METHOD AND SYSTEM FOR COMPILING DEMOGRAPHIC DATA

BACKGROUND TO THE INVENTION

This invention relates to a method and system for compiling demographic data.

Merchants are currently left in the difficult situation of having little or no idea of customers' characteristics. Their advertising and promotions are at best aimed at a hunch of what will attract existing and prospective customers to purchase from them. The merchants do not details of demographic characteristics of their customers, for example geographic location, professional status, family size, etc. They do not know what other merchants their customers also purchase products from, and the merchants do not know what value to place on individual customers.

The same problem may also be experienced with other forms of interactions between merchants and customers involving, for example, call centres, help desk enquiry services and other similar business.

Typically this information is only collected by large merchants either through their own customer database or through market research.

PRIOR ART

Methods and systems for building databases for marketing purposes are known in the art.

One form of system is described in US Patent No. 5,636,346. A method is described of creating a database or a modelled profile of information for customers of an advertiser. This database consists of subscriber names and address information and is compiled from actual cable system and telephone company billing records. The database is then licensed to data processing companies or their clients to be matched with their own customer databases. A target subscriber list is produced from subscribers in the modelled profile which are not already in the customer database, and these subscribers are targeted directly.

This Sheet Has Been Replaced



Another system is described in US Patent No. 5,305,196. A method is described for building a database for use in a retail store marketing program in which a customer's cheque is scanned to detect an account identification number. This unique identification number is then compared against a stored database of customer identification numbers maintained at that store. The database is then updated if necessary with additional identification criteria. A list of prospective customers of the retail store in a predetermined geographical area is obtained through conventional sources. The list of prospective customers is then compared with the list of regular customers and customers which appear in both lists are removed from the list of prospective customers. Advertising material may then be mailed directly to the remaining customers in the prospective customers list.

In the abovementioned prior art, the merchant is provided with little more than a list of customers toward which direct marketing may be focused. It would be particularly advantageous to provide the merchant with characteristics and other information about actual and prospective customers.

OBJECT OF THE INVENTION

An object of the present invention is to provide an improved method and system for compiling demographic data about customers.

DISCLOSURE OF THE INVENTION

Accordingly in one aspect the invention may be said to consist in a computer implemented method for compiling demographic data comprising the steps of maintaining in a computer having a memory a database of demographic data about existing and/or prospective customers, and interactions between customers and merchants; updating the database with data about new interactions between customers and merchants; retrieving from the database demographic data about existing and/or prospective customers; and generating a report on demographic data about existing and/or prospective customers.

In a further aspect the invention may be said to consist in a system for compiling demographic data, the system comprising a computer having a memory in which is

stored a database of demographic data about existing and/or prospective customers, and interactions between customers and merchants; means arranged to update the database with data about new interactions between customers and merchants; means arranged to retrieve from the database demographic data about existing and/or prospective customers; and report generating means for generating a report on demographic data about existing and/or prospective customers.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the method and system will now be described with reference to the accompanying drawings in which:-

Fig. 1 shows a block diagram of the system of the invention;

Fig. 2 shows a block diagram of the system in a commercial transaction between a customer and merchant;

Fig. 3 shows a block diagram of the system in a communication between a customer and merchant;

Figure 4 shows the database schema of the invention;

Figure 5 illustrates a typical database entry;

Figure 6 shows the typical characteristics of a group of customers;

Figure 7 illustrates a typical analysis of customers by country;

Figure 8 shows further characteristics of a typical group of customers;

Figure 9 illustrates a geographical density map;

Figure 10 shows a typical customer value graph;

This Sheet Has Been Replaced



Figure 11 shows the merchants with which a typical merchant shares its customers; and

Figure 12 illustrates a table of repeat customers.

DISCLOSURE OF THE PREFERRED EMBODIMENTS

In the preferred form of the invention, as shown in Figure 1, the system 2 comprises a computer 3 having a data processor and memory, operating under the control of application software. The computer 2 communicates with at least one stored database 4. The database 4 may include an interaction database 6 and customer demographics database 8. It will be appreciated that the interaction database 6 and demographics database may be implemented as separate databases or as a single database. For simplicity the invention will be described with reference to database 4. The customer demographics database 8 may store data about existing customers and/or prospective customers. It will be appreciated that references to customers in the specification and claims may additionally include prospective customers.

Demographic characteristics of customers as used in the specification and appended claims may include geographic location, professional status, family size, age, gender, marital status, ethnicity, education and vocation. Also included within the scope of demographic characteristics may be psychodynamic or psychographic characteristics, and where the customer is a commercial business, demographic data could include the number of employees and the industry code of the business.

Database 4 may be stored in the memory of computer 3. Alternatively database 4 may be stored externally on one or more separate servers and accessed by dedicated and dial-up telecommunications facilities using e-mail, electronic data interchange (EDI) and/or communications via Internet web sites, or stored on CD-ROMS, floppy disks, tape drives, or other storage media. Alternatively the database 4 may be accessed with terminal emulation or Telnet facilities.

The data in database 4 may be contributed by a bank, financial institution, telecommunications or internet service provider, or some other third party, for example an entity operating a loyalty programme.

As shown in Fig. 1, a customer 12 interacts with a merchant 16 as shown in Fig. 1. Typically merchant 16 operates in a commercial premises or store from which customer 12 purchases goods or services. Alternatively merchant 16 may operate from strategically placed machines, for example vending machines, parking meters, laundry machines and transportation ticketing machines. Merchant 16 may also operate a mail order catalogue service, direct market goods or services, or network market through a hierarchy of distributors and resellers. As is becoming increasingly common, merchant 16 may alternatively operate from a website or other electronic medium.

As a further alternative merchant 16 may operate a help desk, call centre, or some other business in which customer 12 interacts with merchant 16 by telephone, facsimile, email, web browsing or other form of communication. It will be appreciated that the nature of business of merchant 16 includes a wide range of commercial activities.

Customer 12 may be a purchaser of goods or services from merchant 16. If merchant 16 operates a help desk or call centre, customer 12 may be a user of this service. Customer 12 may be a commercial or residential entity.

It will be appreciated that an interaction between customer 12 and merchant 16 may be initiated by either the customer 12 or by the merchant 16. As customer 16 interacts with merchant 16, the interaction generates interaction data 18 which may be stored in interaction database 6 as will be further described.

The invention will be first be described with reference to Fig. 2 in which the interaction comprises a retail transaction. For security and convenience it is becoming increasingly common for customer 12 to use a payment other than cash. One example is a credit card, in which a sales person either magnetically reads or makes an imprint of the card, calls a processing centre via a dial-up modem to obtain authorisation and verifies the cardholder's signature to prevent fraud.

Alternatively the customer 12 may provide the account number and expiry date of the credit card to a merchant 16 who is geographically separated from customer 12. Other alternatives to cash include cheques, electronic funds transfer (EFT-POS) cards, pre-paid money cards, credit, debit or charge cards, and integrated circuit or smart cards.

If a payment method other than cash is used then certain customer information is transferred from the customer 12 to the merchant 16. For example the customer information would include details of the customer's financial account to be debited. The merchant 16 transfers payment to the merchant's own financial institution 24 or other financial institution. Also sent to the financial institution 24 is transaction information which includes at least a merchant identifier, a customer identifier, a transaction amount and the date and time of the transaction.

The transaction between customer 12 and merchant 16 generates interaction data 18A. The interaction data 18A includes a merchant identifier. This merchant identifier may comprise the bank account number of merchant 16, or some other identifier. It will be appreciated that interaction data 18A could include further information about the merchant, for example geographic location. This information could be supplied by the merchant 16 or financial institution 24, and could be stored with the interaction data 18A or in database 4.

Interaction data 18A also includes a customer identifier. This customer identifier may comprise the bank account number of customer 16, or some other identifier. Again, interaction data 18A could include demographic data about the customer, for example geographic location, professional status, family size, etc. Also included, for example, could be psychodynamic or psychographic data. Where the customer is a commercial business, interaction data 18A could include the number of employees and the industry code of the business. Information about the customer could be supplied by the customer 12, the merchant 16, financial institution 24, and could be stored with the interaction data 18A or in database 4.

Interaction data 18A could also include, for example, the monetary value of the interaction, a goods/services identifier, and/or the date and time of the interaction.

As shown in Fig. 3, the interaction may be in the form of a communication between a customer 12 and a merchant 16. Merchant 16 may operate a help desk, call centre, or some other business in which customer 12 interacts with merchant 16. If the customer 12 interacts with merchant 16 by telephone or facsimile, the identities of both the customer 12 and merchant 16 are known by the telecommunication service provider (telco) 20 used to make the communication. A customer identifier and merchant identifier could be either generated or at least known to the telco 20 and could be supplied by the telco 20. Alternatively customer identifier and merchant identifier could be supplied by merchant 16 or customer 12. Merchant identifier and customer identifier could be the telephone/facsimile number of the merchant 16 and customer 12 respectively, or could be some other identifier.

Further information about merchant 16 and customer 12 could be included as discussed above with reference to Fig. 2. For example, interaction data 18B could include geographic information about the merchant 16, demographic, psychodynamic or psychographic data about the customer 12, and where the customer 12 is a business, details of the number of employees and industry code.

As discussed above with reference to Fig. 2, interaction data 18B could also include, for example, the monetary value of the interaction (if any), a goods/services identifier (if applicable), and/or the date and time of the interaction. Interaction data 18B could also include the duration of the communication.

Customer 12 may also interact with merchant 16 electronically. For example, customer 12 may send a message by email to merchant 16. Alternatively, merchant 16 may operate a web site which customer 12 may visit with a web browser. In this situation the identities of the customer 12 and merchant 16 are known by the internet service provider (ISP) 20 used to make the communication.

A customer identifier and merchant identifier could be either generated or at least known to the ISP 20 and could be supplied by the ISP 20. Alternatively customer identifier and merchant identifier could be supplied by merchant 16 or customer 12. Merchant identifier and customer identifier could be the internet address of the mercant 16 and customer 12 respectively, or could be some other identifier.

As discussed above, further information about merchant 16 and customer 12 could be included in interaction data 18B.

The merchant 16 may operate a loyalty programme, whereby a selected customer 12 is distinguished from other customers. Those customers who are members of the loyalty programme are often issued with identification cards. Interaction data 18, 18A, or 18B could include the fact the customer 12 is a member of the loyalty programme.

The invention will now be described in the context of a retail transaction. It will be appreciated that the scope of the invention is not limited to retail transactions and includes other forms of interaction as discussed above with reference to Figs. 1 to 3.

The computer 3 may have in its database 4 information about particular merchants, for example those merchants in a common industry. This information may include the name and address of the merchant 16 and the nature of the merchant's business. The information held by the computer 3 about a merchant 16 is shown in Figure 4 as merchant data 22. While not necessary, the merchant data 22 may be indexed by merchant identifier 24 to assist in processing.

The computer 3 also has information about individuals who may use the merchant 16. For example the computer 3 may have a record of the income, age, gender, marital status, ethnicity, education, telephone numbers, residential address and vocation of individuals. The residential address may be specifically defined, or may be an arbitrarily defined geographical area, mesh block, geocode or census area unit. Each individual may be a customer 12 of merchant 16. This information is shown in Figure 4 as customer data 26. Customer data 26 may be indexed by customer identifier 28.

As a customer 12 interacts with merchant 16, interaction data is stored as transaction data 30. An example is shown in Figure 4.

Each transaction can only have one merchant, while individual merchants can have more than one transaction. The relationship of the transaction data 30 to merchant

data 22 is therefore many-to-one. Similarly, each transaction can have only one customer, while individual customers can have more than one transaction. The relationship of the transaction data 30 to customer data 26 is therefore also many-to-one.

The computer 3 may have access to all information contained in merchant data 22, customer data 26 and transaction data 30. From this data it is possible to produce reports for a merchant 16 giving the merchant 16 detailed information about its customers 12. For example, it is possible to estimate the average annual salary of the national population. It is also possible to identify the customers 12 of merchant 16 based on the accumulated transaction data 30 and therefore estimate the average income of customers 12 of a particular merchant 16. Information such as this is very valuable to merchant 16 as it then knows where to focus marketing efforts. It is also possible to provide merchant 16 with other demographic characteristics of its customers 12 as discussed above.

In some circumstances a number of other parties may each transmit certain data to computer 3, so that merchant 16 can obtain further information about its customers 12.

Based on characteristics of customers 12, it is possible to provide merchant 16 with customer segmentation data. For example the merchant 16 may be provided with the proportion of its customers who are in a particular income range to assist in developing marketing strategies.

It is also possible to provide details of the customers 12 a particular merchant 16 shares with other merchants. The transaction data 30 includes a merchant identifier and a customer identifier. Based on this information the proportion and characteristics of customers 12 a merchant 16 shares with competing merchants can be determined. A merchant 16 may then have an idea of its market share and know the types of customers 12 on which to focus marketing initiatives. It is also possible to provide the merchant 16 information about the customers 12 the merchant 16 shares with merchants in other markets. This would allow, for example, a fast food retailer to assess the merits of joint advertising with a petrol station if the merchants share a large proportion of customers.

The transaction data 30 may also include temporal data, for example the date and time of transactions. It is therefore possible to identify the date and time different customer types are likely to purchase goods or services from merchant 16.

In a preferred form of the invention the computer 3 includes a stored database of customer locations, including residential addresses, post codes and telephone numbers. From this information it is possible to produce density maps of customer types of merchant 16 based on the geographical locations, post codes and/or telephone numbers of customers 12. The scale of these density maps may be local, regional, national or global.

Although not strictly necessary, in a further preferred form of the invention the computer 3 includes a stored database of transaction amounts of transactions between customers 12 and merchants 16 as shown in Figure 4. From this information the characteristics of a merchant's customers from which the merchant derives the most revenue, or most valued customers can be determined.

Where appropriate, the transaction details may also include a product identification code. This allows the quantity and characteristics of products purchased by customers 12 to be determined. For example, a merchant 16 who does not sell a particular product may be interested to know that a competitor is selling large quantities of the product. If the merchant 16 offered the same product for sale then customers may purchase products from merchant 16 instead of the competitor.

The product identification code is also useful in evaluating the response to the use of coupons. Generally, coupons are issued to existing customers or are distributed to a particular geographical region. Coupons generally offer a discount on subsequent purchases, or additional complimentary goods or services with subsequent purchases. Using the product identification code it is possible to determine the characteristics of customers who present coupons and the characteristics of customers who do not.

In addition to the above information, it also possible to obtain specific information on companies or industries. From the information in the computer 3, comparisons

may be made of characteristics of the customers 12 of a merchant 16 in one population with those of another population. This information would be valuable to a merchant 16 introducing a product into a new market who needs to know how well the product has been received in other countries.

As stated above the transaction data 30 may include temporal data. The reports may be generated periodically and changes in a merchant's customer base over time can be identified and reported. This use of temporal data is particularly useful in evaluating the success or otherwise of general promotional activity, for example the sale of goods or services at reduced prices.

The reports may be presented to the merchant 16 by paper, oral/visual presentation or electronically for example email or secured web access. In a preferred embodiment of the invention the merchant 16 may select which information it requires about its customer base.

In the preferred form of the invention demographic data 32 is produced from information held by the computer 3. However, other data sources may also be used, for example census data, customer databases, demographic information held by other parties, other customer transactions, product descriptions and merchant databases.

The system 2 may be tailored to satisfy confidentiality or privacy requirements. For example, details of individual customers may be omitted from merchant reports. Additionally, details of individual merchants may be omitted for reasons of commercial confidentiality.

As shown in Figure 5, a customer has purchased goods from the fictitious company Flowers R Us. The appropriate entries have been made in merchant data 22, customer data 26 and transaction data 30. A customer having the unique identifier CUST1, residing in Roseneath, Wellington, New Zealand has purchased flowers to the value of NZ$35 from Flowers R Us, a merchant having the unique identifier MERC1. Based on a number of these transactions, it is possible to produce detailed and commercially useful reports for the merchant 16.

Figure 5 shows an example of a report which may be produced for the merchant 16 illustrating general characteristics of Flowers R Us customers. For example the customers are likely to have qualifications and not likely to be unemployed. Characteristics such as these are available to the computer 3 from database 4 or from other sources and so it is possible to determine that Flowers R Us customers have these characteristics.

As shown in Figure 6, Most of Flowers R Us customers, namely 87.2%, live in New Zealand. This gives the merchant 16 ideas about where to focus its advertising. The nature of this business means that smaller proportions of customer are resident in other countries, although this will not necessarily be the case for other types of business, for example in the travel booking and reservations industry.

Figure 7 shows a further example of characteristics of customers. For simplicity, customers are placed in one of 14 customer types, for example "educated money" or "single and separate". It is possible to estimate from the information in the computer 3 that 8.25% of New Zealanders are of the type "educated money", and that 5.51% are of the type "single and separate". Based on geographical data about its customers, it may be determined that 11.53% of the population living in the same region as merchant 16 are of type "educated money" and 7.91% are of type "single and separate". Based on transaction data it is possible to work out that 14.63% of Flowers R Us customers are of type "educated money". Furthermore, it is also possible to estimate the proportion of Flowers R Us "educated money" customers to those "educated money" types living in the same region. For example 14.63% of Flowers R Us customers are of type "educated money" and 11.53% "educated money" types live in the same region. The proportion is 126.89%.

The invention allows the production of detailed geographical density maps as shown in Figure 9. In the example shown, all the customers of merchant 16 have been identified. The computer 3 has geographical data about these customers, and this data may be presented as a density map. This map shows the areas of the country in which Flowers R Us customers live, and would provide a focus for regional or localised advertising.

This Sheet Has Been Replaced



Figure 10 shows a customer value graph produced with the invention. As shown in the graph, 17% of Flowers R Us customers represent 48% of the merchant's transactions. It is also possible to work out from this information the value of these 17% of customers based on the value of the transactions.

As shown in Figure 11, it is possible to provide Flowers R Us with the proportion of customers 12 it shares with other merchants. For example, 35.9% of Flowers R Us customers are also customers of Peter's Petrol Limited. The merchant 16 may consider joint advertising with Peter's Petrol Limited to reduce advertising expenditure, as the two merchants share a large customer base which would be reached by the advertising. It is also possible to provide Flowers R Us with the proportion of customers it shares with competitors.

A further report is illustrated in Figure 12, showing information of repeat purchases by customers. Of Flowers R Us customers, 34% have purchased goods or services once from Flowers R Us, 26% purchased twice, and so on. This information may also be combined with information about products and other information.

According to this invention, a method and system for compiling demographic data is provided. The method used allows a financial institution, third party, or merchant to compile demographic data easily, allowing merchants to understand their existing customers better and attract prospective customers.

This Sheet Has Been Replaced

CLAIMS:

1. A computer implemented method for compiling demographic data comprising the steps of:

maintaining in a computer having a memory a database of demographic data about existing and/or prospective customers, and interactions between customers and merchants;

updating the database with data about new interactions between customers and merchants;

retrieving from the database demographic data about existing and/or prospective customers; and

generating a report on demographic data about existing and/or prospective customers.

2. A computer implemented method as claimed in claim 1 further comprising the step of maintaining in the database geographic locations of existing and/or prospective customers.

3. A computer implemented method as claimed in claim 1 or claim 2 wherein the interaction between a merchant and a customer comprises a commercial transaction and the interaction data further comprises a transaction value.

4. A computer implemented method as claimed in any one of claims 1 to 3 wherein the interaction data further comprises a product/service identification code.

5. A computer implemented method as claimed in any one of the preceding claims further comprising the step of maintaining in the database census data.

6. A computer implemented method as claimed in any one of the preceding claims wherein the interaction data further comprises temporal data, the method further comprising the step of retrieving the temporal data to identify and display changes in the demographic data.

7. A computer when operated by a method according to any one of claims 1 to 6.

8. A system for compiling demographic data, the system comprising:

* C L. M S *



a computer having a memory in which is stored a database of demographic data about existing and/or prospective customers, and interactions between customers and merchants;

means arranged to update the database with data about new interactions between customers and merchants;

means arranged to retrieve from the database demographic data about existing and/or prospective customers; and

report generating means for generating a report on demographic data about existing and/or prospective customers.

9. A system as claimed in claim 8 wherein the stored database further comprises geographic locations of existing and/or prospective customers.

10. A system as claimed in claim 8 or claim 9 wherein the interaction between a merchant and a customer comprises a commercial transaction and the interaction data further comprises a transaction value.

11. A system as claimed in claim 10 wherein the interaction data further comprises a product/service identification code.

12. A system as claimed in any one of claims 8 to 11 wherein the stored database includes census data.

13. A system as claimed in any one of claims 8 to 12 wherein the interaction data further comprises temporal data and the report generating means is arranged to identify and display changes in the demographic data.

This Sheet Has Been Replaced

