

DZ Table Tennis Venue's website integration

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Abstract. People pay more and more attention to health issues in recent years, everybody needs a health body. Table Tennis is a weatherproof sport and getting more popular in Taiwan, but at the same time, there are two problems in this issue. People need to go to venue to buy table tennis products themselves and phone call to venue to check whether have empty table or not. This project builds a website on Internet and can be used on both computers and mobile phones, with this website, table tennis players can reduce lots of waiting time, and then enhance players satisfaction.

Introduction

Nowadays, people pay more and more attention to health issues in recent years. So, play ball is very helpful to strong people's body. Table Tennis is a weatherproof sport and getting more popular in Taiwan, but there are two problems in this issue. First, table tennis' paddle, rubber and table is important to these table tennis players. In the past, many table tennis players who wants to buy some paddle, rubber and table need to go to table tennis venue to achieve what they want. It cost a lot of time to these table tennis players, and they don't know whether paddle's type, inventory, and price. Second, when table tennis players want to play table tennis, they are always need to call table tennis venue's clerk to ask whether this venue has empty table or not, or they go to the venue to check whether this venue has empty table or not.

In recent year, more and more people likes to do online shopping. Once they have a break, they can do shopping through mobile phone or computer. Successful e-commerce companies sell products while emphasizing their supply chain process efficiency. As the result, purchase paddle, rubber and table from venues and call table tennis venue's clerk to ask whether this venue has empty table or not cost a lot of time to these table tennis players. It became a fatal issue to table tennis venue. These problems may let table tennis players decrease their satisfaction.

Therefore, the aim of this project is to establish a venue website, which could let table tennis players browse paddle, rubber and table on this website. If table tennis players find their favorite paddle, rubber and table on this website. And they can order these paddle, rubber and table on website. These table tennis players also can reserve venue's table on this website. We can help table tennis players to avoid waiting time when they are reserved in advance, although the price might be cheaper than the price they buy on venue. Cause online shopping can reduce inventory in venue. For the table tennis players who buy paddle, rubber and table on the website, we not only help them to buy paddle, rubber and table in a cheaper price, but also offer them a new service, we offer a

reservation system to these table tennis players to be more convenient. And then improve these table tennis player satisfaction from low to high.

In Chapter 1, we discuss the table tennis health benefits and shopping trends. Chapter 2 illustrates the methodology and the framework of this study. Experimental analysis are discussed in Chapter 3. Conclusions and potential research issues for future study are given in Chapter 4.

1. Literature Review

1.1 Table Tennis Health Benefits

Table tennis is one of the world's most popular sports and pastimes. But it offers a lot more than just enjoyment, there are the obvious physical and fitness benefits, and numerous other health and wellbeing benefits you may not have considered. The well-known health benefits as shown in **Figure 1**. Like Cardiovascular, Improves fitness, Improves hand-eyes coordination, Gentle on joints and Stimulates concentration. Studies suggest that table tennis is extremely good for the brain, making it particularly useful for treatment of the elderly and cognitive diseases. Recent studies have suggested that table tennis could be beneficial in the treatment of brain diseases, including Parkinson's, Alzheimer's and other forms of dementia.

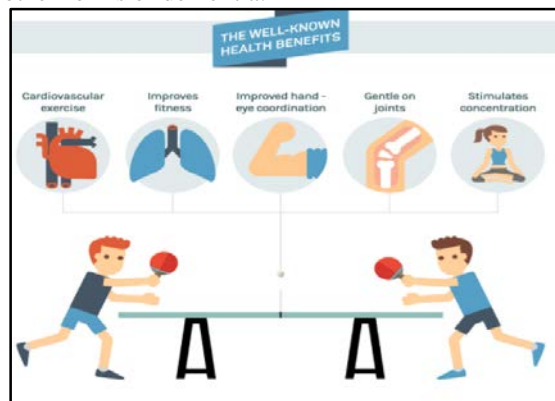


Figure 1. Table Tennis Health Benefits

Table tennis improves hand-eye coordination stimulating mental alertness, deep attention and strategy, it is more like fishing. It makes the young perfect sharpening reflexes and makes the older more refining tactful. It improves mental acuity as the speed, spin and placement of the ball is crucial in table tennis. Those who are skilled they are benefited by the three, speed, spin and ball placement, creating and solving puzzles that relate the three as well. It develops the reflexes for the fast-paced, short distant nature of the sport and for the movement of the gross and fine muscle. The game is unlikely by bursts of exertion and recovery which lead to fast-twitch muscle improvement. It helps to burn calories. If a person is 150 pound in weight and plays the table tennis with boots, his/her 272 calories will burn. And all that happens not by obligation but by entertainment. It is also good for bone joints. If you have any surgery on the knee, back problems, ankle pains, you can try it. It improves the strength in leg, arm, and core without overtaxing on your joint. It is helpful for the elderly people who have lost balance on their body. As it

needs much movement of the body keeping balance on, table tennis enhances the balance in one's movement mostly.

1.2 5 Shopping Trends Changing Retail

The end-to-end shopping experience is changing. Almost every step of the process, from the moment the idea for a product is conceived, until the moment it lands in the hands of a consumer will evolve in the next 10 years, and continue to do so.

Automatic & 'Smart' Replenishment

The early stages of this can already be seen with voice-ordering capabilities like Alexa and Amazon Dash, but Frank suggests that the evolution will be significantly deeper. Anything consumer purchase that is consumable and satisfies a specific need will be on auto-pilot. The consumer will be removed from the purchase decision for consumables like toilet paper, paper towels, undershirts or razor blades. These items will automatically replenish as the product itself recognize it's time to reorder.

Augmented Reality Experiences

Physical retail will be less about facilitating the pickup of a product and more about providing unique experiences. Frank shared an example where you imagine yourself as a customer walking into a Nordstrom and using augmented reality to try on clothing in a virtual representation of the wedding you're attending next week. Retailers will win by knowing their customers better than their competitors and providing differentiated experiences. The key, however, will be making the experience so immersive that the customer wants to come back, instead of just a 'cool', novel feature that is only tried once.

Next-Gen Supply Chains

Much of the future of retail will be invisible for the consumer but will be manifested in lower costs that are only possible with truly agile and fluid supply-chains. With automated replenishment of consumable goods retailers can more effectively leverage just-in-time inventory. When replenishment is managed by the items themselves, demand can easily be predicted, which reduces storage costs for the retailer and eliminates supply chain complexity.

AI-Infused, Algorithmic Assortment Planning

Frank asserted that the days of retailers carrying a curated assortment online are over. With drop-shipping, there is no physical limitation to the number of products a retailer can carry online. The challenge is only to select products that are consistent with the retailer's brand image. The most effective way to build out an assortment is through an AI-influenced algorithms that analyze the product assortments of competing retailers and relevant brands, and then compare those products to the demographic profile of a retailer's customers to select the products most likely to appeal to their customers.

Leveraging Marketplaces For Orders

The distinction between retailers and brands is going away. Frank shared that they already see brands partnering with other brands to sell each other's products and retailers building multi-billion dollar private label businesses. In the future, consumers will make purchases from one party and the fulfillment of those orders will be bid upon by other parties, including retailers and brands. Algorithms will optimize for lowest fulfillment cost and fastest delivery in real-time, which could result in one retailer taking an order that is fulfilled by another, potentially competing retailer, which is closer to the consumer.

1.3 Summary

There are plenty of reports and researches showing how table tennis important to the people, and 5 shopping trends to customers. With immersive shopping experiences already here and around the corner, it's an exciting time to be a modern customer. Businesses will need to heed the trends in order to deliver experiences that will soon become the 'convenience' standard. Although we all know customer satisfaction is a serious problem to maintain, so we aim of this project is to create a website platform and use it to increase the customer satisfaction that use the reservation system on website.

2. Modeling

2.1 As-is model:

We have two model in this project, one is “table tennis players who want to purchase paddle, rubber and table” flow, another is “table tennis players who want to reserve table to play table tennis” flow.

The As-Is model-1 is “table tennis players who want to purchase paddle, rubber and table” flow which are shown in **Fig.2**

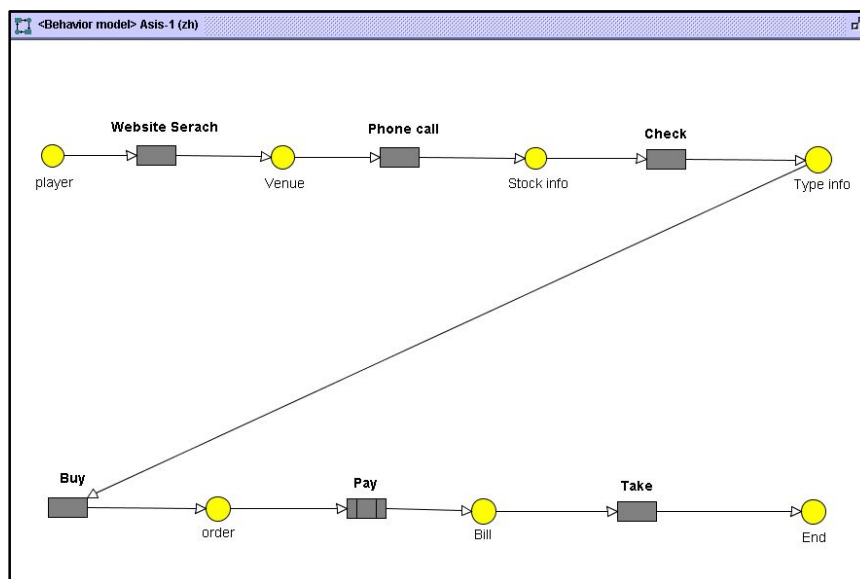


Fig.2 As-is model-1

In As-Is model-1, when table tennis players want to buy some paddle, rubber and table, they should search the venue on the Internet. First, they search the website, and get the product information. To find the table tennis products they want to purchase. Next, they contact to venue asking for whether the store have the table tennis products they want or not. And then table tennis players can go to the venue to check for the tennis products features (colors, type, quality...etc.), then they can purchase in the phone call directly.

After buying players can use two ways to pay, including cash and ATM. Finally, players should take the table tennis products themselves in the venue
 The pay activity drill down is shown in **Fig.3**

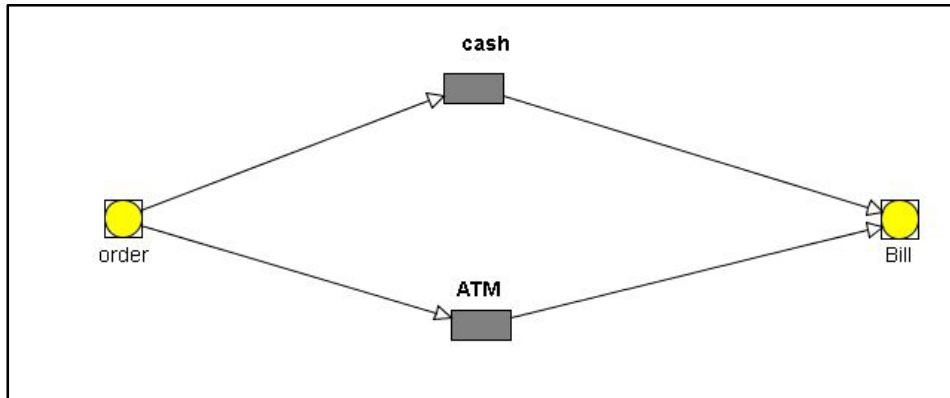


Fig.3 Drill down Pay process

Another As-is model-2 is players who want to exercise which shown in **Fig.4**

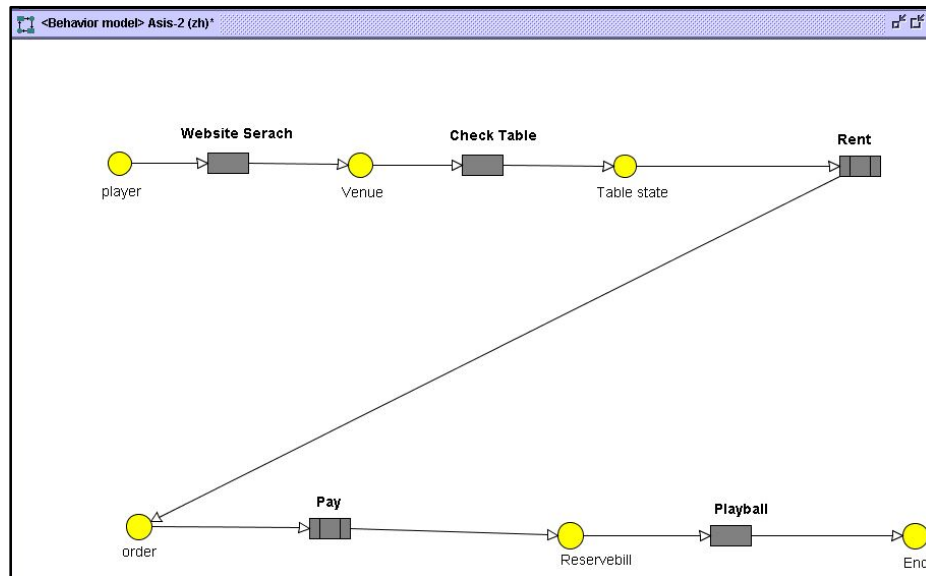


Fig.4 As-is model-2

When players want to exercise, they should search the venue on the website, then they don't know whether this venue have any empty table to exercise or not. So they need to go checking in the venue. If there have empty table, they can play the ball right away. On the contrary, they will wait for table until empty (shown in **Fig.5**). After players only can use cash to pay (shown in **Fig.6**). Finally, players should play the table tennis in the venue.

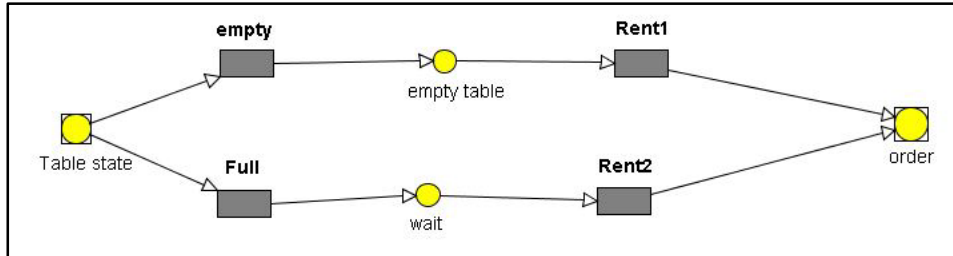


Fig.5 Drill down Rent process

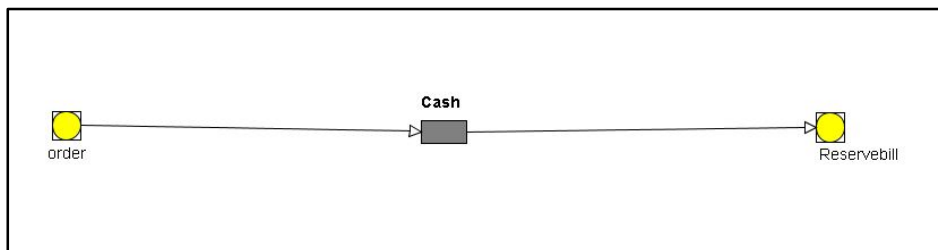


Fig.6 Drill down Pay process

2.2 To-Be model:

We build a website to solve the annoying waiting time. Table tennis players can purchase table tennis products and reserve the table on the Internet. we can see the **Fig.7** and **Fig.8** are shown the To-Be model-1 and To-Be model-2. The biggest difference between the As-Is model and To-Be model is **using the website to purchase the table tennis products and reserve the table**. We build a website to let players search for what they need, and also can check for the features online, we display all the details on the website, after that, players can purchase the table tennis products on the website immediately. Reduce times for going to the store checking the features. And players also can reserve table when they want to exercise with their friends. It can let players reduce lots of waiting time. This website provide more convenient to these table tennis players.

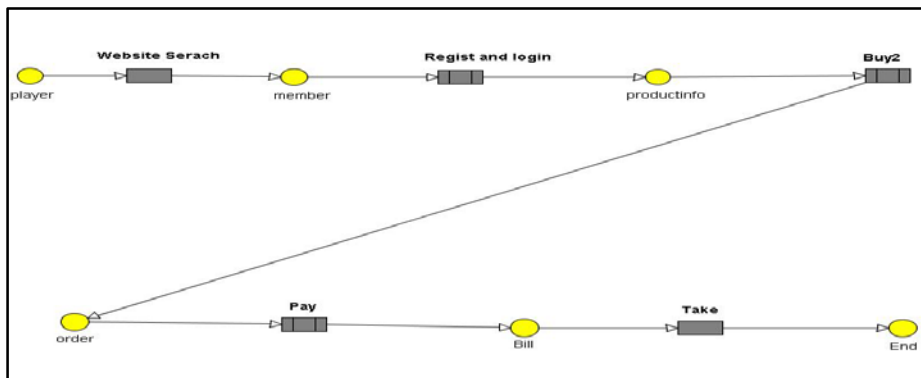


Fig.7 To-Be model-1

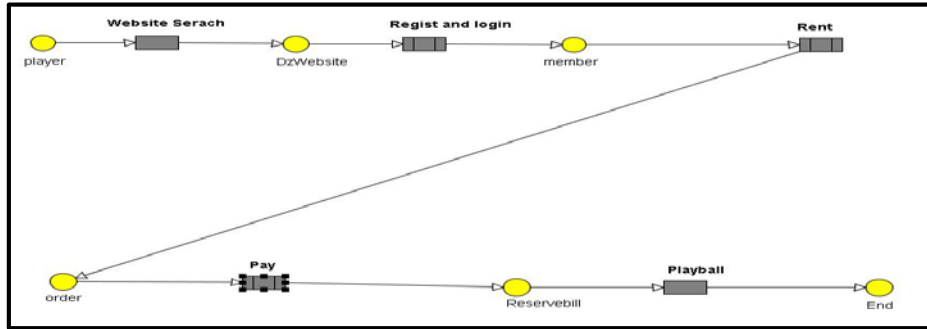


Fig.8 To-Be model-2

In To-Be model, Regist and login, Buy, Rent, Pay process have drilldown which are shown in **Fig.9**, **Fig.10**, **Fig.11** and **Fig.12**

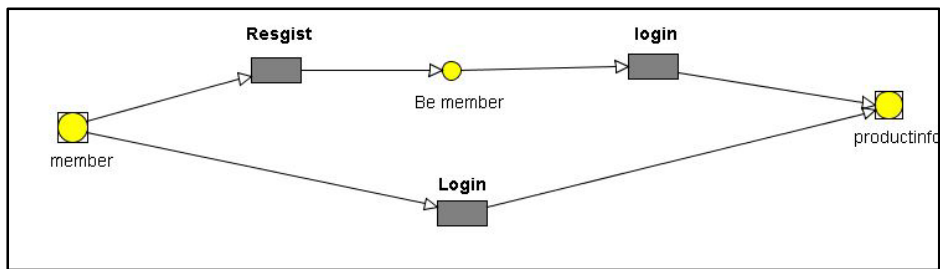


Fig.9 Drill down Regist and login process

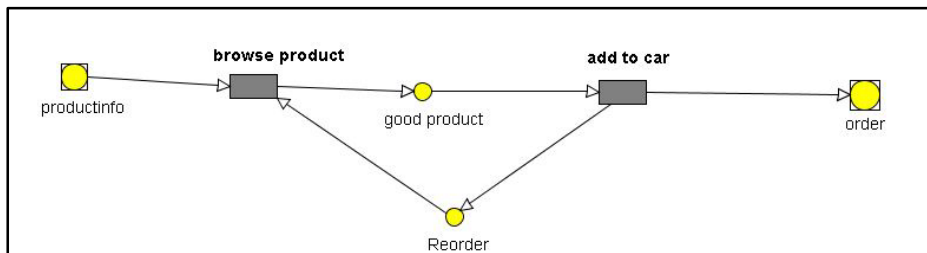


Fig.10 Drill down Buy process

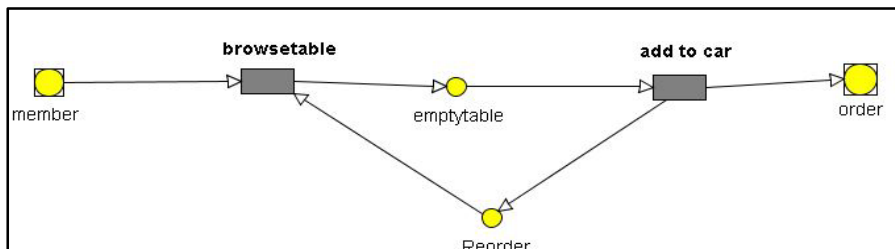


Fig.11 Drill down Rent process

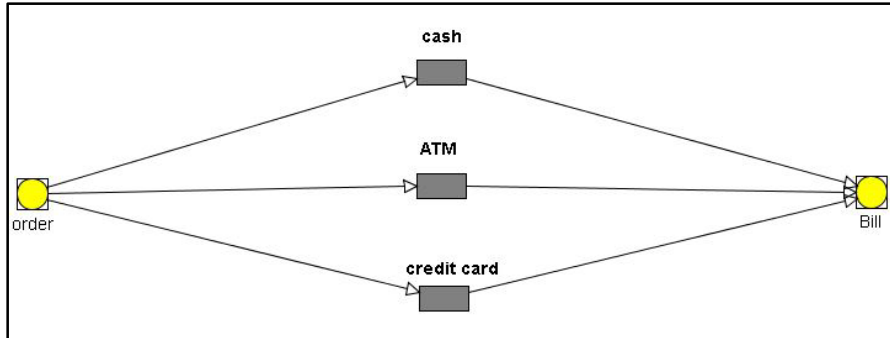


Fig.12 Drill down Pay process

3. Method

The aim of this paper is to establish a platform, which could let player shopping paddle, rubber and table on the website, and players also can reserve table on this system.

The methodology in this project is divided into two parts. Phase I establishes a database system, which can storage the user's account, manager information, product and table information, order and reserve order.

Phase II establishes the website by using html to create the website, CSS to let the outlook be more pleasant, PHP to let the website connect to the database and have many different functions.

3.1 Phase I: Create database

We choose to use MySQL to be the database system, and under the database, we create four tables(as **Figure 13.** show below) to storage the data we expect will come from the website.

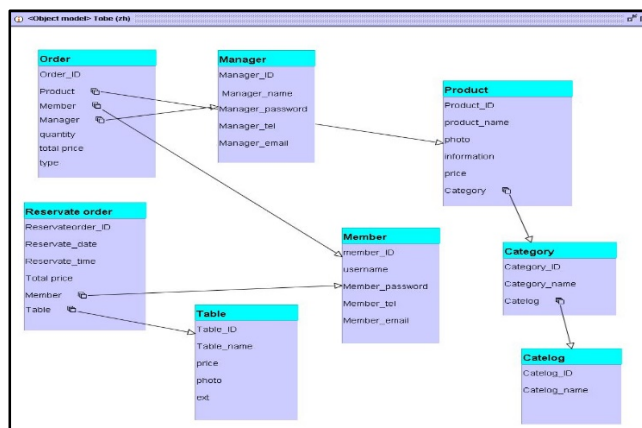


Figure 13. Data structure in the database

- **Member table:**

In this table we can storage user's data, including their username and password, which they can use these to login DZ website, their telephone number and email, which let manager can contact with table tennis players when there have some problems.

- **Manager table:**

In this table we can insert manager's information and DZ website can judge whether it is manager login or not. Their telephone number and email, which let table tennis players can contact with manager when there have some problems (like order, system...)

- **Product table:**

In this table we storage the products' information users have been post, including the product name, price, quantity, information for details, photo, category, who post the product and the condition, column "post" is reference from member_table, and "Category" is reference from Category_table and is used to storage where the product is, the column "con" is used to record that the product is already sold or not.

- **Table table:**

In this table we storage the tables' information users have been post, including the table name, price, photo, ext, the table could show on reserve system.

- **Order table:**

In this table we storage the information of the bill, including product, member, manager, quantity, total price, type. This table including bill information can let manager know what product table tennis players purchased. And these players also can browse their bill.

- **Reservate Order table:**

In this table we storage the information of the reserve bill, including reserve date, reserve time, member, total price, table. This table including reserve bill information can let manager know what table tennis players have reserved. And these players also can browse their reservation.

3.2. Phase II: Build a website

After create the database, we use html, css, php to create the website which can let managers post their products on. We create the website in a special way called "Responsive web design", in this way, when user open the website with a mobile phone on an APP, it can adjust the size by itself, let the surface be suit to the mobile phone, and we will show the website in the next chapter.

4. Website Demo

Fig.14 is the homepage of the website, and you can see the news, Coaches, Member area, Table reservation, Product catalog and Contact us in this page. and you can rolling down to get some more information about this website.



Fig.14 Website homepage

Players need to register member or login in our website before they want to buy some table tennis products and reserve table. Register page and login page are shown in **Fig.15** and **Fig.16**



Fig.15 Register page

Fig.16 login page

Manager also login in this page, when manager login in the page(**Fig.17**), then he can upload the products(**Fig.18**) or check the order or reservation order. (**Fig.19**)



Fig.17 manager page



Fig.18 manager upload page



Fig.19 manager check reservation page

When players became a member, they can choose what product they want to purchase on the catalog (Fig.20), they can see the product information(Fig.21) and add them to shopping car (Fig.22). If there haven't any problems, they can click order button. Then players success to buy what they want. (Fig.23)

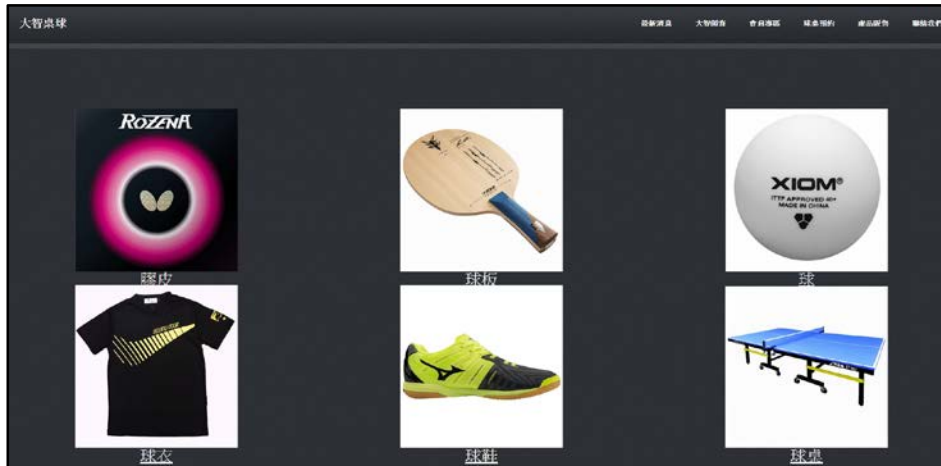



Fig.20 products catalog page



Fig.21 products information page



Fig.22 shopping car page



| 規格 | 產品名稱 | 數量 | 小計 |
|---------------------|-----------------------|----|--------|
| red | Butterfly ROZENA 羅納膠皮 | 1 | \$1500 |
| 總金額(已計算活動折扣) = 1350 | | | |

Fig.23 order page

If players want to reserve table, they can go to “reserve table” page. They can choose table, date, time, people what they want(Fig.24). If there are already reserved, the website will alert players “It has been reserved!” (Fig.25).

第一桌



預約日期 預約時段 人數

預約一小時/人：100 NTD

Fig.24 reserve table page

第一桌



預約日期 預約時段 人數

預約一小時/人：100 NTD

此時段已有人預約

Fig.25 reserve table alert page

Then players can print this bill and go to venue enjoy play table tennis. (Fig.26)



| 預約日期 | 預約時間 | 桌子 | 數量 | 小計 |
|--------------------|-------|-----|----|-------|
| 2018-01-11 | 14-15 | 第四桌 | 2 | \$200 |
| 2018-01-11 | 15-16 | 第四桌 | 2 | \$200 |
| 2018-01-11 | 16-17 | 第一桌 | 2 | \$200 |
| 總金額(已計算活動折扣) = 200 | | | | |

Fig.26 reserve table bill page

5. Conclusions

In this project, I analyze two process of player's situation. One is "table tennis players who want to purchase paddle, rubber and table" flow, another is "table tennis players who want to reserve table to play table tennis" flow. In order to enhance players satisfaction. First I construct as-is model and to-be model to overview the whole process. By using Income to construct the model, we can clearly see the global view of this process. For achieving solving this problem, I need to build a website to improve the process.

The website can reduce people lots of waiting time, no one like to wait, and People won't be worry about there is no table to play. They can make a reservation at any time if they confirm the time interval they want to play table tennis. This website creates more convenient environment and provides more efficient services for players and DZ venue. It could make the platform system more completed.

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