DESCRIPTION

ATM-CASH-LOADING MANAGEMENT SYSTEM AND ATM-CASH-LOADING MANAGEMENT METHOD

TECHNICAL FIELD

[0001]

The present invention relates to an ATM-cash-loading management system and an ATM-cash-loading management method.

BACKGROUND ART

[0002]

ATMs are installed not only at financial institutions but also in various places, such as various retail stores including convenience stores, public facilities and sites on streets. The range of installation and the number of installations have been continuously increasing. Meanwhile, appropriate measures are required to be taken to manage and operate such ATMs efficiently. Conventionally, various techniques have been proposed.

[0003]

For example, a system of redirection to another ATM (see Patent Literature 1) and the like have been proposed that include: ATMs of multiple financial institutions; a customer information monitor apparatus that monitors a customer status at each of the ATMs; an information display apparatus that includes a controller and a display; an ATM corner that includes an ATM operation management apparatus; and a monitor status management apparatus that is connected by a communication line and includes a condition database, redirection necessity determiner, and a redirection information notifier, and further include, in the condition database, a table including a condition of redirection to an ATM of another financial institution and a message corresponding to the condition, for the sake of alleviating possible concentration of customers at an ATM of a certain financial institution and possible failure of the ATM and eliminating inconveniences in an ATM corner where ATMs of multiple financial institutions are installed at a single site.

[0004]

A time-limited special offer management apparatus (see Patent Literature 2) has been proposed that is a time-limited special offer management apparatus providing time-limited special offers for customers in a store for the sake of enabling the customers to receive services

in time zones in which the customers can come to the store and equalizing the distribution of the customers coming to the store in a day to eliminate specific busy time zones, the apparatus including: time-zone-specific shop visit collecting means for counting the number of shop visits in each time zone on a customer-by-customer basis; and customer-specific time-limited special offer setting means for setting time zones including previous shop visit time zones of the customers as individual time-limited special offer time zones for the customers on the basis of the number of shop visits collected on a customer-by-customer basis.

CITATION LIST

PATENT LITERATURE

[0005]

PATENT LITERATURE 1: JP-A-2008-84166

PATENT LITERATURE 2: JP-A-2004-78471

SUMMARY OF INVENTION

TECHNICAL PROBLEM

[0006]

As described above, techniques that facilitate efficient use of an ATM and improvement of convenience of a user have been conventionally proposed. However, there is no technique that facilitates improvement of the efficiency of managing and operating cash to be loaded in an ATM and reduction in the cost.

[0007]

An ATM is an apparatus that has a function of allowing a user to deposit and withdraw money as a basic function. Consequently, periodical or unscheduled cash loading operations are required to be done by a security company or the like. The operations are a cost factor for ATM operating companies, such as financial institutions. In particular, in a business model that provides ATM resources for multiple financial institutions to obtain fee income from each financial institution, the cost of the cash loading operation constitutes a large proportion of the operation cost, and forms an unignorable cost factor.

[0008]

An object the present invention is to provide a technique that can reduce the cost associated with the cash loading operation to ATMs.

SOLUTION TO PROBLEM

[0009]

An ATM-cash-loading management system for solving the above problem includes: a storage device that stores an ATM management table that stores information on a cash holding amount in each of a plurality of ATMs; and a calculation device that receives, from a user terminal, a scheduled notification on an ATM transaction by a prescribed user, specifies an ATM having a cash holding amount that is to change towards a prescribed reference through execution of a transaction indicated by the scheduled notification, with reference to the ATM management table, and transmits, to the user terminal, information recommending the transaction at the specified ATM.

[0010]

An ATM-cash-loading management method of the present invention causes a computer system that includes a storage device that stores an ATM management table that stores information on a cash holding amount in each of a plurality of ATMs to receive, from a user terminal, scheduled notification on an ATM transaction by a prescribed user, specify an ATM having a cash holding amount that is to change towards a prescribed reference through execution of a transaction indicated by the scheduled notification, with reference to the ATM management table, and transmit, to the user terminal, information recommending the transaction at the specified ATM.

ADVANTAGEOUS EFFECTS OF INVENTION

[0011]

The present invention can reduce the cost associated with the cash loading operation to an ATM.

BRIEF DESCRIPTION OF DRAWINGS

[0012]

[FIG. 1] FIG. 1 is a diagram showing a configuration example of a network including an ATM-cash-loading management system of this embodiment.

[FIG. 2] FIG. 2 is a diagram showing a configuration example of the ATM-cash-loading management system according to this embodiment.

[FIG. 3] FIG. 3 is a diagram showing a configuration example of an ATM according to this embodiment.

[FIG. 4] FIG. 4 is a diagram showing a configuration example of a user terminal according to this embodiment.

[FIG. 5] FIG. 5 is a diagram showing a data configuration example of an ATM management table according to this embodiment.

[FIG. 6] FIG. 6 is a diagram showing a data configuration example of a transaction-amount threshold value table according to this embodiment.

[FIG. 7] FIG. 7 is a diagram showing a data configuration example of a note-number threshold value table according to this embodiment.

[FIG. 8] FIG. 8 is a diagram showing a configuration example of a user management table according to this embodiment.

[FIG. 9] FIG. 9 is a diagram showing a configuration example of a reservation table according to this embodiment.

[FIG. 10] FIG. 10 is a flowchart showing a processing procedure example 1 of the ATM-cash-loading management method according to this embodiment.

[FIG. 11] FIG. 11 is a flowchart showing a processing procedure example 2 of the ATM-cash-loading management method according to this embodiment.

[FIG. 12] FIG. 12 is a flowchart showing a processing procedure example 3 of an ATM-cash-loading management method according to this embodiment.

[FIG. 13] FIG. 13 is a flowchart showing a processing procedure example 4 of the ATM-cash-loading management method according to this embodiment.

[FIG. 14] FIG. 14 is a diagram showing an output example 1 of a user terminal according to this embodiment.

[FIG. 15] FIG. 15 is a diagram showing an output example 2 of a user terminal according to this embodiment.

[FIG. 16] FIG. 16 is a diagram showing an output example 3 of a user terminal according to this embodiment.

[FIG. 17] FIG. 17 is a diagram showing an output example 4 of a user terminal according to this embodiment.

[FIG. 18] FIG. 18 is a diagram showing an output example 5 of a user terminal according to this embodiment.

[FIG. 19] FIG. 19 is a diagram showing an output example 6 of a user terminal according to this embodiment.

[FIG. 20] FIG. 20 is a flowchart showing a processing procedure example 5 of the ATM-cash-loading management method according to this embodiment.

[FIG. 21] FIG. 21 is a diagram showing an output example 7 of a user terminal according to this embodiment.

[FIG. 22] FIG. 22 is a diagram showing an output example 8 of a user terminal according to this embodiment.

DESCRIPTION OF EMBODIMENTS

[0013]

---System Configuration---

[0014]

Embodiments of the present invention are hereinafter described with reference to the drawings. FIG. 1 is a diagram showing a configuration example of a network including an ATM-cash-loading management system of this embodiment. The ATM-cash-loading management system 100 shown in FIG. 1 is a computer system for allowing reduction in cost associated with a cash loading operation to an ATM.

[0015]

The ATM-cash-loading management system 100 includes a server apparatus operated by a financial institution, such as a bank, or an ATM service provider company, and is communicatively connected to each ATM 200, which is subjected to cash loading management, via a secure network 20. The ATM-cash-loading management system 100 is also communicatively connected to user terminals 300, which are terminals of users using the ATMs 200, via an appropriate network 30, such as a mobile phone network.

[0016]

The hardware configurations of the ATM-cash-loading management system 100 according to this embodiment, the ATMs 200 and user terminals 300 are now described. FIG. 2 is a diagram showing the hardware configuration example of the ATM-cash-loading management system 100 according to this embodiment. The ATM-cash-loading management system 100 exemplified in FIG. 2 at least includes: a storage device 101 made up of an appropriate nonvolatile storage element, such as SSD (Solid State Drive) or a hard disk drive; a memory 103 made up of a volatile storage element, such as RAM; a calculation device 104, such as a CPU, which reads a program 102 held in the storage device 101 into the memory 103 to execute the program and collectively control the system itself, and performs various determinations, operations and control processes; and a communication device 105 that is connected to the network 20 and is responsible for a communication process with another apparatus.

[0017]

In addition to the program 102 for implementing functions required for an information processing apparatus that constitutes the ATM-cash-loading management system 100

of this embodiment, data items 110 required for various processes are stored in the storage device 101. The data items 110 include at least an ATM management table 125, a transaction-amount threshold value table 126, a note-number threshold value table 127, a reservation table 128, and a user management table 129, which are described later.

[0018]

Meanwhile, as described in FIG. 3, the ATM 200 includes: the device structures that are typical of an ATM including a cash storage 220, a cash conveyance mechanism 230, and a cash insert slot 240; and a computer 250 that executes control of such devices. The computer 250 thereamong includes: a storage device 201 made up of an appropriate nonvolatile storage element, such as a hard disk drive; a memory 203 made up of a volatile storage element, such as RAM; a calculation device 204, such as a CPU, which reads a program 202 held in the storage device 201 into the memory 203 to execute the program and collectively control the devices, and performs various determinations, operations and control processes; an input device 205, such as a touch panel or a keyboard, which receives an input from a user; an output device 206, such as a display or speaker, which outputs a processing result; and a communication device 207 that is connected to the network 20 and is responsible for a communication process with an external apparatus, such as the ATM-cash-loading management system 100.

[0019]

The storage device 201 stores not only the program 202 for implementing functions required for the ATM 200, but also data 210 on the cash holding amount in the cash storage 220 of the ATM 200. The data 210 on the cash holding amount is distributed to the ATM-cash-loading management system 100 from the ATM 200 via the network 20, every constant time period or in response to a request issued by the ATM-cash-loading management system 100.

[0020]

The user terminal 300 of this embodiment has a hardware configuration analogous to that of a typical computer terminal, for example, a smart phone, and, as shown in FIG. 4, includes: a storage device 301 made up of an appropriate nonvolatile storage element; a memory 303 made up of a volatile storage element, such as RAM; a calculation device 304, such as a CPU, which reads a program 302 held in the storage device 301 into the memory 303 to execute the program and collectively control the devices, and performs various determinations, operations and control processes; an input device 305, such as a touch panel or a keyboard, which receives an input from a user; an output device 306, such as a display or speaker, which outputs a processing result; a communication device 307 that is connected to the appropriate

network 30, such as a mobile phone network, and is responsible for a communication process with the ATM-cash-loading management system 100; and a GPS unit 308 that obtains information from a GPS satellite and specifies the current position.

[0021]

In addition to the program 302 for implementing functions required for the user terminal 300 of this embodiment, data items 310, such as the address of the ATM-cash-loading management system 100 in the network 30, required for various processes, are stored in the storage device 301. It is assumed that the program 302 may be an interface supporting the ATM-cash-loading management method of this embodiment, and a smart phone application that provides functions.

---Functions---

[0022]

Functions included in the ATM-cash-loading management system 100 of this embodiment are now described. As described above, the functions which will be described below may be functions implemented by executing the program 102 included in the ATM-cash-loading management system 100, for example. Here, the functions and processing details of the ATM 200 and the user terminal 300, which are required for description of the ATM-cash-loading management system 100, are described as needed.

[0023]

The ATM-cash-loading management system 100 in this embodiment has a function that receives, from the user terminal 300, a scheduled notification on an ATM transaction by a prescribed user, such as a customer of the financial institution, uses the ATM management table 125 to specify an ATM 200 having the cash holding amount that is to preferably change towards a prescribed reference through execution of a prescribed transaction indicated by the scheduled notification, such as deposit, withdrawal or cash transfer, and transmits information recommending the transaction using the ATM 200 herein specified, to the user terminal 300 via the network 30.

[0024]

The "prescribed reference" of the cash holding amount refers to, for example, a reference amount of cash that is enough to support a deposit or withdrawal request issued by the user who is to visit the ATM concerned in a fixed period without any problem. Consequently, "the cash holding amount that is to preferably change towards a prescribed reference" means the amount of cash stored in the cash storage 220 of the ATM 200 approaching the reference amount. When there is an ATM 200 having a cash holding amount in the cash storage 220 that is

insufficient to satisfy subsequent withdrawal requests, a user who is to perform deposit or cash transfer is led to the ATM 200 concerned. If a deposit process or the like is actually executed, "the cash holding amount that is to preferably change towards a prescribed reference" is achieved at the ATM 200. On the contrary, when there is an ATM 200 having a large cash holding amount in the cash storage 220 that has an insufficient capacity to satisfy subsequent deposit and cash transfer requests, a user who is to perform withdrawal is led to the ATM 200 concerned. If a withdrawal process is actually executed, "the cash holding amount that is to preferably change towards a prescribed reference" is achieved at the ATM 200. That is, the prescribed reference is different according to whether the transaction the user wishes is deposit (including cash transfer, which is hereinafter applicable in an analogous manner) or withdrawal.

[0025]

The user having viewed the recommending information at the user terminal 300 recognizes the prescribed ATM 200 where the transaction of the user should be executed, and is likely to go to the ATM 200 and perform an actual transaction, such as deposit or withdrawal of cash.

[0026]

It is preferable that the ATM-cash-loading management system 100 store information on cash holding amount with respect to each cash type, such as notes with each face value, in each of the ATMs, in the ATM management table 125. In this case, as to transmission of the recommending information, the ATM-cash-loading management system 100 further has a function that specifies the ATM where the amount of holding a prescribed type of cash that is to change towards the prescribed reference through execution of a transaction indicated by the scheduled notification, by means of the ATM management table 125, and transmits information recommending the transaction at the ATM indicated here to the user terminal 300.

[0027]

The "prescribed reference" of the cash holding amount with respect to each of the cash types refers to, for example, the number of notes with each face value that is enough to support a deposit or withdrawal request issued by the user who is to visit the ATM concerned in a fixed period without any problem. Consequently, "the cash holding amount with respect to each of the cash types that is to preferably change towards a prescribed reference" means the number of held notes with each face value that is the corresponding type of cash in the cash storage 220 of the ATM 200 approaching the reference amount. When there is an ATM 200 having the amount of held notes, i.e., the number of held notes, with a certain face value held in the cash storage 220 that is insufficient to satisfy subsequent withdrawal requests, a user who is

to perform deposit or cash transfer of the notes concerned is led to the ATM 200. If a deposit process or the like is actually executed, "the number of (lacking type of) held notes of cash that is to preferably change towards a prescribed reference" is achieved at the ATM 200. On the contrary, when there is an ATM 200 having a large number of notes with a certain face value held in the cash storage 220 that has an insufficient capacity to satisfy subsequent deposit and cash transfer requests with respect to the notes concerned, a user who is to perform withdrawal with respect to the notes concerned is led to the ATM 200 concerned. If a withdrawal process is actually executed, "the number of (excessively held type of) held notes of cash that is to preferably change towards a prescribed reference" is achieved at the ATM 200.

[0028]

The user having viewed the recommending information at the user terminal 300 recognizes the prescribed ATM 200 where the transaction of the user should be executed, and is likely to go to the ATM 200 and perform an actual transaction, such as deposit or withdrawal of the recommended type of cash.

[0029]

The ATM-cash-loading management system 100 further has a function in which for transmission of the recommending information, the system includes, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal 300. The incentive here is, although not limited to, points that can be used for payment for articles or services, for example. Information on the incentive in this case is information on the number of points scheduled to be assigned to the user.

[0030]

For transmission of the recommending information, the ATM-cash-loading management system 100 regards information on an incentive that increases according to the degree of deviation between the cash holding amount of the specified ATM and the prescribed reference, as information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification, includes the information into the recommending information, and transmits the information to the user terminal 300. In this case, the ATM management table 125 stores information on an incentive, such as the number of points according to the magnitude of the difference between the cash holding amount of each ATM 200 and the prescribed reference, in association with each type of transactions, such as deposit and withdrawal. Consequently, for transmission of the

recommending information, the ATM-cash-loading management system 100 specifies the information on the incentive that increases according to the degree of deviation between the cash holding amount of the ATM 200 and the prescribed reference, with reference to the ATM management table 125, includes the specified information into the recommending information, and transmits the information to the user terminal 300.

[0031]

For transmission of the recommending information, the ATM-cash-loading management system 100 further has a function that regards information on an incentive that increases according to the degree of deviation between the cash holding amount of the specified ATM and the prescribed reference, as information on an incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the ATMs, includes the information into the recommending information, and transmits the information to the user terminal 300. It can be assumed that the information on each incentive pertaining to each ATM is, for example, a list of the number of points scheduled to be obtained by the user in a case of execution of the transaction concerned by each ATM.

[0032]

In the case where the ATM management table 125 stores the information on the cash holding amount of each of the ATMs and the information on the locations, the ATM-cash-loading management system 100 further has a function that receives a scheduled notification on an ATM transaction by the prescribed user and the current position information on the user concerned from the user terminal 300, and specifies the ATM having the cash holding amount that is to change towards the prescribed reference among the ATMs within a prescribed distance from the current position of the user concerned, with reference to the ATM management table 125. For transmission of the recommending information, the ATM-cash-loading management system 100 further has a function that generates information on an incentive that increases according to a degree of deviation between the cash holding amount of the ATM and the prescribed reference, as information on an incentive scheduled to be provided to a user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the specified ATMs, generates map data indicating the location of each of the specified ATMs and the current position of the user concerned, includes the generated information on each incentive and the map data into the recommending information, and transmits the information to the user terminal 300.

[0033]

For transmission of the recommending information, the ATM-cash-loading management system 100 further has a function that includes, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal 300, and subsequently, when the system receives a reservation notification pertaining to the transaction concerned at the prescribed ATM 200 among the ATMs indicated by the recommending information, the system monitors the ATM 200 concerned on whether the transaction concerned by the user concerned at the ATM 200 concerned is executed within a prescribed time after reception of the reservation notification, and when the transaction concerned is executed within the prescribed time, the system stores, in the storage device 101, assignment information on the incentive pertaining to the user concerned.

[0034]

To "store(s), in the storage device 101, assignment information on the incentive pertaining to the user" corresponds to, for example, a process of storing the value of points obtained by the user concerned in the record of the user concerned in the user management table 129, described later. In the case of multiple chances of assigning incentives to a certain user and for storing pertaining to the user at the second time or thereafter, a process of adding the number of points to the existing point value is executed.

[0035]

The ATM-cash-loading management system 100 further has a function in which in response to execution of the transaction concerned by the user concerned at the ATM 200 concerned within a prescribed time from reception of the reservation notification, the system stores, in the storage device 101, assignment information on the incentive pertaining to the user, monitors the ATM 200 concerned on whether an inverted transaction against the transaction concerned by the user concerned at the ATM 200 concerned within the prescribed reference period after the transaction concerned within the prescribed time, and when the inverted transaction is executed within the reference period, the system cancel the stored assignment information on the incentive performed in relation to the user.

[0036]

For example, a user is assumed who has performed a deposit process to the ATM 200 according to the recommending information. The user is in a state where a prescribed number of points are assigned by actually performing the deposit process at the ATM 200 suggested by the recommending information. However, it is assumed that the user performs an inverted transaction, that is, a withdrawal process at the ATM 200 significantly short time after

the latest deposit process associated with obtainment of the point, thus taking out the cash deposited a little while ago. If no measures were taken against the inverted transaction, sequential repetition of the transaction according to the recommending information at the ATM 200 concerned and its inverted transaction allows each user to obtain points without changing the amount of cash in their possession. Meanwhile, the ATM-cash-loading management system 100 having the aforementioned functions can eliminate an action of obtaining points through such an inverted transaction in a short time.

[0037]

The ATM-cash-loading management system 100 further has a function in which the system determines whether execution of the transaction indicated through the scheduled notification by the user with respect to the prescribed ATM 200 indicated by the recommending information allows the cash holding amount to satisfy the prescribed reference or not, and when a result of the determination determines that the execution of the transaction allows the cash holding amount to satisfy the prescribed reference, the system eliminates the ATM 200 from targets of the recommendation until a situation occurs where the cash holding amount of the ATM concerned does not satisfy the prescribed reference.

[0038]

For example, when the user concerned executes a deposit operation indicated by the scheduled notification at the prescribed ATM 200 indicated by the recommending information, cash is added to the cash storage 220 of the ATM 200 concerned. The ATM-cash-loading management system 100 determines whether the deposit increases the cash holding amount of the ATM 200 concerned and the amount reaches a sufficient value satisfying the prescribed reference or not. When the result of the determination determines that execution of the transaction allows the cash holding amount to satisfy the prescribed reference, the ATM-cash-loading management system 100 sets a flag which means inapplicability of recommendation, i.e., inapplicability of point assignment, at least on deposit in the record of the ATM 200 concerned in the ATM management table 125, for example, and the ATM 200 with the flag concerned being set is eliminated from among search targets with respect to the following deposit indicated by the scheduled notification by each user, thus eliminating the ATM from among recommendation targets.

[0039]

It is now assumed that deposit by users at the ATM 200 concerned reduces cash in the cash storage 220, and finally situations occur where only an amount of cash lower than the prescribed reference is held. The ATM-cash-loading management system 100, which monitors

the cash holding amount of each ATM 200, detects such situations, removes the flag set for the ATM 200 concerned in the ATM management table 125, and the ATM 200 concerned is regarded as a search target at least on deposit, thus returning the ATM as the recommendation target.

---Data Structure Example---

[0040]

Next, a data structure example in a table used by the ATM-cash-loading management system 100 of this embodiment is described. FIG. 5 is a diagram showing a configuration example of an ATM management table 125 according to this embodiment. The ATM management table 125 is a table storing information on the cash holding amount of each of the ATMs to be subjected to cash loading management by the ATM-cash-loading management system 100. The ATM management table 125 shown in FIG. 5 is an aggregation of records which use, as keys, ATM machine numbers, i.e., identification information on the respective ATMs 200, and in which values are associated with each other; the values include the installation place of the ATM 200 concerned, the cash balance (cash holding amount) in the cash storage 220, the type-specific number of notes, scheduled balance, the type-specific scheduled number of notes, deposit points, and withdrawal points.

[0041]

Among these items, the type-specific number of notes represents the number of notes with each face value held in the cash storage 220 of each ATM 200. The example in FIG. 5 represents, for example, situations where the numbers of notes with respective face values currently held by the ATM 200 with "xxx-10001" are "JPY1000 notes: 500", "JPY2000 notes: 500", "JPY5000 notes: 500", and "JPY10000 notes: 520".

[0042]

The scheduled balance represents an assumed value of the cash balance changed by executing the ATM transaction indicated by the scheduled notification to add or take out cash to or from the cash storage 220 of the ATM 200 concerned. For example, the example in FIG. 5 represents situations where the ATM 200 with "xxx-10001" has the current cash holding amount, or cash balance, is "JPY9,200,000 ", and execution of deposit indicated by a certain scheduled notification reduces the cash balance by "JPY70,000 " and causes the scheduled balance to be "JPY9,130,000 ".

[0043]

The type-specific scheduled number of notes represents an assumed value of the number of notes changed by executing the ATM transaction indicated by the scheduled notification to add or take out notes with a prescribed face value to or from the cash storage 220

of the ATM 200 concerned. For example, the example in FIG. 5 represents situations where the number of JPY10000 notes is "520" among the current type-specific numbers of notes in the ATM 200 with "xxx-10001", and execution of a transaction indicated by a certain scheduled notification reduces the number of notes by "7" and causes the type-specific scheduled number of notes to be "513".

[0044]

The deposit point is any of the value of assigned points determined according to the difference between the cash balance and an after-mentioned threshold (prescribed reference) defined on deposit in the transaction-amount threshold value table 126, and the value of assigned points determined according to the difference between the type-specific number of notes and an after-mentioned threshold (prescribed reference) defined on the remaining number of each type of notes and on the deposit process in the note-number threshold value table 127, described later. The case of adopting the value of the note-number threshold value table 127 is a case where the type-specific number of notes in the ATM concerned matches with the threshold of the remaining number defined in the note-number threshold value table 127 (equal to or less than the threshold in the case of deposit; equal to or more than the threshold in the case of withdrawal) (hereinafter applicable in an analogous manner).

[0045]

For example, a first threshold defined on deposit in the transaction-amount threshold value table 126 is "JPY1,000,000 ". The ATM 200 with "xxx-10001" has a cash balance "JPY9,200,000", which exceeds the threshold. Consequently, the deposit point is "0 point".

[0046]

Meanwhile, the ATM 200 with "yyy-10003" has a cash balance "JPY400,000 ", which is less than the threshold, and is in a range between a second threshold "JPY500,000 " and a third threshold "JPY100,000 " according to the transaction-amount threshold value table 126. Consequently, according to the transaction-amount threshold value table 126, the deposit point is "5 points/JPY1000". The type-specific numbers of notes in the ATM 200 with "yyy-10003" are herein "JPY1000: 10", "JPY2000: 0", "JPY5000: 60", and "JPY10000: 9", which are verified against each threshold pertaining to the deposit process in the note-number threshold value table 127, and "20 points/one note" for JPY1000 notes whose number is "equal to or less than 20 notes" and "24 points/one note" for JPY10000 notes whose number is also "equal to or less than 20 notes". As described above, the type-specific number of notes of the ATM concerned matches with the threshold of the remaining number of notes defined in the note-number

threshold value table 127 (equal to or less than the threshold in the case of deposit). Consequently, in this case, the values of the note-number threshold value table 127, that is, the values of "20 points/one note" for JPY1000 notes and "24 points/one note" for JPY10000 notes are adopted as the deposit points.

[0047]

The withdrawal point is any of the value of assigned points determined according to the difference between the cash balance and an after-mentioned threshold (prescribed reference) defined on withdrawal in the transaction-amount threshold value table 126, described later, and the value of assigned points determined according to the difference between the type-specific number of notes and an after-mentioned threshold (prescribed reference) defined on the remaining number of each type of notes and on the withdrawal process in the note-number threshold value table 127, described later.

[0048]

For example, the first threshold defined for withdrawal in the transaction-amount threshold value table 126 is "JPY9,000,000", and the cash balance in the ATM 200 with "xxx-10001" is "JPY9,200,000", which exceeds the threshold and is between the first threshold and the second threshold "JPY9,500,000". Consequently, according to the transaction-amount threshold value table 126, the withdrawal point is "1 point/JPY1000". The type-specific numbers of notes in the ATM 200 with "xxx-10001" are herein "JPY1000: 500", "JPY2000: 500", "JPY5000: 500", and "JPY10000: 520", which are verified against each threshold pertaining to the withdrawal process in the note-number threshold value table 127. The number of every type of note is equal to or more than the threshold "400 or more", thus obtaining "5 points/one note" for JPY1000 notes, "7 points/one note" for JPY2000 notes, "12 points/one note" for JPY5000 notes, and "20 points/one note" for JPY10000 notes. As described above, the type-specific number of notes of the ATM concerned matches with the threshold of the remaining number of notes defined in the note-number threshold value table 127 (equal to or more than the threshold in the case of withdrawal). Consequently, in this case, the values of the note-number threshold value table 127, that is, the values of "5 points/one note" for JPY1000 notes, "7 points/one note" for JPY2000 notes, "12 points/one note" for JPY5000 notes, and "20 points/one note" for JPY10000 notes are adopted as the withdrawal points.

[0049]

Meanwhile, the cash balance in the ATM 200 with "yyy-10003" is "JPY400,000 ", which is less than the first threshold in the transaction-amount threshold value table 126. Consequently, the withdrawal point is "0 point".

[0050]

The values of the type-specific number of notes and the type-specific scheduled number of notes in the ATM management table 125, and the values of the note type and the remaining number of notes in the note-number threshold value table 127 may be values stored with respect to multiple types of coins with different face values. Here, a case may occur where the deposit points and the withdrawal points in the ATM management table 125 include values set with respect to the types of coins.

[0051]

FIG. 6 is a diagram showing a data configuration example of a transaction-amount threshold value table 126 according to this embodiment. The transaction-amount threshold value table 126 is a table that stores the cash balance threshold for determining the number of assigned points defined according to the magnitude of cash balance in the ATM 200. In other words, the threshold is defined according to the necessity of deposit and withdrawal in the ATM 200. The transaction-amount threshold value table 126 shown in FIG. 6 is an aggregation of records which use, as a key, each of the first to third thresholds pertaining to the cash balances and in which the numbers of points to be assigned are associated, with respect to each of deposit and withdrawal processes.

[0052]

FIG. 7 is a diagram showing a data configuration example of the note-number threshold value table 127 according to this embodiment. The note-number threshold value table 127 is a table that defines the correspondence relationship between the threshold of the number of notes with each face value to be held in the cash storage 220 of each ATM and the points to be assigned in a case of a transaction (deposit/withdrawal of cash) of notes with the face value concerned in a condition satisfying the threshold. The note-number threshold value table 127 in this embodiment is an aggregation of records which use, as a key, each of the first and third thresholds pertaining to the remaining number of notes with each face value and in which the value of the numbers of points to be assigned to each transaction of notes with the face value concerned are associated, with respect to each of deposit and withdrawal processes.

[0053]

FIG. 8 is a diagram showing a configuration example of the user management table 129 according to this embodiment. The user management table 129 is a table that stores information pertaining to each user. The user management table 129 shown in FIG. 8 is an aggregation of records which use, as a key, a user ID that is identification information for uniquely identifying each user and in which information on an email address of the user

concerned and points obtained so far is associated.

[0054]

FIG. 9 is a diagram showing a configuration example of the reservation table 128 according to this embodiment. The reservation table 128 is a table that stores the content of the reservation notification issued according to the scheduled notification. The reservation table 128 shown in FIG. 9 is an aggregation of records which use, as a key, a reservation ID appropriately issued for uniquely specifying the reservation notification and in which the user ID of the user having made the reservation concerned, an ATM machine number scheduled to be used, the reservation date and time, the deadline date and time, the transaction, the amount, the breakdown, and the scheduled points are associated.

[0055]

Among these items, the ATM machine number scheduled to be used is the identification information on a prescribed ATM selected by the user from among the ATMs 200 suggested through the recommending information by the ATM-cash-loading management system 100 for the user having made the corresponding reservation notification. The reservation date and time is the date and time of reception of the reservation date and time. The deadline date and time is the date and time a prescribed time after the reservation date and time (e.g., 30 minutes later), and indicates a deadline date and time when the transaction concerned is to be actually performed at the ATM 200 concerned. The "transaction" indicates the content of the transaction scheduled by the user concerned. The "amount" is the amount of cash handled in the transaction concerned. The "breakdown" represents the breakdowns of the numbers of notes to be used in the transaction concerned with respect to the face values. For example, the breakdown of the transaction corresponding to "1111111" is "JPY10000 notes", and indicates that all of "70,000" are scheduled to be withdrawn in JPY10000 notes. Likewise, the breakdown of the transaction corresponding to "7654321" is "JPY10000 notes: 4" and "JPY1000 notes: 10", and indicates that "JPY50,000 " is scheduled to be deposited in 4 JPY10000 notes and 10 JPY1000 notes. The "scheduled points" represents the number of points temporarily assigned in relation to the transaction concerned through the reservation notification.

---Processing Procedure Example---

[0056]

Actual procedures of an ATM-cash-loading management method of this embodiment are hereinafter described with reference to the drawings. Various operations corresponding to the ATM-cash-loading management method described later is actualized by programs read by the ATM-cash-loading management system 100 into the memory 103 and

executed. Such programs include code for executing various operations described below.

[0057]

FIG. 10 is a flowchart showing a processing procedure example 1 of the ATM-cash-loading management method according to this embodiment. Here, it is assumed that first, a certain user considers cash deposit into a prescribed account or cash transfer, that is, a deposit transaction, using the ATM. The user in this case operates the appropriate user terminal 300, such as their smartphone, to activate an application that is for a smart phone and provides an interface (see an interface 1200 in FIG. 14) and functions supporting the ATM-cash-loading management method of this embodiment, for example. The user inputs information on the deposit transaction through the interface displayed on a display 306 of the user terminal 300 by the application. The interface 1300 including the result of the input is as exemplified in FIG. 15. In the example in FIG. 15, the user concerned "900002" designates that it is scheduled to perform a "deposit" transaction of "JPY50,000 " in breakdowns of "JPY1000 notes: 10" and "JPY10000 notes: 4". A user who wishes a "Free" state where types of notes to be used in the transaction are not specified clicks a radio button of a "Free" field indicated by the interface 1200 in FIGS. 14 and 15.

[0058]

Meanwhile, the user terminal 300 obtains, through the application, each piece of information pertaining to the deposit transaction input by the user, and transmits the information as information on the scheduled notification on the ATM transaction, via the network 30 to the ATM-cash-loading management system 100 (s100). The information on the scheduled notification includes not only the user ID of the user concerned but also the type of the transaction (e.g., deposit or withdrawal), amount, and information on the current position of the user terminal 300. In the case where any designation on the breakdown of notes to be used is made through the interface 1200, the information on the breakdown of the transaction is further included. The information on the current position of the user terminal 300 is data, such as coordinate values of the own position obtained by the user terminal 300 from the GPS unit 308.

[0059]

The ATM-cash-loading management system 100 receives the scheduled notification transmitted from the user terminal 300, and specifies the ATM 200 having the cash balance (cash holding amount) that is to preferably change towards a prescribed reference through execution of a transaction indicated by the scheduled notification, with reference to the ATM management table 125 (s101). In this case, the ATM-cash-loading management system 100 determines whether the content of the transaction indicated by the scheduled notification is

deposit or withdrawal, and searches the ATM management table 125 for the ATM 200 to which points are to be assigned in relation to the transaction. As a result of the search, in the case where multiple ATMs 200 are searched, a list of ATMs 200 where points are to be obtained is specified as information on the ATM having "the cash holding amount that is to preferably change towards a prescribed reference". It is a matter of course that as a result of the search, in the case where only one ATM 200 is searched, only the ATM concerned is specified as the ATM having "the cash holding amount that is to preferably change towards a prescribed reference".

[0060]

When the ATM management table 125 exemplified in FIG. 5 is referred to in relation to the transaction, i.e., "deposit", indicated by the scheduled notification, two ATMs, or the ATM with "yyy-10003" and ATM with "zzz-10005" where deposit points are set are retrieved. The ATM-cash-loading management system 100 thus specifies these two ATMs.

[0061]

Next, the ATM-cash-loading management system 100 returns recommending information including a message that recommends a transaction at the ATM 200 specified in the aforementioned step s101, to the user terminal 300 via the network 30 (s102). It is preferred that the message further include information on the number of points (the number of deposit points in the aforementioned case) scheduled to be obtained by the user when the transaction is performed at each ATM 200, and map data that represents the positional relationship between the current position of the user and the location of each of the specified ATMs 200.

[0062]

The details of the processes (s120) pertaining to the aforementioned steps s101 and s102 are herein described with reference to FIG. 11. The ATM-cash-loading management system 100 having received the scheduled notification from the user terminal 300 verifies the information on the current position of the user included in the scheduled notification against the information on the installation place of each ATM in the ATM management table 125, specifies the ATM residing in the range of the prescribed distance from the current position of the user, and further executes calculation of points that are to be obtained through execution of the transaction indicated by the scheduled notification at the specified ATM (s121).

[0063]

The ATM-cash-loading management system 100 in this case applies information on the type and number of notes with face values (the number of each type of notes and total amount) with which the transaction concerned (deposit/withdrawal) indicated by the scheduled notification is to be performed, to the condition indicated by the deposit point or the withdrawal

point in the ATM management table 125, thus performing point calculation. For example, when the user performs a "deposit" transaction of "JPY50,000" with a breakdown of "JPY1000 notes: 10" and "JPY10000 notes: 4" at the ATM with the ATM machine number "xxx-100003", 20 points × 10 (the number of JPY1000 notes) + 24 points × 4 (the number of JPY10000 notes) = total 224 points are scheduled to be assigned to the user concerned according to the ATM management table 125. Likewise, when an analogous transaction is performed at the ATM with the ATM machine number "xxx-100005", 20 points × 10 (the number of JPY1000 notes) + 24 points × 4 (the number of JPY10000 notes) = total 224 points are scheduled to be assigned to the user concerned according to the ATM management table 125. In the case with no designation pertaining to the types of notes in the scheduled notification, that is, the case where "Free" is designated in a transaction breakdown field through the interface 1200 in FIG. 14, the ATM-cash-loading management system 100 applies the value of the transaction amount indicated by the scheduled notification to a condition based on the value of the of the transaction-amount threshold value table 126 (e.g., 1 pt/JPY1000) among the conditions indicated by the deposit points and withdrawal points in the ATM management table 125, and calculates the points. In the case where no condition based on the value of the transaction-amount threshold value table 126 exists but only a condition of assigned points per note with each face value exists, the ATM-cash-loading management system 100 specifies the condition with the minimum assigned points, regards a value obtained by dividing the transaction amount by the face value of note defined by the condition as the number of notes for transaction, applies the number to the condition concerned, and calculates the points.

[0064]

The ATM-cash-loading management system 100, having calculated the points for each ATM, generates a list that associates each ATM with the points scheduled to be assigned through the transaction at the ATM concerned, and stores the list in the memory 103 or the storage device 101 (s122).

[0065]

Next, the ATM-cash-loading management system 100 reads the information on the installation place held in the ATM management table 125 with respect to each of the ATMs in a range of a predetermined distance from the current position of the user concerned specified in step s121, verifies the information against map data (preliminarily held in the storage device), and generates map data that indicates the position of each ATM on the map and also indicates the current position of the user concerned on the same map (s123).

[0066]

The ATM-cash-loading management system 100 includes, into the recommending information, the list of ATMs and map data which have been created in the aforementioned steps s122 and s123, and transmits the information to the user terminal 300 (s124), and finishes the flow. After completion of the flow, the processing transitions to step s103 in the flow of FIG. 10.

[0067]

In the aforementioned specific example, the case where the transaction indicating the scheduled notification by the user is "deposit" has been described. The case where the transaction is "withdrawal" is also executed in an analogous manner. In this case, the interface 1400 through which the user designates the content of the transaction at the user terminal 300 is as shown in FIG. 16. The examples in FIGS. 16 and 17 show situations where the user with the user ID "900001" designates that it is scheduled to perform withdrawal "JPY70,000" with 7 JPY10000 notes. Each value that pertains to the transaction and is included in an interface 1500, the current position information on the user terminal 300 and the like are transmitted from the user terminal 300 to the ATM-cash-loading management system 100. Meanwhile, the ATM-cash-loading management system 100 refers to the ATM management table 125 in relation to the transaction indicated by the scheduled notification, i.e., "withdrawal", and searches the ATMs to which withdrawal points are set, for each ATM in the range of the prescribed distance from the current position of the user terminal 300 concerned and thus specifies the ATM. In the case of the ATM management table 125 shown in FIG. 5, the ATM to which the values of withdrawal points are set is only "xxx-10001". Consequently, only this ATM is specified.

[0068]

The description is herein returned to that of the flow in FIG. 10. Meanwhile, the user terminal 300 receives the recommending information transmitted from the ATM-cash-loading management system 100, and causes the display 306 to display the information (s103), and provides the information for allowing the user to view the information. The examples of screens 1600 and 1700 the user terminal 300 causes the display 306 to display are as shown in FIGS. 18 and 19. The screen 1600 in FIG. 18 shows that #1 to #4 ATMs are recommended as ATMs within the prescribed distance from the current position of the user "900001" among ATMs that can obtain points in the case of "withdrawal" of "JPY70,000 " with 7 JPY10000 notes, through an ATM list 1601 and a map 1610. The screen 1700 in FIG. 19 shows that #1 to #4 ATMs are recommended as ATMs within the prescribed distance from the current position of the user "900002" among ATMs that can obtain points in the case of "deposit" of "JPY50,000 " with 4 JPY10000 notes and 10 JPY1000 notes, through an ATM list 1701 and a map 1710.

[0069]

The user viewing such recommending information through the user terminal 300 recognizes the ATM 200 at which execution of the transaction by the user is recommended and the number of points obtained by the transaction, thereby facilitating willingness of going to the ATM that can obtain the highest points, or the ATM nearest from the current position and performing an actual transaction, such as deposit and withdrawal of cash, for example. That is, the user is led by the ATM-cash-loading management system 100 to a transaction at the ATM 200 whose cash balance is in unfavorable situations in view of cash loading management.

[0070]

It is assumed that the user recognizes that points are assigned when the transaction concerned (transaction scheduled by the user concerned) at the prescribed ATM 200 indicated by the recommending information, and determines a will for actually performing the transaction and the ATM 200 to be used in this case. In this case, the user concerned designates a desired ATM through an appropriate interface on the screens 1600 and 1700, for example, reservation buttons 1602 and 1702 of ATM lists 1601 and 1701, and presses OK buttons 1603 and 1703, thereby designating "Reservation" for the transaction concerned. It is a matter of course that there is a user who would not designate any reservation even if viewing the recommending information and wish to go to a voluntarily selected ATM and perform a transaction. In the case of such a user, even if step s103 is executed, reservation is not designated, and it is designated that reservation is not executed, through prescribed interfaces, such as not reserving buttons 1604 and 1704.

[0071]

If the designation received through the prescribed interface associated with display of the recommending information is reservation designation (s104: y), the user terminal 300 transmits the designation as the reservation notification, to the ATM-cash-loading management system 100 (s105). On the contrary, if the designation received through the interface of the application is in conformity with a will of not reserving (s104: n), the ATM-cash-loading management system 100 does not execute processes thereafter in the flow and finishes the flow.

[0072]

Meanwhile, the ATM-cash-loading management system 100, having received the reservation notification, generates a record in the reservation table 128, and stores, in this record, information indicated by the reservation notification concerned (s106). A scheduled point field of this record stores the number of points indicated by the recommending information as the

number of temporary points. If a certain user actually performs prescribed content of a process at a certain ATM 200 in the process of this step s106, the number of points to be assigned to the user is temporarily secured.

[0073]

The ATM-cash-loading management system 100 executes the flow shown in FIG. 12 in parallel to the process of storing the reservation notification. The ATM-cash-loading management system 100 in this case determines whether or not execution of the content of the transaction indicated by the reservation notification changes the cash balance at the ATM 200 concerned to exceed (or falls short of) the threshold (prescribed reference) defined in relation to the process concerned with reference to the transaction-amount threshold value table 126 (s150).

[0074]

When the result of the determination determines that the cash balance of the ATM 200 concerned exceeds (or falls short of) the threshold (s151: y), the ATM-cash-loading management system 100 sets a flag which means inapplicability of recommendation, i.e., what is not assigned points, in relation to the process concerned (e.g., deposit), for example, to the record of the ATM 200 in the ATM management table 125 for the sake of elimination from the recommendation targets (in other words, point assignment targets) until situations occur where the cash balance of the ATM 200 concerned falls short of (or exceeds) the threshold, and the ATM 200 with the flag concerned being set is eliminated from among search targets with respect to the following deposit indicated by the scheduled notification by each user, thus eliminating the ATM from among recommendation targets (s152).

[0075]

It is assumed that after such flag setting, execution of various processes, such as deposit and withdrawal, by other users change the cash balance in the cash storage 220 and finally reaches situations of falling short of (or exceeding) the prescribed reference. The ATM-cash-loading management system 100, which monitors each ATM 200, detects such situations (s153), removes the flag set for the ATM 200 concerned in the ATM management table 125, and the ATM 200 concerned is regarded as a search target on the process concerned (e.g., deposit), thus returning the ATM as the recommendation target (s154).

[0076]

The ATM-cash-loading management system 100 executes such series of steps (s150 to s154) every time of receipt of the reservation notification from the user terminal 300 of each user.

[0077]

The flow s150 to s154 is executed with reference to the transaction-amount threshold value table 126 in some cases and executed with reference to the note-number threshold value table 127 in other cases. As shown in the flow of FIG. 13, the ATM-cash-loading management system 100 in this case determines whether or not execution of the content of the transaction indicated by the reservation notification changes the number of notes with each face value at the ATM 200 concerned to exceed (or falls short of) the threshold (prescribed reference) defined in relation to the process concerned with reference to the note-number threshold value table 127 (s155).

[0078]

When the result of the determination determines that the numbers of notes with all face values in the ATM 200 concerned exceed (or fall short of) the threshold (s156: ALL), the ATM-cash-loading management system 100 sets a flag which means inapplicability of recommendation, i.e., what is not assigned points, in relation to the process concerned (e.g., deposit), for example, to the record of the ATM 200 in the ATM management table 125 for the sake of elimination from the recommendation targets (in other words, point assignment targets) until situations occur where the number of notes with each face value of the ATM 200 concerned falls short of (or exceeds) the threshold, and the ATM 200 with the flag concerned being set is eliminated from among search targets with respect to the following deposit indicated by the scheduled notification by each user, thus eliminating the ATM from among recommendation targets (s157).

[0079]

When the result of the determination determines that the numbers of notes with a prescribed face value in the ATM 200 concerned exceeds (or falls short of) the threshold (s156: PART), the ATM-cash-loading management system 100 sets a flag which means inapplicability of recommendation, i.e., what is not assigned points, in relation to the process concerned (e.g., deposit) with respect to the notes with the face value concerned, for example, to the record of the ATM 200 in the ATM management table 125 for the sake of elimination from the recommendation targets (in other words, point assignment targets) with respect to the notes with the face value concerned until situations occur where the number of notes with the face value concerned of the ATM 200 concerned falls short of (or exceeds) the threshold, and the ATM 200 with the flag concerned being set is eliminated from among search targets with respect to the following deposit with respect to the notes with the face value concerned indicated by the scheduled notification by each user, thus eliminating the ATM from among recommendation targets (s158).

[0080]

It is assumed that after such flag setting, execution of various processes, such as deposit and withdrawal, of the notes with the face value concerned by other users changes the number of corresponding type of notes in the cash storage 220 and finally reaches situations of falling short of (or exceeding) the prescribed reference. The ATM-cash-loading management system 100, which monitors each ATM 200, detects such situations (s159), removes the flag set for the notes with the face value concerned in the ATM 200 concerned in the ATM management table 125, and the ATM 200 concerned is regarded as a search target on the process concerned (e.g., deposit of notes with the face value concerned), thus returning the ATM as the recommendation target (s160).

[0081]

The description is herein returned to that of the flow in FIG. 10. Subsequent to step 106, upon receipt of the reservation notification, the ATM-cash-loading management system 100 starts monitoring the ATM 200 scheduled to be used by the user concerned according to this reservation notification (s107). For example, the monitoring corresponds to an operation of accessing the ATM 200 concerned every constant time period, or of obtaining a process log at the ATM 200 transmitted every constant time period from the ATM 200 and searches for whether the user ID of the user concerned having issued the reservation notification and a history of transaction indicated by the reservation notification are included in the process log or not. It is a matter of course that the ATM 200 itself may perform such a monitoring operation, and when detecting the operation concerned by the user, this ATM may notify the ATM-cash-loading management system 100 of the detection.

[0082]

Meanwhile, after the user performs the operation of transmitting the reservation notification to the ATM-cash-loading management system 100, the user moves toward the ATM 200 selected by the user themselves, touches the "Deposit" transaction button corresponding to the reservation notification through an appropriate interface displayed on the touch panel 206 of the ATM 200 concerned, and further performs appropriate operations, such as insertion of cash into the cash insert slot 240 and designation of the deposit amount through a numeric key pad or the like on the touch panel 206.

[0083]

A log of processes executed by the ATM 200 associated with such operations by the user is transmitted from the ATM 200 to the ATM-cash-loading management system 100, as described above. It is a matter of course that the log includes the ATM machine number of the

ATM concerned. The log further includes pieces of information which are the user ID read from a cash card of the user, the type of the transaction (deposit/withdrawal) designated through the touch panel 206, the breakdown of the inserted notes, and the amount.

[0084]

For example, when the ATM-cash-loading management system 100 detects execution of the process concerned by the user corresponding to the reservation notification within the prescribed time (e.g., within 30 minutes) from reception of the reservation notification in the process of monitoring the ATM 200 concerned (s108: y), this system searches the user management table 129 using the user ID as a key, and adds the value of the number of points stored in the scheduled point field in the reservation table 129 in the aforementioned step s106 to the value in an obtained point field of the record of the user concerned (s109). This process securely assigns the user concerned the number of points that was temporary at the time of execution of step s106, and causes the state to transition to a determined state.

[0085]

There is however a possibility that the user having obtained a prescribed number of points through an actual transaction at the ATM 200 suggested by the recommending information as described above may execute an inverted transaction at the ATM 200 concerned after lapse of significantly short time period (e.g., ten minutes later) from the latest transaction allowing the points to be obtained. This is resultantly equivalent to an action of obtaining points without changing the cash on hand through repetition of a transaction and its inverted transaction by the user.

[0086]

To address this, the ATM-cash-loading management system 100 of this embodiment continues monitoring the ATM 200 concerned even after execution of the aforementioned step s109 (s110). When the system detects execution of the inverted transaction by the user concerned at the ATM 200 concerned within the prescribed reference period after execution of the transaction concerned detected in step 108 (s111: y), the system subtracts the number of points added in step s109 from the obtained point field, thus canceling the addition of the points in step s109 (s112). Consequently, control is performed such that even if the transaction and its inverted transaction are repeated at the ATM 200, no point is assigned to the user.

[0087]

When no inverted transaction by the user concerned is performed at the ATM 200 concerned within the prescribed reference period after execution of the transaction concerned

detected in step 108 (s111: n), the ATM-cash-loading management system 100 finishes this flow and is brought into a waiting state until a scheduled notification is newly received from a certain user terminal 300.

[0088]

The cost of cash loading management that can be reduced by actions, such as deposit and withdrawal, by each of the users in an ATM group to which the ATM cash-loading-management scheme in this embodiment is applied may be verified, and the number of points may be determined according to the verification result. In this case, the points assigned at the time of receipt of the reservation notification serves as information on a temporary incentive that means the degree of contribution to reduction in cost. Thus, the ATM-cash-loading management system 100 obtains, from for example an administrator terminal in a financial institution, the operational cost caused by the financial institution concerned requesting an cash loading operation from a security company or the like in a prescribed period where the ATM cash-loading-management scheme of this embodiment is applied, compares the cost against the average cost of cash loading operations in the same period in the past (where the ATM cash-loading-management scheme was not applied), and calculates the difference. The ATM-cash-loading management system 100 compiles the numbers of points of all the users having obtained the points using the ATM group concerned, and divides the aforementioned difference by this compiled value, thus calculating the value per unit point. The ATM-cash-loading management system 100 multiplies the number of points of each user by this value, thus calculating the true number of points according to the degree of contribution and determining this number. As described above, distribution of incentives according to the actually obtained economic effects can effectively avoid degradation in cost due to meaningless point issuance in an organization of issuing points, such as a financial institution.

---Examples of Other Processing Procedures---

[0089]

The aforementioned example describes an example that specifies an ATM that is scheduled to allow points to be obtained and resides within the prescribed distance from the current position of the user, includes the information into the recommending information, and presents the information to the user. Alternatively, the ATM-cash-loading management system 100 can specify the ATM with the highest point scheduled to be obtained among the multiple candidate ATMs, include the information into the recommending information, and provide the information for the user. For the sake of simplifying the description, the example that considers only the cash balance of ATM is herein described.

[0090]

In this case, as shown in a flow in FIG. 20, the ATM-cash-loading management system 100 having received the scheduled notification from the user terminal 300 verifies the information on the current position of the user included in the scheduled notification against the information on the installation place of each ATM in the ATM management table 125, specifies the ATM residing in the range of the prescribed distance from the current position of the user, and further executes calculation of points that are to be obtained through execution of the transaction indicated by the scheduled notification at the specified ATM (s170). The scheme of calculating points is as described above.

[0091]

The ATM-cash-loading management system 100, which has calculated the points for each ATM within the range of the prescribed distance from the current position of the user, specifies the ATM with the highest points among the ATMs (s171). The ATM-cash-loading management system 100 includes, into the recommending information, information on the ATM concerned specified in step s171, and transmits the information to the user terminal 300 (s172), and finishes the flow. After completion of the flow, the processing transitions to step s103 in the flow of FIG. 10.

[0092]

The user terminal 300, which has received the recommending information from the ATM-cash-loading management system 100, causes the display 306 to display the information, accepts information pertaining to the reservation designation from the user, and returns the information to the ATM-cash-loading management system. Screens 1800 and 1900 where the user terminal 300 causes the display 306 to display the recommending information are shown in FIG. 21 (the case of the withdrawal transaction) and FIG. 22 (the case of the deposit transaction). As shown in recommended ATM information 1801 and 1901 on the screens 1800 and 1900 in FIGS. 21 and 22, only one ATM is recommended as an ATM having the highest points scheduled to be obtained.

[0093]

Thus, what has the highest points scheduled to be obtained among nearer ATMs, in other words, an ATM in cash holding situations most apart from the prescribed reference, may be presented to the user, thereby facilitating improvement of the cash holding situations of the ATM concerned as soon as possible.

[0094]

The best mode for implementing the present invention and the like have been

specifically described. However, the present invention is not limited thereto, and can be variously changed in a range without departing from the gist thereof.

[0095]

This embodiment as described above encourages the user, for example, in a deposit transaction at an ATM having a cash holding amount lower than the other ATMs or a withdrawal transaction at an ATM having a cash holding amount higher than the other ATMs through incentives, such as point assignment, which facilitates maintaining the cash holding amount at each ATM to be the prescribed reference and can reduce the frequency of cash loading operations by a security company as in the conventional art. That is, the cost associated with the cash loading operation to an ATM can be reduced.

[0096]

The details of this Description clarify at least the followings. That is, according to the ATM-cash-loading management system of this embodiment, the storage device may store information on the cash holding amounts with respect to each of the cash types in each of ATMs, in the ATM management table, and the calculation device may specify the ATM having the cash holding amount with respect to a prescribed type to change the prescribed reference, with reference to the ATM management table, by executing the transaction indicated by the scheduled notification, in transmission of the recommending information, and transmit information recommending the transaction at the specified ATM to the user terminal.

[0097]

In this way, each user is led to perform a scheduled transaction at the ATM that has an insufficient or excessive number of stored notes with a certain face value, using the notes concerned, thereby facilitating allowing the number of stored notes of each type at the ATM concerned to transition into an appropriate state.

[0098]

The calculation device of this embodiment may include, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmit the information to the user terminal.

[0099]

This allows the user to clearly recognize an incentive that is to be obtained by executing the transaction, and induces the user to securely execute the transaction. Consequently, the deposit transaction at the ATM with the cash holding amount lower than the other ATMs or the withdrawal transaction at the ATM with the cash holding amount higher than

the other ATMs is facilitated to occur, which effectively achieves reduction in cost associated with the cash loading operation to the ATM.

[0100]

In the ATM-cash-loading management system of this embodiment, for transmission of the recommending information, the calculation device may regard information on an incentive that increases according to a degree of deviation between the cash holding amount of the specified ATM and the prescribed reference, as information on an incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification, include the information into the recommending information, and transmit the information to the user terminal.

[0101]

This allows the user to clearly recognize an incentive that is to be obtained by executing the transaction and the magnitude thereof, and further induces the user to securely execute the transaction. Consequently, the deposit transaction at the ATM with the cash holding amount lower than the other ATMs or the withdrawal transaction at the ATM with the cash holding amount higher than the other ATMs is further facilitated to occur, which further effectively achieves reduction in cost associated with the cash loading operation to the ATM.

[0102]

In the ATM-cash-loading management system of this embodiment, for transmission of the recommending information, the calculation device may regard information on an incentive that increases according to a degree of deviation between the cash holding amount of each of the specified ATMs and the prescribed reference, as information on each incentive scheduled to be provided to a user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the specified ATMs, include the information into the recommending information, and transmit the information to the user terminal.

[0103]

This allows the user to clearly recognize an incentive that is to be obtained by executing the transaction and the magnitude thereof with respect to each ATM, facilitates recognition of the ATM increasing transaction incentive for the user concerned, and further induces the user to securely execute the transaction. Consequently, the deposit transaction at the ATM with the cash holding amount lower than the other ATMs or the withdrawal transaction at the ATM with the cash holding amount higher than the other ATMs is further facilitated to occur, which further effectively achieves reduction in cost associated with the cash loading operation to the ATM.

[0104]

In the ATM-cash-loading management system of this embodiment, the storage device may store information on the cash holding amount in each of the plurality of ATMs and information on a location, in the ATM management table, and the calculation device may receive, from the user terminal, a scheduled notification on an ATM transaction by the prescribed user and current position information on the user concerned, may specify an ATM having a cash holding amount that is to change towards a prescribed reference through execution of the transaction indicated by the scheduled notification among ATMs within a prescribed distance from a current position of the user concerned, with reference to the ATM management table, and for transmission of the recommending information, the calculation device may generate information on an incentive that increases according to a degree of deviation between the cash holding amount of each of the ATMs and the prescribed reference, as information on an incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the specified ATMs, generate map data indicating the location of each of the specified ATMs and the current position of the user concerned, includes the information on each incentive and the map data that have been generated, into the recommending information, and transmit the information to the user terminal.

[0105]

This allows the user to clearly recognize an incentive that is to be obtained by executing the transaction and the magnitude thereof with respect to each ATM residing in a constant range from the current position of the user, facilitates recognition of the ATM increasing transaction incentive for the user concerned, and further induces the user to securely execute the transaction. Consequently, the deposit transaction at the ATM with the cash holding amount lower than the other ATMs or the withdrawal transaction at the ATM with the cash holding amount higher than the other ATMs is further facilitated to occur, which further effectively achieves reduction in cost associated with the cash loading operation to the ATM.

[0106]

In the ATM-cash-loading management system of this embodiment, the calculation device may further execute a process where for transmission of the recommending information, the calculation device includes, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal, and after the transmission, when the calculation device receives, from the user terminal, reservation notification pertaining to the transaction at a prescribed ATM concerned,

the calculation device monitors the ATM concerned on whether the transaction by the user concerned at the ATM concerned is executed or not within a prescribed time after reception of the reservation notification, and when the transaction is executed within the prescribed time, the calculation device further executes a process of storing assignment information on the incentive pertaining to the user concerned in the storage device.

[0107]

This avoids meaninglessly assigning an incentive to the user who has been scheduled to execute the transaction at the ATM but has not executed the transaction concerned in actuality, thus causes the user to clearly recognize that the transaction is required to be securely executed to obtain the incentive, and induces the user to securely execute the transaction. Consequently, the deposit transaction at the ATM with the cash holding amount lower than the other ATMs or the withdrawal transaction at the ATM with the cash holding amount higher than the other ATMs is facilitated to occur, which further effectively achieves reduction in cost associated with the cash loading operation to the ATM.

[0108]

In the ATM-cash-loading management system of this embodiment, the calculation device may further execute a process where for transmission of the recommending information, the calculation device includes, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal, after the transmission, when the calculation device receives, from the user terminal, reservation notification pertaining to the transaction at a prescribed ATM concerned, the calculation device monitors the ATM concerned on whether the transaction by the user concerned at the ATM concerned is executed or not within a prescribed time after reception of the reservation notification, and when the transaction is executed within the prescribed time, the calculation device stores, in the storage device, the assignment information on the incentive with respect to the user concerned, and the calculation device monitors the ATM concerned on whether an inverted transaction against the transaction by the user concerned at the ATM concerned is executed or not within the prescribed reference period after execution of the transaction within the prescribed time or not, and when the inverted transaction is executed within the reference period, the calculation device further executes a process of canceling the stored assignment information on the incentive performed for the user concerned.

[0109]

This can eliminate an action by the user who intends to obtain only an incentive

without contributing to cash loading management at the ATM concerned, by actually executing the transaction at the ATM but further executing the inverted transaction in a short period. This allows the user to clearly recognize that execution of the transaction contributing to cash loading management at the ATM is required to obtain the incentive, and further induces the user to securely execute the transaction. Consequently, the deposit transaction at the ATM with the cash holding amount lower than the other ATMs or the withdrawal transaction at the ATM with the cash holding amount higher than the other ATMs is facilitated to occur, which further effectively achieves reduction in cost associated with the cash loading operation to the ATM.

[0110]

In the ATM-cash-loading management system of this embodiment, the calculation device may further execute a process where the calculation device determines whether execution of the transaction indicated by the scheduled notification with respect to the specified ATM allows the cash holding amount to satisfy the prescribed reference or not, and when a result of the determination determines that the execution of the transaction allows the prescribed reference to be satisfied, the ATM concerned is eliminated from targets of the recommendation until a situation occurs where the cash holding amount of the ATM concerned does not satisfy the prescribed reference.

[0111]

This regards only the ATMs having a cash holding amount that does not satisfy the prescribed reference as targets of cash loading management to facilitate improvement in efficiency, allows the user to be notified of recommendation target ATMs of which the number of candidates are appropriately narrowed down and which are easily recognized, and further induces the user to securely execute the transaction. Consequently, the deposit transaction at the ATM with the cash holding amount lower than the other ATMs or the withdrawal transaction at the ATM with the cash holding amount higher than the other ATMs is facilitated to occur, which effectively achieves reduction in cost associated with the cash loading operation to the ATM.

[0112]

In the ATM-cash-loading management method of this embodiment, the method further may cause the computer system to store information on the cash holding amount with respect to each of cash types in each of the plurality of ATMs, in the ATM management table of the storage device, and for transmission of the recommending information, the method may further cause the computer system to specify the ATM having a prescribed type of cash holding amount that is to change towards a prescribed reference through execution of the transaction

indicated by the scheduled notification, with reference to the ATM management table, and transmit, to the user terminal, information recommending the transaction at the specified ATM.

[0113]

In the ATM-cash-loading management method of this embodiment, for transmission of the recommending information, the method may further cause the computer system to include, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmit the information to the user terminal.

[0114]

In the ATM-cash-loading management method of this embodiment, for transmission of the recommending information, the method may further cause the computer system to regard information on an incentive that increases according to a degree of deviation between the cash holding amount of the specified ATM and the prescribed reference, as information on an incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification, include the information into the recommending information, and transmit the information to the user terminal.

[0115]

In the ATM-cash-loading management method of this embodiment, for transmission of the recommending information, the method may further cause the computer system to regard information on an incentive that increases according to a degree of deviation between the cash holding amount of the specified ATM and the prescribed reference, as information on an incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the specified ATMs, include the information into the recommending information, and transmit the information to the user terminal.

[0116]

In the ATM-cash-loading management method of this embodiment, the method may further cause the computer system to store information on the cash holding amount in each of the plurality of ATMs and information on a location, in the ATM management table, and receive, from the user terminal, a scheduled notification on an ATM transaction by the prescribed user and current position information on the user concerned, and specify an ATM having a cash holding amount that is to change towards a prescribed reference through execution of the transaction indicated by the scheduled notification among ATMs within a prescribed distance from a current position of the user concerned, with reference to the ATM management table, and

for transmission of the recommending information, the method further causes the computer system to generate information on an incentive that increases according to a degree of deviation between the cash holding amount of the ATM and the prescribed reference, as information on each incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the specified ATMs, generate map data indicating the location of each of the specified ATMs and the current position of the user concerned, include the generated information on each incentive and the map data into the recommending information, and transmit the information to the user terminal.

[0117]

The ATM-cash-loading management method of this embodiment may further cause the computer system to execute a process where for transmission of the recommending information, the system includes, into the recommending information, information on an incentive scheduled to be provided for a user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal, after the transmission, when the system receives, from the user terminal, a reservation notification pertaining to the transaction at a prescribed ATM concerned, the system monitors the ATM concerned on whether the transaction by the user concerned at the ATM concerned is executed or not within a prescribed time after reception of the reservation notification, and when the transaction is executed within the prescribed time, the system stores assignment information on the incentive pertaining to the user concerned in the storage device.

[0118]

The ATM-cash-loading management method of this embodiment may further cause the computer to execute a process where for transmission of the recommending information, the system includes, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal, after the transmission, when reservation notification pertaining to the transaction at the ATM concerned is received from the user terminal, the system monitors the ATM concerned on whether the transaction by the user concerned at the ATM concerned is executed or not within a prescribed time after reception of the reservation notification, and when the transaction is executed within the prescribed time, the system stores, in the storage device, assignment information on the incentive with respect to the user concerned, after execution of the transaction within the prescribed period, the system monitors the ATM concerned on whether an inverted transaction against the transaction by the user concerned at the ATM concerned is

executed or not within a prescribed reference period, and when the inverted transaction is executed within the reference period, the system further cancels the stored assignment information on the incentive performed for the user concerned.

[0119]

The ATM-cash-loading management method of this embodiment may further cause the computer system to execute a process where the system determines whether execution of the transaction indicated by the scheduled notification with respect to the specified ATM allows the cash holding amount to satisfy the prescribed reference or not, and when a result of the determination determines that the execution of the transaction allows the prescribed reference to be satisfied, the system eliminates the ATM from targets of the recommendation until a situation occurs where the cash holding amount of the ATM concerned does not satisfy the prescribed reference.

REFERENCE SIGNS LIST

[0120]

20, 30	Network
100	ATM-cash-loading management system
101	Storage device
102	Program
103	Memory
104	Calculation device
105	Communication device
110	Data items
125	ATM management table
126	Transaction-amount threshold value table
127	Note-number threshold value table
128	Reservation table
129	User management table
200	ATM
201	Storage device
202	Program
203	Memory
204	Calculation device
205	Input device

206 Output device
207 Communication device
210 Data items
220 Cash storage
230 Cash conveyance mechanism
240 Cash insert slot
250 Computer
300 User terminal
301 Storage device
302 Program
303 Memory
304 Calculation device
305 Input device
306 Output device
307 Communication device
308 GPS unit
310 Data items

CLAIMS

[CLAIM 1] An ATM-cash-loading management system, comprising:

a storage device that stores an ATM management table that stores information on a cash holding amount in each of a plurality of ATMs; and

a calculation device that receives, from a user terminal, a scheduled notification on an ATM transaction by a prescribed user, specifies an ATM having a cash holding amount that is to change towards a prescribed reference through execution of a transaction indicated by the scheduled notification, with reference to the ATM management table, and transmits, to the user terminal, information recommending the transaction at the specified ATM.

[CLAIM 2] The ATM-cash-loading management system according to claim 1,

wherein the storage device stores information on the cash holding amount with respect to each of cash types in each of the plurality of ATMs, in the ATM management table, and

for transmission of the recommending information, the calculation device specifies an ATM having a prescribed type of cash holding amount that is to change towards a prescribed reference through execution of the transaction indicated by the scheduled notification, with reference to the ATM management table, and transmits, to the user terminal, information recommending the transaction at the specified ATM.

[CLAIM 3] The ATM-cash-loading management system according to claim 1,

wherein for transmission of the recommending information, the calculation device includes, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal.

[CLAIM 4] The ATM-cash-loading management system according to claim 1,

wherein for transmission of the recommending information, the calculation device regards information on an incentive that increases according to a degree of deviation between the cash holding amount of the specified ATM and the prescribed reference, as information on an incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification, includes the information into the recommending information, and transmits the information to the user terminal.

[CLAIM 5] The ATM-cash-loading management system according to claim 1,

wherein for transmission of the recommending information, the calculation device regards information on an incentive that increases according to a degree of deviation between the cash holding amount of each of the specified ATMs and the prescribed reference, as information

on each incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the specified ATMs, includes the information into the recommending information, and transmits the information to the user terminal.

[CLAIM 6] The ATM-cash-loading management system according to claim 1,

wherein the storage device stores information on the cash holding amount in each of the plurality of ATMs and information on a location, in the ATM management table, and

the calculation device receives, from the user terminal, a scheduled notification of an ATM transaction by the prescribed user and current position information on the user concerned, specifies an ATM having a cash holding amount that is to change towards a prescribed reference through execution of the transaction indicated by the scheduled notification among ATMs within a prescribed distance from a current position of the user concerned, with reference to the ATM management table, and

for transmission of the recommending information, the calculation device generates information on an incentive that increases according to a degree of deviation between the cash holding amount of each of the ATMs and the prescribed reference, as information on an incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the specified ATMs, generates map data indicating the location of each of the specified ATMs and the current position of the user concerned, includes the information on each incentive and the map data that have been generated, into the recommending information, and transmits the information to the user terminal.

[CLAIM 7] The ATM-cash-loading management system according to claim 1,

wherein the calculation device further executes a process where for transmission of the recommending information, the calculation device includes, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal, and

after the transmission, when the calculation device receives, from the user terminal, reservation notification pertaining to the transaction at a prescribed ATM indicated by the recommending information, the calculation device monitors the ATM concerned on whether the transaction by the user concerned at the ATM concerned is executed or not within a prescribed time after reception of the reservation notification, and when the transaction is executed within the prescribed time, the calculation device stores assignment information on the

incentive pertaining to the user concerned in a storage device.

[CLAIM 8] The ATM-cash-loading management system according to claim 1,

wherein the calculation device further executes a process where for transmission of the recommending information, the calculation device includes, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal,

after the transmission, when the calculation device receives, from the user terminal, reservation notification pertaining to the transaction at a prescribed ATM indicated by the recommending information, the calculation device monitors the ATM concerned on whether the transaction by the user concerned at the ATM concerned is executed or not within a prescribed time after reception of the reservation notification, and when the transaction is executed within the prescribed time, the calculation device stores, in the storage device, the assignment information on the incentive with respect to the user concerned,

the calculation device monitors the ATM concerned on whether an inverted transaction against the transaction by the user concerned at the ATM concerned is executed or not within the prescribed reference period after execution of the transaction within the prescribed time or not, and when the inverted transaction is executed within the reference period, the calculation device cancels the stored assignment information on the incentive performed for the user concerned.

[CLAIM 9] The ATM-cash-loading management system according to claim 1,

wherein the calculation device further executes a process where the calculation device determines whether execution of the transaction indicated by the scheduled notification with respect to the specified ATM allows the cash holding amount to satisfy the prescribed reference or not, and when a result of the determination determines that the execution of the transaction allows the prescribed reference to be satisfied, the ATM concerned is eliminated from targets of the recommendation until a situation occurs where the cash holding amount of the ATM concerned does not satisfy the prescribed reference.

[CLAIM 10] An ATM-cash-loading management method, causing a computer system that includes a storage device that stores an ATM management table that stores information on a cash holding amount in each of a plurality of ATMs to

receive, from a user terminal, a scheduled notification on an ATM transaction by a prescribed user, specify an ATM having a cash holding amount that is to change towards a prescribed reference through execution of a transaction indicated by the scheduled notification,

with reference to the ATM management table, and transmit, to the user terminal, information recommending the transaction at the specified ATM.

[CLAIM 11] The ATM-cash-loading management system according to claim 10,

wherein the system further causes the computer system to

store information on the cash holding amount with respect to each of cash types in each of the plurality of ATMs, in the ATM management table of the storage device, and

for transmission of the recommending information, the system further causes the computer system to specify the ATM having a prescribed type of cash holding amount that is to change towards a prescribed reference through execution of the transaction indicated by the scheduled notification, with reference to the ATM management table, and transmit, to the user terminal, information recommending the transaction at the specified ATM.

[CLAIM 12] The ATM-cash-loading management method according to claim 10,

wherein for transmission of the recommending information, the method further causes the computer system to include, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmit the information to the user terminal.

[CLAIM 13] The ATM-cash-loading management method according to claim 10,

wherein for transmission of the recommending information, the method further causes the computer system to regard information on an incentive that increases according to a degree of deviation between the cash holding amount of the specified ATM and the prescribed reference, as information on an incentive scheduled to be provided to a user concerned in a case of execution of the transaction indicated by the scheduled notification, include the information into the recommending information, and transmit the information to the user terminal.

[CLAIM 14] The ATM-cash-loading management method according to claim 10,

wherein for transmission of the recommending information, the method further causes the computer system to regard information on an incentive that increases according to a degree of deviation between the cash holding amount of the specified ATM and the prescribed reference, as information on an incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the specified ATMs, include the information into the recommending information, and transmit the information to the user terminal.

[CLAIM 15] The ATM-cash-loading management method according to claim 10,

wherein the method further causes the computer system to

store information on the cash holding amount in each of the plurality of ATMs and information on a location, in the ATM management table, and

receive, from the user terminal, a scheduled notification on an ATM transaction by the prescribed user and current position information on the user concerned, and specify an ATM having a cash holding amount that is to change towards a prescribed reference through execution of the transaction indicated by the scheduled notification among ATMs within a prescribed distance from a current position of the user concerned, with reference to the ATM management table, and

for transmission of the recommending information, the method further causes the computer system to generate information on an incentive that increases according to a degree of deviation between the cash holding amount of the ATM and the prescribed reference, as information on each incentive scheduled to be provided to the user concerned in a case of execution of the transaction indicated by the scheduled notification at each of the specified ATMs, generate map data indicating the location of each of the specified ATMs and the current position of the user concerned, include the generated information on each incentive and the map data into the recommending information, and transmit the information to the user terminal.

[CLAIM 16] The ATM-cash-loading management method according to claim 10, further causing the computer system to execute a process where

for transmission of the recommending information, the system includes, into the recommending information, information on an incentive scheduled to be provided for a user concerned in a case of execution of the transaction indicated by the scheduled notification at the specified ATM, and transmits the information to the user terminal,

after the transmission, when the system receives, from the user terminal, a reservation notification pertaining to the transaction at a prescribed ATM indicated by the recommending information, the system monitors the ATM concerned on whether the transaction by the user concerned at the ATM concerned is executed or not within a prescribed time after reception of the reservation notification, and when the transaction is executed within the prescribed time, the system stores assignment information on the incentive pertaining to the user concerned in a storage device.

[CLAIM 17] The ATM-cash-loading management method according to claim 10 further causing the computer system to execute a process where,

for transmission of the recommending information, the system includes, into the recommending information, information on an incentive scheduled to be provided for the user concerned in a case of execution of the transaction indicated by the scheduled notification at the

specified ATM, and transmits the information to the user terminal,

after the transmission, when the system receives, from the user terminal, a reservation notification pertaining to the transaction at a prescribed ATM indicated by the recommending information, the system monitors the ATM concerned on whether the transaction by the user concerned at the ATM concerned is executed or not within a prescribed time after reception of the reservation notification, and when the transaction is executed within the prescribed time, the system stores, in the storage device, assignment information on the incentive with respect to the user concerned,

after execution of the transaction within the prescribed period, the system monitors the ATM concerned on whether an inverted transaction against the transaction by the user concerned at the ATM concerned is executed or not within a prescribed period, and when the inverted transaction is executed within the reference period, the system cancels the stored assignment information on the incentive performed for the user concerned.

[CLAIM 18] The ATM-cash-loading management method according to claim 10, further causing the computer system to execute a process where

the system determines whether execution of the transaction indicated by the scheduled notification with respect to the specified ATM allows the cash holding amount to satisfy the prescribed reference or not, and when a result of the determination determines that the execution of the transaction allows the prescribed reference to be satisfied, the system eliminates the ATM from targets of the recommendation until a situation occurs where the cash holding amount of the ATM concerned does not satisfy the prescribed reference.