. However, although the exchange amount is large, the exchange amount may include cases where a small number of large payments are made at a small number of affiliated stores (even when only one large payment is included, the exchange amount may be large), and thus reliability may be somewhat lower than the number of currency exchange transactions and the currency exchange transaction frequency, and a third highest weight may be assigned to the currency exchange transaction amount. Further, the transaction amount may include the total amount of payments performed as the user accounts 101, 102, and 103 use the payment service supported by the device 100. That is, this may be a concept that includes all domestic and overseas transactions. When the total transaction amount is large as the user uses the payment service supported by the device 100, the total transaction amount may be used to determine the preferential level in that the user reliability may be evaluated to be high because the server supported by the device 100 may correspond to the user's main transaction payment server. However, since the preferential level is a level for determining the provided exchange rate, the importance of the number, the frequency, and the amount corresponding to transactions corresponding to currency exchange may be higher than that of the preferential level, and thus a fourth highest weight may be assigned to the total transaction amount. Further, since the total number of transactions is the number of times the payment process is performed as the payment service supported by the device 100 is used, the total number of transactions, like the total transaction amount, the server supported by the device 100 may also correspond to the user's main transaction payment server. However, since the number of transactions at this time includes many domestic cases, the total number of transactions may include many unnecessary transactions and low-importance transactions (e.g., transactions of less than a preset amount, such as candy), and thus it may be desirable to assign a lower weight than the total transaction amount in cases where domestic cases are included, and a fifth highest weight may be assigned to the total number of transactions.

Further, the payment support service usage period may be a period from a time point at which the user subscribes to the payment service supported by the device 100 or a period from a time point at which the user starts using the payment service to a current time point. The longer the payment support service usage period, the longer the users has used the service, and thus user's reliability may be partially guaranteed compared to new users. However, although the period of use is long, the actual number of times the payment service or currency exchange service has been used may be low so that accuracy may be low, and thus a sixth highest weight may be assigned to the payment support service usage period. Therefore, by assigning the weights of different values to the six factors described above, the preferential level corresponding to the user accounts 101, 102, and 103 is determined, and thus the provided exchange rate may be determined with higher accuracy, and accordingly, user satisfaction may be improved. In another embodiment, the device 100 may obtain the number of recent transactions, a recent transaction amount, and income information corresponding to the user accounts 101, 102, and 103. Further, when the payment support service usage period is less than a preset period (e.g., 1 year), the device 100 may determine the preferential level on the basis of weights assigned in the order of the number of recent transactions, the recent transaction amount, and the income information. In an embodiment, the income information may be a confirmed deposit amount including a monthly salary of the user accounts 101, 102, and 103. For example, the device 100 may obtain an amount deposited repeatedly every month (e.g., 3 months or more) to one or more accounts corresponding to the user accounts 101, 102, and 103 as the confirmed deposit amount. Alternatively, the amount obtained (deposited) repeatedly from the server corresponding to the monthly salary account corresponding to the network (e.g., automatic transfer corresponding server) linked to the payment server supported by the device 100 may be obtained as the confirmed deposit amount. When the payment support service usage period

is less than a preset period, it may be desirable to check the number of recent transactions because the accuracy of the six factors described above may be somewhat low. The number of recent transactions is the number of payments made within a preset period (e.g., 1 year), and the utilization rate during a short period of time may be checked, and thus the preferential level may be determined by assigning the highest weight to the number of recent transactions. Further, the recent transaction amount is a total transaction amount for which payment was made within a preset period, and the transaction amount may increase as the number of uses increases, but since the transaction amount may be determined on a one-time basis, accuracy may be lower than the number of times, and thus the second highest weight may be assigned to the recent transaction amount. Further, the income information may be used to determine the preferential level in that a factor that can confirm the user reliability when the payment support service usage period is short. When the confirmed deposit amount is greater than the amount divided by the recent transaction amount by the number of months corresponding to the payment support service usage period or when the confirmed deposit amount that is repeatedly deposited is constant, the user reliability may be determined to be high, and when the confirmed deposit amount is smaller than the amount divided by the recent transaction amount by the number of months corresponding to the payment support service usage period, or the more unclear the confirmed deposit amount that is repeatedly deposited (e.g., when the size of the repeatedly deposited amount is not constant and has high volatility), the reliability may be determined to be lower, and thus the third highest weight may be assigned to the income information. Therefore, the device 100 may determine the preferential level on the basis of the weights of different values assigned to the number of recent payments, the recent payment amount, and the income information, and thus may more accurately determine the provided exchange rate that can be provided to users who have used the payment support service for a short period of time.

In an embodiment, the preferential level may be determined to be one of a first level to a third level. For example, when the payment support service usage period is greater than or equal to a preset period, the device 100 may calculate a preferential score on the basis of the number of currency exchange transactions, the currency exchange transaction frequency, the currency exchange transaction amount, the total transaction amount, the total number of transactions, and the payment support service usage period corresponding to each of the user accounts 101, 102, and 103, according to importance weights corresponding to 35%, 25%, 20%, 15%, 10%, and 5% for each of the six factors described above. When the calculated total preferential score corresponds to 80% or more of the total score preset by an administrator, the preferential level may be determined to be the first level, when the calculated total preferential score corresponds to 50% or more and less than 80% of the total score, the preferential level may be determined to be the second level, and when the calculated total preferential score corresponds to less than 50% of the total score, the preferential level may be determined to be the third level. Further, when the preferential level corresponds to the first level, the device 100 may determine the partially preferential exchange rate as a first exchange rate (e.g., 85%) corresponding to the first level, when the preferential level corresponds to the second level, the device 100 may determine the partially preferential exchange rate as a second exchange rate (e.g., 75%) corresponding to the second level, and when the preferential level corresponds to the third level, the device 100 may determine the partially preferential exchange rate as a third exchange rate (e.g., 50%) corresponding to the third level. In an embodiment, the first to third levels and the first to third exchange rates may be flexibly changed by the administrator, and the sizes corresponding thereto may also be changed. Since the device 100 determines the second currency transaction price by determining the provided exchange rate by applying the partially preferential exchange rate differently to each of the user accounts 101, 102, and 103

according to the preferential level, there is an effect that user satisfaction can be improved and the utilization rate of the service for supporting payment through currency exchange supported by the device 100 can be improved.

Referring to operation S350, the device 100 according to the embodiment may transmit a funds transfer status inquiry request to the local servers 104, 105, and 106 after a funds transfer request is transmitted. In an embodiment, the local servers 104, 105, and 106 may include a foreign financial server corresponding to the country that corresponds to the first currency. Further, the funds transfer status inquiry request may mean requesting status information on whether a fund transfer has been performed after the fund transfer request is transmitted to the local server 104, 105, or 106 corresponding to an overseas country, that is, status information on whether payment for the first currency transaction price has been made at the affiliated store as an amount of the second currency transaction price corresponding to the first currency transaction price is withdrawn from the user accounts 101, 102, and 103. The device 100 may repeatedly perform the funds transfer status inquiry request on the basis of whether a funds transfer status response to the funds transfer status inquiry request is received. In an embodiment, an example in which the device 100 receives the funds transfer status response may mean the funds transfer status response received from the local servers 104, 105, and 106. For example, when the device 100 receives the funds transfer status response from the local servers 104, 105, and 106, the device 100 may not transmit further the funds transfer status inquiry request, and when the device 100 does not receive the funds transfer status response from the local servers 104, 105, and 106, the device 100 may repeatedly transmit the funds transfer status inquiry request. The device 100 according to the embodiment may determine a frequency and number of repetitions for repeatedly performing the funds transfer status inquiry request. For example, the frequency and number of repetitions of the transmitting of the funds transfer status inquiry request may be

determined based on a communication status with the local servers 104, 105, and 106, a time elapsed since the funds transfer status inquiry request was first transmitted, a trust level of the local servers 104, 105, and 106, and the second currency transaction price. In an embodiment, as the device 100 monitors the status of the local servers 104, 105, and 106, the device 100 may determine the frequency in proportion to the communication status with the local servers 104, 105, and 106. For example, when the communication status with the local servers 104, 105, and 106 is good, signals may be transmitted and received rapidly, and thus the frequency may be determined to be high, and when the communication status with the local servers 104, 105, and 106 is poor, signals may not be transmitted and received rapidly, and thus the frequency may be determined to be low because errors may occur in communication when the frequency is determined to be high. Further, the device 100 may determine the frequency to be lower as the elapsed time increases. In an embodiment, the device 100 may determine a frequency until a preset time after the funds transfer status inquiry request is transmitted to be high, and determine a frequency after a preset time to be low. For example, the device 100 may determine a frequency until a first time (e.g., less than 10 minutes) after the funds transfer status inquiry request is transmitted to be highest (e.g., requests once every 3 minutes), determine a frequency until a second time (e.g., 10 minutes or more and less than 15 minutes) to be slightly low (e.g., requests once every 6 minutes), and determine a frequency for a third time (e.g., 15 minutes or more) to be lower (e.g., requests once every 9 minutes). In an embodiment, the first time, the second time, and the third time may be flexibly changed by the administrator. Further, the device 100 may determine the number of repetitions to be lower as the trust level of the local servers 104, 105, and 106 increases. For example, the trust level of the local servers 104, 105, and 106 may be determined according to the size of the local servers 104, 105, and 106, marketability of the country corresponding to the local servers 104, 105, and 106, and the exchange rate for the

country corresponding to the local servers 104, 105, and 106. Since the larger the size of the local servers 104, 105, and 106 or the greater the marketability of the country, the higher the reliability in the corresponding country, it is determined to be a temporary communication server error even when the current response is not fast, and since the risk may be low even when subsequent processes are performed, the frequency and number of repetitions of transmitting the fund transfer status request may be determined to be low. Further, the greater the exchange rate for a country, the higher the frequency and number of repetitions of requests may be determined. When the exchange rate for the country is high, the risk of currency exchange may increase, and thus the frequency and number of repetitions of transmitting the fund transfer status request may be determined to be high. Further, the device 100 may determine the frequency and number of repetitions of transmitting the funds transfer status request to be higher as the second currency transaction price is larger. For example, since the size of the second currency transaction price corresponding to the first currency transaction price may increase even when the user makes a large payment at an affiliated store, the need for confirmation of approval for currency exchange and transactions may increase, and thus the frequency and number of repetitions may be determined to be high. Therefore, the device 100 may repeatedly perform the funds transfer status inquiry request on the basis of the determined frequency and number of repetitions. The device 100 according to the embodiment may provide the funds transfer status response when the funds transfer request is transmitted to the local servers 104, 105, and 106. In an embodiment, an example in which the device 100 provides the funds transfer status response may mean providing the funds transfer status response to the user accounts 101, 102, and 103. In an embodiment, the transmission may mean that only the device 100 transmits the funds transfer request to the local servers 104, 105, and 106. That is, regardless of whether the device 100 receives the funds transfer status response received from the local servers 104, 105, and 106, when the

device 100 transmits (delivers) the funds transfer request to the local servers 104, 105, and 106, the device 100 may provide the funds transfer status response to the user accounts 101, 102, and 103. In an embodiment, reliability may be guaranteed because the local servers 104, 105, and 106 are the foreign financial servers corresponding to the country corresponding to the second currency, and without relying on the funds transfer status responses that may be received at different time points depending on the communication status in the corresponding country, the funds transfer status response is provided to the user accounts 101, 102, and 103 at the time point when the funds transfer request is transmitted and delivered to the local servers 104, 105, and 106 (i.e., when the local server receives the funds transfer request) so that the exchange amount is deposited into the user accounts 101, 102, and 103, and thus the transactions may be performed more rapidly. Therefore, the device 100 may monitor the funds transfer status response received from the local servers 104, 105, and 106 after providing the funds transfer status response to the user accounts 101, 102, and 103.

FIG. 4 is a schematic diagram illustrating an example of a process in which the device 100 according to the embodiment inquires about whether a transaction is approved.

Referring to FIG. 4, the device 100 may obtain transaction initiation information by obtaining a QR code from the user accounts 101, 102, and 103. Further, as described in operation S320, the device 100 may provide a transaction price input image obtained according to the transaction initiation information and determine a first currency transaction price according to a price entered in a first currency transaction price input box from the user accounts 101, 102, and 103. Further, as described in operations S330 and S340, the device 100 may provide a second currency transaction price determined according to the first currency transaction price and a provided exchange rate in a second currency transaction price provision box, and also provide information on the provided exchange rate. For example, a

ratio of the second currency to the first currency may be provided in a provided exchange rate box. Further, the device 100 may provide an approval inquiry message inquiring whether the transaction corresponding to each price at which the currency exchange process is performed is approved by providing “approval” and “cancel” selection input boxes.

FIG. 5 is a flowchart illustrating operations in which the device 100 according to the embodiment provides a transaction approval result.

Referring to FIG. 5, the device 100 according to the embodiment may transmit an authentication request for the user terminal (S501) by obtaining the transaction initiation information (S310). The device 100 may perform authentication for the user accounts 101, 102, and 103, and then perform operations S320 to S350. The device 100 may transmit a funds transfer request to the local servers 104, 105, and 106 (S350), then receive a funds transfer response from the local servers 104, 105, and 106 (S502), and provide a transaction approval result to the user accounts 101, 102, and 103 (S503). In an embodiment, the process of providing the transaction approval result (S503) may include a process of providing the above-described funds transfer status response to the user accounts 101, 102, and 103.

FIG. 6 is a flowchart illustrating operations of an example in which the device 100 according to the embodiment transmits a funds transfer status inquiry request.

Referring to FIG. 6, the device 100 according to the embodiment may transmit a funds transfer status inquiry request (S601) after transmitting the funds transfer request. The device 100 may transmit the funds transfer status inquiry request, and then repeatedly monitor whether the funds transfer status response is received based on the local servers 104, 105, and 106 (S602). Therefore, a frequency and number of repetitions for the funds transfer status inquiry request may be determined according to a result of the monitoring (S603). The device 100 may re-transmit the funds transfer status inquiry request to the local servers 104,

105, and 106 according to the determined frequency and number of repetitions for the request (S604). Therefore, when a fund transfer response to the funds transfer status inquiry request repeatedly retransmitted is received from the local servers 104, 105, and 106 (S502), the device 100 may provide a transaction approval result to the user accounts 101, 102, and 103 (S503).

FIG. 7 is a flowchart illustrating operations of an example in which the device 100 according to the embodiment provides a transaction approval result when a funds transfer request is transmitted to the local servers 104, 105, and 106.

Referring to FIG. 7, the device 100 according to the embodiment may update a time point at which the transaction approval result is provided (S503) in FIG. 6. For example, the process of receiving the fund transfer response from the local servers 104, 105, and 106 (S502), illustrated as a dotted box in FIG. 7, may be omitted. The device 100 may transmit the funds transfer request to the local servers 104, 105, and 106 (S350) as the approval response is obtained from the user accounts 101, 102, and 103, and when the funds transfer request is transmitted, the device 100 may provide the transaction approval result including the funds transfer status response to the user accounts 101, 102, and 103 (S503). That is, the device 100 may first provide the transaction approval result (S503) and then perform operations S602 to S604. In an embodiment, when the operation corresponding to the dotted box is set by the administrator, or a response is not received for a preset time or more (e.g., one minute to two minutes) depending on the communication status of the local servers 104, 105, and 106, the operation may be omitted. Therefore, the speed of a payment process through currency exchange may be improved.

FIG. 8 is a diagram for describing an example in which the device 100 according to the embodiment performs a payment process through currency exchange on the basis of a partially preferential exchange rate.

Referring to FIG. 8, the diagram shown at the top is a diagram showing an example of spreads determined according to the bank's exchange rate standard. For example, a fee may be incurred when exchanging currency based on the bank's exchange rate standard without a preferential exchange rate. Accordingly, for example, each of the spreads representing fees corresponding to a cash buying rate, a telegraphic transfer selling rate, a telegraphic transfer buying rate, and a cash selling rate may be determined according to the standard exchange rate. The device 100 may determine a preferential level corresponding to the user accounts 101, 102, and 103 as described in operation S330, and determine a partially preferential exchange rate according to the preferential level. In an embodiment, the partially preferential exchange rate may be determined to be less than 50%. That is, the partially preferential exchange rate may be an exchange rate which is partially discounted compared to the standard exchange rate and may be determined to be 50% or more of the standard exchange rate. In FIG. 8, an example in which the partially preferential exchange rate is 50% is shown. Referring to FIG. 8, the diagram shown at the bottom is a diagram showing an example of spreads determined according to a provided exchange rate updated according to the partially preferential exchange rate. In an embodiment, a value between the cash buying rate before update and the telegraphic transfer selling rate before update may be determined as the cash buying rate updated according to the partially preferential exchange rate. For example, when it is assumed that the cash buying rate is 314.58 KRW (an amount corresponding to the second currency required to buy 1 unit of the first currency) and the telegraphic transfer selling rate is 303.56 KRW (an amount corresponding to the second currency required to remit 1 unit of the first currency) according to the bank's exchange rate standard, the device 100 may determine an amount between 314.58 KRW and 303.56 KRW as the updated cash buying rate. For example, when it is assumed that the partially preferential exchange rate is 50% according to the above-described embodiment, the device 100 may

determine 308.07 KRW as the updated cash buying rate, and determine 302.06 KRW as the telegraphic transfer selling rate. In this case, as shown in FIG. 8, it can be seen that the spread is reduced by half according to the partially preferential exchange rate. An exchange spread may be a percentage difference between the cash buying rate and the cash selling rate. Further, a telegraphic transfer spread may be a percentage difference between the telegraphic transfer selling rate and the telegraphic transfer buying rate. When the partially preferential exchange rate is determined at 50 percent, the exchange spread and the telegraphic transfer spread may be reduced by half.

According to an embodiment, by using existing payment services, payments can be made without opening a separate account, card, etc., when making overseas payments, and thus user convenience can be improved, and since a provided exchange rate is determined differently based on a preferential level corresponding to user accounts 101, 102, and 103, currency exchange services can be provided at a lower exchange rate than a standard exchange rate, and thus user satisfaction can be improved. Further, users can be provided in advance with a currency exchange amount to be charged corresponding to an amount in their home country according to an exchange rate, and thus convenience and satisfaction can be improved, and since a time point at which a transaction approval result according to a situation is provided is determined as soon as possible, users can rapidly make payments and thus satisfaction can be improved.

Various embodiments of the present disclosure may be implemented as software including one or more instructions stored in a machine-readable storage medium (e.g., a memory). For example, a processor (e.g., the processor 120) of the machine may call at least one instruction among the stored one or more instructions from the storage medium and execute the at least one called instruction. This allows the machine to be operated to perform at least one function according to the at least one called instruction. The one or

more instructions may include code generated by a compiler or code to be executed by an interpreter. The machine-readable storage medium may be provided in the form of a non-transitory storage medium. Here, the “non-transitory” means that the storage medium does not include a signal and is tangible, and does not distinguish that data is semi-permanently or temporarily stored in the storage medium.

According to an embodiment, the methods according to various embodiments disclosed in the present disclosure may be provided by being included in computer program products. The computer program products may be traded between sellers and buyers as commodities. The computer program products may be distributed in the form of a machine-readable storage medium (e.g., compact disc read only memory (CD-ROM)) or online through an application store (e.g., Play Store™). In the case of online distribution, at least some of the computer program products may be temporarily stored or temporarily generated in a storage medium such as a memory of a server of a manufacturer, a server of an application store, or a relay server.

According to an embodiment of the present disclosure, by using existing payment services, payments can be made without opening a separate account, card, etc., when making overseas payments, and thus user convenience can be improved.

Further, since a provided exchange rate is determined differently based on a preferential level corresponding to user accounts, currency exchange services can be provided at a lower exchange rate than a standard exchange rate, and thus user satisfaction can be improved.

Further, users can be provided in advance with a currency exchange amount to be charged corresponding to an amount in their home country according to an exchange rate, and thus convenience and satisfaction can be improved.

Further, since a time point at which a transaction approval result according to a situation is provided is determined as soon as possible, users can rapidly make payments and thus satisfaction can be improved.

Effects of the present disclosure are not limited to the above-described effects and other effects that are not described may be clearly understood by those skilled in the art from the above detailed descriptions.

The present disclosure has been described with reference to the illustrative drawings, but is not limited to the disclosed embodiments and drawings. It will be understood by those skilled in the art that various changes may be made without departing from the spirit and scope of the present disclosure. Therefore, the disclosed methods should be considered in a descriptive sense only and not for purposes of limitation. Even when the operational effects according to the configuration of the present disclosure are not explicitly described and explained in the description of the embodiments, the effects that can be predicted by the configuration may also be recognized. The scope of the present disclosure is indicated in the claims rather than the foregoing description, and all differences within the scope equivalent thereto should be construed as being included in the present disclosure.

WHAT IS CLAIMED IS:

1. A method of supporting payment through currency exchange, comprising:

obtaining, by a reception unit, transaction initiation information including information on an affiliated store handling a transaction subject transacted in a first currency;

obtaining, by a processor, a first currency transaction price for the transaction subject on the basis of the transaction initiation information;

providing, by the processor, a second currency transaction price for the transaction subject that is determined according to the first currency transaction price and a provided exchange rate;

providing, by the processor, an approval inquiry message inquiring whether to approve a transaction proceeding according to the first currency transaction price and the second currency transaction price; and

transmitting, by the processor, a funds transfer request according to the first currency transaction price on the basis of an approval response to the approval inquiry message.

2. The method of claim 1, wherein the providing of the second currency transaction price further includes:

determining a provided exchange rate for a second currency relative to the first currency at a time point at which the transaction initiation information is obtained, on the basis of a standard exchange rate; and

updating the provided exchange rate according to a partially preferential exchange rate determined based on a preferential level for a user account providing the transaction initiation information,

wherein the provided exchange rate includes a cash buying rate and a telegraphic transfer selling rate.

3. The method of claim 1, wherein the transaction initiation information includes a quick-response (QR) code used for payment in a separate local payment method.

4. The method of claim 1, further comprising transmitting a funds transfer status inquiry request to a local server after the funds transfer request is transmitted,

wherein the transmitting of the funds transfer status inquiry request is repeatedly performed based on whether a funds transfer status response to the funds transfer status inquiry request is received.

5. The method of claim 4, wherein, when the funds transfer status response is not received, a frequency and number of repetitions of the transmitting of the funds transfer status inquiry request are determined based on a communication status with the local server, a time elapsed since the funds transfer status inquiry request was first transmitted, a trust level of the local server, and the second currency transaction price.

6. The method of claim 1, further comprising providing a funds transfer status response when the funds transfer request is transmitted to the local server.

7. The method of claim 1, wherein the obtaining of the first currency transaction price includes:

providing a transaction price input image obtained according to the transaction initiation information; and

determining the first currency transaction price on the basis of a user price input obtained based on the transaction price input request image.

8. The method of claim 2, wherein the updated cash buying rate updated according to the partially preferential exchange rate is smaller than the cash buying rate and greater than the telegraphic transfer selling rate.

9. The method of claim 2, wherein the preferential level is determined based on at least one of a total number of transactions, a total amount of transactions, a payment support service usage period, a number of currency exchange transactions, a currency exchange transaction amount, and a currency exchange transaction frequency for the user account.

10. A device for supporting payment through currency exchange, comprising:

a reception unit configured to obtain transaction initiation information including information on an affiliated store handling a transaction subject transacted in a first currency; and

a processor configured to obtain a first currency transaction price for the transaction subject on the basis of the transaction initiation information,

provide a second currency transaction price for the transaction subject that is determined according to the first currency transaction price and a provided exchange rate,

provide an approval inquiry message inquiring whether to approve a transaction proceeding according to the first currency transaction price and the second currency transaction price, and

transmit a funds transfer request according to the first currency transaction price on the basis of an approval response to the approval inquiry message.

11. The device of claim 10, wherein the processor is configured to:

determine a provided exchange rate for a second currency relative to the first currency at a time point at which the transaction initiation information is obtained, on the basis of a standard exchange rate; and

update the provided exchange rate according to a partially preferential exchange rate determined based on a preferential level for a user account providing the transaction initiation information,

wherein the provided exchange rate includes a cash buying rate and a telegraphic transfer selling rate.

12. The device of claim 10, wherein the transaction initiation information includes a quick-response (QR) code used for payment in a separate local payment method.

13. The device of claim 10, wherein the processor is configured to:

transmit a funds transfer status inquiry request to a local server after the funds transfer request is transmitted; and

repeatedly transmit the funds transfer status inquiry request on the basis of whether a funds transfer status response to the funds transfer status inquiry request is received.

14. The device of claim 13, wherein, when the funds transfer status response is not received, a frequency and number of repetitions of the transmission of the funds transfer status inquiry request are determined based on a communication status with the local server, a time elapsed since the funds transfer status inquiry request was first transmitted, a trust level of the local server, and the second currency transaction price.

15. A computer-readable recording medium on which a program for executing the method of any one claim of claims 1 to 9 on a computer is recorded.