Development of a Customer Loyalty System

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Abstract

Due to rapid global economic growth, the competition within markets has increased, requiring organizations to acquire and sustain a competitive advantage in today's information-based on digital business environment. Organizations must take more creative steps in their use of information technology to make their business more attractive to customers rather than their competitors. Loyalty programs are a prime example of keeping a competitive edge in today’s market. The success of these programs rely on keeping track of the activities and accounts of many, perhaps even millions of customers, which would not be without a customer loyalty system. Thus, this paper introduces the development of a customer loyalty system which can compute, generate, and provide reports to the business stakeholders concerning their work, customers, and their market share (growth). Managers can then easily learn how to use this system and integrate it within their other business applications.

Keywords: Customer loyalty, Short Message Service (SMS), American Customer Satisfaction Index (ACSI), Web Customer Satisfaction Index (WCSI), Customer to business (C2B).

Introduction

Loyalty programs play a major role in business growth by retaining the present customers and attracting potential ones. In order to achieve these roles, organizations should have a powerful customer loyalty system which gathers valuable information concerning customers' purchasing frequency, purchasing interests and their spending practices. Customer information will be analyzed by the customer loyalty system and utilized to create useful promotion and reward plans.

Much has been written about loyalty program implementation and ideas. Cheung & Lee in [1] have empirically tested the asymmetric and nonlinear information system user satisfaction model in the context of Internet-based portals, with a purpose to examine the asymmetric and nonlinear nature of links involved in satisfaction judgment. The information quality of the content of the Internet-based portal is the most important and relevant variable to determine user satisfaction. Information quality has been defined as the extent to which users think that information is appropriate, up-to-date, accurate, and complete. The findings of their study have shown that there exists a positive-negative asymmetry in the user satisfaction model. The negative perceived performance of the

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information-quality attribute has a greater impact than the positive perceived performance (except in the case of the completeness-of-information quality where there was some support for diminishing returns in the domain of negative perceived performance of information-quality attributes, but not in the domain of positive perceived performance).

Lilly, *et al.* in [2] has empirically examined the effects of using customer terminology on loyalty behaviors. A total of 273 subjects participated in the experimental study. The findings underlined the importance of providing excellent service. However, using customer terminology did not significantly affect loyalty. Thus, organizations that have only adopted customer terminology as a relationship marketing instrument probably won’t be realizing their expected gains.

Tian & Zhang in [3] have proposed an iterative model which is based on the traditional American Customer Satisfaction Index (ACSI). First, they discussed the foundation of building the model called Web Customer Satisfaction Index (WCSI) where four aspects of social relation, psychology, behavior and the ACSI working fields were defined. Then, the model methodology was discussed which is used to collect data from users’ records, like average clicking rate, and figuring out the score of service quality by using the factor analysis method. They discovered that the index system based on customer behavior of WCSI model is more applicable than the survey based ACSI to a network environment.

Xue & Liang in [4] studied factors which influence customer loyalty within the telecommunication industry to investigate the formation mechanism and development and control of Customer Loyalty by applying the data mining. They discovered that there is neither a single behavior loyalty, nor a single attitude loyalty. From the view of consumer behavior, before purchasing, while purchasing, and after purchasing, consumer’s rational judgments are all permeated.

Li and Jiang in [5] have produced a detailed evaluation of indicators which includes customer confidence, enterprise visualization, customer value, communication apparatus, and customer satisfaction. They have evaluated the relational factors that affect customer loyalty and set up the proportion distribution of these factors. Based on their analysis, they put forward marketing strategies founded on product and customer divergence.

Bolton et al in [6] has investigated the conditions under which a loyalty reward program will have a positive effect on customer evaluations, behavior, and repeat purchase intentions. The findings of the study showed that members of a loyalty reward program overlook or discount negative evaluations of the company vis-à-vis competition. The authors concluded that members of the loyalty rewards program probably perceive that they are getting better quality and service for their price (a good value).

Huang et al in [7] has empirically investigated whether loyalty programs indeed build customer loyalty or just merely create habitual repeated patronage in the casino industry. The study has found that monetary rewards, special treatment rewards, and employee interaction rewards significantly and positively influenced customer
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satisfaction with loyalty programs. However, timing of the rewards had a minimal impact on customer satisfaction with the loyalty programs. The results of this study indicated that customer satisfaction with loyalty programs has no effect on customer loyalty. Casino managers then should note that using only loyalty programs is not sufficient enough to create customer loyalty. The results of this study has had some similarities with the results of Hennig et al [8] like social and confidence benefits leading to customer loyalty. Instead of spending money to give away free hotel room stays, or free meals, casino managers might consider providing intangible rewards to customers to enhance their satisfaction and loyalty.

Wolfinbarger and Gilly in [9] have found that offering goal-oriented online customers with what they want, when they want it, and answering inquiries with no delay creates loyalty, even if these customers are not interested in being entertained while shopping online.

This paper introduces the development of customer loyalty systems. These systems are simple, flexible, and user friendly. The developed systems enable organizations to update their promotion and reward strategies based on actual feedback data from customers.

As a methodology for this study, we developed loyalty software that focused on delivering promotions to customers’ mobile phones using SMS services. The developed system addresses the common Customer Relationships Management (CRM Systems) principles.

The organization of this paper is divided into sections. Section 2 introduces the development of a customer loyalty system, which includes system components, description, functional and non-functional requirements, design of the model, model use cases and the description to basic screens are covered. Section 3 covers the testing and the evaluation of the model. In section 4 the model improvements are covered and the conclusion is drawn in section 5.

Customer Loyalty Model Development

This paper presents the development and implementation of a customized loyalty system focusing on delivering promotions to customers’ mobile phones using SMS services that allow the company to communicate with customers individually and effectively to reduce the marketing costs of these promotions.

The developed model requires the examination of four major stages. These stages are shown in Figure 1. As shown in Figure 1, there is an imperative need for a loyalty system which represents the first stage in our model. The second stage is identifying the services that will be offered to the customer. By skipping many details and jumping to the implementation stage, the customer feedback and expectations are collected and placed for further processing which represents the third stage. The fourth stage is associated with the decisions that should be made about the improvements and the evolitional recommendations which will be fed back to the first stage and thus the cycle continues.
The Developed loyalty system requires the firm to set the following components which are shown in Figure 2. The firm should first setup its objectives. Among other factors, customer satisfaction plays a major role. There are many factors that have high impact on customer satisfaction including quality, after sales service, promotions, gifts and rewards, advertisements, competitive prices and others. This study addresses mainly two issues namely promotion and gifts and rewards. Customer satisfaction has a direct and positive impact on customer loyalty.

This study examines three loyalty components: granting points, on the amount of purchasing, granting rewards based on the accumulated points and promotion via different communication channels.

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Fig. 1: Block diagram for the customer loyalty system stages.

Fig. 2: Block diagram for the proposed Loyalty Model.
The Loyalty System Components

The proposed loyalty system mainly addresses the communication channels and offered services, namely, the point’s calculation method, the reward policy and the promotion policy.

Communication channels and their offered services cover three "customer to business" (C2B) channels: direct access to store, web site access and SMS messages. The services cover direct access to store include: (1) purchasing, (2) points query, (3) rewards query, (4) promotion available and (5) rewards selection. From the web site services, the customer can make query about: the accumulated points, the deserved rewards and the available promotions. The SMS services can be used for informing customers about his or her granted points for each purchase and any available promotions.

Regarding the points calculation methods, each currency unit for a specific product (such as JD and USD) has a set of points that should be clearly conveyed to customer. Those points are normally set by the manager.

With respect to the rewards granting policy, the model addresses a fixed rewarding policy, and from time to time, the manager can make changes on the offered rewards. These rewards are limited to specific products.

In the promotion policy, the model does not have a clear promotion policy. The manager decides the time and the product to be promoted.

The System Description

Many business corporations focus their efforts on increasing revenues by reducing their costs and increasing the quality of service provided to the customers. As this process continues over a long time, new problems and challenges arise, like how to keep the present customers, increase their purchases and maintain a list of their actual needs and interests. In addition, how to invest efforts in order to attract new ones.

The researchers started to gather information about hardware retail stores problems and needs. In studying one of these stores, they found that one store has over 10,000 customers to serve monthly. However, when it come to gathering valuable purchase information such as purchasing frequency, interests, spending, …etc, and analyzing of this information to make targeted promotions and rewards, there was no actual efficient system the managers to benefit from in order to increase the customers average buying and to gain their loyalty while increasing their satisfaction.

As a methodology for this study, we implemented customized loyalty software that focused on delivering promotions to customers’ mobile phones using SMS services. This in turn, allows the store to communicate with customers individually, effectively, and conveniently to reduce the marketing costs of these promotions.

The system will provide lists of products and their prices, categories, other details, and a table of points for each product/category. The administrator can then enter the desired number of points to each JD, along with a list of customers containing their purchases and points. Depending on the customer points, the system will generate a gift
or promotion and send a report about this to the customer via SMS service or Email. The website will be updated for future promotions. The system will also provide useful reports such as the best customer, the best buyer, the best purchasing customer, average sales per month, and the best and worst sales category.

**Functional and Non-functional Requirements**

To give a better picture about the proposed model, it is worth introducing both the functional and non-functional requirements.

**Functional Requirements**

The stakeholders of this system comprise the administrator, the cashier, and the customer. The following list shows the major functions that the system must allow the administrator to perform:

1. Authorization to set an account for him/herself with all privileges and another one for the cashier to access the system.
2. The ability to delete customers’ accounts.
3. The ability to view/edit customer account information.
4. The ability to set the points per currency unit (JD...etc) ratio.
5. The ability to send to customers customizable SMS batches with promotions gifts and/or special offers.
6. The ability to report to the management the average sales for month, the best and the worst seller.
7. The ability to filter customers upon date of birth, average buying, and location.
8. The ability to filter the least 100 purchasing customers per month, and be able to send promotions to them.
9. The ability to view the gifts due to customers’ points.
10. The ability to provide an easy way to manage products, add (initiate) products sale, add gifts, and map gifts to points.

The following list shows the major functions that the system must allow the cashier to perform:

1. The ability to add new customer accounts.
2. The ability to add a new customer at the store including the customer’s full name and mobile number.
3. The ability to save receipt information to the customer’s data immediately at any point of sale.
4. The ability to send new customers SMS(s) with their usernames and generate passwords for them.
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The following list shows the major functions that the system must allow the customer to perform:

1. Through the web site the system must provide a registration form for the new customers to enroll in the program, add their desired usernames and passwords and their mobile numbers, address, and age (through birth date).
2. The ability to login to their accounts and view/update their information, view their points, receipts, gifts, and promotions.
3. The ability to provide to customers an easy way to order their earned gifts online (redeem points).
4. The ability to change a customer’s password through the website.
5. The ability to obtain help using the website map.

Non-Functional Requirements

The most important non-functional requirements considered in this study are as follows:

1. The system should be easy to use with clearly titled buttons and menus.
2. The interface should be clear enough to show the tasks that can be performed.
3. The system should have a user-friendly design.
4. The system must have the ability to securely backup all data and messages.
5. The system must provide an easy way to manage data.

The Model Design

The block diagram shown in Figure 3 describes the major logical subsystems components of the proposed model.

![Proposed Model Logical Subsystems](image)

The proposed model comprises a set of logical subsystems. Messages are sent to customers mobiles through the SMS gateway. As described above, the administrator has full control over the system in terms of managing customers, setting point’s ratio,
describing the reports required, and dealing with employees’ accounts. The cashier enters the customer’s merchandise into the system. In the Point calc, the process of calculating customers’ points on products is performed and based on this the database is then updated. Managing employees’ accounts and privileges occurs in the Security and accounts component. In Ordering, the cashier enters a customer’s specific order of products and gifts. In the Manage component, the administrator manages the various subsystems like customers, cashiers, points…etc. The customer can order gifts, manage his/her account information and view his/her points through the Website. As a final component, Reporting is used to generate certain reports that the system provides such as sales reports and the best customer.

Use Cases

Description of the proposed model use cases is presented in this section. Figure 4 – (a) shows the administrator use case and Figure 4 – (b) shows the related sequence diagrams. The administrator is the person who is responsible for the system control panel, where he/she controls the system, generates reports, and manages accounts. The administrator can generate reports related to points and other issues such as the best buyer, the average sales, and the overseeing of cashier’s actions by reporting cashier sales, and analyze these reports in a strategic way in order to achieve a company’s goal. Also, the administrator can manage the customers’ accounts, cashiers’ accounts (add new cashier, edit cashier’s password …etc), and also enter the data that is required for the operations of the system.
Figure 5 shows the cashier use case diagram. The cashier is the person who is in charge of ordering products and gifts. The cashier, through customized screens, enters customer information and adds this to the database; the entry screen contains an input-box to enter a customer’s phone number in order to send the customer an SMS with his/her user name and initial password. This password can be modified later by the customer. The cashier can add purchases for customer and start the ordering process by selecting the customer’s name.

Fig. 5. Cashier Use Case Diagram.
In Figure 6, customer user case diagram is shown. The customer is the person who buys products. After logging into his/her account on the company’s website, the customer can check his/her point balance, view current offers, and select from available gifts. The customer can enter his/her address on the website to receive the gifts through the delivery service of the company. The customer also has the ability to login to the website, edit his/her personal account information through the edit screen option, and update his/her phone number, name, birthday, and address which will then reflect these changes on the database.

**Fig. 6:** Customer Use Case Diagram.

### Description of Basic Screens

Screen shots for basic screens will be presented in this section. Figure 7 shows the two main buttons that will be displayed when the system starts. Figure 8 shows the login screen for both the cashier and the administrator. They can login to the system by entering a valid username and a valid password or they can cancel and exit the program.

**Fig. 7:** Main Buttons – Startup Screen.

**Fig. 8:** Cashier Login Screen.

Other screens are available to help the cashier enter a customer’s order; the cashier can view existing customers or can add newer ones.
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During the purchasing process, the system computes automatically the points deserved (product points) for the customer on each product and accumulates them to the total (points total) of each purchase. Figure 9 illustrates this process.

Figure 10 shows how the cashier can add a new customer by filling the customer’s first name, last name, and mobile number. The ID number of the customer is automatically added. By clicking on the save button, the information is committed to the database. By clicking on the Sms button, an SMS is sent to the customer with his/her information, and by clicking on the Next button enables the cashier to view other customers on the screen.

The administrator controls all processes in the system, such as generating reports, viewing gifts, adding points, and managing SMS. The administrator tasks include: managing cashiers, sending SMS(s), managing customers, and managing gifts and
products. The reports include: Best 10 customers, lowest purchasing customer, sales report, and cashier sales.

Figure 11 shows how the administrator can send an SMS batch to all customers by filling the SMS text, and adding the customers who are entitled to receive the message.

As shown in the figure 11, the message can customized by adding dear customer at the beginning and/or adding the amount of the accumulated points at the end.

The administrator can manage the points for the products in the system by assigning points to each product category, and the discount needed on each point (see Figure 12). The administrator can manage all customers stored in the database system by adding, editing, viewing and deleting. In order to analyze the customer in the system efficiently, the administrator can filter the customers based on their points, age, and joining date. Also, the administrator can manage all the cashiers available in the store, by viewing, adding, editing, and deleting.
The Model Testing and Evaluation

To gather feedback on the proposed model, 115 different customers were asked about their perception of loyalty. For this purpose, a questionnaire with 17 questions was distributed to customers to fill (see Table 1).

In order to analyze the answers of customers by using purchasing frequencies, we transferred the collected data from the 115 customers into spreadsheet software. The accumulative summary to their answers was summarized in Table 2. As shown in Table 2, the questions were grouped into three categories: the points’ calculation methods, rewards grants policy and promotion policy. In order to make it easy for the customers to answer the questionnaire, we made the list of questions in the questionnaire short and concentrated on 17 questions in one page.

Table 1: Loyalty Questionnaire.

<table>
<thead>
<tr>
<th>Category</th>
<th>Question</th>
<th>Your Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Points' calculation method</td>
<td>1. The points’ calculation method is really a good one.</td>
<td>4  3  2  1  0</td>
</tr>
<tr>
<td></td>
<td>2. The firm should offer increasing the points gained when the spent amount increases</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. The firm should replace points with discounts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. The expiry time limit on the accumulated points is a good policy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. The firm should have no expiry time limit on the accumulated points</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Putting a time limit on the points usage forces me to replace my points with any reward regardless of my needs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Putting a time limit on the points usage results sometimes in loosing points due to forgetting the deadline</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Putting a time limit on the points usage decreases my loyalty</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. The points granted to the frequent customers are enough</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. The firm should grant me extra points for being a frequent customer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11. The firm should distinguish the frequent customer from the infrequent one</td>
<td></td>
</tr>
<tr>
<td>Reward granting policy</td>
<td>12. The rewards granting policy is good/or excellent one</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13. The firm should offer the customer a set of rewards to select from and not always a fixed list or replace rewards with cash or discounts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14. The firm should offer the customer with a high number of accumulated points with more reward sets to select from</td>
<td></td>
</tr>
<tr>
<td>Promotion Policy</td>
<td>15. The promotion policy is really a good one</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16. The firm should offer the frequent customer more promotion offers than the occasional customer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17. The promotions offered for loyal customer should satisfy their needs</td>
<td></td>
</tr>
</tbody>
</table>

Extra comments:
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The mean ($\mu$) for all answered questions is 2 and it is calculated by adding the weight on the five answers and dividing the result by 5; i.e. $(4+3+2+1+0)/5$.

The value of $\mu$ is used to determine the level of customers’ satisfaction:
- If $\mu > 2$, the customers are satisfied;
- If $\mu < 2$, the customers are not satisfied, and
- If $\mu = 2$, the customers have an indifferent opinion.

When collecting feedback from the firm that implemented the proposed model and as shown in Table 2, the researchers found that the customers are not satisfied ($\mu < 2$) with the point’s calculation methods (questions 1, 4, and 9), rewards grants policy (question 12) and promotion policy (question 15) categories.

1. The points calculations methods is not a good one ($\mu=1.50$ for question 1) because they were expecting to apply rules related to spent amount ranges (question 2); i.e. when the spent amount increases, the point gained should increase as well in order to retain more customer loyalty. Also, customers were expecting to replace accumulated points with discounts on the merchandise they wanted (question 3); not the offered one.

2. The time limit on points is not good ($\mu=1.67$ for question 4). There should be no time limit on points (question 5). As long as companies put limits on the point’s usage, this will reduce loyalty (questions 8) because it adds a pressure on customers to either use their points with any offered reward (question 6) that might not be useful at that time or causes the loss of points due to forgetting the deadlines (question 7).

Table 2: Accumulative summary to customers answers.

<table>
<thead>
<tr>
<th>Category</th>
<th>Question</th>
<th>Scale</th>
<th>Average</th>
<th>$\mu$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 3 2 1 0</td>
<td></td>
</tr>
<tr>
<td>Points’ calculation method</td>
<td>1. The points’ calculation method is really a good one</td>
<td>10 13 8 55 29</td>
<td></td>
<td>1.50</td>
</tr>
<tr>
<td></td>
<td>2. The firm should offer increasing the points gained when the spent amount increases</td>
<td>71 17 11 15 1</td>
<td></td>
<td>3.72</td>
</tr>
<tr>
<td></td>
<td>3. The firm should replace points with discounts</td>
<td>62 21 20 6 6</td>
<td></td>
<td>3.57</td>
</tr>
<tr>
<td></td>
<td>4. The expiry time limit on the accumulated points is a good policy</td>
<td>12 16 23 25 39</td>
<td></td>
<td>1.67</td>
</tr>
<tr>
<td></td>
<td>5. The firm should have no expiry time limit on the accumulated points</td>
<td>83 17 5 6 4</td>
<td></td>
<td>3.99</td>
</tr>
<tr>
<td></td>
<td>6. Putting a time limit on the points usage forces me to replace my points with any reward regardless of my needs</td>
<td>45 34 16 13 7</td>
<td></td>
<td>3.27</td>
</tr>
<tr>
<td></td>
<td>7. Putting a time limit on the points usage results sometimes in loosing points due to forgetting the deadline</td>
<td>51 39 11 9 5</td>
<td></td>
<td>3.52</td>
</tr>
<tr>
<td></td>
<td>8. Putting a time limit on the points usage decreases my loyalty</td>
<td>24 21 41 17 12</td>
<td></td>
<td>2.58</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Category</th>
<th>Question</th>
<th>Scale</th>
<th>Average μ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>μ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>4</strong>  <strong>3</strong>  <strong>2</strong>  <strong>1</strong>  <strong>0</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>9.</strong>  The points granted to the frequent customers are enough</td>
<td>13 18 24 22 38</td>
<td><strong>1.76</strong></td>
<td></td>
</tr>
<tr>
<td><strong>10.</strong>  The firm should grant me extra points for being a frequent customer</td>
<td>33 35 18 16 13</td>
<td><strong>2.89</strong></td>
<td></td>
</tr>
<tr>
<td><strong>11.</strong>  The firm should distinguish the frequent customer from the infrequent one</td>
<td>49 29 23 10 4</td>
<td><strong>3.39</strong></td>
<td></td>
</tr>
<tr>
<td><strong>12.</strong>  The rewards granting policy is good/or excellent one</td>
<td>9 14 31 29 32</td>
<td><strong>1.69</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>μ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>4</strong>  <strong>3</strong>  <strong>2</strong>  <strong>1</strong>  <strong>0</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>13.</strong>  The firm should offer the customer a set of rewards to select from and not always a fixed list or replace rewards with cash or discounts</td>
<td>27 28 22 23 15</td>
<td><strong>2.59</strong></td>
<td></td>
</tr>
<tr>
<td><strong>14.</strong>  The firm should offer the customer with a high number of accumulated points with more reward sets to select from</td>
<td>42 36 21 9 7</td>
<td><strong>3.27</strong></td>
<td></td>
</tr>
<tr>
<td><strong>15.</strong>  The promotion policy is really a good one</td>
<td>14 17 22 37 25</td>
<td><strong>1.88</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>μ</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>4</strong>  <strong>3</strong>  <strong>2</strong>  <strong>1</strong>  <strong>0</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>16.</strong>  The firm should offer the frequent customer more promotion offers than the occasional customer</td>
<td>29 33 20 19 14</td>
<td><strong>2.74</strong></td>
<td></td>
</tr>
<tr>
<td><strong>17.</strong>  The promotions offered for loyal customer should satisfy their needs</td>
<td>57 42 3 7 6</td>
<td><strong>3.67</strong></td>
<td></td>
</tr>
</tbody>
</table>

With respect to point’s calculation method category, the customers mainly indicated that:

3. The points granted to frequent customers are not enough ($\mu=1.76$ for question 9). The model has no extra points for frequent customers (question 10). Frequent customers have no advantage over the occasional shopper (question 11); both types of customers are treated the same way in terms of getting points.

With respect to rewards granting policy category, the customers indicated that they don’t like the rewards granting policy ($\mu=1.69$ for question 12); the company applies fixed rewards always (question 13); they do not give many choices to customers to select from (question 14).

With respect to promotion policy category, the customers indicated that the promotion policy is not a good one ($\mu=1.88$ for question 15). They have reservations about the promotions offered to them (question 16); these promotions are not enough for customer needs, and they were expecting more (question 17).

### Model Improvements

One way to increase customer’s loyalty is by adding extra points on a yearly basis. This process depends upon a set of factors including: (1) The recorded number of customer visits either directly through a purchasing process or via browsing the web site, and (2) the number of years the customer has had as a committed relationship with the firm.
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The points’ calculation policy should increase the points based on the spent amounts and offer the customer the chance to replace the points with discounts. To gain more loyalty from customers, the firm should have no expiry limit on the accumulated points; i.e. keeping points accumulated as long as they wish (points has no expiry date!). Also, the firm should distinguish between frequent customers and the occasional one in terms of points.

On the other hand, the rewards granting policy can be improved by allowing the customer to:

1- Freely choose between replacing points with cash or with gift(s), or getting a suitable discount. Suitable here means for both the firm and the customer as a compromise.
2- Freely choose any product as a gift depending on the accumulated points.
3- Map their points set as a set of gifts (Customizing their points and gifts).

The promotion policy can be improved by offering frequent customers more promotion chances than regular ones (customers). Also, the promotions offered to the loyal customers should be desirable to them.

The promotion policy can be also improved through:
1. Keeping statistical information about each customer independently to most frequently browsed products from the products’ catalog. The block diagram shown in Figure 13 illustrates this process.

2. Keeping statistical information about the highest average for all customer product hits on the web. The block diagram shown in Figure 14 illustrates this process.
Conclusion

The development and implementation of a customized customer loyalty system has been introduced. The developed model addresses the challenges facing this type of loyalty system represented by the necessity of handling and managing a huge amount of valuable information concerning customers purchasing in retail stores.

The developed system has solved those challenges by implementing an easy to use yet powerful Graphical User Interface (GUI) to be interfaced with the store database to manage the process of purchasing, point's calculations, getting gifts and sending offers to customers.

Since customer satisfaction has a direct and positive impact on customer loyalty, this study has found that the loyalty of frequent customers can be enhanced by adding extra points on a yearly basis, offers customers the chance of replacing the points with discounts, and allowing the customer to freely choose between replacing points with cash or gift(s).
كيفية تطوير نظام ولاء للمستهلك

ملخص

إن التطور الاقتصادي العالمي السريع زاد المنافسة في الأسواق وأدى هذا بدوره إلى الحاجة إلى تطوير أنظمة ولاء المستهلكين.

واحتاج هذا التنافس من المؤسسات تحقيق ميزة القدرة على التعامل مع البيانات ذات العلاقة بالمعلوماتية والأعمال الإلكترونية وكذلك المحافظة على هذه الميزة. على المؤسسات القيام بخطوات إبداعية في استخدام تقنية المعلومات من أجل جذب المزيد من العملاء للشراء من هذه المؤسسات دون غيرها. ومن أفضل الأمثلة في هذا المجال أنظمة ولاء المستهلكين التي تقدمها الكثير من المؤسسات. إن نجاح هذه البرامج يعتمد ويشكل أساسًا على الاحتفاظ بنشاط وحساب العملاء، ربما العلايين منهم، والذين لا يمكن تطبيقها عملياً دون بناء نظام ولاء للمستهلك.

لقد قدمت هذه الورقة طريقة بناء نظام ولاء المستهلك الذي يستطيع القائم على المؤسسة من خلاله حساب وإنشاء وطباعة التقارير عن أداء المؤسسة والعملاء، وعن مدى النمو الذي تحققه هذه المؤسسة. ويستطيع من خلال ذلك القائمين على المؤسسة من التعلم واستخدام النظام المطور ودمجه مع أنظمة أعمال أخرى.

References


Development of a Customer Loyalty System


