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(54) **SALES SUPPORT METHOD AND SALES SUPPORT SYSTEM**

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CPC ***G06Q 30/0607*** (2013.01)

(57) **ABSTRACT**

in sale of age-restricted products, a sales support method and sales support system are provided that allow reduction in time and effort for dealing with false statement of age. The sales support method for supporting sale of age-restricted products include acquiring input information indicating whether a customer is at predetermined age and over or under the predetermined age, acquiring age estimation information indicating age of the customer estimated using biometric information obtained by observation of the customer, determining whether the customer is at the predetermined age and over based on the age estimation information when the input information indicates that the customer is at the predetermined age and over, and notifying determination results.

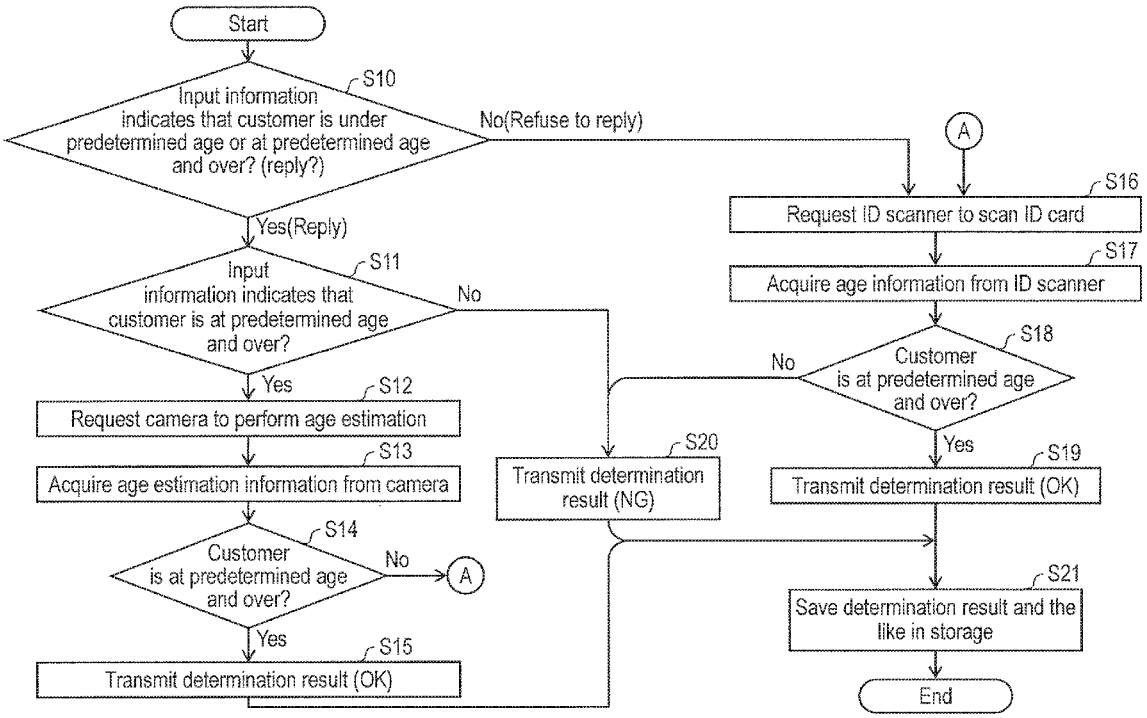


FIG. 1

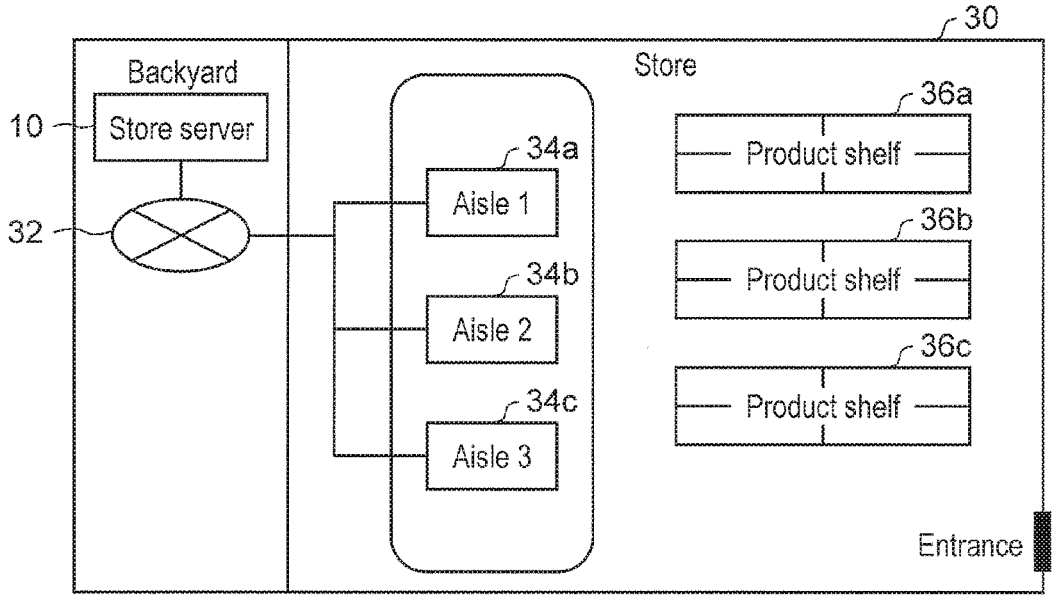

30
Backyard
Store
10
Store server
32
34a
Aisle 1
34b
Aisle 2
34c
Aisle 3
36a
Product shelf
36b
Product shelf
36c
Product shelf
Entrance

FIG. 2

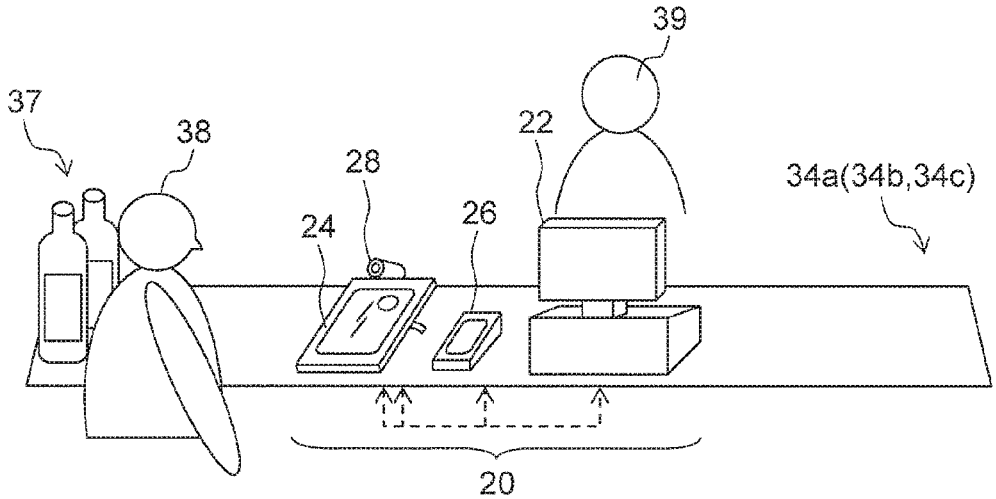

39
37
38
22
28
24
26
34a(34b,34c)
20

FIG. 3

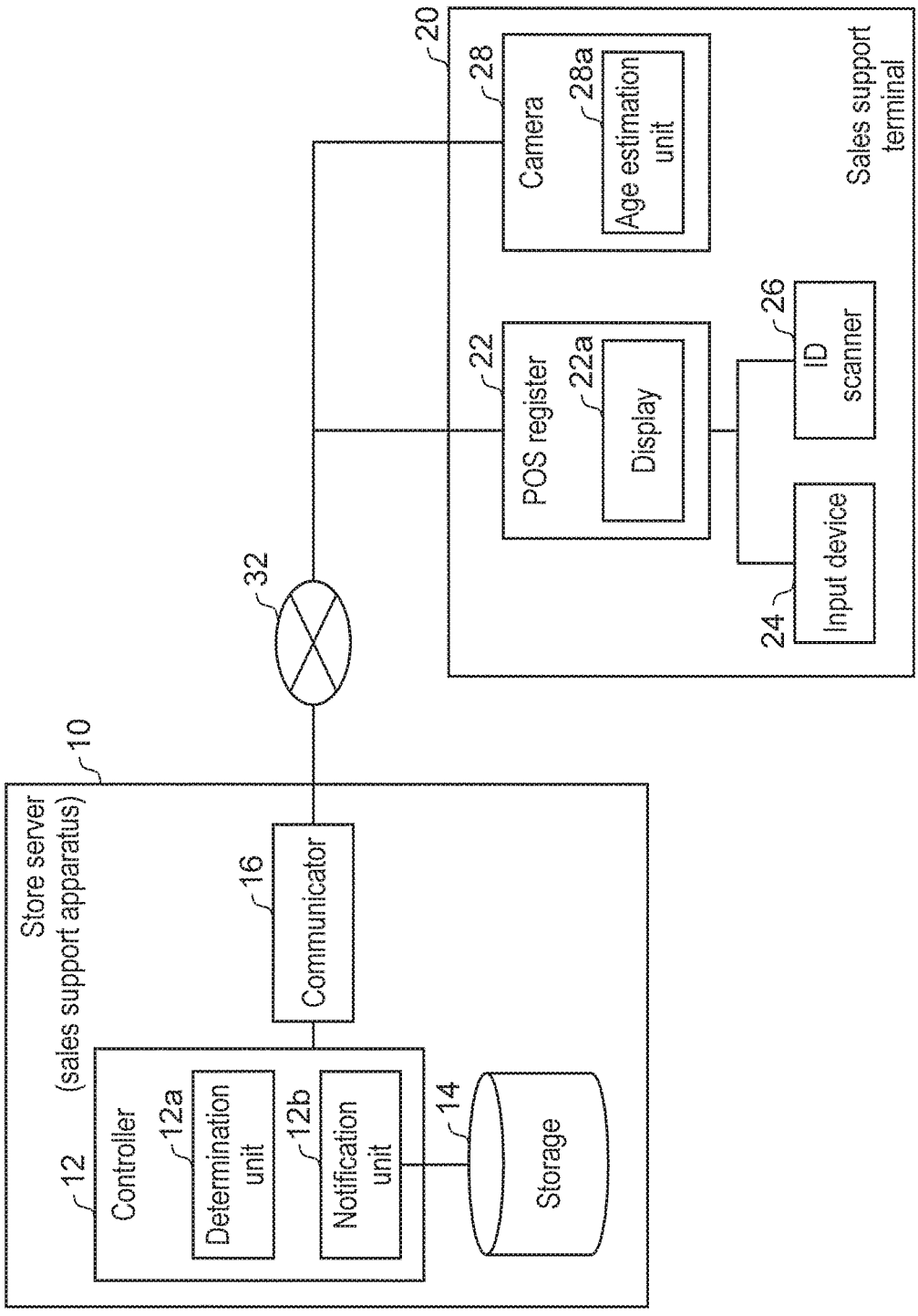

Store server
(sales support apparatus)
10
12
Controller
12a
Determination unit
12b
Notification unit
14
Storage
16
Communicator
32
20
Sales support terminal
28
Camera
28a
Age estimation unit
22
POS register
22a
Display
26
ID scanner
24
Input device

FIG. 4

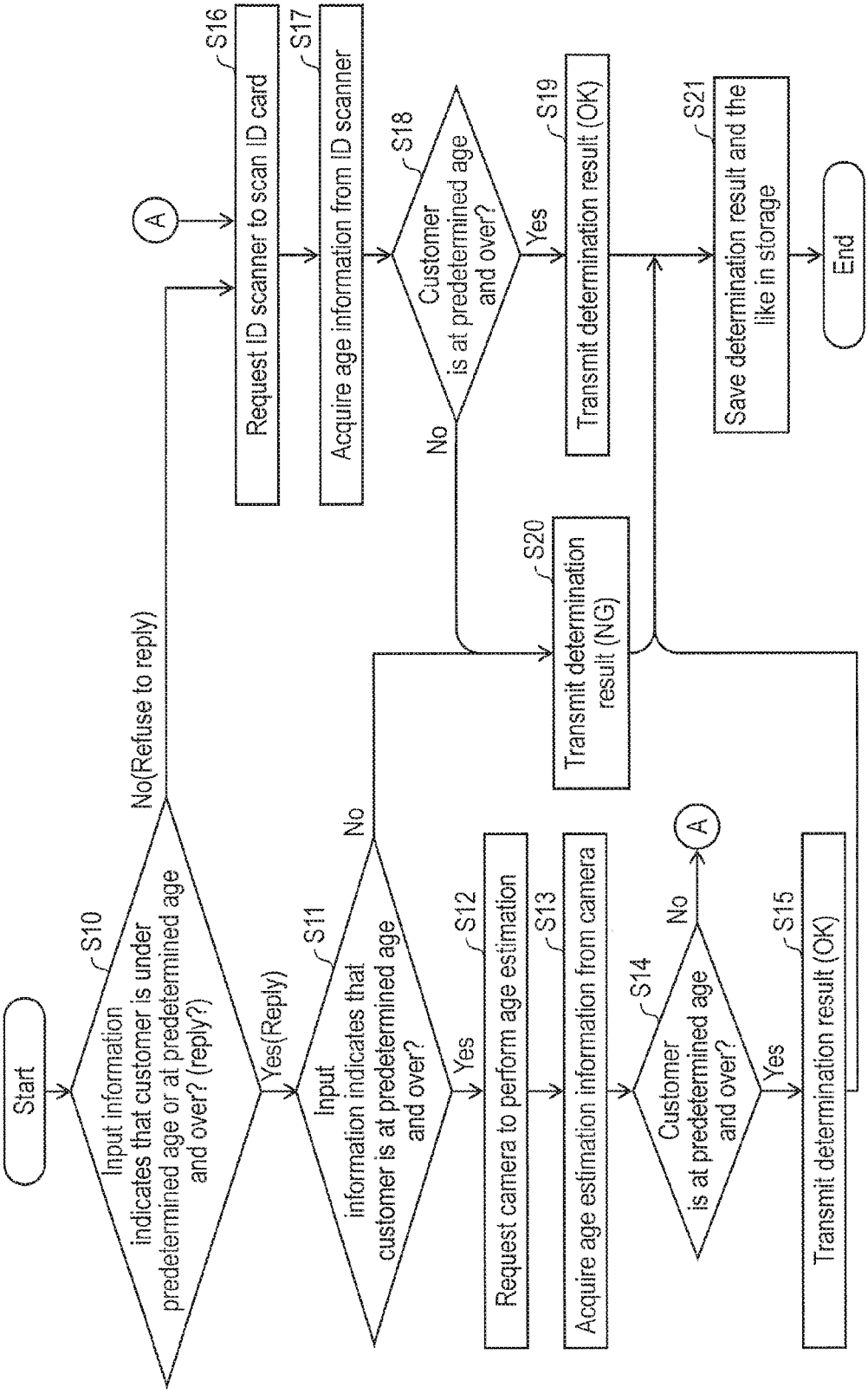

Start
S10
Input information indicates that customer is under predetermined age or at predetermined age and over? (reply?)
No(Refuse to reply)
Yes(Reply)
S11
Input information indicates that customer is at predetermined age and over?
No
Yes
S12
Request camera to perform age estimation
S13
Acquire age estimation information from camera
S14
Customer is at predetermined age and over?
No
Yes
A
S15
Transmit determination result (OK)
A
S16
Request ID scanner to scan ID card
S17
Acquire age information from ID scanner
S18
Customer is at predetermined age and over?
No
Yes
S19
Transmit determination result (OK)
S20
Transmit determination result (NG)
S21
Save determination result and the like in storage
End

FIG. 5A

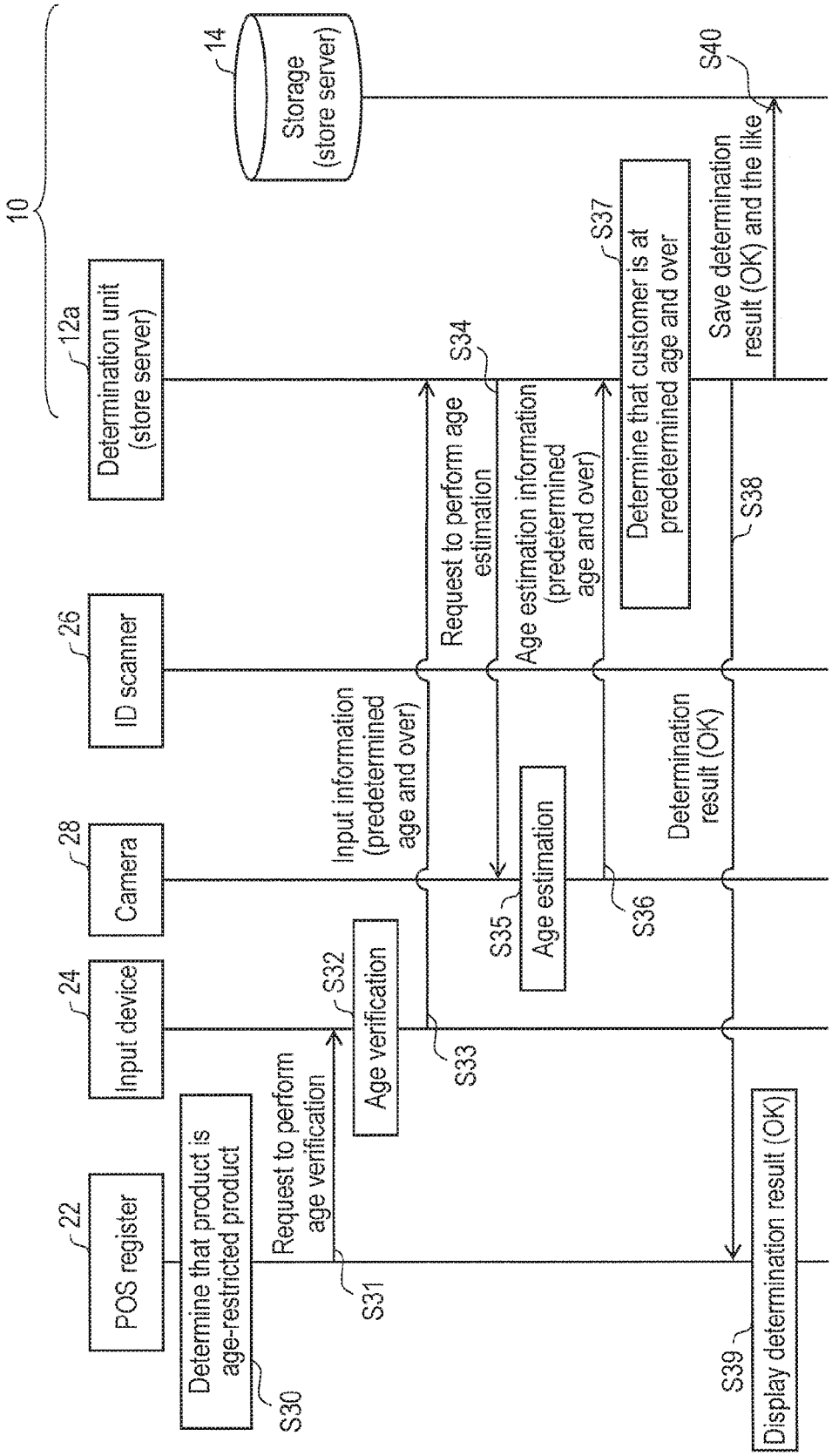

10
12a
Determination unit (store server)
14
Storage (store server)
22
POS register
24
Input device
26
ID scanner
28
Camera
Determine that product is age-restricted product
S30
Request to perform age verification
S31
S32
Age verification
S33
Input information (predetermined age and over)
S34
Request to perform age estimation
S35
Age estimation
S36
Age estimation information (predetermined age and over)
S37
Determine that customer is at predetermined age and over
S38
Determination result (OK)
S39
Display determination result (OK)
S40
Save determination result (OK) and the like

FIG. 5B

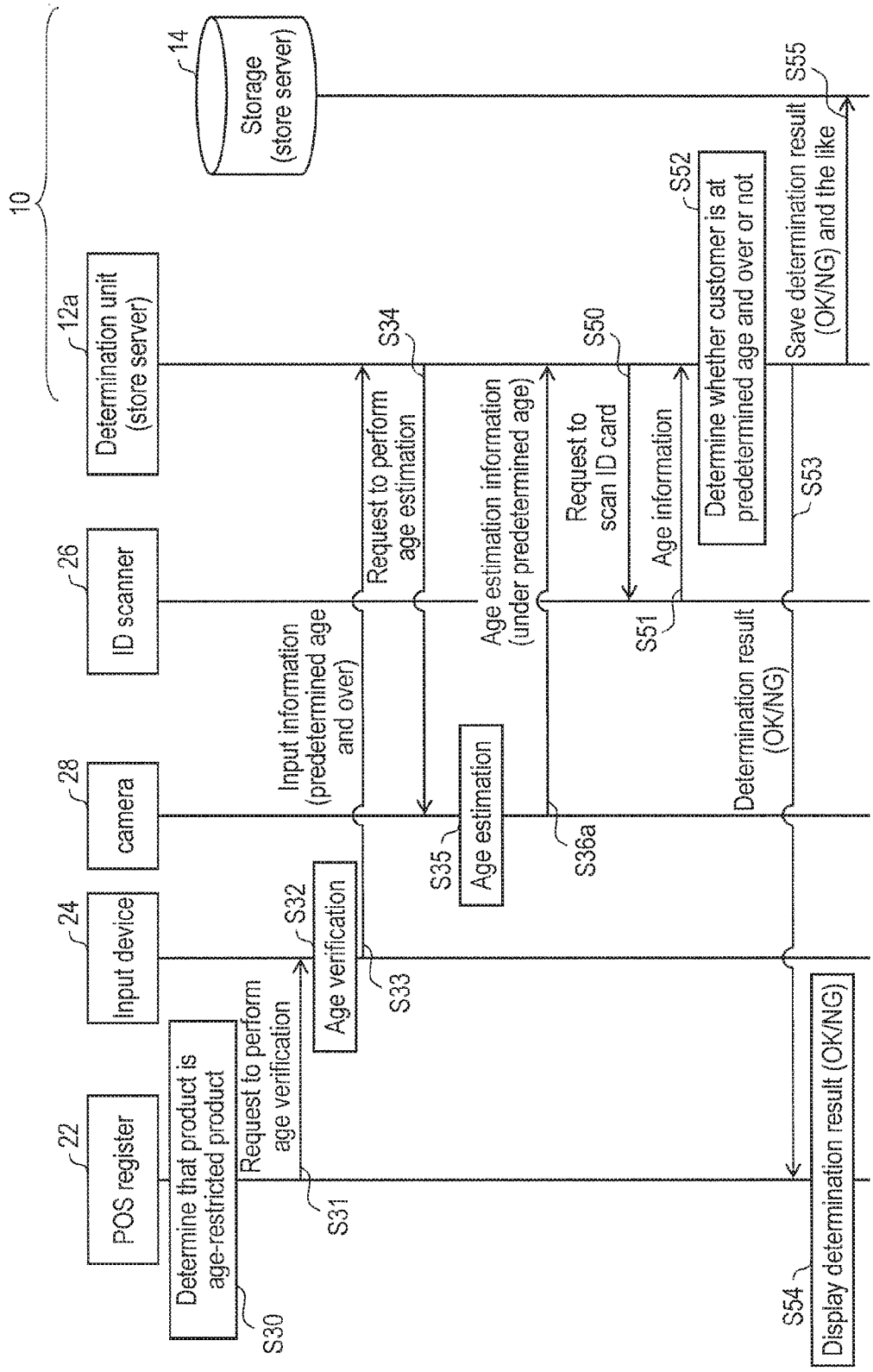

10
22
POS register
24
Input device
28
camera
26
ID scanner
12a
Determination unit (store server)
14
Storage (store server)
Determine that product is age-restricted product
S30
Request to perform age verification
S31
S32
Age verification
S33
Input information (predetermined age and over)
Request to perform age estimation
S34
S35
Age estimation
Age estimation information (under predetermined age)
S36a
Request to scan ID card
S50
S51
Age information
Determine whether customer is at predetermined age and over or not
S52
Determination result (OK/NG)
S53
Save determination result (OK/NG) and the like
S55
S54
Display determination result (OK/NG)

FIG. 5C

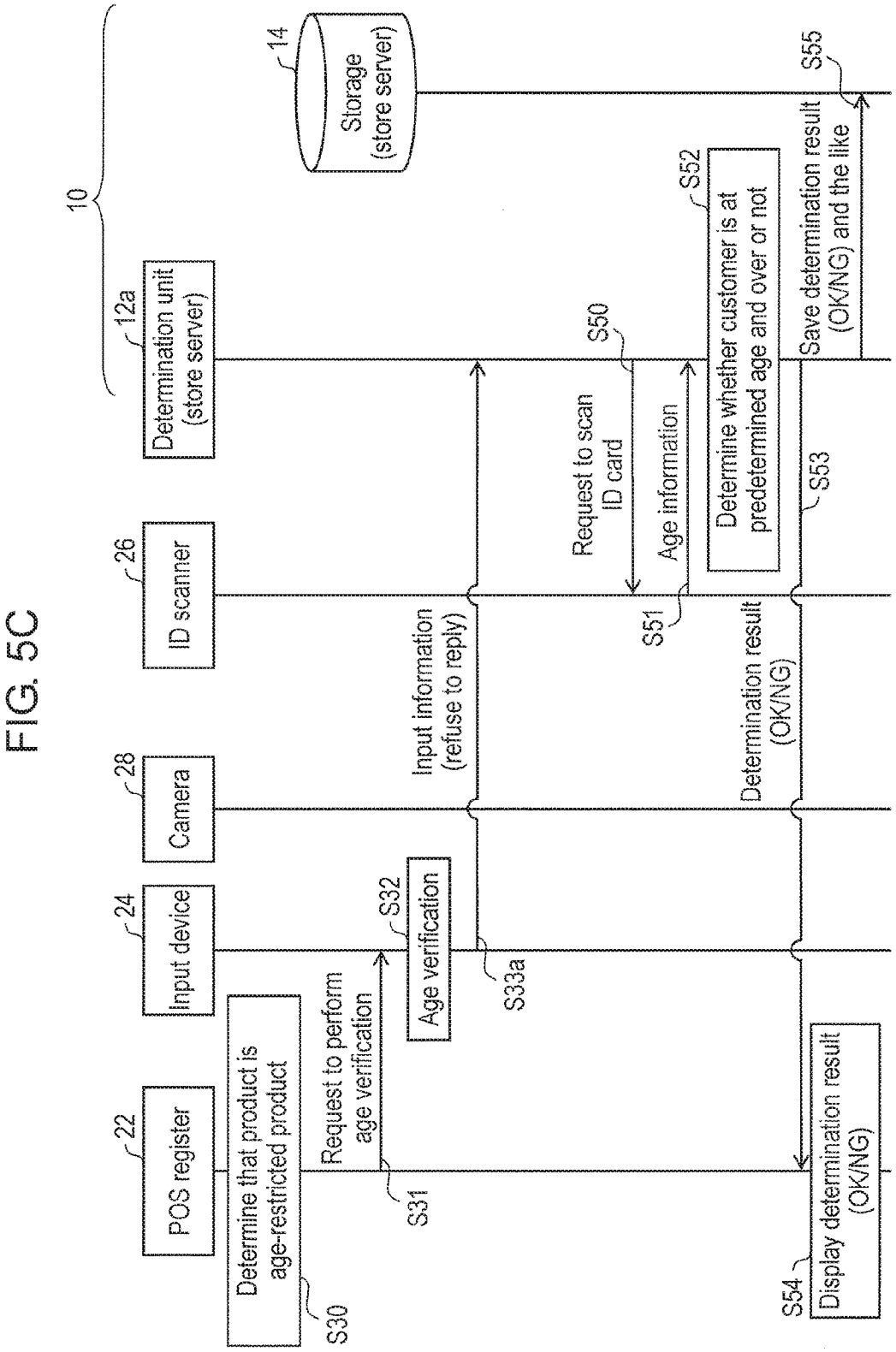

10
22
POS register
24
Input device
28
Camera
26
ID scanner
12a
Determination unit (store server)
14
Storage (store server)
Determine that product is age-restricted product
S30
Request to perform age verification
S31
S32
Age verification
S33a
Input information (refuse to reply)
S50
Request to scan ID card
S51
Age information
S52
Determine whether customer is at predetermined age and over or not
S53
Determination result (OK/NG)
S55
Save determination result (OK/NG) and the like
S54
Display determination result (OK/NG)

FIG. 5D

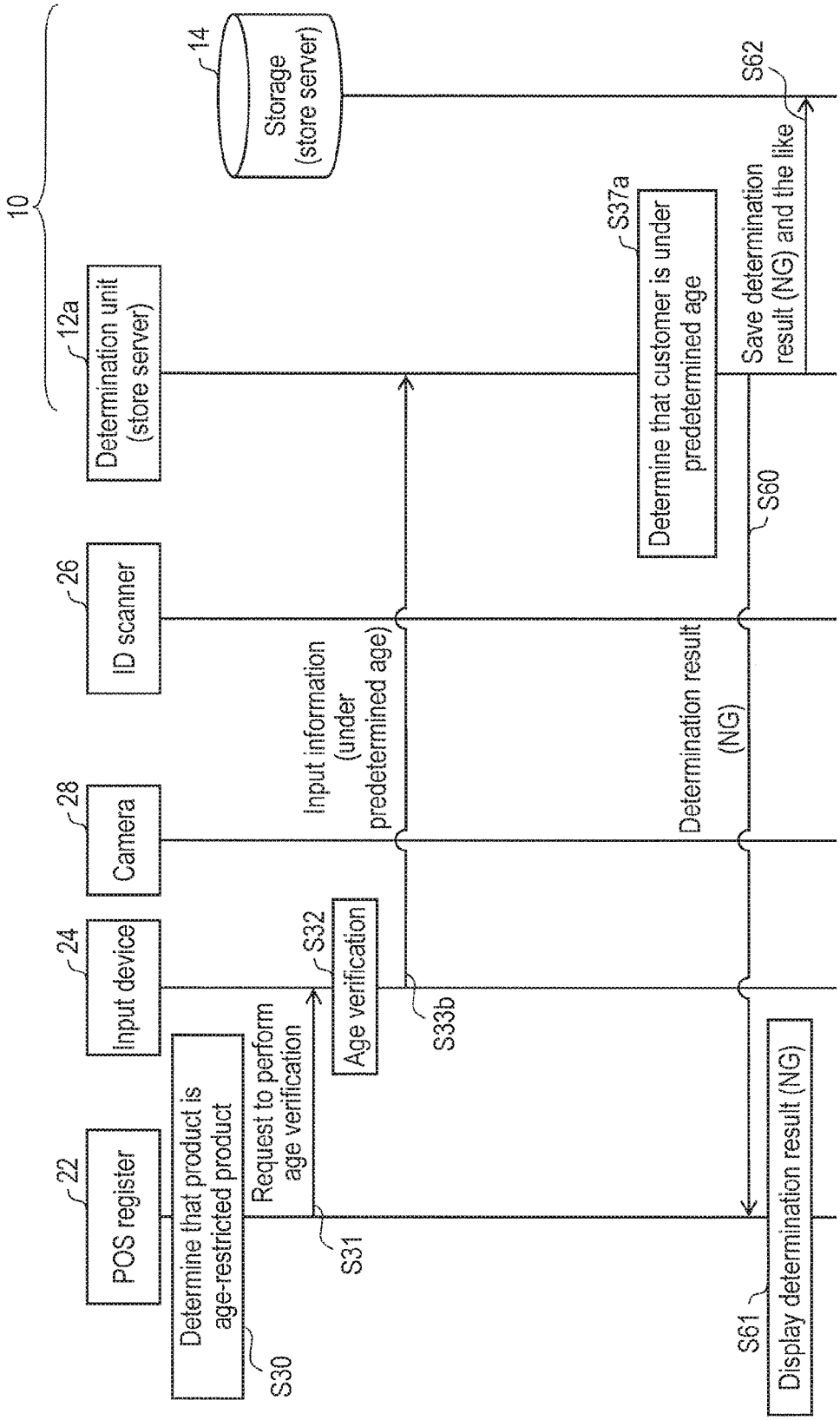

10
22
POS register
24
Input device
28
Camera
26
ID scanner
12a
Determination unit (store server)
14
Storage (store server)
Determine that product is age-restricted product
S30
Request to perform age verification
S31
S32
Age verification
S33b
Input information (under predetermined age)
Determination result (NG)
S37a
Determine that customer is under predetermined age
S60
Save determination result (NG) and the like
S62
S61
Display determination result (NG)

FIG. 6

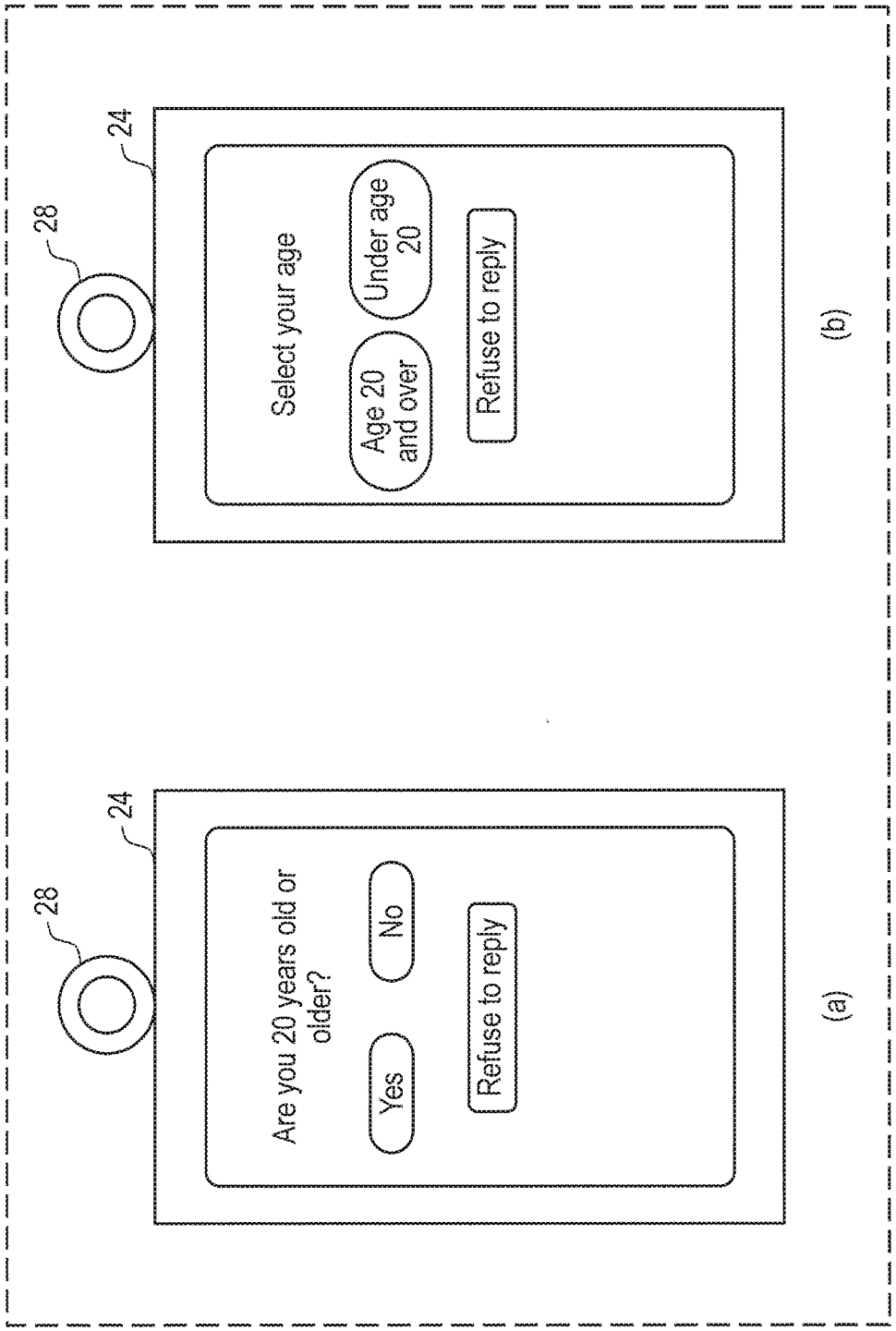

28
24
Are you 20 years old or older?
Yes
No
Refuse to reply
(a)
28
24
Select your age
Age 20 and over
Under age 20
Refuse to reply
(b)

FIG. 7

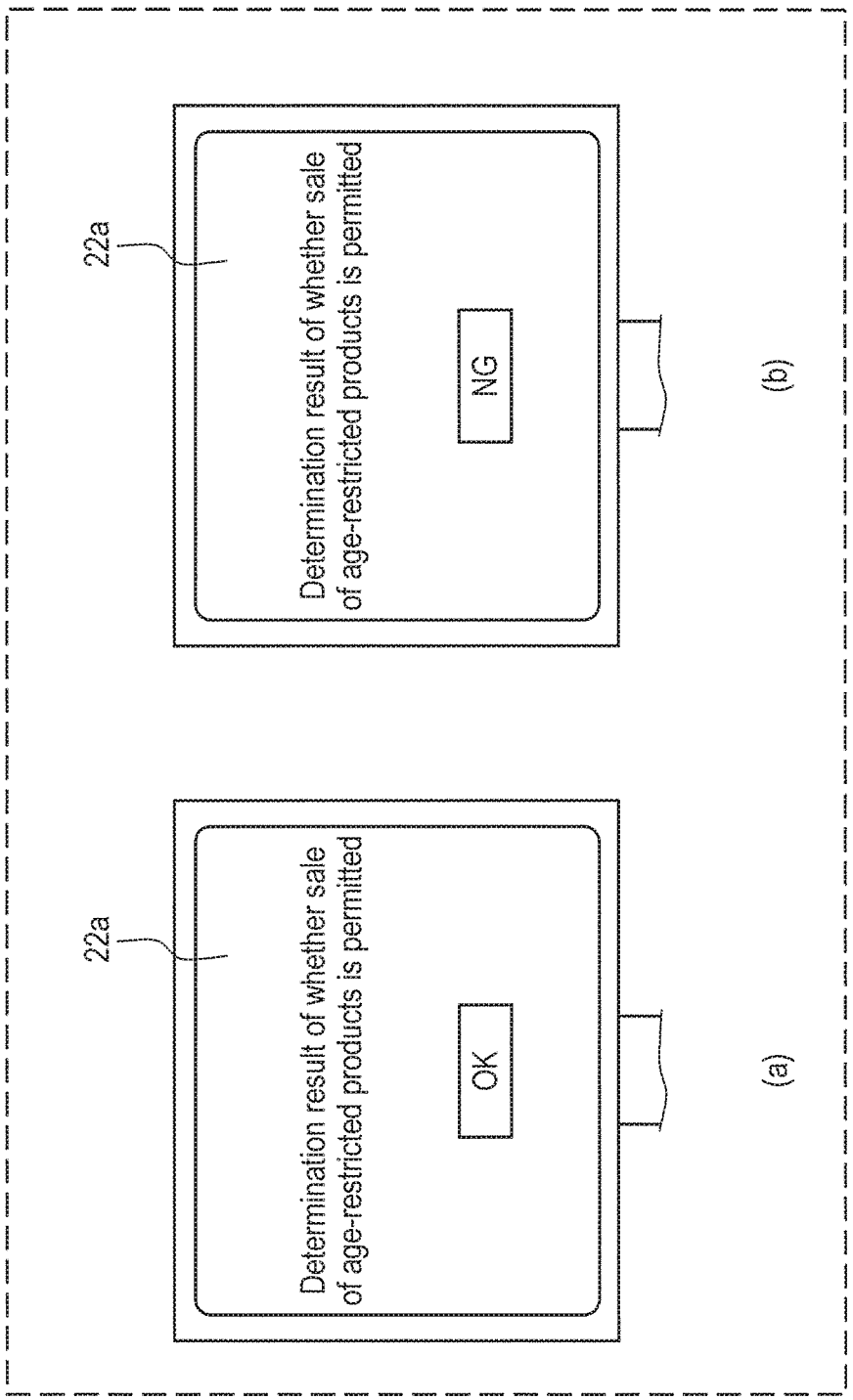

22a
Determination result of whether sale of age-restricted products is permitted
OK
(a)
22a
Determination result of whether sale of age-restricted products is permitted
NG
(b)

FIG. 8

Case NO.	Specific example
1	●Customer: age 25 ●Age verification: select [age 20 and over] ●Age estimation with camera: perform ●Estimation result: age 19 ⇒ request to present ID card ●Sell alcoholic beverages when verified that customer is at age 20 and over based on age information from ID scanner
2	●Customer: age 55 ●Age verification: select [age 20 and over] ●Age estimation with camera: perform ●Estimation result: age 50 ⇒ sell alcoholic beverages without requesting presentation of ID card
3	●Customer: age 18 ●Age verification: select [age 20 and over] (false statement of age) ●Age estimation with camera: perform ●Estimation result: age 18 ⇒ request to present ID card ●Do not sell alcoholic beverages because customer is turned out to be under age 20 based on age information from ID scanner
4	●Customer: age 18 ●Age verification: select [under age 20] ●Age estimation with camera: do not perform ●Do not sell alcoholic beverages because customer is under age 20
5	●Customer: age 30 ●Age verification: select [refuse to reply] ●Age estimation with camera: do not perform ⇒ request to present ID card ●Sell alcoholic beverages when verified that customer is at age 20 and over based on age information from ID scanner

FIG. 9

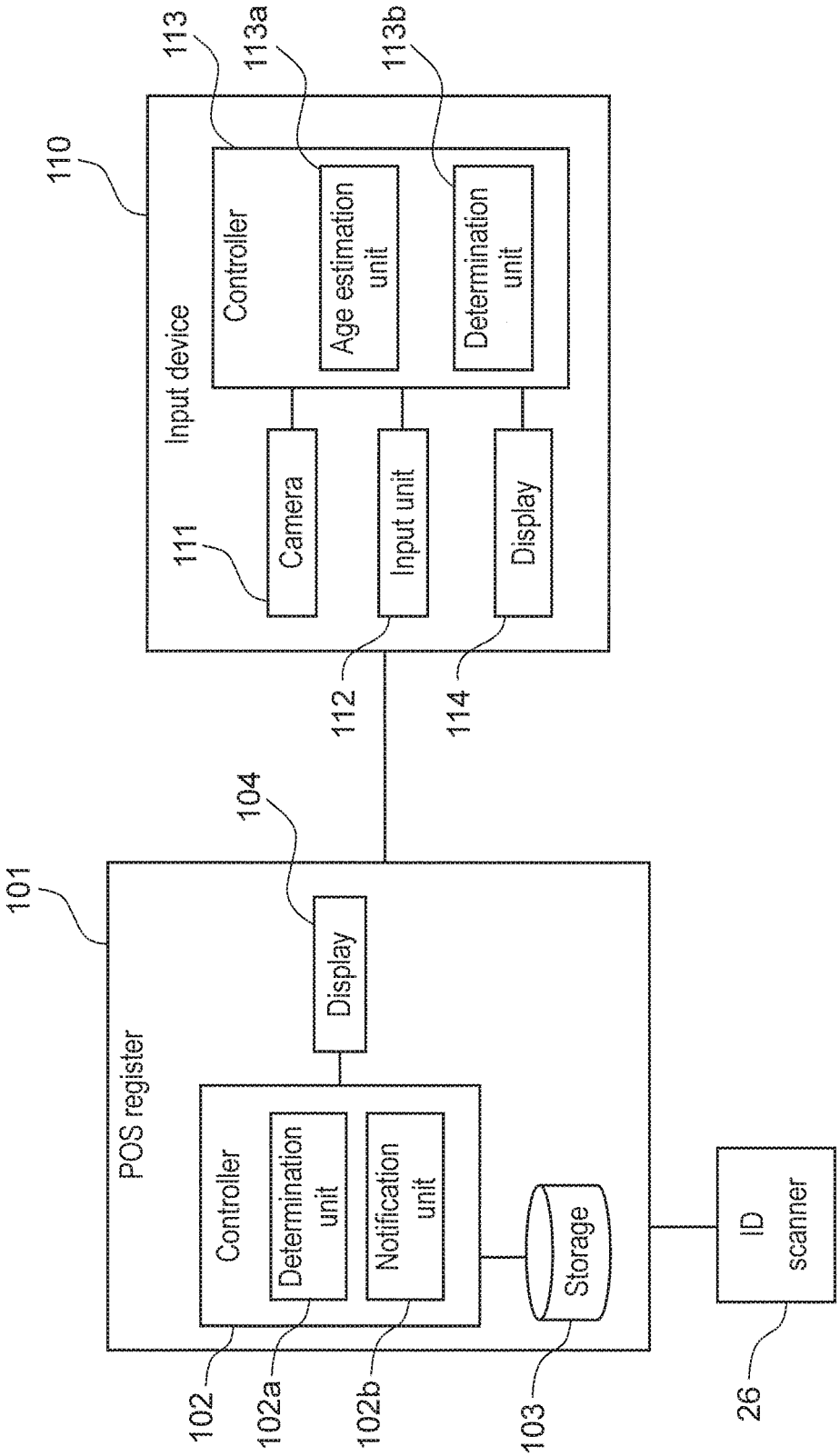
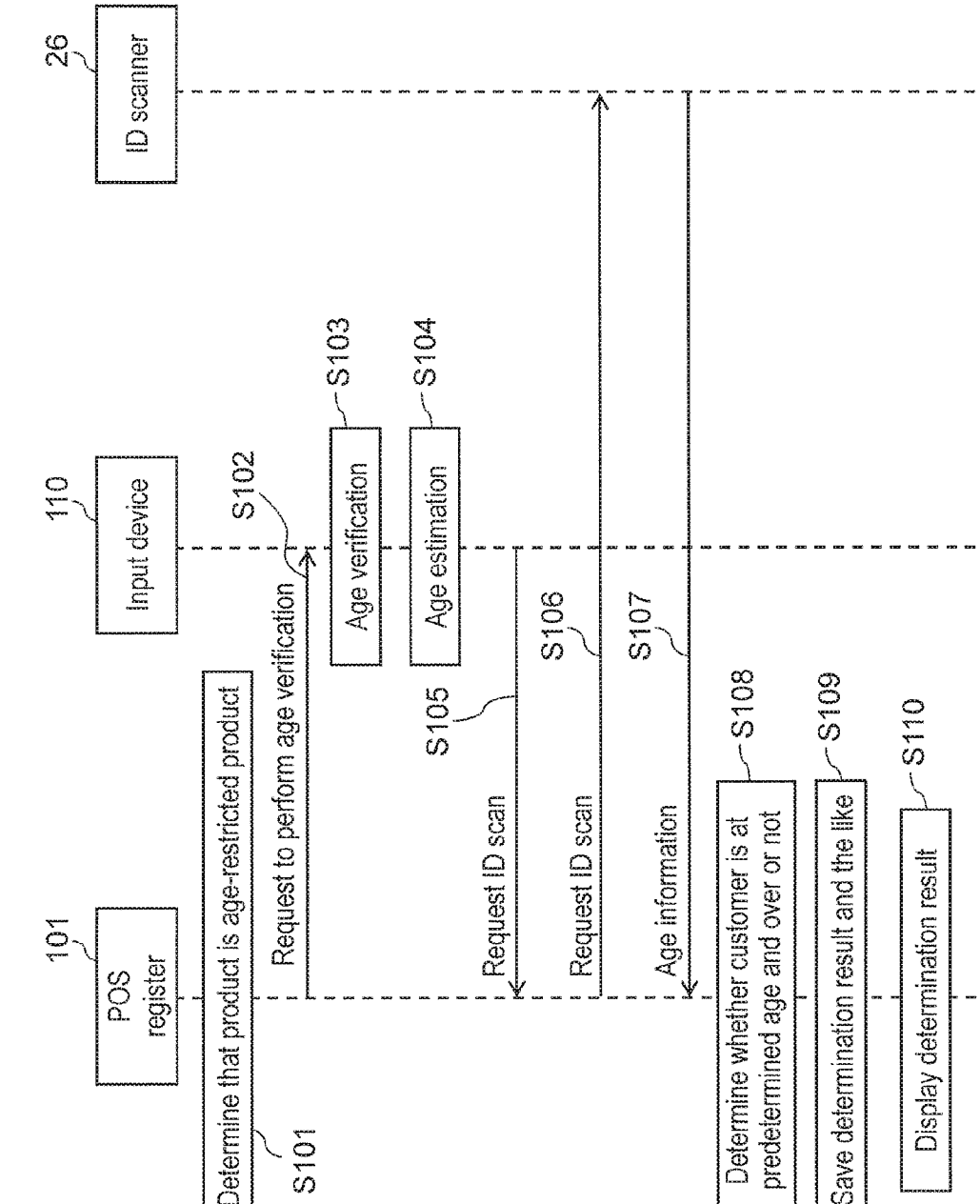

110
Input device
113
Controller
113a
Age estimation unit
113b
Determination unit
111
Camera
Input unit
Display
112
114
104
101
POS register
Display
Controller
Determination unit
Notification unit
Storage
ID scanner
102
102a
102b
103
26

FIG. 10


101
POS register
110
Input device
26
ID scanner
Determine that product is age-restricted product
S101
Request to perform age verification
S102
Age verification
S103
Age estimation
S104
Request ID scan
S105
Request ID scan
S106
Age information
S107
Determine whether customer is at predetermined age and over or not
S108
Save determination result and the like
S109
Display determination result
S110

SALES SUPPORT METHOD AND SALES SUPPORT SYSTEM

BACKGROUND

[0001] 1. Technical Field

[0002] The present disclosure relates to a sales support method and a sales support system for supporting sale of age-restricted products.

[0003] 2. Description of the Related Art

[0004] In sale of age-restricted products such as alcoholic beverages and cigarettes, it is necessary to verify age of a customer who intends to purchase the products and to sell the products after obtaining verification that age restrictions are met. Conventionally, various techniques have been proposed as an apparatus to support sale of such an age-restricted product.

[0005] In PTL 1, a customer who purchases an age-restricted product is requested to report his or her age, and when the reported age exceeds restricted age, age verification is performed with an age certificate, such as a driver's license and health insurance card. Accurate age verification performed by such a method prevents unjust age reporting and facilitates age verification of the customer who intends to purchase the age-restricted product.

CITATION LIST

Patent Literature

[0006] PTL 1: Unexamined Japanese Patent Publication No. 2014-2686

SUMMARY

[0007] The present disclosure provides a sales support method and sales support system capable of reducing time and effort for dealing with false statement of age in sale of age-restricted products.

[0008] A sales support method according to the present disclosure is a sales support method for supporting sale of an age-restricted product. The sales support method includes: acquiring input information indicating whether a customer is at predetermined age and over or under the predetermined age; acquiring age estimation information indicating age of the customer estimated using biometric information obtained by observation of the customer; when the input information indicates that the customer is at the predetermined age and over, determining whether the customer is at the predetermined age and over based on the age estimation information; and notifying a determination result.

[0009] A sales support system according to the present disclosure is a sales support system for supporting sale of an age-restricted product. The sales support system includes: an input device for inputting information indicating whether a customer is at predetermined age and over or under the predetermined age; an age estimation apparatus that estimates age of the customer by using biometric information obtained by observation of the customer; a determination unit that determines whether the customer is at the predetermined age and over based on age estimation information when the input information indicates that the customer is at the predetermined age and over; and a notification unit that notifies a determination result made by the determination unit.

[0010] The sales support method and sales support system according to the present disclosure allow reduction in time and effort for dealing with false statement of age in sale of age-restricted products.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. **1** is a diagram illustrating one example of layout of a store in which a sales support system is installed according to the exemplary embodiment;

[0012] FIG. **2** is a diagram illustrating a sales support terminal installed in each of aisles illustrated in FIG. **1**;

[0013] FIG. **3** is a block diagram illustrating detailed configurations of a store server illustrated in FIG. **1** and the sales support terminal illustrated in FIG. **2**;

[0014] FIG. **4** is a flowchart illustrating an operation of the sales support system according to the exemplary embodiment;

[0015] FIG. **5**A is a communication sequence diagram illustrating one example of the operation of the sales support system according to the exemplary embodiment;

[0016] FIG. **5**B is a communication sequence diagram illustrating another example of the operation of the sales support system according to the exemplary embodiment;

[0017] FIG. **5**C is a communication sequence diagram illustrating still another example of the operation of the sales support system according to the exemplary embodiment;

[0018] FIG. **5**D is a communication sequence diagram illustrating still another example of the operation of the sales support system according to the exemplary embodiment;

[0019] FIG. **6** is a diagram illustrating a display example of images for age verification to be made by an input device;

[0020] FIG. **7** is a diagram illustrating a display example of a determination result to be made by a determination unit in a display of a POS register;

[0021] FIG. **8** is a diagram illustrating a specific example of the operation of the sales support system according to the exemplary embodiment;

[0022] FIG. **9** is a block diagram illustrating a detailed configuration of the sales support system according to another exemplary embodiment; and

[0023] FIG. **10** is a communication sequence diagram illustrating one example of the operation of the sales support system according to another exemplary embodiment.

DETAILED DESCRIPTION

[0024] Exemplary embodiments will be described in detail below with reference to the drawings as needed. However, a description more detailed than necessary may be omitted. For example, a detailed description of an already well-known matter and a repeated description of substantially identical components may be omitted. This is intended to avoid the following description from becoming unnecessarily redundant and to make the description easier for a person skilled in the art to understand.

[0025] It is to be noted that the inventors provide the accompanying drawings and the following description in order for a person skilled in the art to fully understand the present disclosure, and that the inventors do not intend to limit the subject described in the appended claims. That is, all of the exemplary embodiments to be described below illustrate one specific example of the present disclosure. Numerical values, shapes, materials, components, disposition positions and connection forms of the components,

steps, order of the steps, and the like that are indicated in the following exemplary embodiments are one example, and do not intend to limit the present disclosure. Also, among the components described in the following exemplary embodiments, components that are not described in an independent claim which represents the highest concept are described as optional components.

Exemplary Embodiment

[0026] An exemplary embodiment will be described with reference to the drawings.

[1. Configuration]

[0027] FIG. **1** is a diagram illustrating one example of layout of store **30** in which a sales support system is installed according to the exemplary embodiment. Store **30** is provided with product shelves **36***a* to **36***c* that display various products including age-restricted products, aisles **34***a* to **34***c* for paying purchased products, sales support terminals (not illustrated) installed in respective aisles **34***a* to **34***c*, and store server **10** that is connected to communication network **32** and installed in a backyard. Store server **10** is one example of a sales support apparatus that supports sale of age-restricted products and that is provided in each store, and for example, store server **10** is a computer apparatus. Store server **10** may also function as a server of a point of sales (POS) system, and may be connected to an external computer apparatus, such as a cloud server, via a communication network such as the Internet.

[0028] FIG. **2** is a diagram illustrating sales support terminal **20** installed in each of aisles **34***a* to **34***c* (here, aisle **34***a*) illustrated in FIG. **1**. FIG. **2** illustrates how customer **38** who purchases age-restricted product **37**, such as alcoholic beverages, pays in aisle **34***a* of which salesclerk **39** takes charge. Sales support terminal **20** is one example of the sales support terminal that supports sale of age-restricted products. Sales support terminal **20** includes POS register **22**, input device **24**, ID scanner **26**, and camera **28**.

[0029] POS register **22** is a cash register having a terminal function of a POS system. Input device **24** is one example of an input device for age verification to input information about whether customer **38** is at predetermined age and over or under the predetermined age. Input device **24** is, for example, a tablet terminal. ID scanner **26** is a device that reads information from an ID card in which information for acquiring age of the customer is recorded. ID scanner **26** is, for example, a bar code reader, magnetic card reader, or IC card reader. Camera **28**, such as a digital camera, is one example of an age estimation apparatus that estimates the age of the customer by using biometric information (face in the present exemplary embodiment) obtained by observation of the customer. According to the present exemplary embodiment, input device **24** and camera **28** are integrated as a tablet terminal. Camera **28** is incorporated in an upper part of input device **24**.

[0030] Camera **28** is incorporated in the upper part of input device **24** in order to use facial images during age estimation performed by camera **28**. When customer **38** inputs with input device **24** information regarding whether customer **38** is at predetermined age and over or under the predetermined age, sales support terminal **20** uses a position of a face of customer **38** in the upper part of input device **24**. In performing age estimation, when brightness of the surroundings is insufficient, brightness in the surroundings may be secured by increasing light quantity of a back light of input device **24** (for example, tablet).

[0031] FIG. **3** is a block diagram illustrating detailed configurations of store server **10** illustrated in FIG. **1** and sales support terminal **20** illustrated in FIG. **2**. Store server **10**, which is one example of the sales support apparatus, and sales support terminal **20** constitute the sales support system that supports sale of age-restricted products.

[0032] Sales support terminal **20** includes POS register **22**, input device **24**, ID scanner **26**, and camera **28**. Here, input device **24** and ID scanner **26** are connected to POS register **22**. POS register **22** and camera **28** are connected to store server **10** via communication network **32**.

[0033] POS register **22** reads bar code information applied to a product with a scanner (not illustrated), and includes display **22***a* that displays the read bar code information and the like.

[0034] Camera **28** is an image pickup device, and includes age estimation unit **28***a* that estimates the age of the customer by using an image obtained by capturing the customer (that is, facial image) and transmits age estimation information that indicates the estimated age to store server **10**. Age estimation unit **28***a* is implemented, for example, by components such as a memory that stores a control program and a processor that executes the control program. A process for estimating the age of the customer from the facial image of the customer employs, for example, a method for learning correspondence between a feature amount extracted from a facial image with age information proved in advance and age of the face, and for estimating the age from the feature amount extracted from a facial image with unknown age based on a result of the learning (for example, refer to PTL 2 (Japanese Patent No. 5072102)). Also, "age" of the customer to estimate is not limited to one numerical value, but may be a numerical value range (age bracket), such as from age 15 to age 18, or at age 30 and over.

[0035] When there is a request from store server **10**, camera **28** sends, to store server **10**, age estimation information of a person who is being captured by camera **28** at that time, that is, the customer who is undergoing age verification performed by input device **24**. While the age estimation information may be the age estimated at that time by using only an image of predetermined timing, according to the present exemplary embodiment, camera **28** transmits, as the age estimation information, an average of a plurality of ages estimated during a period from timing when camera **28** detects the face of the customer until timing of age verification when input device **24** receives the information indicating whether the customer is at predetermined age and over or under the predetermined age.

[0036] According to the present exemplary embodiment, input device **24** includes a touch-panel display (not illustrated), and converses with customer **38** by a graphical user interface (GUI) via the touch-panel display under control of store server **10** and POS register **22**. Specifically, when a product that customer **38** intends to purchase is found to be an age-restricted product by POS register **22** (reading of the bar code information applied to the product), for purposes of age verification, input device **24** acquires input information from customer **38** through dialog with customer **38**, the input information indicating one of whether customer **38** is at predetermined age and over, whether customer **38** is under the predetermined age, and whether customer **38** refuses to

input information regarding whether customer **38** is at the predetermined age and over or under the predetermined age (whether customer **38** refuses to reply). Input device **24** then transmits the acquired input information to store server **10**. Here, the age-restricted product refers to a product of which sale to customers under predetermined age is restricted. The predetermined age is determined depending on country, area, or any other conditions. For example, in Japan, the age-restricted product includes alcoholic beverages and cigarettes of which sale is restricted to persons under age 20.

[0037] ID scanner **26** reads information for acquiring the age of customer **38** from the ID card that customer **38** possesses, identifies the age of customer **38** from the read information, and transmits age information that indicates the identified age to store server **10**. When the age information is recorded in the ID card that customer **38** possesses, ID scanner **26** transmits the read age information as it is to store server **10**. When the age information is not recorded in the ID card that customer **38** possesses, ID scanner **26** acquires the age information registered in store server **10** or other database from an ID recorded in the ID card (for example, a member ID), and then ID scanner **26** transmits the acquired age information to store server **10**.

[0038] Store server **10** is one example of the sales support apparatus that supports sale of age-restricted products. Store server **10** includes controller **12**, storage **14**, and communicator **16**.

[0039] Communicator **16** is a communication adapter that communicates with sales support terminal **20** via communication network **32**. According to the present exemplary embodiment, under control of controller **12**, communicator **16** acquires the input information from input device **24**, acquires the age estimation information from camera **28**, or acquires the age information from ID scanner **26**.

[0040] Storage **14** is an apparatus for storing a process result performed by controller **12** and other information. For example, storage **14** is a nonvolatile memory such as a hard disk.

[0041] Controller **12** is a controller that controls sales support terminal **20** via communicator **16**. Controller **12** includes determination unit **12***a* and notification unit **12***b* as functional processors. These processors are implemented by components such as a memory in which a control program is stored and a processor that executes the control program. The control program is included in controller **12**.

[0042] When the input information acquired from input device **24** via communicator **16** indicates that customer **38** is at predetermined age and over, determination unit **12***a* determines whether customer **38** is at the predetermined age and aver based on the age estimation information acquired from camera **28** via communicator **16**. When this results in determination that customer **38** is not at the predetermined age and over, determination unit **12***a* determines whether customer **38** is at the predetermined age and over based on the ID card in which information for acquiring the age of the customer is recorded. For example, determination unit **12***a* determines whether customer **38** is at the predetermined age and over by controlling sales support terminal **20** and reading the age information from the ID card that customer **38** possesses via ID scanner **26**. Also, when the input information acquired from input device **24** via communicator **16** indicates that the customer refuses to input information regarding whether customer **38** is at predetermined age and over or under the predetermined age, determination unit **12***a* determines whether customer **38** is at the predetermined age and over based on the ID card in which information for acquiring the age of the customer is recorded. When the input information acquired from input device **24** via communicator **16** indicates that customer **38** is under predetermined age, determination unit **12***a* does not acquire and use the age estimation information from camera **28** via communicator **16**.

[0043] Notification unit **12***b* notifies sales support terminal **20** of determination results made by determination unit **12***a*. Specifically, when the input information acquired from input device **24** indicates that customer **38** is at predetermined age and over, and when determination unit **12***a* determines whether customer **38** is at the predetermined age and over based on the age estimation information acquired from camera **28**, then notification unit **12***b* transmits the determination result to sales support terminal **20** and displays the determination result on display **22***a* of POS register **22**. Also, when determination unit **12***a* determines whether customer **38** is at predetermined age and over based on the ID card, notification unit **12***b* transmits the determination result to sales support terminal **20** and displays the determination result on display **22***a* of POS register **22**.

[2. Operation]

[0044] Next, operations of the sales support system (store server **10** and sales support terminal **20**) configured as described above according to the present exemplary embodiment will be described.

[0045] FIG. **4** is a flowchart illustrating the operation (that is, sales support method) of the sales support system (store server **10**) according to the exemplary embodiment. FIG. **4** illustrates a flow that mainly describes the process in store server **10** when the product that customer **38** intends to purchase is found out to be the age-restricted product (the product of which sale to customers under predetermined age is restricted) by PUS register **22** (that is, reading of the bar code information applied to the product). Here, it is assumed that input device **24** provides input information indicating that customer **38** is under predetermined age or at the predetermined age and over, or the input information indicating that the customer **38** refuses to reply (input) to a question whether customer is at the predetermined age and over or under the predetermined age, and that the input information is transmitted from input device **24** to store server **10**.

[0046] First, determination unit **12***a* determines whether the input information acquired from input device **24** via communicator **16** indicates that customer **38** is at the predetermined age and over or under the predetermined age, that is, whether customer **38** replies (inputs) or refuses to a question whether the customer is at the predetermined age and over or under the predetermined age (S**10**).

[0047] As a result, when the input information indicates that customer **38** is at the predetermined age and over or under the predetermined age, that is, when customer **38** replies (inputs) to the question whether the customer is at the predetermined age and over or under the predetermined age (Yes in S**10**), next, determination unit **12***a* determines whether the input information indicates that customer **38** is at the predetermined age and over or customer **38** is under the predetermined age (S**11**).

[0048] As a result, when the input information indicates that customer **38** is at the predetermined age and over (Yes

in S11), determination unit **12***a* requests camera **28** installed in the aisle from which the input information has been sent to perform age estimation via communicator **16** (S12). Accordingly, age estimation unit **28***a* of camera **28** captures an image of customer **38**, estimates the age of the customer by using the obtained image (that is, facial image), and transmits the age estimation information indicating the estimated age to store server **10**.

[0049] Then, determination unit **12***a* acquires the age estimation information on customer **38** from camera **28** via communicator **16** (information acquisition step S13), and based on the acquired age estimation information, determination unit **12***a* determines whether customer **38** is at the predetermined age and over or not (S14). For example, when the predetermined age is age 20 and the age estimation information indicates a range from age 15 to age 18, determination unit **12***a* determines that customer **38** is not at the predetermined age and over. When the age estimation information indicates age 30 and over, determination unit **12***a* determines that customer **38** is at the predetermined age and over. In a case where the acquired age estimation information indicates age that does not allow determination whether customer **38** is at the predetermined age and over or under the predetermined age (for example, an age bracket from under the predetermined age to the predetermined age and over), or in a case where the acquired age estimation information indicates that the age estimation fails for a reason that the face is not recognized or other reasons, determination unit **12***a* determines that customer **38** is not at the predetermined age and over.

[0050] As a result, when determination unit **12***a* determines that customer **38** is at the predetermined age arid over (YES in S14), notification unit **12***b* transmits a determination result (for example, information indicating "OK") to POS register **22** of sales support terminal **20** via communicator **16** (notification step S15). Accordingly, the determination result (for example, "OK") is displayed on display **22***a* of POS register **22**.

[0051] Meanwhile, in step S10, when the input information does not indicate that customer **38** is under the predetermined age or at the predetermined age and over, that is, when customer **38** refuses to reply (input) to the question whether the customer is at the predetermined age and over or under the predetermined age (No in S10), and when determination unit **12***a* does not determine in step S14 that customer **38** is at the predetermined age and over (No in S14), determination unit **12***a* requests POS register **22** installed in the aisle from which the input information has been sent to scan the ID card that customer **38** possesses with ID scanner **26** via communicator **16** (S16). Accordingly, this request is displayed on display **22***a* of POS register **22**, salesclerk **39** who sees this display requests customer **38** to present his or her ID card, and customer **38** holds the ID card that customer **38** possesses over ID scanner **26**. Then, ID scanner **26** reads the information for acquiring the age of customer **38** from the ID card that customer **38** possesses, identifies the age of customer **38** from the read information, and transmits the age information indicating the identified age to store server **10**.

[0052] Determination unit **12***a* of store server **10** acquires the age information transmitted from ID scanner **26** (S17). Determination unit **12***a* determines whether the acquired age information indicates the predetermined age and over (S18). As a result, when the acquired age information indicates the predetermined age and over (Yes in S18), notification unit **12***b* transmits the determination result (for example, information indicating "OK") to POS register **22** of sales support terminal **20** via communicator **16** (notification step S19). Accordingly, the determination result (for example, "OK") is displayed on display **22***a* of POS register **22**.

[0053] Meanwhile, when the age information does not indicate the predetermined age and over in step S18 (No in S18), and when the input information does not indicate that customer **38** is at the predetermined age arid over in step S11 (No in S11), notification unit **12***b* transmits the determination result (for example, information indicating "not good (NG)") to POS register **22** of sales support terminal **20** via communicator **16** (notification step S20). Accordingly, the determination result (for example, "NG") is displayed on display **22***a* of POS register **22**.

[0054] After the notification made by notification unit **12***b* (S15, S19, S20), determination unit **12***a* identifies current time by referring to a timer (not illustrated) stored in controller **12**, and saves the determination result along with the identified current time in storage **14** (S21).

[0055] Thus, in the sales support system (store server **10** and sales support terminal **20**) according to the present exemplary embodiment, in sale of age-restricted products, when the customer replies that the customer is at predetermined age and over in response to age verification, it is automatically determined whether the customer is at the predetermined age and over based on the age estimation information indicating the age of the customer estimated using biometric information obtained by observation of the customer. That is, when the determination result is "OK" as in step S15, the user is not given awareness of operations other than input operations, and the salesclerk does not need to perform verification operations. Therefore, time and effort for dealing with false statement of age can be reduced.

[0056] FIG. **5**A is a communication sequence diagram illustrating one example of the operation of the sales support system (store server **10** and sales support terminal **20**) according to the exemplary embodiment. FIG. **5**A illustrates processes and exchange of communications in POS register **22**, input device **24**, camera **28**, ID scanner **26**, controller **12** of store server **10**, and storage **14** of store server **10**. FIG. **5**A illustrates the communication sequence in a case where customer **38** replies that customer **38** is at predetermined age and over during age verification and where camera **28** estimates that customer **38** is at the predetermined age and over.

[0057] When POS register **22** reads the bar code information applied to the product that customer **38** intends to purchase to determine that the product is an age-restricted product (a product of which sale to customers under predetermined age is restricted) (S30), POS register **22** requests input device **24** to perform age verification (S31).

[0058] On receipt of the age verification request, input device **24** acquires a reply to the age verification request from customer **38** (here, a reply that customer **38** is at predetermined age and over) by displaying an image illustrated in FIG. **6**(*a*) or FIG. **6**(*b*) (S32). Input device **24** then transmits the input information that indicates the acquired reply (here, input information indicating that customer **38** is at the predetermined age and over) to store server **10** along with an aisle ID (S33). The aisle ID is an identifier of the aisle in which input device **24** is installed. The aisle ID is

stored in advance in POS register **22**, and is referred to by input device **24** or stored in input device **24**.

[0059] In store server **10** that acquires from input device **24** the input information indicating that customer **38** is at the predetermined age and over, determination unit **12***a* requests camera **28** installed in the aisle from which the input information has been sent to perform the age estimation (S**34**).

[0060] In camera **28** that receives the age estimation request, age estimation unit **28***a* captures an image of customer **38**, estimates the age of customer **38** by using the obtained image (that is, facial image) (S**35**), and transmits the age estimation information indicating the estimated age to store server **10** (S**36**). In a case illustrated in FIG. **5**A, it is assumed that the age estimation information indicates predetermined age and over.

[0061] In store server **10** that acquires the age estimation information indicating the estimated age at the predetermined age and over, determination unit **12***a* determines that customer **38** is at the predetermined age and over based on the acquired age estimation information (S**37**). Then, notification unit **12***b* transmits the determination result made by determination unit **12***a* (here, information that indicates "OK") to POS register **22** (S**38**). On receipt of the determination result that indicates "OK", POS register **22** displays the determination result (here, "OK") on display **22***a* as in the display example illustrated in FIG. **7**(*a*) (S**39**).

[0062] Subsequently, determination unit **12***a* identifies current time by referring to the timer (not illustrated) stored in controller **12**, and saves the determination result and other information (such as the aisle ID, current time, input information, age estimation information, determination result) along with the identified current time in storage **14** (S**40**).

[0063] Thus, in the sales support system according to the present exemplary embodiment, when customer **38** replies that customer **38** is at the predetermined age and over during the age verification, determination is made whether camera **28** estimates that customer **38** is at the predetermined age and over. When estimation is made that customer **38** is at the predetermined age and over, sale of age-restricted products is permitted without requesting presentation of the ID card. This allows reduction of time and effort for dealing with false statement of age.

[0064] FIG. **5**B is a communication sequence diagram illustrating one example of the operation of the sales support system (store server **10** and sales support terminal **20**) according to the exemplary embodiment. FIG. **5**B illustrates the communication sequence in a case where customer **38** replies that customer **38** is at predetermined age and over during age verification, and where camera **28** estimates that customer **38** is under the predetermined age.

[0065] Since steps S**30** to S**35** are identical to the process steps illustrated in FIG. **5**A, identical numerical references are assigned and description thereof is omitted.

[0066] In the case illustrated in FIG. **5**B, in camera **28** that receives the age estimation request from store server **10**, age estimation unit **28***a* captures an image of customer **38**, and estimates the age of customer **38** by using the obtained image (that is, facial image) (S**35**). As a result of the age estimation, age estimation unit **28***a* estimates age under the predetermined age as the age of customer **38**, and transmits the age estimation information that indicates the estimated age of under the predetermined, age to store server **10** (S**36***a*).

[0067] In store server **10** that acquires the age estimation information, since the acquired age estimation information indicates the age under the predetermined age, determination unit **12***a* requests POS register **22** installed in the aisle from which the input information has been sent to scan the ID card that customer **38** possesses with ID scanner **26** (S**50**). As a result, the salesclerk is notified that scanning with ID scanner **26** is needed. The salesclerk may be notified by using ID scanner **26**, or the salesclerk may be notified through display of this notification on display **22***a* of POS register **22**. Accordingly, salesclerk **39** who receives the notification requests customer **38** to present the ID card, and customer **38** holds the ID card that customer **38** possesses over ID scanner **26**. Then, ID scanner **26** reads the information for acquiring the age of customer **38** from the ID card that customer **38** possesses, identifies the age of customer **38** from the read information, and transmits the age information that indicates the identified age to store server **10** (S**51**).

[0068] Determination unit **12***a* of store server **10** determines whether the age information transmitted from ID scanner **26** indicates age at the predetermined age and over or not (S**52**). Then, notification unit **12***b* transmits the determination result made by determination unit **12***a* (information indicating "OK" or "NG") to POS register **22** (S**53**). On receipt of the determination result that indicates "OK" or "NG", POS register **22** displays the determination result ("OK" or "NG") on display **22***a* as in the display example illustrated in FIG. **7**(*a*) or FIG. **7**(*b*) (S**54**). Here, in FIG. **7**(*b*), display may be made indicating that the read product will be canceled simultaneously with display of "NG."

[0069] Subsequently, determination unit **12***a* identifies current time by referring to the timer (not illustrated) stored in controller **12**, and saves the determination result and the like (such as the aisle ID, current time, input information, age estimation information, age information, determination result) along with the identified current time in storage **14** (S**55**).

[0070] Thus, when customer **38** replies that customer **38** is at the predetermined age and over during the age verification, determination is made whether camera **28** estimates that customer **38** is at the predetermined age and over. When estimation is not made that customer **38** is at the predetermined age and over, the customer is requested to present the ID card, and determination is made about whether to permit sale by using the age of the customer identified with the ID card. Therefore, presentation of the ID card is requested only when it is unclear whether the customer satisfies age restriction, and time and effort to always present the ID card when purchasing age-restricted products is avoided.

[0071] FIG. **5**C is a communication sequence diagram illustrating one example of the operation of the sales support system (store server **10** and sales support terminal **20**) according to the exemplary embodiment. FIG. **5**C illustrates the communication sequence when customer **38** refuses to reply (input) during age verification.

[0072] Since steps S**30** to S**32** are identical to the process steps illustrated in FIG. **5**A and steps S**50** to S**55** are identical to the process steps illustrated in FIG. **5**B, identical numerical references are assigned and description thereof is omitted.

[0073] In the case illustrated in FIG. **5**C, on receipt of a request to perform age verification from POS register **22**, input device **24** acquires a reply (here, an instruction to refuse to reply (input)) to the age verification request from

customer **38** by displaying the image illustrated in FIG. **6**(*a*) or FIG. **6**(*b*) (S**32**). Input device **24** then transmits the input information indicating the acquired instruction (here, input information indicating that the age verification is refused) along with the aisle ID to store server **10** (S**33***a*).

[0074] On acquisition of the input information indicating that the age verification is refused, determination unit **12***a* requests POS register **22** installed in the aisle from which the input information has been sent to scan the ID card that customer **38** possesses with ID scanner **26** to acquire the age information from ID scanner **26**. Hereinafter, determination unit **12***a* performs the processes similar to the processes in the case illustrated in FIG. **5**B (S**50** to S**55**).

[0075] Thus, when customer **38** refuses to reply during the age verification, the age estimation information from camera **28** is not used, and determination about whether to permit sale is made depending on the age of the customer identified from the ID card. Therefore, presentation of the ID card is requested only when it is unclear whether the customer satisfies the age restriction, and time and effort to always present the ID card when purchasing age-restricted products is avoided. It is to be noted that during the age verification, store server **10** may operate so as to determine that the operation to scan the ID card is reply refusal, and the salesclerk may be able to input the reply refusal for a case where the customer refuses to reply orally.

[0076] FIG. **5**D is a communication sequence diagram illustrating one example of the operation of the sales support system (store server **10** and sales terminal **20**) according to the exemplary embodiment. FIG. **5**D illustrates the communication sequence when customer **38** replies that customer **38** is under predetermined age during the age verification.

[0077] Since steps S**30** to S**32** are identical to the process steps illustrated in FIG. **5**A, identical numerical references are assigned and description thereof is omitted.

[0078] In the case illustrated in FIG. **5**D, on receipt of a request to perform age verification from POS register **22**, input device **24** acquires a reply to the age verification request from customer **38** (here, a reply that customer **38** is under predetermined age) by displaying the image illustrated in FIG. **6**(*a*) or FIG. **6**(*b*) (S**32**). Input device **24** then transmits the input information indicating the acquired reply (here, input information indicating that customer **38** is under the predetermined age) along with the aisle ID to store server **10** (S**33***b*).

[0079] On acquisition of the input information indicating age under the predetermined age, determination unit **12***a* determines that customer **38** is under the predetermined age (S**37***a*). Notification unit **12***b* transmits the determination result made by determination unit **12***a* (here, information indicating "NG") to POS register **22** (S**60**). On receipt of the determination result that indicates "NG", POS register **22** displays the determination result (here, "NG") on display **22***a* as in the display example illustrated in FIG. **7**(*b*) (S**61**).

[0080] Subsequently, determination unit **12***a* identifies current time by referring to the timer (not illustrated) stored in controller **12**, and saves the determination result and other information (such as the aisle ID, current time, input information, determination result) along with the identified current time in storage **14** (S**62**).

[0081] Thus, when customer **38** replies during the age verification that customer **38** is under the predetermined age, camera **28** does not perform the age estimation, "NG" indicating prohibition of sale is displayed on display **22***a* of POS register **22**, and inappropriate sale of age-restricted products is avoided.

[0082] FIG. **8** is a diagram illustrating a specific example of the operation of the sales support system (store server **10** and sales support terminal **20**) according to the exemplary embodiment. FIG. **8** illustrates the operation example of the sales support system in five possible cases in which the age-restricted product is alcoholic beverages and the predetermined age is age 20.

[0083] Case No.1 is a case where a 25-year-old customer replies as "age 20 and over" in response to the age verification made by input device **24** (refer to FIG. **5**B). In this case, camera **28** performs the age estimation. It is assumed that a result of the age estimation is age 19.

[0084] In this case, the customer is requested to present the ID card, ID scanner **26** reads information from the ID card and identifies the age, and it becomes clear that the customer is at age 20 and over from the identified age. Therefore, alcoholic beverages are sold.

[0085] Case No.2 is a case where a 55-year-old customer replies as "age 20 and over" in response to the age verification made by input device **24** (refer to FIG. **5**A). In this case, camera **28** performs the age estimation. It is assumed that the result of the age estimation is age 50.

[0086] In this case, alcoholic beverages are sold without requesting the customer to present the ID card.

[0087] Case No.3 is a case where a 18-year-old customer replies as "age 20 and over" (false statement of age) in response to the age verification made by input device **24** (refer to FIG. **5**B). In this case, camera **28** performs the age estimation. It is assumed that the result of the age estimation is age 18.

[0088] In this case, the customer is requested to present the ID card, ID scanner **26** reads the information from the ID card and identifies the age, and it becomes clear that the customer is under age 20 from the identified age. Therefore, alcoholic beverages are not sold.

[0089] Case No.4 is a case where an 18-year-old customer replies as "under age 20" in response to the age verification made by input device **24** (refer to FIG. **5**D). In this case, camera **28** does not perform the age estimation.

[0090] In this case, since the customer reports to be under age 20, alcoholic beverages are not sold.

[0091] Case No.5 is a case where a **30**-year-old customer refuses to reply (input) in response to the age verification made by input device **24** (refer to FIG. **5**C). In this case, camera **28** does not perform the age estimation.

[0092] In this case, the customer requested to present the ID card, and ID scanner **26** reads information from the ID card and identifies the age. When it is verified that the customer is at age 20 and over from the identified age, alcoholic beverages are sold.

[3. Advantageous Effects and the Like]

[0093] As described above, store server **10** according to the present exemplary embodiment is a sales support apparatus for supporting sale of age-restricted products. Store server **10** is connected to input device **24** for inputting information whether the customer is at predetermined age and over or under the predetermined age, and to camera **28** as the age estimation apparatus that estimates the age of the customer by using the biometric information obtained by observation of the customer. As characteristic components,

store server **10** includes: communicator **16** that acquires the input information that is input into input device **24** and the age estimation information that indicates the age estimated by the age estimation apparatus; determination unit **12***a* that determines whether the customer is at the predetermined age and over based on the age estimation information acquired by communicator **16** when the input information acquired by communicator **16** indicates that the customer is at the predetermined age and over; and notification unit **12***b* that notifies the determination result made by determination unit **12***a*.

[0094] Accordingly, in sale of age-restricted products, when the customer replies that the customer is at the predetermined age and over in response to the age verification, determination is made whether the customer is at the predetermined age and over based on the age estimation information indicating the age of the customer estimated by using the biometric information obtained by observation of the customer. This allows reduction in time and effort for dealing with false statement of age.

[0095] When determination unit **12***a* determines that the customer is not at the predetermined age and over, determination unit **12***a* determines whether the customer is at the predetermined age and over based on the ID card in which the information for acquiring the age of the customer is recorded.

[0096] Accordingly, the age verification with the ID card is performed only when the age estimated using the biometric information obtained by observation of the customer is not at the predetermined age and over. This allows reduction in time and effort of the age verification compared with a conventional case where presentation of an age certificate is always requested.

[0097] Furthermore, input device **24** receives refusal to input the information regarding whether the customer is at the predetermined age and over or under the predetermined age. When the input information indicates that the customer refuses to input the information regarding whether the customer is at the predetermined age and over or under the predetermined age, determination unit **12***a* determines whether the customer is at the predetermined age and over based on the ID card in which the information for acquiring the age of the customer is recorded.

[0098] Accordingly, even if the customer refuses to reply to the question whether the customer is at the predetermined age and over or under the predetermined age, the age verification using the ID card is performed, and thus age-restricted products can be sold after the age verification is performed.

[0099] When the input information indicates that the customer is under the predetermined age, determination unit **12***a* does not use the age estimation information.

[0100] Accordingly, when the customer replies to the age verification that the customer is under the predetermined age, the age estimation apparatus avoids performing useless age estimation.

[0101] The age estimation apparatus is an image pickup device (camera **28**) and estimates the age of the customer by using the image obtained by capturing the customer.

[0102] Accordingly, capturing the image with the camera allows easy acquisition of the biometric information of the customer and allows estimation of the age of the customer.

[0103] The sales support system according to the present exemplary embodiment is a sales support system for supporting sale of age-restricted products. The sales support system according to the present exemplary embodiment includes input device **24** for inputting information about whether the customer is at predetermined age and over or under the predetermined age, camera **28** as the age estimation apparatus that estimates the age of the customer by using the biometric information obtained by observation of the customer, and store server **10** as the sales support apparatus connected to input device **24** and the age estimation apparatus.

[0104] Accordingly, in sale of age-restricted products, when the customer replies that the customer is at the predetermined age and over to the age verification made by input device **24**, based on the age estimation information indicating the estimated age of the customer obtained by the age estimation apparatus, store server **10** determines whether the customer is at the predetermined age and over. This allows reduction in time and effort for dealing with false statement of age.

[0105] In sales support terminal **20** according to the present exemplary embodiment, input device **24** and camera **28** are integrated. Input device **24** is for inputting the information about whether the customer is at the predetermined age and over or under the predetermined age. Camera **28** functions as the age estimation apparatus that estimates the age of the customer by using the biometric information obtained by observation of the customer.

[0106] Accordingly input device **24** and camera **28**, which are peripheral devices that constitute sales support terminal **20**, are integrated, and the space-saving sales support terminal is implemented.

[0107] The sales support method according to the present exemplary embodiment is a sales support method for supporting sale of an age-restricted product. The sales support method includes: an information acquisition step of acquiring input information indicating whether the customer is at predetermined age and over or under the predetermined age, and age estimation information indicating the age of the customer estimated using biometric information obtained by observation of the customer; a determination step of determining whether the customer is at predetermined age and over based on the age estimation information acquired in the information acquisition step when the input information acquired in the information acquisition step indicates that the customer is at the predetermined age and over; and a notification step of notifying a determination result made in the determination step.

[0108] Accordingly, in sale of age-restricted products, when the customer replies that the customer is at the predetermined age and over in response to the age verification, determination is made whether the customer is at the predetermined age and over based on the age estimation information indicating the age of the customer estimated using the biometric information obtained by observation of the customer. This allows reduction in time and effort for dealing with false statement of age.

Other Exemplary Embodiments

[0109] While the sales support method and the sales support system have been described above according to the exemplary embodiment, the present invention is not limited to this exemplary embodiment. Other exemplary embodiments to which various modifications conceivable by a person skilled in the art are made and other exemplary

embodiments that are made by combining some components of the exemplary embodiment are also within the scope of the present invention as long as such exemplary embodiments do not depart from the gist of the present invention.

[0110] For example, while store server **10** installed in store **30** functions as the sales support apparatus according to the above-described exemplary embodiment, a position (apparatus) where the function as the sales support apparatus is to be mounted is not limited to store server **10**. The function may be mounted inside sales support terminal **20** (for example, POS register **22**), and the function may be mounted inside an external computer apparatus connected to store server **10** such as a cloud server.

[0111] While peripheral devices of sales support terminal **20** (input device **24**, ID scanner **26**, and camera **28**) are configured as separate bodies from POS register **22** according to the above-described exemplary embodiment, the peripheral devices may be integrated with POS register **22**. This allows implementation of compact sales support terminal **20** and achievement of space-saving.

[0112] While input device **24** uses a touch panel according to the above-described exemplary embodiment, input device **24** may be a physical button or other devices.

[0113] For example, the input device may be configured as illustrated in FIG. **9** as one example. FIG. **9** is a block diagram illustrating a detailed configuration of the sales support system according to another exemplary embodiment. Unlike FIG. **3**, in FIG. **9**, functions of the store server (sales support apparatus) and the camera are mounted in the POS register and the input device. The sales support system includes POS register **101**, input device **110**, and ID scanner **26**.

[0114] PUS register **101** includes controller **102**, storage **103**, and display **104**. Controller **102** includes determination unit **102***a* that determines whether the customer is at predetermined age and over, and notification unit **102***b* that notifies a result of the determination. Storage **103** stores the result of controller **102** and other information. Display **104** displays a result of reading bar code information and a result of age determination.

[0115] Input device **110** is, for example, a terminal such as a tablet, and includes camera **111**, input unit **112**, controller **113**, and display **114**. Controller **113** includes age estimation unit **113***a* that estimates the age of the customer from an image of camera **111** and determination unit **113***b* that determines whether the customer is at predetermined age and over based on the result of age estimation unit **113***a* (age estimation information).

[0116] The operation of the sales support system configured as described above will be described with reference to FIG. **10**. FIG. **10** is a communication sequence diagram illustrating one example of the operation of the sales support system according to another exemplary embodiment. FIG. **10** describes a case similar to the case of FIG. **5**B.

[0117] POS register **101** reads bar code information applied to a product that customer **38** intends to purchase, and on determination that the product is an age-restricted product (S**101**), POS register **101** requests input device **110** to perform age verification (S**102**).

[0118] On, receipt of the age verification request, input device **110** displays an image illustrated in FIG. **6** on display **114**, and acquires a reply to the age verification (here, a reply that the customer is at predetermined age and over) from the customer (S**103**). Then, since the age of the customer is at the predetermined age and over, determination unit **113***b* of input device **110** instructs age estimation unit **113***a* of input device **110** to perform age estimation. Age estimation unit **113***a* estimates the age based on an image of the customer acquired with camera **111** (S**104**). It is assumed here that the age estimation result is under the predetermined age.

[0119] At this time, since the age estimation result differs from the reply of the customer, determination unit **113***b* of input device **110** requests POS register **101** to perform ID scan (S**105**).

[0120] In response to the request of input device **110**, POS register **101** requests ID scanner **26** to perform ID scan (S**106**), and acquires the age information on the ID card that the customer possesses via ID scanner **26** (S**107**).

[0121] Determination unit **102***a* of POS register **101** determines whether the customer is at the predetermined age and over based on the age information (S**108**), saves a result of the determination in storage **103** (S**109**), and displays the result on display **104** via notification unit **102***b* (S**110**).

[0122] When the reply of the customer is under the predetermined age, determination unit **113***b* of input device **110** determines as NG and notifies POS register **101** of the result. Determination unit **102***a* displays the NG determination of determination unit **113***b* as it is on display **104** via notification unit **102***b*.

[0123] When the reply of the customer is the predetermined age and over and the determination result made by age estimation unit **113***a* is also the predetermined age and over, determination unit **113***b* determines OK, and notifies POS register **101** of the result. Determination unit **102***a* displays the OK determination of determination unit **113***b* as it is on display **104** via notification unit **102***b*.

[0124] When the customer refuses to perform the age verification of S**103**, the age estimation of S**104** is not performed, the ID scan of S**105** is requested, and the processes similar to the processes of FIG. **10** are performed.

[0125] According to the above-described exemplary embodiment, camera **28** is used as the age estimation apparatus that estimates the age of the customer by using the biometric information obtained by observation of the customer; however, the age estimation is not limited to this example, and the age of the customer may be estimated from the biometric information such as bodily characteristics that allows identification of the customer, such as voice and fingerprint. The process for estimating the age of the customer from the biometric information, such as voice and fingerprint of the customer, may use, for example, in a similar manner to the above-described age estimation with the facial image, a method for learning correspondence between the age and a feature amount extracted from the biometric information in which the age is proved in advance, such as voice and fingerprint, and estimating the age from the feature amount extracted from the biometric information in which the age is unknown, such as voice and fingerprint, based on a result of the learning. Furthermore, higher-precision age estimation may be performed by using two or more pieces of biometric information from a plurality of pieces of biometric information such as image, voice, and fingerprint. That is, as an age estimation method, instead of causing a user to be aware of an operation other than an age verification operation, such as causing the user to present the ID card, the age may be estimated without causing the user to be aware of operations other than an input operation, such as age estimation with camera **28**.

[0126] According to the above-described exemplary embodiment, age estimation unit **28***a* is provided, inside camera **28**; however, age estimation unit **28***a* may be provided inside POS register **22**, store server **10**, or the above-described external computer apparatus such as a cloud server. When age estimation unit **28***a* is provided in store server **10**, camera **28** captures the image of the customer and sends the obtained image to store server **10**. Age estimation unit **28***a* provided in store server **10** (or controller **12** or determination unit **12***a*) estimates the age of the customer by analyzing the acquired image, and generates the age estimation information that indicates the estimated age. Accordingly, a general-purpose digital camera that does not have age estimation unit **28***a* may be employed as camera **28**.

[0127] According to the above-described exemplary embodiment, time identified by store server **10** is used as current time to be saved in storage **14**. Instead of this time, or in addition to this time, time may be identified at which input device **24** obtains the reply from the customer in response to the age verification, and the identified time may be transmitted to store server **10** along with the input information and saved in storage **14** of store server **10**. Similarly, time at which camera **28** captures the customer may be identified, and the identified time may be transmitted to store server **10** along with the age estimation information and saved in storage **14** of store server **10**. Time at which ID scanner **26** reads information from the ID card of the customer may be identified, and the identified time may be transmitted to store server **10** along with the age information and saved in storage **14** of store server **10**. Accordingly, accurate time is saved at which the input information, the age estimation information, and the age information are acquired.

[0128] Based on the determination result and the like saved in store server **10**, for example, statistical data may be output, such as data indicating a degree of agreement between the input result of the customer and the age estimation result. The determination results of a plurality of store servers **10** may be compiled by a cloud server outside the store or the like and may be output as statistical data.

[0129] According to the above-described exemplary embodiment, POS register **22** displays the result in response to the determination result; however, POS register **22** may display the result in sound, light (lamp), or the like as an output form other than display.

[0130] According to the above-described exemplary embodiment, "OK" and "NG" are used as the determination result; however, the determination result may be information necessary for notification, for example, display data itself illustrated in FIG. **7**.

[0131] According to the above-described exemplary embodiment, the predetermined age is the age determined, for the age-restricted product; however, the predetermined age may be age different from the age determined for the age-restricted product, (for example, setting the predetermined age as age 30 and above for the age-restricted product for age 20 and above).

[0132] According to the above-described exemplary embodiment, refusal to age input is accepted; however, age may be always input and refusal may not be accepted.

[0133] According to the above-described exemplary embodiment, POS register **22** determines the age-restricted product by reading the bar code; however, another method may be used. For example, a salesclerk may look at a product and input into POS register **22** that the product requires age verification. Display may be made on input device **24** so as to allow the customer to verify the age automatically when a payment process starts, and the display may always be made on input device **24**.

[0134] According to the above-described exemplary embodiment, the sales support method illustrated in FIG. **4** can be implemented as a program to be executed by a computer included in store server **10**. The program can be circulated through recording on a computer-readable recording medium such as a DVD, and can be circulated via a communication network such as the Internet.

[0135] As described above, the exemplary embodiments have been described as illustration of the technique in the present disclosure. For this purpose, the accompanying drawings and detailed description have been provided.

[0136] Accordingly, the components described in the accompanying drawings and detailed description may include not only components essential for solving problems but also components unessential for solving problems, in order to illustrate the technique. Therefore, it should not be acknowledged immediately that those unessential components be essential because those unessential components are described in the accompanying drawings and detailed description.

[0137] Also, since the above-described exemplary embodiments are intended to illustrate the technique in the present disclosure, various changes, replacements, additions, omissions, etc. may be made within the scope of the appended claims or equivalents thereof.

[0138] The present disclosure is applicable to the sales support method and sales support system that allow improvement in accuracy of age verification in sale of age-restricted products compared with a conventional method without taking time and effort. Specifically, the present disclosure is applicable to apparatuses such as the POS register, store server, and cloud server which are connected to the tablet terminal and the digital camera.

What is claimed is:

1. A sales support method for supporting sale of an age-restricted product, the sales support method comprising:

acquiring input information indicating whether a customer is at predetermined age and over or under the predetermined age;

acquiring age estimation information indicating age of the customer estimated using biometric information obtained by observation of the customer;

when the input information indicates that the customer is at the predetermined age and over, determining whether the customer is at the predetermined age and over based on the age estimation information; and

notifying a determination result.

2. The sales support method according to claim **1**, further comprising, when determination is made that the customer is not at the predetermined age and over, determining whether the customer is at the predetermined age and over based on an ID card in which information for acquiring the age of the customer is recorded.

3. The sales support method according to claim **1**, further comprising, when the input information indicates that the customer is under the predetermined age, determining whether the customer at the predetermined age and over based on the input information.

4. The sales support method according to claims 1, wherein the biometric information is an image obtained by capturing the customer.

5. The sales support method according to claim 4, wherein the image is a facial image of the customer.

6. The sales support method according to claims 1, wherein one of the input information and the age estimation information is acquired when a product is the age-restricted product.

7. The sales support method according to claims 1, wherein

the input information includes information indicating whether the customer refuses to input information regarding whether the customer is at the predetermined age and over or under the predetermined age, and

when the input information indicates that the customer refuses, determination is made whether the customer is at the predetermined age and over based on the ID card in which the information for acquiring the age of the customer is recorded.

8. A sales support system for supporting sale of an age-restricted product, the sales support system comprising:

an input device for inputting information indicating whether a customer is at predetermined age and over or under the predetermined age;

an age estimation apparatus that estimates age of the customer by using biometric information obtained by observation of the customer;

a determination unit that determines whether the customer is at the predetermined age and over based on age estimation information when the input information indicates that the customer is at the predetermined age and over; and

a notification unit that notifies a determination result made by the determination unit.

9. The sales support system according to claim 8, wherein on determination that the customer is not at the predetermined age and over, the determination unit determines whether the customer is at the predetermined age and over based on an ID card in which information for acquiring the age of the customer is recorded.

10. The sales support system according to claim 8, wherein when the input information indicates that the customer is under the predetermined age, the determination unit determines whether the customer is at the predetermined age and over based on the input information.

11. The sales support system according to claims 8, wherein the input device and the age estimation apparatus are integrated.

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