DESCRIPTION

Title of Invention

USER INFORMATION MANAGEMENT DEVICE

Technical Field

[0001]

The present invention relates to a technique for managing customer information.

Background Art

[0002]

Companies commonly acquire and accumulate customer information from customers' day-to-day purchasing behavior and conduct marketing activities for analyzing the customer information.

[0003]

Against such a background, attempts have been made to analyze customers' purchasing behavior and make use of the analysis in sales promotion activities. For example, Patent Literature 1 proposes a sales support device capable of providing customer classifications in which customer tendencies in residential remodeling are similar.

Citation List

Patent Literature

[0004]

Patent Literature 1: JP 2021-135627 A

Summary of Invention

Technical Problem

[0005]

However, the conventional technique described above is premised on there being no missing customer information, and there has been a problem that, when part of the customer information is missing, a risk exists of deriving an inaccurate result.

Accordingly, in view of the problem described above, an object of the present invention is to provide a user information management device that fills in missing information in customer information based on supporting grounds.

Solution to Problem

[0006]

One form of a user information management device disclosed herein includes: user information storage means that stores, for each piece of user identification information, user personal information including any one or more of attribute information, purchase history information, skin information, health indicator information, and questionnaire response information that

are related to a user identified by the user identification information; and user information registration means that, in a case where, in the user information storage means, missing information is present in any item of the user personal information associated with first user identification information, registers the missing information associated with the first user identification information based on information related to an item pertaining to the missing information associated with second user identification information having first item information identical or similar to first item information included in the user personal information associated with the first user identification information.

[0007]

In addition, one form of a user information management device disclosed herein includes: user information storage means that stores, for each piece of user identification information, user personal information including any one or more of attribute information, purchase history information, skin information, health indicator information, and questionnaire response information that are related to a user identified by the user identification information; and user information registration means that, in a case where, in the user information storage means, missing information is present

in any item of the user personal information associated with first user identification information, identifies second user identification information having information identical or similar to information associated with the first user identification information, further performs, one or more times, processing for identifying the (N+1)-th user identification information having information identical or similar to information associated with the N-th user identification information, and registers the missing information associated with the first user identification information based on information related to an item pertaining to the missing information associated with the (N+1)-th user identification information identified as a result of performing the processing. Note that N starts from 2 and increases by 1 each time the identifying processing is performed.

Advantageous Effects of Invention

[0008]

The disclosed user information management device fills in missing information in customer information based on supporting grounds.

Brief Description of Drawings

[0009]

Fig. 1 is a diagram illustrating an overview of the user information management device according to the present embodiment.

Fig. 2 is a functional block diagram of the user information management device according to the present embodiment.

Fig. 3 is a diagram illustrating user information registration means according to the present embodiment.

Fig. 4 is a diagram illustrating user information registration means according to the present embodiment.

Fig. 5 is a diagram illustrating an example hardware configuration of the user information management device according to the present embodiment.

Fig. 6 is a flowchart illustrating a flow of a processing example by the user information management device according to the present embodiment.

Description of Embodiments

[0010]

An embodiment for carrying out the present invention will be described with reference to the drawings.

(Operation Principle of User Information Management Device According to Present Embodiment)

[0011]

The operation principle of a user information

management device (hereinafter simply referred to as the "present device") 100 according to the present embodiment will be described with reference to Figs. 1 to 4. Fig. 1 is a diagram illustrating a connection relationship between the present device 100 and other devices, and Fig. 2 is a functional block diagram of the present device 100.

[0012]

As illustrated in Fig. 1, the present device 100 is connected to a point of sales (POS) system 340 and the like via a communication network 330. The communication network 330 may be in either a wired form or a wireless form. The point of sales (POS) system 340 provides purchase history information 250 to the present device 100.

As illustrated in Fig. 2, the present device 100 includes a user information storage means 110, a user information registration means 120, and an erroneous registration detection means 130.

[0013]

The user information storage means 110 stores, for each piece of the user identification information 220, the user personal information 230 that includes any one or more of the attribute information 240, the purchase history information 250, the skin information 260, the health indicator information 270, the questionnaire response information 280, and the promotional material usage

information 290 related to the user 210 identified by the user identification information 220. The user information storage means 110 is a type of so-called customer relationship management (CRM) database.

[0014]

The attribute information 240 is information related to a customer's name, gender, age, family structure, address, telephone number, and the like. The skin information 260 is information related to a customer's skin age, skin type, moisture content, conditions of pores, wrinkles, spots, and texture, and the like. The health indicator information 270 is information related to laboratory values of a customer, such as triglycerides, cholesterol, and uric acid.

[0015]

The user information registration means 120 detects that missing information 320 is present in any item of the user personal information 230 associated with the first user identification information 300 in the user information storage means 110. At that time, the user information registration means 120 identifies the second user identification information 310 having first item information identical or similar to the first item information included in the user personal information 230 associated with the first user identification information

300. Then, the user information registration means 120 registers the missing information 320 associated with the first user identification information 300 based on information related to an item pertaining to the missing information 320 associated with the identified second user identification information 310.

[0016]

Fig. 3 is a diagram illustrating processing of the user information registration means 120. As illustrated in Fig. 3, the user information registration means 120 detects, for example, that missing information 320: NULL is present in item X of the user personal information 230 associated with the user identification information 220 (300): 10000. Then, the user information registration means 120 identifies the user identification information 220 (310): 100XX having item A: ○ identical or similar to item A: ○ included in the user personal information 230 associated with the user identification information 220 (300): 10000. Further, the user information registration means 120 registers the missing information 320 associated with the user identification information 220 (300): 10000 based on information: □ related to item X pertaining to the missing information 320 associated with the user identification information 220 (310): 100XX.

[0017]

Note that, as with item B, even in a case where the two pieces of user identification information 220 (300, 310) have different data, such as item B: △ of the user identification information 220 (300): 10000 and item B: ▲ of the user identification information 220 (310): 100XX, the different data is unrelated to processing by the user information registration means 120.

[0018]

The user information registration means 120 may be in a form in which the user information registration means 120 performs processing based on information related to a plurality of pieces of the second user identification information 310. In addition, the user information registration means 120 may be in a form in which the user information registration means 120 performs processing using not information itself related to an item pertaining to the missing information 320 associated with the second user identification information 310, but information predicted therefrom.

[0019]

The user information registration means 120 detects that the missing information 320 is present in any item of the user personal information 230 associated with the first user identification information 300 in the user information storage means 110. At that time, the user information

registration means 120 identifies the second user identification information 310 having information identical or similar to information associated with the first user identification information 300. Further, in a case where N is assumed to start from 2 and increase by 1 each time loop processing 370 described later is performed, the user information registration means 120 performs, one or more times, the loop processing 370 for identifying the (N+1)-th user identification information 360 having information identical or similar to information associated with the N-th user identification information 350. Then, the user information registration means 120 registers the missing information 320 associated with the first user identification information 310 based on information related to an item pertaining to the missing information 320 associated with the (N+1)-th user identification information 360 identified by the loop processing 370. Note that a condition (number of times) for stopping the loop processing 370 may be appropriately determined.

[0020]

Fig. 4 is a diagram illustrating processing of the user information registration means 120. As illustrated in Fig. 4, the user information registration means 120 detects, for example, that the missing information 320 is present in item X of the user personal information 230

associated with the user identification information 220 (300): 10000. Subsequently, the user information registration means 120 identifies the user identification information 220 (310): 100XX having information identical or similar to information of item A associated with the user identification information 220 (300): 10000. Further, the user information registration means 120 identifies the user identification information 220 (360): 100YY having information identical or similar to information of item B associated with the user identification information 220 (350): 100XX. Subsequently, the user information registration means 120 identifies the user identification information 220 (360): 100ZZ having information identical or similar to information of item C associated with the user identification information 220 (350): 100YY. In this example, the loop processing 370 is performed twice. Then, the user information registration means 120 registers the missing information 320 associated with the first user identification information 220 (310): 10000 based on information: ☆ related to item X pertaining to the missing information 320 associated with the user identification information 220 (360): 100ZZ identified by the loop processing 370.

[0021]

The erroneous registration detection means 130

performs processing in a case where the missing information 320 associated with the first user identification information 300 is acquired by regular processing when information is registered in the user information storage means 110, the regular processing being different from processing by the user information registration means 120. At that time, in a case where information registered by the user information registration means 120 differs from the missing information 320 acquired by the regular processing by a predetermined value or more, the erroneous registration detection means 130 issues a notification to that effect. The foregoing is processing for evaluating the reliability of processing by the user information registration means 120.

The present device 100 fills in the missing information 320 in the customer information 220, 230 based on supporting grounds, according to the operation principle described above.

(Hardware Configuration of User Information Management Device According to Present Embodiment)

[0022]

An example hardware configuration of the present device 100 will be described with reference to Fig. 5. Fig. 5 is a diagram illustrating an example of a hardware configuration of the present device 100. As illustrated in

Fig. 5, the present device 100 includes a central processing unit (CPU) 510, a read-only memory (ROM) 520, a random access memory (RAM) 530, an auxiliary storage device 540, a communication I/F 550, an input device 560, a display device 570, and a storage medium I/F 580.

[0023]

The CPU 510 is a device that executes a program stored in the ROM 520, performs arithmetic processing on data loaded in the RAM 530 in accordance with instructions of the program, and controls the present device 100 as a whole. The ROM 520 stores programs and data to be executed by the CPU 510. In the RAM 530, when the CPU 510 executes a program stored in the ROM 520, a program to be executed and data are loaded, and the RAM 530 temporarily holds calculation data during calculation.

[0024]

The auxiliary storage device 540 is a device that stores an operating system (OS), which is basic software, an application program according to the present embodiment, and the like together with related data, and may be in a form including, for example, the user information storage means 110. The auxiliary storage device 540 is, for example, a hard disk drive (HDD), flash memory, or the like.

[0025]

The communication I/F 550 is an interface for connecting to the communication network 330, such as a wired/wireless local area network (LAN) or the Internet, and exchanging data with another device (a POS system or the like) 340 that provides a communication function.

[0026]

The input device 560 is a device, such as a keyboard, for inputting data to the present device 100. The display device (output device) 570 is a device configured with a liquid crystal display (LCD) or the like and is a device that functions as a user interface when a user uses a function included in the present device 100 or performs various settings. The storage medium I/F 580 is an interface for transmitting and receiving data to and from a storage medium 590, such as a CD-ROM, a DVD-ROM, or a USB flash drive.

[0027]

Each means included in the present device 100 may be implemented by the CPU 510 executing a program corresponding to each means, the program being stored in the ROM 520 or the auxiliary storage device 540. In addition, each means included in the present device 100 may be in a form in which processing related to each means is implemented as hardware. In addition, the present device 100 may be in a form in which a program according to the

present invention is read from an external server device via the communication I/F 550, or the program according to the present invention is read from the storage medium 590 via the storage medium I/F 580, and the present device 100 executes the program.

(Processing Example by User Information Management Device According to Present Embodiment)

A flow of a processing example by the present device 100 will be described with reference to Fig. 6. Fig. 6 is a flowchart illustrating a flow of a processing example by the present device 100.

[0028]

In S10, the user information registration means 120 detects that missing information 320 is present in any item of the user personal information 230 associated with the first user identification information 300 in the user information storage means 110.

[0029]

At that time, the user information registration means 120 identifies the second user identification information 310 having first item information identical or similar to the first item information included in the user personal information 230 associated with the first user identification information 300.

[0030]

Then, the user information registration means 120 registers the missing information 320 associated with the first user identification information 300 based on information related to an item pertaining to the missing information 320 associated with the identified second user identification information 310.

[0031]

As illustrated in Fig. 3, the user information registration means 120 detects, for example, that missing information 320: NULL is present in item X of the user personal information 230 associated with the user identification information 220 (300): 10000. Then, the user information registration means 120 identifies the user identification information 220 (310): 100XX having item A: ○ identical or similar to item A: ○ included in the user personal information 230 associated with the user identification information 220 (300): 10000. Further, the user information registration means 120 registers the missing information 320 associated with the user identification information 220 (300): 10000 based on information: □ related to item X pertaining to the missing information 320 associated with the user identification information 220 (310): 100XX.

[0032]

Note that, as with item B, even in a case where the

two pieces of user identification information 220 (300, 310) have different data, such as item B: △ of the user identification information 220 (300): 10000 and item B: ▲ of the user identification information 220 (310): 100XX, the different data is unrelated to processing by the user information registration means 120.

[0033]

The user information registration means 120 may be in a form in which the user information registration means 120 performs processing based on information related to a plurality of pieces of the second user identification information 310. In addition, the user information registration means 120 may be in a form in which the user information registration means 120 performs processing using not information itself related to an item pertaining to the missing information 320 associated with the second user identification information 310, but information predicted therefrom.

In addition, the user information registration means 120 may be in a form in which the user information registration means 120 performs processing such as the following that differs from the processing described above.

[0034]

In S10, the user information registration means 120 detects that missing information 320 is present in any item

of the user personal information 230 associated with the first user identification information 300 in the user information storage means 110. At that time, the user information registration means 120 identifies the second user identification information 310 having information identical or similar to information associated with the first user identification information 300.

[0035]

Further, in a case where N is assumed to start from 2 and increase by 1 each time loop processing 370 described later is performed, the user information registration means 120 performs, one or more times, the loop processing 370 for identifying the (N+1)-th user identification information 360 having information identical or similar to information associated with the N-th user identification information 350.

[0036]

Then, the user information registration means 120 registers the missing information 320 associated with the first user identification information 310 based on information related to an item pertaining to the missing information 320 associated with the (N+1)-th user identification information 360 identified by the loop processing 370. Note that a condition (number of times) for stopping the loop processing 370 may be appropriately

determined.

[0037]

As illustrated in Fig. 4, the user information registration means 120 detects, for example, that missing information 320 is present in item X of the user personal information 230 associated with the user identification information 220 (300): 10000. Subsequently, the user information registration means 120 identifies the user identification information 220 (310): 100XX having information identical or similar to information of item A associated with the user identification information 220 (300): 10000.

[0038]

Further, the user information registration means 120 identifies the user identification information 220 (360): 100YY having information identical or similar to information of item B associated with the user identification information 220 (350): 100XX. Subsequently, the user information registration means 120 identifies the user identification information 220 (360): 100ZZ having information identical or similar to information of item C associated with the user identification information 220 (350): 100YY. In this example, the loop processing 370 is performed twice.

[0039]

Then, the user information registration means 120 registers the missing information 320 associated with the first user identification information 220 (310): 10000 based on information: ☆ related to item X pertaining to the missing information 320 associated with the user identification information 220 (360): 100ZZ identified by the loop processing 370.

[0040]

In S20, a case is assumed where the missing information 320 associated with the first user identification information 300 is acquired by regular processing when information is registered in the user information storage means 110, the regular processing being different from the processing in S10.

[0041]

In S20, in a case where information registered by the user information registration means 120 differs from the missing information 320 acquired by the regular processing by a predetermined value or more, the erroneous registration detection means 130 issues a notification to that effect. This processing is processing for evaluating the reliability of processing by the user information registration means 120.

By performing the processing described above, the present device 100 fills in the missing information 320 in

the customer information 220, 230 based on supporting grounds.

[0042]

Although an embodiment of the present invention has been described in detail above, the present invention is not limited to the specific embodiment, and various modifications and changes can be made within the scope of the gist of the present invention described in the claims.

Reference Signs List

[0043]

100 User information management device
110 User information storage means
120 User information registration means
130 Erroneous registration detection means
210 User
220 User identification information
230 User personal information
240 Attribute information
250 Purchase history information
260 Skin information
270 Health indicator information
280 Questionnaire response information
290 Promotional material usage information
300 First user identification information

310 Second user identification information

320 Missing information

330 Communication network

340 Point of sales (POS) system

510 CPU

520 ROM

530 RAM

540 Auxiliary storage device

550 Communication interface

560 Input device

570 Output device

580 Storage medium interface

590 Storage medium

CLAIMS

[Claim 1]

A user information management device comprising:

user information storage means that stores, for each piece of user identification information, user personal information including any one or more of attribute information, purchase history information, skin information, health indicator information, and questionnaire response information that are related to a user identified by the user identification information; and

user information registration means that, in a case where, in the user information storage means, missing information is present in any item of the user personal information associated with first user identification information, registers the missing information associated with the first user identification information based on information related to an item pertaining to the missing information associated with second user identification information having first item information that is identical or similar to the first item information included in the user personal information associated with the first user identification information.

[Claim 2]

A user information management device comprising:

user information storage means that stores, for each

piece of user identification information, user personal information including any one or more of attribute information, purchase history information, skin information, health indicator information, and questionnaire response information that are related to a user identified by the user identification information; and

user information registration means that, in a case where, in the user information storage means, missing information is present in any item of the user personal information associated with first user identification information, identifies second user identification information having information identical or similar to information associated with the first user identification information, further performs, one or more times, processing for identifying the (N+1)-th user identification information having information identical or similar to information associated with the N-th user identification information, and registers the missing information associated with the first user identification information based on information related to an item pertaining to the missing information associated with the (N+1)-th user identification information identified as a result of performing the processing. Note that N starts from 2 and increases by 1 each time the identifying processing is performed.

[Claim 3]

The user information management device according to claim 1 or 2, further comprising erroneous registration detection means that, in a case where the missing information associated with the first user identification information is acquired by regular processing when information is registered in the user information storage means, the regular processing differing from processing by the user information registration means, and information registered by the user information registration means differs from the missing information acquired by the regular processing by a predetermined value or more, issues a notification to that effect.

[Claim 4]

A user information management method in a computer comprising user information storage means that stores, for each piece of user identification information, user personal information including any one or more of attribute information, purchase history information, skin information, health indicator information, and questionnaire response information that are related to a user identified by the user identification information, the user information management method comprising:

a step of registering, by user information registration means, in a case where, in the user

information storage means, missing information is present in any item of the user personal information associated with first user identification information, the missing information associated with the first user identification information based on information related to an item pertaining to the missing information associated with second user identification information having first item information that is identical or similar to the first item information included in the user personal information associated with the first user identification information.

[Claim 5]

A user information management method in a computer comprising user information storage means that stores, for each piece of user identification information, user personal information including any one or more of attribute information, purchase history information, skin information, health indicator information, and questionnaire response information that are related to a user identified by the user identification information, the user information management method comprising:

a step in which user information registration means, in a case where, in the user information storage means, missing information is present in any item of the user personal information associated with first user identification information, identifies second user

identification information having information identical or similar to information associated with the first user identification information, further performs, one or more times, processing for identifying the (N+1)-th user identification information having information identical or similar to information associated with the N-th user identification information, and registers the missing information associated with the first user identification information based on information related to an item pertaining to the missing information associated with the (N+1)-th user identification information identified as a result of performing the processing. Note that N starts from 2 and increases by 1 each time the identifying processing is performed.

[Claim 6]

The user information management method according to claim 4 or 5, comprising a step in which erroneous registration detection means, in a case where the missing information associated with the first user identification information is acquired by regular processing when information is registered in the user information storage means, the regular processing differing from processing by the user information registration means, and information registered by the user information registration means differs from the missing information acquired by the

regular processing by a predetermined value or more, issues a notification to that effect.

[Claim 7]

A user information management program for causing a computer to execute the method according to claim 4 or 5.