

A Purchasing System

Field the Invention

- 5 The present invention relates to a purchasing system for placing an order and paying for the order.

Background

- 10 In hospitality industries, such as bars, cafes or restaurants, it is known for a patron to order their food and in particular drinks, and to pay for them on the spot. During busy periods, a waiter can take a long time to return with the order. If a credit card is given to pay
15 for the drinks, this can further add to the delay.

The present invention seeks to provide an improved way of ordering and paying for the order.

20 Brief Summary of the Invention

According to a first aspect of the invention there is provided a purchasing system comprising:

- 25 a first biometric reader for receiving a biometric reading of a customer;
- an order input means for receiving a new order;
- a storage for receiving the biometric reading and the new order, and storing the new order together with any previous orders in association with the biometric reading;
- 30 a processor configured to tally a bill from orders associated with the stored biometric reading; and
- a bill output configured to output the tallied bill.

In an embodiment the first biometric reader and order input means are disposed in a POS device.

5 In an embodiment the purchasing system further comprises a second biometric reader for receiving the biometric reading of the customer when the bill is requested.

10 In an embodiment the bill output and second biometric reader are disposed in a billing device.

In an alternative embodiment the first biometric reader, order input and the bill output are disposed in one device.

15 In an embodiment the storage, processor and bill output are disposed in the same device.

According to a second aspect of the invention there is provided a purchasing system comprising:

20 a POS device having a first biometric reader for receiving a first biometric reading and an order input means for receiving a new order;

a storage for receiving the first biometric reading and the new order from the POS device and storing the new order together with any previous orders in association with the first biometric reading;

25 a billing device having a second biometric reader for receiving a second biometric reading and a bill output, wherein the billing device is configured to tally a bill from orders associated with the first biometric reading in the storage when the second biometric reading matches the first biometric reading and output the tallied bill from the bill output.

In an embodiment the first biometric reader of the POS device is configured to receive subsequent biometric readings and the order input means is configured to receive subsequent orders, each subsequent biometric reading being associated with one or more of the subsequent orders, wherein the storage is configured to receive the subsequent biometric readings and the subsequent orders from the POS device, wherein the storage is further configured to store the subsequent orders together with any previous orders in association with respective biometric readings.

In an embodiment the storage is configured to record an indication against each order of whether each order has been paid for, such that the billing device excludes orders that have been paid for in the tallied bill.

In an embodiment the billing device is configured to cause the storage to indicate that an order is paid for when a payment is received for the order.

In an embodiment the storage is configured to record loyalty points against the respective biometric reading according to orders received.

In an embodiment the storage is configured to record loyalty points against the respective biometric reading according to orders paid for.

In an embodiment the storage is configured to record against each biometric reading one or more preferred orders which are determined based on ordering history.

In an embodiment the POS device is configured inform a user of the previous order recorded against the received first biometric reading.

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In an embodiment the POS device is configured inform a user of the one or more preferred orders recorded in the storage against the received first biometric reading.

10 In an embodiment the storage is configured to record an indication against each order of whether each order has been filled.

In an embodiment the system further comprises an order
15 presentation means for informing service staff of a received order.

In an embodiment the order presentation means is arranged to receive an input from service staff that an order has
20 been filled, which causes the storage to indicate that the corresponding order has been filled.

In an embodiment the POS device is configured to receive a filled order delivery location with the new order, the
25 storage is configured to record the filled order delivery location received from the POS device against the new order, and the order presentation means is configured to output the filled order delivery location retrieved from the storage when the new order has been filled, such
30 service staff can deliver the filled order at the order delivery location.

In an embodiment the storage is configured to record an inventory and update the inventory according to the recording of filling of orders.

- 5 In an embodiment the system further comprises a registration device having a third biometric reader for receiving the first biometric reading and an EFT identifier input for receiving an EFT identifier (such as a credit card number), and the storage is configured to
10 record the first biometric reading in association with the EFT identifier.

In an embodiment the billing device receives the EFT identifier associated with the first biometric reading
15 from the storage and causes an EFT system to charge a financial account associated with the EFT identifier as a payment for the orders from which the tallied bill is derived.

- 20 In an embodiment the system comprises an interface between the storage and a customer relationship management system for profiling and providing demographic analysis of customers based on information stored in the storage.

- 25 In an embodiment the storage is configured to record proof of age information in association with the first biometric reading.

In an embodiment the POS device communicates with the
30 storage over a wireless connection.

In an embodiment the system comprises a plurality of POS devices.

According to a third aspect of the invention there is provided a purchase management system comprising:

5 a first interface for interfacing with a POS device to receive a first biometric reading and a new order from the POS device;

a storage for storing the new order together with any previous orders in association with the first biometric reading;

10 a second interface for interfacing with a second biometric reader to receive a second biometric reading;

a processor configured to tally a bill from orders associated with the first biometric reading in the storage when the second biometric reading matches the first

15 biometric reading; and

an output for outputting the tallied bill.

According to a fourth aspect of the invention there is provided a method of placing an order and paying for the
20 order comprising:

receiving a first biometric reading and an order at a POS device;

25 storing the order together with any previous orders associated with the same biometric reading in association with the first biometric reading;

receiving a second biometric reading at a billing device;

tallying a bill for stored orders associated with the second biometric reading;

30 outputting the tallied bill and receiving payment.

In an embodiment the method further comprises informing service staff of a received order and fulfilling the order.

- 5 In an embodiment the biometric reading is anonymously recorded.

In an embodiment the biometric reading is recorded against identity information of the source of the biometric
10 reading.

In an embodiment subsequent biometric readings and orders are received at the POS device, each subsequent biometric reading is associated with one or more of the subsequent
15 orders, wherein the subsequent orders together with any previous orders are stored in association with the respective biometric reading.

In an embodiment the method further comprises storing an
20 indication against each order as to whether each order has been paid for, such that orders that have been paid for are excluded from the tallied bill.

In an embodiment the method further comprises storing
25 loyalty points against the biometric reading according to orders received.

In an embodiment the method further comprises storing
loyalty points against the biometric reading according to
30 orders paid for.

In an embodiment the method further comprises storing against each biometric reading one or more preferred orders which are determined based on ordering history.

- 5 In an embodiment the method further comprises informing a user of a POS device of the previous order recorded against the received first biometric reading.

10 In an embodiment the method further comprises informing a user of a POS device of the one or more preferred orders recorded against the received first biometric reading.

15 In an embodiment the method further comprises storing an indication against each order of whether each order has been filled.

In an embodiment the method further comprises storing a filled order delivery location received from the POS device against the new order.

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In an embodiment the method further comprises storing an inventory and updating the inventory according to the recording of filling of orders.

- 25 In an embodiment the method further comprises storing an EFT identifier in association with the first biometric reading.

30 In an embodiment the method further comprises storing proof of age information in association with the first biometric reading.

According to a fifth aspect of the invention there is provided a method of profiling customers comprising:

receiving orders from customers, for each order
receiving a biometric reading and order details at a POS
5 device;

storing the details order together with any previous
orders associated with the same biometric reading in
association with the respective biometric reading;

retrieving stored information and conducting profile
10 analysis of the stored information.

In an embodiment the method further comprises storing a
time and date of each order.

15 In an embodiment the method further comprises storing age
information in association with each biometric reading.

In an embodiment the method further comprises storing the
location of taking the order against each order.

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According to a sixth aspect of the invention there is provided a profiling system comprising:

a first interface for interfacing with a POS device
to receive orders, each order having a biometric reading
25 associated therewith;

a storage for storing each order together with any
previous orders in association with the respective
biometric reading;

a processor configured retrieve the stored
30 information and conduct profile analysis of the stored
information.

Brief Summary of the Drawings

In order to provide a better understanding of the present invention, preferred embodiments will now be described, by way of example only, with reference to the accompanying drawings.

Figure 1 is a schematic diagram showing a payment system according to an embodiment of the present invention.

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Figure 2 is a schematic diagram showing modules of a server of the system of Figure 1.

Description of Preferred Embodiments

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Referring to figure 1, there are shown a schematic representation of a purchasing system 10. The system 10 includes a server 12 and one or more wireless point of sale (POS) devices 14. Each POS device 14 is typically in the form of a handheld personal digital assistant (PDA) having wireless connectivity and a biometric reader, such as a fingerprint scanner. The system 10 further includes a wireless network 16. The wireless network 16 would typically be in the form of an access point connected to the server 12. The system 10 further includes an order printing device 18 typically in the form of a networked printer or a printer connected to a networked device. The POS device 14 also has a keyboard and/or a touch screen for inputting details of an order received from a customer

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The server 12 manages a database stored on a storage device of the server 12 or stored on a network storage device. Typically the storage device will be hard disk

drive, although other forms of storage may be suitable, such as flash RAM. The server 12 operates under the control of one or more computer programs as will be described further below. The database is structured as
5 will be described further below.

Referring to figure 2, a set of management modules in the form of computer programs 50 control the operation of server 12. The modules 50 comprises a food and beverage
10 wireless point of sale interface 52 for interfacing with the one or more POS devices 14, a biometric tracking module 54, customer loyalty and profiling module 56, a food and beverage inventory and reporting module 58, a database management system 60 for managing the database,
15 and an operating system 62. The modules 50 and in particular module 58 are configured to export data 64, such as in a format suitable for use by spreadsheet program, such as Excel.

20 The POS module 52 manages communication between the server 12 and the POS device 14 using standard hardware and protocols. The POS module 52 also controls the activities of the server 12 in dealing with orders.

25 In use, a waiter 22 users one of the POS devices 14 to attend to a customer 20. The waiter asks the customer 20 to provide a biometric reading. Typically this will involve placing a digit on the fingerprint scanner or swiping a digit across the fingerprint scanner. In the
30 present embodiment is assumed that the digit is that customer's thumb, although it may be any finger. Once the biometric reading has been taken, the waiter takes 22 the customer's order and enters it into the POS device 14 via

the touch screen. In the present embodiment the order would be a drink or drinks and/or food. An example of an order might be a bottle of a certain brand of beer and a packet of crisps.

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The POS device 14 transmits 24 biometric data corresponding to the biometric reading and order data representing the customer's order over the wireless network 16 to the server 12. The server 12 stores the
10 biometric data and customer's order data in the database. The time of taking the order may be recorded as part of the order details. The biometric reading data acts as a unique identifier of the customer. The customer may effectively remain anonymous - identified only by their
15 biometric reading data - or the biometric reading may be associated with other identifying information, such as the name and other personal details of the customer and/or financial information, such as a credit card number. If the database contains another entry related to the same
20 biometric reading, such as if the customer had made a previous order, the new order is associated with the existing biometric data in the database, along with any previous orders. As an alternative each biometric data and order data set may be simply stored on each occasion.

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In an alternative embodiment, in a "barman mode", the order may be taken first and when the customer 20 received his or her order they provide a thumbprint reading to the POS device for addition of the order to their bill.

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In a "waiter mode", the new order can then be printed on the order printer 18 for service staff to fill the order and waiting staff to deliver the order to the customer 20.

The time of taking of the order may be printed so that orders can be properly prioritised.

When the customer 20 is ready to leave, the customer 20
5 can present to a cash register, to provide another
biometric reading, in order for their bill to be tallied.
At the cash register another biometric reader is able to
receive the biometric reading of the customer 20. Second
biometric data representing the second biometric reading
10 is used to look up matching biometric data in the database
in order to retrieve from the database orders made by the
customer which are associated with this biometric reading.
The retrieved orders are used to produce a tally of money
owing for the customer's orders. As an alternative
15 customer may ask the waiter for their bill, whereupon once
they provide the biometric reading to the POS device 14
orders made by the customer recorded in the database can
be tallied, the waiter can present them with their bill
from the POS device 14 or the order printer 18 or it can
20 be printed at the cash register.

The biometric tracking module 54 tracks biometric readings
taken by POS devices 14 and cash register in order to
match biometric readings from the same person, and
25 distinguish biometric readings from different people.
Each biometric reading may be referenced by a unique
identifier.

The database can record whether each order has been paid
30 for so that when billing occurs only orders that are
outstanding will be tallied in the bill, and orders that
have been paid for are excluded from the tally. This is
useful when the customer has previously made orders that

have been paid for and not deleted from the database. It is desirable to retain previous orders for loyalty and profiling purposes as will be described further below. Alternatively once the orders have been paid for, the
5 entries in the database can be deleted.

The database can record loyalty information under the control of module 56 and can allocate loyalty points against a customer's biometric reading whenever orders are
10 received or whenever orders are paid for. This automatic process has the ability to be anonymous if personal information is not recorded with a biometric reading. This allows loyalty rewards to be given over a single visit to the bar or restaurant. Although of course
15 rewards can be accumulated over a number of visits if this information is retained and depending upon configuration of the system.

The database can record profiling information under the control of module 56. Profiling can include retrieving
20 from the database and sending to the POS device 14 the previous one or more orders placed by the customer 20 in order to assist the waiter in placing the customer's next order in a "captain mode". Module 56 can also determine
25 favourite or preferred orders of customer 20 based on previous orders. The customer's favourite order can also be sent to the POS device 12 to assist the waiter in placing the customer's next order.

30 Demographic analysis can be conducted by the module 56 or by an external customer relationship management system. For example, customers may order more beer earlier in the evening and move to spirits later in the evening. This

can be identified and stocks controlled to cater for demand. If age is recorded, demographic information may for example show that 18 to 24 year olds drink more spirits than 25 to 30 year olds. Numerous other
5 demographic and profile modelling can be done with the information stored in the database.

The database can record information on whether each order has been filled so that service staff can know which
10 orders are outstanding. When an order has been filled an indication that the order is outstanding can be changed to an indication that the order has been filled in the database. To do this service staff can be provided with a terminal that receives input that the order has been
15 filled. This terminal can provide a display of new orders to be filled in addition to or instead of the order printer 18. Additionally the waiter can take a further thumbprint reading from the customer 20 as confirmation that the customer 20 received the order. Reading of the
20 thumbprint is again transmitted to the server 12 by the POS device 14. An indication of verification of receipt of the order can also be stored in the database.

The database can record information on the location within
25 the establishment of the customer 20. This location information will serve to allow the waiter to deliver the filled order to the correct customer. This location information may be a table number, or similar, or maybe some other location information, such as a GPS reading,
30 mobile telephone location reading, or POS device 14 triangulation reading at the time of taking the order.

As orders are taken and filled updating of an inventory

database can be controlled by module 58. For example, if during the course of an evening, customers' orders accumulate to five cases worth of a particular beer brand, then the inventories of that beer brand can be reduced by five cases and when appropriate threshold is reached more of that beer brand can be ordered. This process will be applicable to other types of drink and food products.

In one embodiment of the invention a registration occurs when the customer enters the establishment. During registration a customer provides a biometric reading to a biometric reader. If the biometric reading is already registered within the database the customer is known and can then proceed. If the customer is unknown, depending upon the implementation, a further registration process may be required. This may include giving identifying information such as name and address, proof of age, or may involve providing an electronic fund transfer (EFT) identifier such as credit card number. This can be useful at the end of the customer's visit as they have already provided the credit card and their bill can be settled automatically. In one in embodiment the customer may simply confirm that their credit card can be used to settle the bill.

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The age of a customer 20 may be recorded in the database against the customer's biometric reading. This could be taken at registration or at the time of taking the first order by input into a registration computer or input into the POS device 14. Alternatively if identification is checked to ensure the customer 20 is of an age at which he or she can be legally served alcohol (such as 18 or 21 depending on the relevant laws) an indication can be

recorded in the database that such a check has occurred so that the customer does not need to provide identification when placing each order. Age information can be useful for profile analysis as described above.

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Persons skilled in the field of the invention will realise that the present invention provides a convenient system for ordering and paying for goods and services. The application has particular intervention in the food and
10 beverage industry such as in bars restaurants and the like, but persons skilled in the field invention will realise that the invention can be used in many industries in which a person places an order for goods and services. The present invention also provides a powerful customer
15 profiling and analysis tool.

It will be understood to persons skilled in the field of the invention that many modifications may be made without departing from the spirit and scope of the invention.

CLAIMS

1. A purchasing system comprising:
 - 5 a first biometric reader for receiving a biometric reading of a customer;
 - an order input means for receiving a new order;
 - a storage for receiving the biometric reading and the new order, and storing the new order together with any
 - 10 previous orders in association with the biometric reading;
 - a processor configured to tally a bill from orders associated with the stored biometric reading; and
 - a bill output configured to output the tallied bill.
- 15 2. A system as claimed in claim 1, wherein the first biometric reader and order input means are disposed in a POS device.
3. A system as claimed in either claim 1 or claim 2,
 - 20 wherein the purchasing system further comprises a second biometric reader for receiving the biometric reading of the customer when the bill is requested.
4. A system as claimed in claim 3, wherein the bill
 - 25 output and second biometric reader are disposed in a billing device.
5. A system as claimed in claim 1, wherein the first biometric reader, order input and the bill output are
 - 30 disposed in one device.

6. A system as claimed in any one of claims 1 to 5, wherein the storage, processor and bill output are disposed in the same device.

5 7. A purchasing system comprising:

a POS device having a first biometric reader for receiving a first biometric reading and an order input means for receiving a new order;

a storage for receiving the first biometric reading
10 and the new order from the POS device and storing the new order together with any previous orders in association with the first biometric reading;

a billing device having a second biometric reader for receiving a second biometric reading and a bill output,
15 wherein the billing device is configured to tally a bill from orders associated with the first biometric reading in the storage when the second biometric reading matches the first biometric reading and output the tallied bill from the bill output.

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8. A system as claimed in claim 7, wherein the first biometric reader of the POS device is configured to receive subsequent biometric readings and the order input means is configured to receive subsequent orders, each
25 subsequent biometric reading being associated with one or more of the subsequent orders, wherein the storage is configured to receive the subsequent biometric readings and the subsequent orders from the POS device, wherein the storage is further configured to store the subsequent
30 orders together with any previous orders in association with respective biometric readings.

9. A system as claimed in any one of claims 4 or 8,
wherein the storage is configured to record an indication
against each order of whether each order has been paid
for, such that the billing device excludes orders that
5 have been paid for in the tallied bill.

10. A system as claimed in claim 9, wherein the billing
device is configured to cause the storage to indicate that
an order is paid for when a payment is received for the
10 order.

11. A system as claimed in any one of claims 1 to 10,
wherein the storage is configured to record loyalty points
against the respective biometric reading according to
15 orders received.

12. A system as claimed in any one of claims 1 to 10,
wherein the storage is configured to record loyalty points
against the respective biometric reading according to
20 orders paid for.

13. A system as claimed in any one of claims 1 to 12,
wherein the storage is configured to record against each
biometric reading one or more preferred orders which are
25 determined based on ordering history.

14. A system as claimed in any one of claims 2, 7 or 8,
wherein the POS device is configured inform a user of the
previous order recorded against the received first
30 biometric reading.

15. A system as claimed in any one of claims 2, 7 or 8,
wherein the POS device is configured inform a user of the

one or more preferred orders recorded in the storage against the received first biometric reading.

16. A system as claimed in any one of claims 1 to 15,
5 wherein the storage is configured to record an indication against each order of whether each order has been filled.

17. A system as claimed in any one of claims 1 to 16,
wherein the system further comprises an order presentation
10 means for informing service staff of a received order.

18. A system as claimed in claim 17, wherein the order presentation means is arranged to receive an input from service staff that an order has been filled, which causes
15 the storage to indicate that the corresponding order has been filled.

19. A system as claimed in any one of claims 2, 7, 8, 14, or 15, wherein the POS device is configured to receive a
20 filled order delivery location with the new order, the storage is configured to record the filled order delivery location received from the POS device against the new order, and the order presentation means is configured to output the filled order delivery location retrieved from
25 the storage when the new order has been filled, such service staff can deliver the filled order at the order delivery location.

20. A system as claimed in any one of claims 1 to 19,
30 wherein the storage is configured to record an inventory and update the inventory according to the recording of filling of orders.

21. A system as claimed in any one of claims 1 to 20,
wherein the system further comprises a registration device
having a third biometric reader for receiving the first
biometric reading and an EFT identifier input for
5 receiving an EFT identifier, and the storage is configured
to record the first biometric reading in association with
the EFT identifier.

22. A system as claimed in claim 21 when dependant on any
10 one of claims 4, 7, 8 to 10, wherein the billing device
receives the EFT identifier associated with the first
biometric reading from the storage and causes an EFT
system to charge a financial account associated with the
EFT identifier as a payment for the orders from which the
15 tallied bill is derived.

23. A system as claimed in any one of claims 1 to 22,
wherein the system comprises an interface between the
storage and a customer relationship management system for
20 profiling and providing demographic analysis of customers
based on information stored in the storage.

24. A system as claimed in any one of claims 1 to 23,
wherein the storage is configured to record proof of age
25 information in association with the first biometric
reading.

25. A system as claimed in any one of claims 2, 7, 8, 14
or 15, wherein the POS device communicates with the
30 storage over a wireless connection.

26. A system as claimed in any one of claims 2, 7, 8 14, 15, 19 or 25, wherein the system comprises a plurality of POS devices.

5 27. A purchase management system comprising:

a first interface for interfacing with a POS device to receive a first biometric reading and a new order from the POS device;

a storage for storing the new order together with any
10 previous orders in association with the first biometric reading;

a second interface for interfacing with a second biometric reader to receive a second biometric reading;

a processor configured to tally a bill from orders
15 associated with the first biometric reading in the storage when the second biometric reading matches the first biometric reading; and

an output for outputting the tallied bill.

20 28. A method of placing an order and paying for the order comprising:

receiving a first biometric reading and an order at a POS device;

a storing the order together with any previous orders
25 associated with the same biometric reading in association with the first biometric reading;

receiving a second biometric reading at a billing device;

tallying a bill for stored orders associated with the
30 second biometric reading;

outputting the tallied bill and receiving payment.

29. A method as claimed in claim 28, further comprising informing service staff of a received order and fulfilling the order.

5 30. A method as claimed in either claim 28 or 29, wherein the biometric reading is anonymously recorded.

31. A method as claimed in any one of claims 28 to 30, wherein the biometric reading is recorded against identity
10 information of the source of the biometric reading.

32. A method as claimed in any one of claims 28 to 31, wherein subsequent biometric readings orders are received at the POS device, each subsequent biometric reading is
15 associated with one or more of the subsequent orders, wherein the subsequent orders together with any previous orders are stored in association with the respective biometric reading.

20 33. A method as claimed in any one of claims 28 to 32, wherein the method further comprises storing an indication against each order as to whether each order has been paid for, such that orders that have been paid for are excluded from the tallied bill.

25 34. A method as claimed in any one of claims 28 to 33, wherein the method further comprises storing loyalty points against the biometric reading according to orders received.

30 35. A method as claimed in any one of claims 28 to 33, wherein the method further comprises storing loyalty

points against the biometric reading according to orders paid for.

36. A method as claimed in any one of claims 28 to 35,
5 wherein the method further comprises storing against each biometric reading one or more preferred orders which are determined based on ordering history.

37. A method as claimed in any one of claims 28 to 36,
10 wherein the method further comprises informing a user of a POS device of the previous order recorded against the received first biometric reading.

38. A method as claimed in any one of claims 28 to 36,
15 wherein the method further comprises informing a user of a POS device of the one or more preferred orders recorded against the received first biometric reading.

39. A method as claimed in any one of claims 28 to 38,
20 wherein the method further comprises storing an indication against each order of whether each order has been filled.

40. A method as claimed in any one of claims 28 to 39,
25 wherein the method further comprises storing a filled order delivery location received from the POS device against the new order.

41. A method as claimed in any one of claims 28 to 40,
30 wherein the method further comprises storing an inventory and updating the inventory according to the recording of filling of orders.

42. A method as claimed in any one of claims 28 to 41, wherein the method further comprises storing an EFT identifier in association with the first biometric reading.

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43. A method as claimed in any one of claims 28 to 42, wherein the method further comprises storing proof of age information in association with the first biometric reading.

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44. A method of profiling customers comprising:
receiving orders from customers, for each order
receiving a biometric reading and order details at a POS
device;

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storing the details order together with any previous
orders associated with the same biometric reading in
association with the respective biometric reading;
retrieving stored information and conducting profile
analysis of the stored information.

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45. A method as claimed in claim 44, further comprising
storing a time and date of each order.

46. A method as claimed in either claim 44 or 45, further
25 comprising storing age information in association with
each biometric reading.

47. A method as claimed in one of claims 44 to 46,
further comprising storing the location of taking the
30 order against each order.

48. A profiling system comprising:
a first interface for interfacing with a POS device

to receive orders, each order having a biometric reading associated therewith;

a storage for storing each order together with any previous orders in association with the respective

5 biometric reading;

a processor configured retrieve the stored information and conduct profile analysis of the stored information.