Building an Electronic Shopping Mall for Oysters

Masaru Nakagawa*,

e-mail; nakagawa@sys.wakayama-u.ac.jp

Akinori Nokami*, Hironobu Morikawa*, Takehiko Tanaka*

Abstract: In recent times, electronic commercial systems have been getting popular. "The Internet exposition in Japan" into which the government was putting the power, started in New Year's Eve in 2000. We are catching the wind of this boom, and propose an electronic shopping mall that sells local specialty to the whole country. This Internet goods sales system integrates the control information of sales dealers, and deals with the commercial transaction habit which is peculiar to oyster ordering.

Oysters are mainly traded for gifts, and as for oyster dealing, the customer's control and the decision of the selling price are peculiar. The customer who had dealings many times is treated as a good customer, who is granted the privilege of buying at less expensive prices. In our system, a decision on a formal style of pricing is entrusted to the communication from dealer and customer. On the other hand, a convenient electronic commercial transaction was realized by the database on the server, which classifies the customers into order persons, order data such as destinations, payment persons.

By using this system, the goods that are purchased are better and can be purchased at lower cost, while for the sales dealer, securing of the new customer who made use of the Internet and securing of the customer as a repeater become easy.

Keywords: electronic shopping mall, Oyster dealing, Database Design

1. Introduction

As the Internet has been popularized, the dealings using the Internet are progressing rapidly. Electronic commerce is one of the representative examples [1]. Though there are various forms of this electronic commerce, an electronic shopping mall targeting the dealings with a dealer and an individual consumer is made a topic in this paper.

Electronic commerce is expected to bring benefits to both customers and dealers; the customers can look up more than one kind of goods and buy them in bulk. On the other hand, it is easier for the dealers to gather their guests. Nevertheless, early electronic shopping malls did not make use of this advantage; it is merely an aggregate of electronic stores. Electronic shopping malls that made use of those characteristics have recently appeared by the introduction of the database. However, there are few electronic shopping malls that share information of commodities between the dealers. Therefore, there is hardly any competition between the dealers. From the viewpoint of the customers, when they search stores with some keywords, they see the wishing stores separately.

Based on these problems, we developed a new electronic commercial system that stimulates the competition between the dealers, by supplying several functions and interfaces to reduce the load of the customers and the dealers.

*Department of Computer and Communication Sciences, Faculty of System Engineering, Wakayama Univ., 930 Sakaedani, Wakayama 640-8510, JAPAN
2. Commercial Transaction of Oysters

2.1 Characteristics of Commercial Transaction of Oysters
In the commercial transaction of oysters, there are several characteristics different from other goods. Main characteristics are as follows. (1) Oysters are mainly traded for gifts. (2) Some customers are treated as good customers. (3) A sales period is concentrated on a short term in the year. We will give the details of these characteristics.

(1) Since oysters are handled for the gifts, an order person, a destination and a payment person are different in general. For example, a branch of an enterprise orders some for a gift, and the head office pays for it. In this case, three persons are actually different. When one order specifies more than one destination, the destinations are different.

(2) How to decide a good customer, though there are some differences among oyster dealers, must meet at least the following two conditions. First, he or she has ordered the goods sufficiently in the quality and in the quantity. Then, he or she is a trustworthy person. To the customer who becomes a good customer, a privilege like the discount of the selling price and the change of the settlement method to the lump-sum payment from the bank payment and the generation favor is given. This implies that prices are different for every customer. Hence a direct communication with the dealer and the customer is indispensable. Taking care of good customers leads to holding repeaters.

(3) The sales of oysters are concentrated in a few months of winter. In the time when there are most dealings, several hundred orders pour in one day. Since it is perishable, oysters cannot be kept long once unloaded. A dealer is mindful for the prediction of the order since the decision of the amount of unloading on one day is concerned with the profit directly. To raise sales in this season, in addition, the dealers take advertising activities such as sending of pamphlets and the offer of bargain sale information before the season. For an acquisition of new customers, these advertisement activities are directed to the destinations, too.

2.2 From Traditional System to Electronic Shopping Mall
A typical oyster sales system is shown in Figure 1. A dealer has a local database in which data such as goods, customers, orders (slips) and postage are managed. Actually a dealer owns one personal computer and a database management system to work on it. An order is accepted by calls or FAX. When an order appears, a dealer inputs the contents of an order to the local database with his or her hands.
Though such a database is excellent in totaling every customer's amount of dealings and the sales of every month and so on, it is easy to imagine that the effort to input the data is too much for the dealer.

That is why we attempt to build an "electronic shopping mall" which unifies more than one oyster dealer. Accepting an order from the Web page will reduce a dealer's input load. However, if the contents of all the local databases were integrated, then it would make troubles. It is obvious that the information of the customer, for example, should be stored only in the local database and each dealer wants the information not to be known by other dealers. The local database, furthermore, holds as well the stock information and the charge data of the home delivery dealer including the printing format of the home delivery slip, which are various in every dealer. For this reason, when developing the electronic shopping mall for oysters, we consider it important that the dealers use their local databases to manage their own information while the public data of the dealers are gathered and maintained in a new server.

At present, a charge settlement is done with the bank payment, month-end settlement, and so on. Though there are several sorts of electronic money proposed (for example in [2]), we consider that it is too early yet to adopt that when we think about its safety, the cost for a realization and the penetration into the consumer [3]. Hence our system uses telephone and FAX as well for the confirmation of the order.

3. Electronic Shopping Mall for Oysters

3.1 Overview
The outline of this system is shown in Figure 2. Existing independently of local databases, one database called the “network database” is installed.

Electronic shopping mall for Oysters (Server)

![Figure 2. Overview of the system](image)

The network database manages the goods data of dealers together with the customer data
and the order data that order persons input newly. Remark that once information of a customer (an order person, a destination or a payment person) is registered, it will be available for other orders in the future. The re-use of these input data contributes to the repeater's acquisition.

The retrieval of the goods information and the goods order are realized by the World Wide Web (abbreviated as Web). An order person refers to the Web page by a computer with the Internet connectivity and by a Web browser running in the computer. Of course, it must not be the case that the information of the customer is leaked out to the dealer who does not have dealings with the customer. By recording the relations between the dealer and the customer, a dealer never knows the information of the customers without dealing.

However, by referring to the Web page, each dealer can know other dealers’ prices and the evaluation by the order person, which is an effect on competition among the dealers.

3.2 Flow of Goods Purchase
A purchase process using our system is shown in Figure 3. Everyone can access freely to the oysters homepage on the Web and can refer to the goods and the prices (a). In other words, user registration is not necessary until fixing the goods to purchase.

User registration arises only when he or she tries to do an order using this system for the first time (b). When the order person inputs a name, an address, a telephone number, a password, and so on, a user ID is given. This information is recorded as customer information.
in the network database. The user ID, the password and the telephone number identify the order person. If the goods to purchase are decided, he or she moves to the order page in the Web after the login procedure. Then, this system displays the goods formation of the dealer's page on the Web. We developed the interface module using Oracle DBI (Data Base Interface) module and CGI (Common Gateway Interface) of Perl for the connection of the Web page and the network database.

Before specifying the goods, an order person inputs a payment person and a destination. We prepared three patterns for the input of this information. They are (1) New input, (2) input of User ID and the telephone number, (3) reuse of the inputted data. Using the method of (2) and (3), the customer can retrieve and reuse the data of a payment person and the destination, inputted in the order to other dealers.

When a reference button is pushed, JavaScript displays a name and address list in another window. Then, when the name is clicked on, a data such as a destination is pasted on the window of the order page. And, when the customer chooses goods and determines a quantity, a delivery hope's date, and a classification (the small gift, the year-end present), the order is finished. The customer who finished an order waits for the contact from the home delivery dealer. The customer can confirm how the order is dealt with by looking at the homepage on the Web. Because the Web page can be used to send a complaint to the dealer directly and the bulletin board as well on Web is prepared, a user can say his opinion and can see the opinion of other order people. The dealing is completed if a payment is finished and goods are received.

3.3 Network Database
In the network database (figure 3), many data such as a customer data, a goods data, an order data, a destination data and relationships between goods, dealers and customers are managed by using Relational DBMS (Data Base Management System). Main tables in this system and relationships between tables are shown in figure 4. In a customer table, information of an order person, a destination and a payment person are kept as the customer data without distinction. A destination order person relationship table and a slip number table are referring to a customer code (an order person code, a destination code and a payment person code) of a customer table.

When an order is completed on figure 3 (b), the data is written to the network database. When a customer inputs new destination data and payment person data, the data is written in a customer table using SQL (Structured Query Language) statement in Perl script. And then, the relationship between dealers and customers and the relationship between order persons and destinations are written in each relationship table, too (figure 4). A slip number is decided by the relationship of an order person, a payment person and a dealer. An order slip is made based on this slip number and the data of ordered goods are stored in the order table. At this moment, a price is a standard price shown on Web page. After that, contents of an order are sent to both of the order person and the destination by electric mail. An order person can confirm his dealing's conditions by using the slip number.

A dealer completes an authentication by the dealer number and the password. And, he downloads order data for his company to his local database (d). Then, the order data is translated to the CSV (Comma Separated Values) file format that is one of TEXT file format. Based on this data, He telephones to the order person and the destination to confirm contents of an order (e). Then, they decide a formal selling price, a way of settlement, a delivery day, and so on. At this moment, a formal deal is made. After the confirmation of the contents is taken, goods are sent to the destination and the local database is modified. Then, the network
4. Conclusions
We developed Electronic shopping mall system, which promotes competition between peoples in the same trade. Concretely, we realized the sharing of the information and the reduction of the input load for oyster dealers by creating a network database. From the viewpoint of customers, the goods that are purchased are better and can be purchased at lower cost.

In this system, after a customer orders oysters on Web, a final decision on a price is done by the telephone or FAX. If a decision on a price is done on the Web page, the period from the order to the delivery becomes shorter. Especially, we think it is useful for the dealings that a destination aligns with the order person. However, oyster dealing is mainly for gifts. Therefore, we must take consideration for next two points.

At first, because a destination is generally different from the order person, the technique of more powerful authentication is looked for, so a pretender, an order mistake, and so on may not happen. Though present on-line authentication technology is fully developed, its cost is too much. At last, because oyster dealing is mainly for gifts, so the needs, which is delivered soon after the order, are never high. For these reasons, we did not accept the price decision with on-line.

References