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**An investigation about data-mining and their applications in developing news & e-commerce website.**

## **ABSTRACT**

The research of technology, system design, and content summary of the Data-mining system is used to develop E-Commerce and Newspaper Online Website using ASP.NET MVC and other techniques.

## **ACKNOWLEDGMENTS**

To do this project, I have received help to implement, evaluate and develop from the facilitator, Mr. Doan Trung Tung.

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# **1 INTRODUCTION**

News and E-commerce websites are one of the most popular sites in the world, and people nowadays almost always need to read the news and buy products online to save time and money better. So that, we will design a system that is both a consumer news site for agricultural products and an online sales page. Design the website that includes news display tasks for users, information updates, images, text, and video for users to view, show products to users for they can buy them. In addition to presenting the data mining website can also suggest a product to the user by using the data that users have manipulated or act on the previous site to attract users to use the site better. The website is also a type of online newspaper to increase the interactivity of the system in the future that can reach readers the fastest, with the development of the online publication online has gradually replaced paper newspaper; it can also assist users to log in and purchase, record customer actions to assist in analyzing customer behavior. It brings many benefits such as cost savings, view various types of journals, quick information updates, easy to edit content, and can see the media, encourage users to consider products and buy products more quickly. So that, the website includes newspaper, and online sales is now a significant site and many people in the world use today. For website development I have used C#, ASP.NET MVC 5 for web development, this is a very stable web development language, with highly customizable security and mechanism and with a news site system containing many data so that using C#, ASP MVC for development is very consistent. By presenting and analyzing data for website managers, we need logic charts to display the data. The Kendo UI works very well and will be applied to perform the data analysis for the website. That is one of the very powerful frameworks that was released many years ago and is used by many developers to design the website interface. The site also uses HTML5 and Jquery; AJAX composes the display more attractive, interactive code system through AJAX software helps to develop more diverse to save time developing software. In addition to expanding the entire system, we also use Agile Scrum, which helps increase productivity in software production, minimizes risk and development errors, improves project control and shortens development time software. Here we also look at components such as research on technologies for back-end and front-end design, methods for quality assurance, software development, research and analysis of data-mining and current newspaper type.

## **2 LITERATURE REVIEW**

### **2.1 Overview**

A website is a website that helps users sell and buy a product online; It also includes providing users with news readings to help users get the most useful information. Web design technologies are now much work, and we are looking at technologies like C # MVC, Angular JS, MS-SQL, .NET core or Bootstrap and Data Mining to spawn a complete website and attract customers.

### **2.2 E-commerce and Traditional commerce**

E-commerce and Traditional commerce are an issue that every business or business person is interested in doing business or implementing projects. The implementation of software to serve E-commerce or Traditional commerce needs to be carefully reviewed and analyzed.

#### **2.2.1 Traditional commerce**

Traditional business is a business based on a local system used to sell or provide services or products to customers in a given geographic area. It is a place where customers need to visit a physical store to buy a product. Over the past ten years, a business often based on this method. Marketing and communication methods are also traditional and have few appearances on the internet, and we have drawn some problems study on traditional business as follows

#### **Disadvantage**

Poor scalability: Scalability and capacity to show products will be limited and heavily dependent on infrastructure.

Time does not allow: This depends too much on the environment of each locality because not always stores permitted to open and sell 24/24.

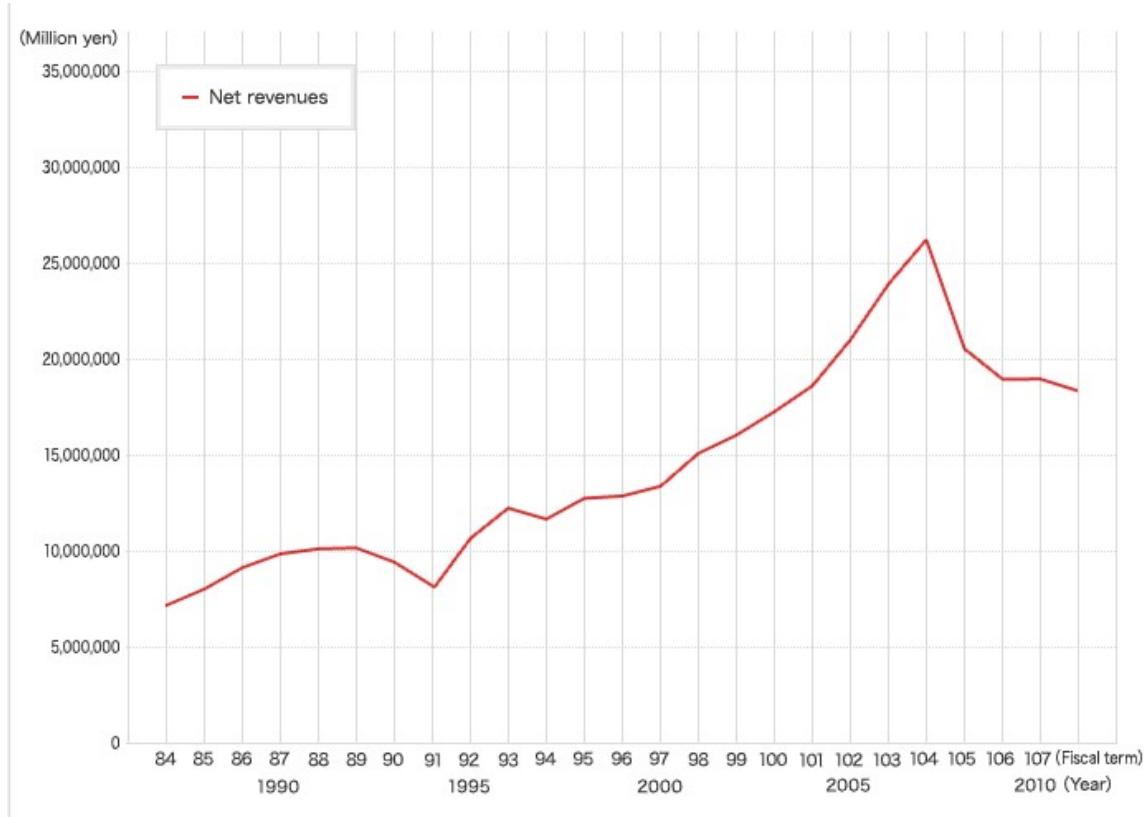
Limits of geographic location: The location of stores is limited to a specific location, and often need to centrally locate where many customers go so that they can easily shop.

High staffing costs: To manage the store business we need much staff and pay many salaries as sales staff, accountants, warehouse management, security, and so on.

High Cost of Infrastructure: In business through a store, the cost to manage and build is very high, we can also rent or buy office and lose vast amounts of money.

#### **Advantage**

In the past and to the present, the traditional business not through the internet is quite inconvenient. However, companies and some items still need to do business based on traditional business because of their specificity and price, such as housing or cars. Moreover, we try some companies like Toyota; they are hardly affected because their item is dependent on the traditional business.



**Figure 1 Toyota revenue. Source: Toyota Global**

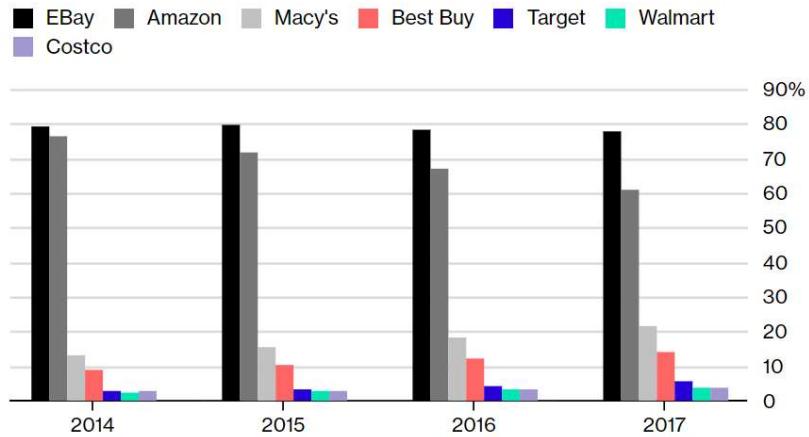
We can see their business chart from 1984 to 2010, and during this time the traditional business on all items remains the key and Toyota is still growing normally.

### 2.2.2 E-commerce

E-commerce is a form of business through a website that includes activities to buy or sell products through the internet, each site has one or more different items and marketing through the internet, processing orders and online transactions items. E-commerce has been formed and developed for many years to come to present has become a significant form of business through which companies or corporations can exchange goods, combined to produce and market to customers. By using the power of the internet, e-commerce has changed the way we do business. The convenience of easy access to customers through the web, intranets, and from which we have advanced web applications are used to address the needs of companies or customers. Despite the downturn in e-commerce in the late twentieth century, many companies and businesses have failed, but then it has been hit by the second wave of e-commerce globalization. Helping more accessible and more flexible market and models work better in using internet services to solve user problems, and today companies and organizations around the world are using e-commerce to adapt and meet their business needs more easily and quickly.

The first e-commerce site was released in 1971 by ARPANET (Markoff's, n.d.) this type of website provides information such as online news reader and online shopping from consumers or third parties.

Businesses through this site may also collect demographics through user login or purchase. Exchange data between companies or perform email marketing. Interact and launch or market new products and online actions related to online transactions. According to Bloomberg 2017, one of the world's most prestigious financial websites, leading online sites such as eBay, Amazon, Macy's, and revenue leader is always eBay for several years.



**Figure 2 Revenue of companies. Source: Bloomberg**

### E-commerce definition

There are many definitions around, and they explain e-commerce, but the following descriptions provide clear ideas: E-commerce defined as the business process of the company or business affiliated with other companies or organizations and the development of internal development processes using electronic links. E-business is the transformation of the central business processes through the using of internet technologies. E-commerce is not just about shopping for products online; they can be paid online by banks as well as forms of trading for businesses using the internet or intranet.

To reinforce the quality of e-commerce, we also need to have elements to recognize and follow as manage our products, transactions, and expenses through the using of Internet-related rules, perform refactoring in business processes into streamlined, and sequentially to ensure that businesses engage in the most efficient trading and trading via the internet. The use of information technology and the internet to create opportunities and favorable conditions for employees enables them to work flexibly, distribute and provide a working capacity effectively.

### E-commerce rebirth

The rebirth of e-commerce occurs when people use the internet more and are set up on many systems and businesses, and they learn and fix errors from the past. Stable growth and growth in the areas of activity leads to sales that lead to increased e-commerce. When we find out why the second wave of e-commerce is successful, we will look at the elements of the first e-commerce wave. The first wave of e-commerce was limited to US companies and businesses and not to the global. International organizations

and companies feel that the primary language of the internet will be English and that the consumer will use it to reach out to US businesses. Most companies and organizations use English as a business language, and they have created e-commerce websites in English and expect that consumers from other countries also use this language. However, the problem has occurred there; many users do not understand English did not participate in the purchase. Then they switched to advertising or email advertising, but later in the late 1990s, they realized that it was a big mistake and from then on they realized it was not profitable.

After the first wave of E-commerce failed, they got on the experience, and it was internationalized and broadened. Many companies and organizations have realized that the internet is a huge market and it can be globally present. Local organizations or businesses can produce websites in the local language and are semantically and contextually appropriate. Online businesses and organizations are set up in more numbers with their own. Trying and attempts made by creating the right business environment on the internet. Organizations are ready to be flexible on how to make a profit and react promptly to trends to lead to success. Then there was a significant development in internet technology that increased the number of people using computer networks, and almost all countries in the world were using the internet to create favorable conditions for E-commerce to succeed.

### **Advantages of electronic commerce**

E-commerce helps increase sales of brisk business, well-implemented advertising and it can appear in every country if conditions permit. An organization or company can reach customers scattered geographically and locally. E-commerce sites are incredibly useful in creating an online consumer community that regularly visits the store.

Organizations and companies reduce the cost of handling purchase requests, providing pricing, and validating product availability by using the useful-ness of e-commerce in the buying and selling process order.

It offers users a lot more choices and options to choose products than traditional commercial business forms; it offers users an easy way to purchase and customize the level of detail in the process to get a good deal.

Easily track and control costs and money and address vulnerabilities and cost-related risks that provide security for our business and personal income.

### **Disadvantages of electronic commerce**

Some organizations and businesses are not suitable for e-commerce, and these items are often perishable, expensive, or subject to pre-purchase checks.

Companies and organizations often have difficulty calculating the cost of investing in the system, the problem of recruiting technology engineers to design the system because the system design requires a professional development team and have a full process.

Integrating is difficult traditional database systems and e-commerce systems because e-commerce systems are often large and complex to analyze. Many organizations also have cultural or legal obstacles to conducting business and commercializing e-commerce.

### Solve challenges of e-commerce

This challenge is an integral part of all businesses when they do e-commerce business; they need to establish credibility with consumers, famous companies do it by knowing whom the consumer has created a system and user interaction with customer needs to attract more customers. We have the only way to do business effectively is to adapt to that culture, which includes religion and morality, and we need to meet that for consumers to be useful in e-commerce. Businesses have succeeded in addressing the challenges, and they are known to be a matter of credibility, customs, and language, which is still a significant challenge and a significant drawback for e-commerce. The internet infrastructure consists of hardware and software, so it also depends on the many economies and cultures of each country. So, from that, we can know which e-commerce target in any country.

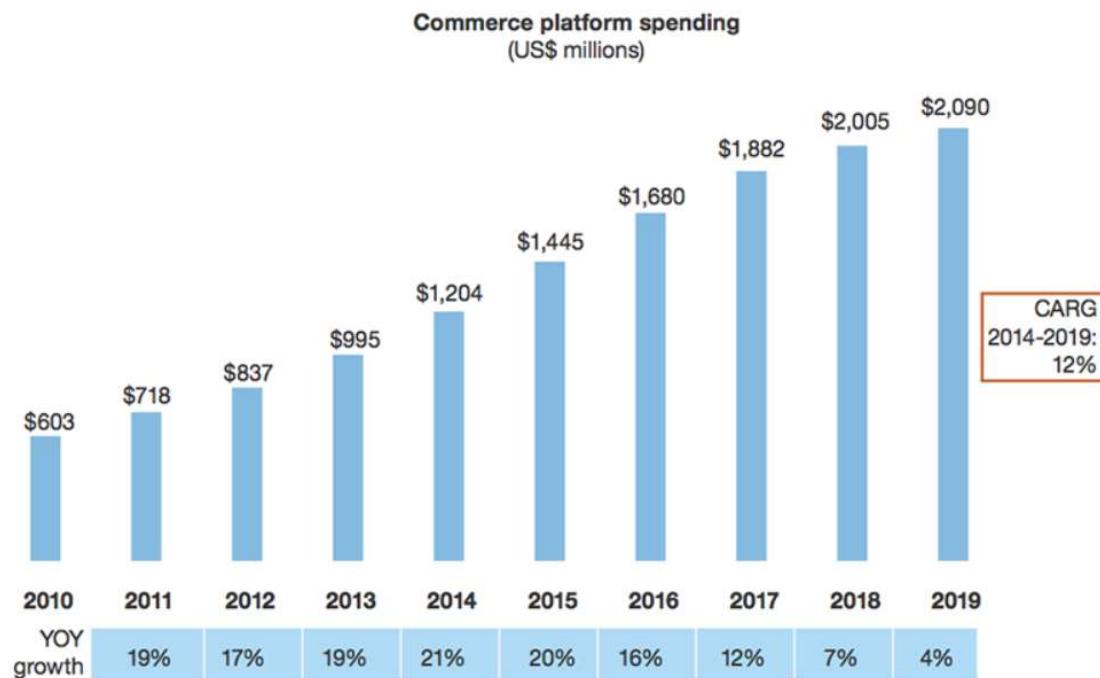


Figure 3 Research Commerce Platform Technology. Source: MarTech Today

Moreover, through the chart, we find that despite the many challenges, e-commerce continues to grow and they are spending much development in the US and not to mention in other countries also have commercial power. It is compelling, so we need to pay attention and develop them in the right direction, overcome the challenges to bring more success for e-commerce because it is a very potential market.

### Comparing between two commerce

Traditional trading enterprises widely defined as the exchange of products or service objects between at least two parties. These activities include all the processes that the two parties commit and what we usually see is the exchange of products. These activities are guaranteed, and most organizations do the same and commercialize them is called business. We can look through some processes such as money transfer, customer information, picking and placing orders, sending invoices to customers and finally delivery.

Moreover, we can see some products that are more suitable for sale with traditional business such as fragile or valuable items. The products that can trade over the internet are mostly soft downloadable products, and services such as tickets and travel services. Websites often also support flexible payments in a variety of ways, or in conjunction with banks to support payments, and below is a summary of the comparison between traditional e-commerce and business. That draws the business strategy between the two types of business.

Suitable for E-Commerce	Suitable for E-Commerce and Traditional Commerce	Suitable for Traditional Commerce
Document, book, story, travel ticket, movie tickets, software, music, movies.	Clothing, home appliances, electronics, computers, telephones, money transfer services, housing, vehicles.	Buy a product that must be previewed, purchased with great value, jewelry, and valuables.

## 2.3 Database Management System

The database, also known as background data which is a collection of data. DMS is a collection of schemas, tables, queries, reports, views, and other objects. The primary purpose of databases is to organize and set up large amounts of information by storing, collecting and managing them. Today, many sites around the world processed through databases such as Facebook, Amazon or eBay.

Database management system (**DBMS**), software or system designed to organize and set up a database. Specifically, all programs of this type provide the ability to store, repair, delete and search for information in the database. Almost all database management systems on the market have a common feature of using structured query language called Structured Query Language (SQL). The database management system that many people are known is MySQL, Oracle, SQL Server, PostgreSQL, MS Access, and so on.

**RDBMS** defined as the Relational Database Management System, which is the foundation for creating modern database management systems such as SQL, MS SQL Server, ORACLE. It is named because it based on the Relational Model introduced by E.F.Codd. Relational Database can know the most

commonly used database, rows represent it. It contains tables, and each table has its own Primary Key. Access to the database becomes easy as these tables are organized and linked together tightly.

### 2.3.1 MySQL

**MySQL** is an open source SQL Database. It supports many different platforms including Microsoft Windows, Linux, UNIX, and Mac OS X. Depending on the usage; we will use the free or paid version. MySQL has a very fast, multi-threaded SQL Server, which is very user-friendly and powerful.

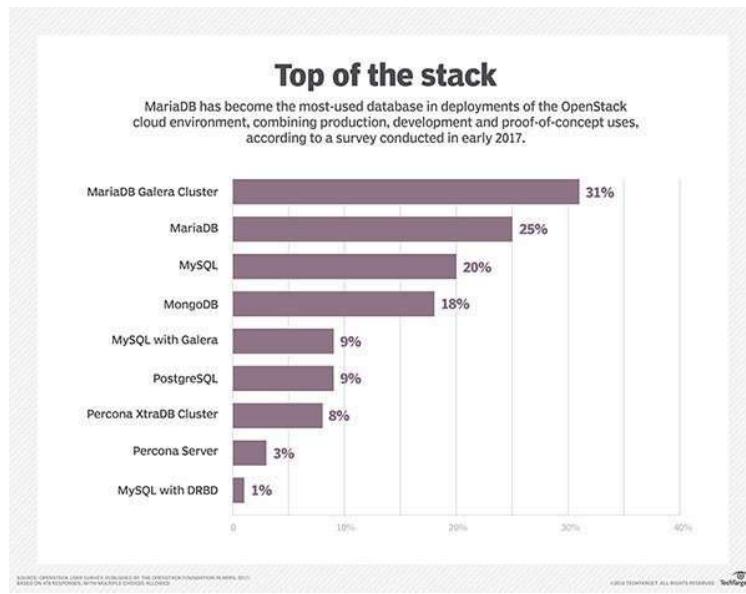


Figure 4 MySQL and Other DBMS. Source: cdn.ttgtmedia.com

Based on the above evaluation we can see in the free database system that MySQL and its variants will take up most of the market share of users by 2017. Since this is a free system, there are many people who prefer MySQL, which uses SQL to manipulate data, and most languages can handle MySQL, and most commonly PHP. Characteristics of MySQL are high performance, high availability, extensible and flexible, strong support for transactions, web hosting and data-intensive, high data protection, complete application development, easy management, 24/7 support and open source, lowest total cost of ownership.

#### Advantage

The benefit of MySQL is that its open source, easy to use, libraries are open to supporting, low development and maintenance costs, reusable and transparent, and high security.

#### Disadvantage

Increased memory usage is a hardship, not consistent with large projects with complex business logic, difficulty in debugging, and maintenance of stored procedures. The problem of validation of the system

is usually not good and only provides some functionality, so seeing what is going on in the database is difficult because the application called from the client.

The worries and difficulties in developing MySQL software are open sources and the solution is to monitor and monitor the system regularly. Use the software to monitor and maintain the system, removes errors and helps the system to operate more efficiently.

### 2.3.2 MS SQL Server

**MS SQL Server** is defined as a relational database management system developed by Microsoft. It is also a relational database management system. The software uses both the command line interface and the GUI interface. SQL language support (formerly SEQUEL - Structured Query Language) - which is IBM's product.

**Figure 5 SQL, MySQL, Microsoft Access trending. Source: Google trend**

By exploring user trends, one can see that MSSQL has searchable DBMS and they pass after reputable DBMS like MySQL. We can see some characteristic of MS SQL as high performance, high availability, monitoring Database, Database snapshot, CRL integration, service Broker, DDL trigger, rating function, level of isolation based on row version, XML integration, TRY...CATCH, Database Mail.

#### **Advantage**

Easy use, friendly eye interface, local supply network for the small application, provide multiple features for user use, provide the integration with the .NET framework Restore the data lost. MSSQL can execute a large number of access statements at the same time and still achieve high speed and efficiency; they also allow us to view the data quickly without having to store data.

### **Disadvantage**

Do not allow more than one local server installation, GUI for poor vulnerabilities of LocalDB and SQL Express, large database protection management and prevention of problems. The interface of MSSQL is quite challenging to use for beginners or simple commands.

MSSQL is used almost exclusively in enterprise application systems, financial applications, and personnel, and is an indispensable tool in data management in today's software engineering.

### **2.3.3 MS Access**

**MS Access** is also a Microsoft product; it is a database management software. MS Access Database is a robust database for small-scale projects at low cost. MS Access uses the Jet Database engine, which comes with the MS Office package and has an easy-to-use interface. By *figuring out five* comparisons of MS Access are currently not well-liked by MSSQL and MySQL. We can see some characteristic of MS Access: Users can initialize the query, form, and report tables and then connect them with macros. From there we can import and export data for different formats. It can share the whole application with others. It can also run in a disconnected environment. MS Access provides parametric queries from which, together with Access Table, can be referenced from other programs such as VB6 and .NET via DAO or ADO, Desktop Edition of MS SQL Server can connect to Access. It has not liked another RDBMS; it does not implement Database triggers, stored procedures, or transaction logs.

### **Advantage**

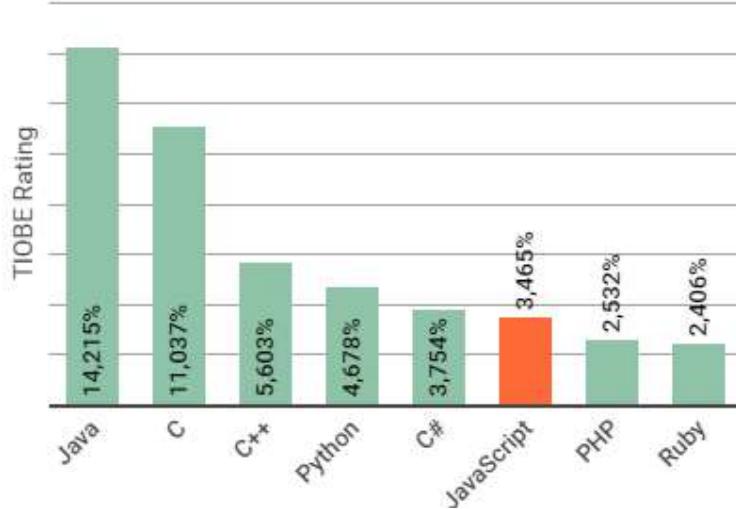
Provide structure for business processes, data validation by allows formatting rules for data entry, efficiency for the redundant data entry, data security is excellent, searching is easy by multiple criteria.

### **Disadvantage**

Lack of support corrupted make data unreliable, scalability make data get quickly overburdened, not suitable for inexperienced programmers

## **2.4 Back-end Technologies**

To design a website, the technology we use is so important that we need to research it thoroughly before using it because it affects the cost and time of the project. We will review some of the related technologies that can be used to design an e-commerce website and to select the most appropriate techniques for the website. The technology we use is so important that we need to research it thoroughly before using it because it affects the cost and time of the project. We will review some of the related technologies that can be used to design an e-commerce website and to select the most appropriate techniques for the site. To search and analyze the language I use TIOBE index to know the popularity of the words used for programming. These indicators based on a survey of skilled engineers around the globe, they use tools like Google, Bing, Yahoo, and so on, to calculate ratings, through which we rank as follows



**Figure 6 TIOBE 6/2018 Source: TIOBE**

Through the chart, we see that the most commonly searched users are java and then the C language group is most favored for programming. Javascript is used to design client-side also occupy a significant amount. To create the front end, according to keycdn.com page, they have developed the most popular fonts-end of 2018, and they are Bootstrap have more than 100.000 projects on GitHub, Foundation has more than 24.000 projects on Git, Semantic-UI has more than 28.000 projects on Git. All of them are front-end frameworks to support the front-end design. Each language has a different context to support various tasks, and hereafter, we will select the appropriate structures to evaluate regarding language.

#### 2.4.1 ASP.NET

ASP.NET is a web application development platform, developed and provided by Microsoft. First launched in January 2002 with the .NET Framework 1.0. ASP.NET is the serial technology of Microsoft's Active Server Pages and compiled in the form of a CLR (Common Language Runtime) that allows users to write ASP.NET code in any language supported by the .NET language. ASP.NET allows and supports the creation of dynamic websites, web applications, and web services.

ASP.NET is one of the most potent platforms used in the web development industry in the world. With a large number of users, and strong support from open source. Tremendous support from the Microsoft publisher is very well-suited to run on Windows platforms, with support for interface languages such as RazorEngine, ASPX, Spark, StringTemplate, PHPStorm, and HTML5. Security as well as support for web building.

C # is the object programming language and developed by Microsoft. It is a built as a section of .NET and built on based C ++ and Java. C # integrated with the Visual Studio and as the language programming with the ASP.NET platform for the web development and this second is going to be together. We can found in **Figure 4**, C # located at the five positions in the TIOBE.

### **Advantages**

ASP.NET has changed entirely and has influenced the development of the Website of the world, and the following are their strengths. One of the benefits and pros of ASP.NET MVC is that it scatters and breaks down components and breaks into model control and view models, we can easily maintain the application because they are separated. At the same time, we can divide work into many developers, and it will not affect the work of others. It supports the Unit test, the latest version of MVC promotes default for mobile web pages. We can create our viewer tool and easily compare it to the old viewer tool. It makes it easier to manage to a programme by dividing components into small modules such as server and client site. Allows HTML programming to be rendered as usual and separates the transparent sections, facilitating all parties involved in web programming. ASP.NET supports very well in TDD direction.

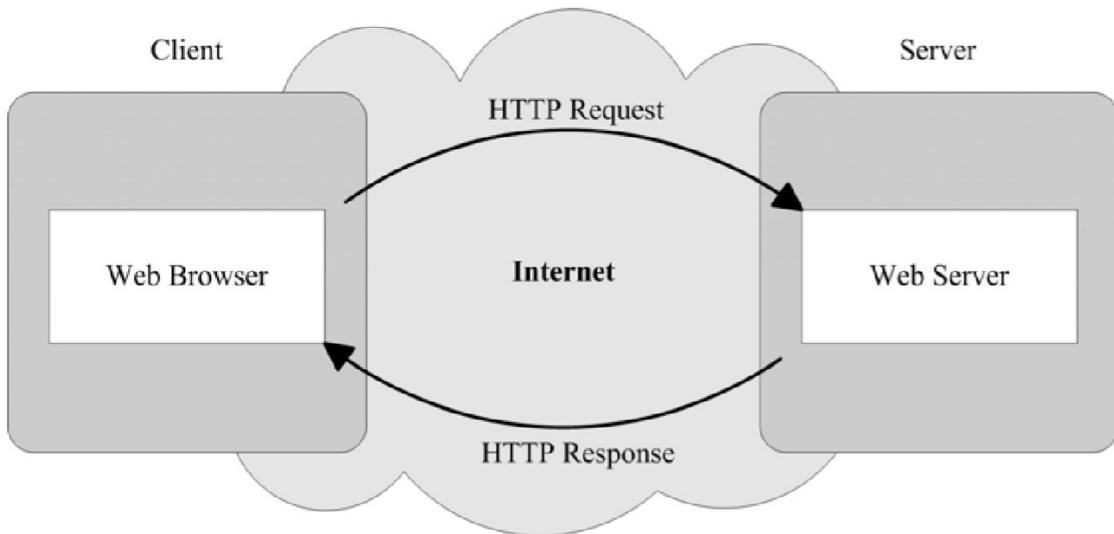
### **Disadvantages**

Code and module are complexity; we cannot access data in the view, challenging to use MVC for modern users. Need more workforce and programmer, need a good knowledge of technology, developers must know the client and HTML code. Compared with other source code, ASP.NET makes programming a lot more expensive, requiring a variety of license papers such as Visual Studio, SQL Server, and Windows, maintenance also costs a lot because the server needs many resources.

ASP.NET has different strengths and weaknesses, but in general, it is more beneficial to create a web world, and this is still a robust and reliable language in the world of website design.

#### **2.4.2 JSP**

JSP is a technology that helps us create and develop web pages and interact with them, and now let's look at how a website works. JSP is a technology that makes it possible for us to create interactive and informative web pages, JavaServer Faces (JSF), also known as interface packages, to make interactivity with pages more leisurely and more convenient. Along with Tomcat, it allows our code to act as a server, in conjunction with JSP / JSF, and they are ultimately free, so we have a complete environment for having a webpage.



**Figure 7 View of Html Page. Source:** (Zambon, n.d.)

The structure of the JSP is the same as a standard HTTP request, and the path is replaced by (.jsp) instead of (.html). The server for storing the JSP code is not the same as the standard server but must be a Java server, along with extensions to support the Java Servlet, which will validate the files (.jsp) and process them. Java tools and techniques will convert JSP to Servlet, and from this point, we will not be able to distinguish them. JSP tools have been developed to assist us in compiling servlets into the executable class and deploying them elsewhere in the web server, and the system only collects the JSP page that is confirmed to have changed since the last time, and this makes the JSP more efficient than PHP and faster. In compiling the language and system, the servlet will generate an output file in HTML format, and then it will move through HTTP just like a regular static page.

**Figure 8 View of JSP. Source:** (Zambon, n.d.)

JSF is a server-based component of the UI. It is often used for web application development; it provides a model for clearly defined models and a variety of APIs and tags. The latest version of JSF uses Facelets as its default template language and it is written in Java. The first version of JSF was released on March 11, 2004. Moreover, the latest version is JSF 2.3 published in 2017 (Giulio Zambon, n.d.)

### **Advantage**

Interactive contents are an integral part of the JSP; usually, for compiling from an interrupt-only machine, a small change must also be required to recompile the whole page or section. However, the JSP is modular. It is extraordinary by separating it into different parts into JavaBeans. They are then joined together by the JSP. They support us the meaning of writing once and bringing them to use in many different places; we can move the JSP page anywhere in the system without any difficulty so that the JSP can be used for many other programming purposes such as on wireless devices or handheld devices.

JSF also provides a separation between actions on the web interface. We can write business logic and interface separately, JSF APIs are loaded directly into the serverlet API, which allows multiple instances of the application to be used. It includes technologies like Facelets in JSF 2.0, which offer many advantages to developers.

### **Disadvantage**

Getting familiar with JSF syntax is a disadvantage, but if we are new to HTML and CSS can reduce the difficulty. No benchmark evaluates the actual effectiveness of JSF and is only suitable for high performance. There are too few examples available for website development such as adding, editing, deleting for business needs, each click button sends a complex form. The table component requires the same data type from the bean and restore view, and if the data retrieved from the database will affect the performance unable to expand is JSF uses session objects to store the costly state of memory and bandwidth. (Giulio Zambon, n.d.) (Copeland, n.d.)

JSPs and JSF are an open source freebie from the server until development, so many people favor them because they are based on the Java platform for growth, they are one of the languages set up the world's most powerful Web.

### **2.4.3 PHP**

Currently, PHP language is one of the most popular programming languages in the world; it is a language used by programmers to make dynamic and interactive web pages run on web servers and servers. User needs, PHP can embed embedded web into HTML to help us to make the site quickly. Websites can easily interact with users, change the content they want, interact with each other and respond whenever needed. The PHP Framework is one of the things that developers love to use, and it is important that they emphasize the process of optimizing the product. PHP Framework we can see that they help us streamline the software development process, arrange and reuse code easily, making our website can

quickly grow in time. It is always short and always guarantees the logic of the product as they always ensure the MVC pattern.

**Figure 9 Search trends programming for PHP framework (Google Trends 11/2018).**

We can see from the above comparison, PHP is one of the most popular languages, and according to common documents it is always the most popular language in the world, and their search is relative to other words. ASP.NET and Java Web are three to four times higher than ASP.NET, although Java Web and the ASP.NET are languages that many developers use.

### **Advantages**

This framework can run on many operating systems and a variety of platforms, allowing users to no more extended care about the operating system the user is working on, users are easy to learn this language because it is easy to learn, it referred to as quite the C programmer. Another most important part is that the speed of the site is fast or not, that is the strength of PHP. The stability of PHP is quite good because they have existed for more than 20 years, lots of development, application, fix and consolidation by the community so great that we can see PHP is very stable.

### **Disadvantages**

PHP's security issues are always a big concern for developers, their code is open to everyone, so if something goes wrong in the source code, everyone outside can see them. While this is a source code for Facebook, it is not generally a significant project language because it is not modular, the language of PHP is the hypertext language, and it is difficult to program the applications, and its models primarily built for small applications.

As we have seen, PHP is still one of the most popular and famous programming languages in the world, and developers have used them to create different applications. They also have other advantages and disadvantages, but it also depends on the situation and applications such as large applications are not suitable for PHP, but they are only ideal for small projects.

## 2.5 Front-end Technologies

### 2.5.1 Bootstrap

Website systems have developed and simplified to a large extent. There are many external interfaces for web development that have been built such as Bootstrap, Foundation, Semantic User and now we will learn about Bootstrap. Nowadays screens come in a variety of sizes and web production to meet them is required including grid layouts, images so that they can be automatically resized and mainly based on CSS and JavaScript. They are based on HTML and most recently HTML5, which is used to present content based on the standard structure available, and CSS used to describe the presentation of the software in HTML.

**Figure 10 DOM. Source: W3school**

To be able to present the HTML page we need to use CSS, and we have the closest version that is CSS3, and we already know that CSS4 is also being developed, allowing us to customize the color, sharpness, position, the layout more arbitrarily and systematically. As a set of frameworks to make it easy to implement the design of the page, they include full packages and directories, helping us to simplify web site development.

### CSS and the related components

Each set of CSS has different characteristics and criteria for site layout, easy to understand and easy to understand, but also challenging to interact with and challenging to work with it. The ease of customization is essential, and finally, the long-term support of frameworks is continually updated and supported. Now web developers use CSS preprocessors to build CSS to be faster. It is a preprocessed

CSS process and then it is compiled into standard CSS code and has two preprocessing types, SASS and LESS. SASS is an expression for the Syntactically Awesome Style, and it is an extension to the CSS code, which adds parts like nested rules, adds operators and then translates to a standard CSS and is formatted as standard syntax or plugin.

We have LESS stands for Write Less Do More, which provides mechanisms for faster coding such as variables, nested algorithms, plurals, and conversion support to CSS via Javascript for use in an application. (Copeland, n.d.) Let's look at some examples of LESS and SASS.

The figure shows a comparison between SASS and LESS syntax for setting a font size. On the left, under 'Sass', is the following code:

```
$font-size: 16px;  
  
div {  
    font-size: $font-size;  
}
```

On the right, under 'Less', is the following code:

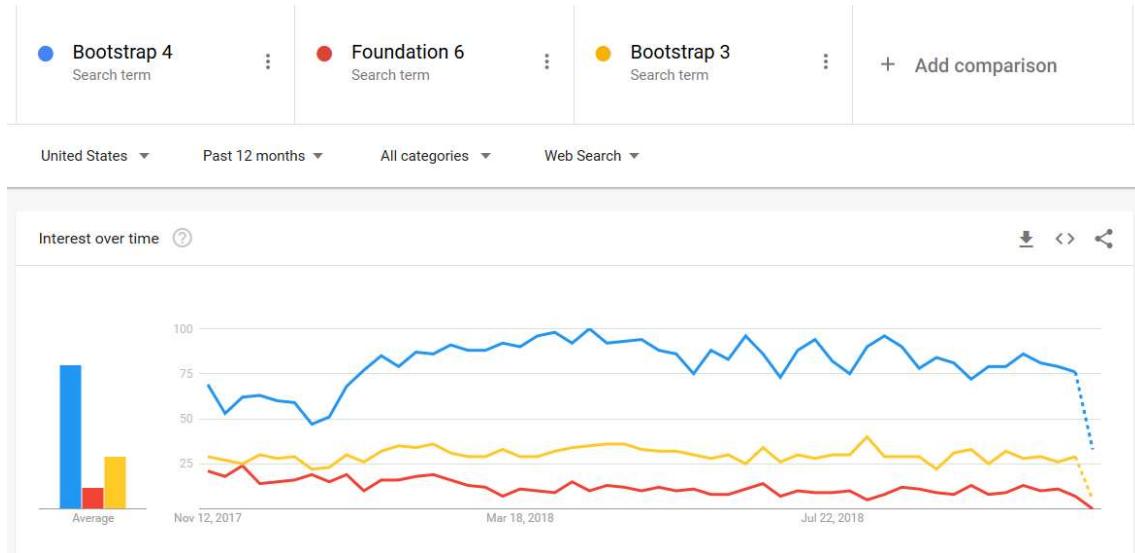
```
@font-size: 16px;  
  
div {  
    font-size: @font-size;  
}
```

**Figure 11 SASS and LESS. Source: HtmImag**

The bootstrap developed by Twitter developers led by Mark Otto and Jacob Thornton. The first version released in 2011, and it is open source, so far BS has become a favorite open source in the world and the primary language used to design interfaces in Twitter. This language includes essential components that come with HTML, CSS, and JS. BS is perfect for designing applications for mobile devices and various types of monitors.

Bootstrap is a design framework that allows us to create a faster and easier responsive website. It includes elements such as HTML template, CSS template, and JS that make things available such as form, button, modal, carousel. In the bootstrap, there are JavaScript plugins that let we design our web pages faster and easier. Bootstrap was developed and publicized by Mark Otto and Jacob Thornton on Twitter, so far it has been growing for four years, and the current version is bootstrap 4.

Concerned about the framework for designing interfaces such as Bootstrap 4 and 3 or Foundation 6, here's a Google search chart of programmers' tastes about these two frameworks.



**Figure 12 Demand Framework for Frameworks 11/2018 from Google Trend.**

As in the chart, we can see BS is always dominant in the current search, including the old version of BS3 is still popular.

### Advantage

- The advantage of the BS is that it speeds up the development of the external interface and that the available codecs save time rather than having to redesign it from the beginning. Wide enough for general design needs that make it convenient for most projects to design with Bootstrap.
- Bootstrap's central principle is consistency in design, trust for its users, results displayed on all types of browsers remain the same, and Bootstrap is an extremely stable framework.
- The framework also offers developers great support in allowing developers to design their interface, which can discard arbitrary, unnecessary features that make it easier to manage code.
- With a large community development team and support, bugs are fixed quickly by open source code hosted on Github, with more than 500 contributors and over 9000 commitments.
- Very easy to use: The BS is HTML-based, CSS and JS, and only the knowledge of the three languages are possible using bootstrap, Built-in be responsiveness for phones, tablets, and laptops, compatible with many browsers such as Chrome, Internet Explorer, Safari, Firefox, and Edge.

### Disadvantage

In addition to the strengths, Bootstrap also has some disadvantages such as:

- An overly generous and unused code layout, there are too many DOM components built into the "class," and they make the code contain a lot of bad data, making maintenance and upgrades difficult to do.

- CSS and JS of the bootstrap for the site is quite a resource consuming to influence the speed of web page load. Also, bootstrap is becoming more and more popular to make web pages look the same, which affects the particular brand of the organization.
- There are many people complaining that bootstrap.js lacks markers to represent structural integrity, so when compiling or compressing this file, it usually causes some nasty bugs.

There are many reasons to use Bootstrap or not, but generally, when Bootstrap comes out, it makes it easier to develop software interface design, and Bootstrap is more suited to their projects. Whether or not curved depends on many different factors.

### **2.5.2 Foundation**

Foundation is a framework to help programmers build website interfaces and make the website more organized and beautiful and suitable for a wide variety of displays. The structure designed for mobile-first, from the beginning, we will have to develop applications for small screen devices first and then will gradually expand to the larger screen type, we also no need to be so concerned about it, but usually, that will make the design better. As *shown in figure 10*, we find that the Foundation's search needs to do much research, although, after the Bootstrap, the number of user requests with this framework is still huge. This framework also has various functions for JavaScript support and is developed by ZURB, and they are an open source, and in 2011 it was released Foundation 2.0.

#### **Advantages**

This framework allows us to customize the page without making it look like other sites have designed, it also makes the place look flat and beautiful as soon as design, it also supports the generation of HTML5-based forms of verification; the user experience will vary depending on the screen size.

#### **Disadvantages**

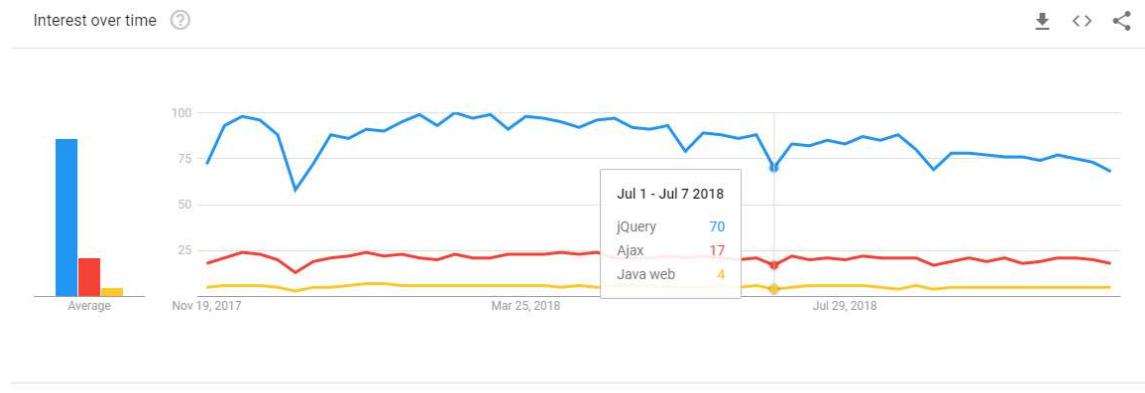
When applying the Foundation framework, all components in the site will automatically use the default styles of the Foundation and not create their own, and our site is in general and most similar other websites that share the same framework. Too many components and classes make it difficult to understand the details and specific elements in the elements to identify the elements and attributes of the tags. Too many components and classes make it difficult to understand the details and specific elements in the elements to identify the elements and attributes of the tags. IE is a primary browser, and this Framework does not support IE 8 anymore.

### **2.5.3 JQuery**

JavaScript first appeared in 1995 and was incorporated into the web browser by Netscape, since its appearance became very attractive and attracted much attention to the developers, allowing it to interact with the site, send and receive information without having to reload the page. After introducing and

seeing the success of it, Netscape continues to deliver documented documents to support JavaScript, and they are called ECMAScript and are called a standard.

Jquery is a javascript library, and it is designed to simplify the HTML design, software is open source licensed for free use, and it is the most widely used language. jQuery's syntax is intended to be easier to use than it does to develop ajax-related applications. The jQuery module allows for the creation of dynamic web pages.



**Figure 13 Compare jQuery, Foundation, and Bootstrap searches (Google Trends 11/2018).**

### **Advantage**

It is simple to use and faster than using pure JavaScript syntax, and it also requires less code to achieve the same purpose in this feature. Not only that, It is an extremely extensive library for user support, and jQuery examples and documentation are available in detail. Also, jQuery has a robust open source community and supports easy-to-use Ajax.

We are no stranger to jQuery with Ajax, while website design is an essential language and it is considered one of the most critical and successful modules so far in the world website design industry. They include some support methods, such as Get, Post, and Load, to generate requests to the server with just a few short lines.

As in the chart, we have seen a great deal of Ajax and jQuery search trends; even when compared to significant back-end language platforms, it is still three to four times higher than the others search volume world. We can see the most significant search volume is jQuery, followed is Ajax.

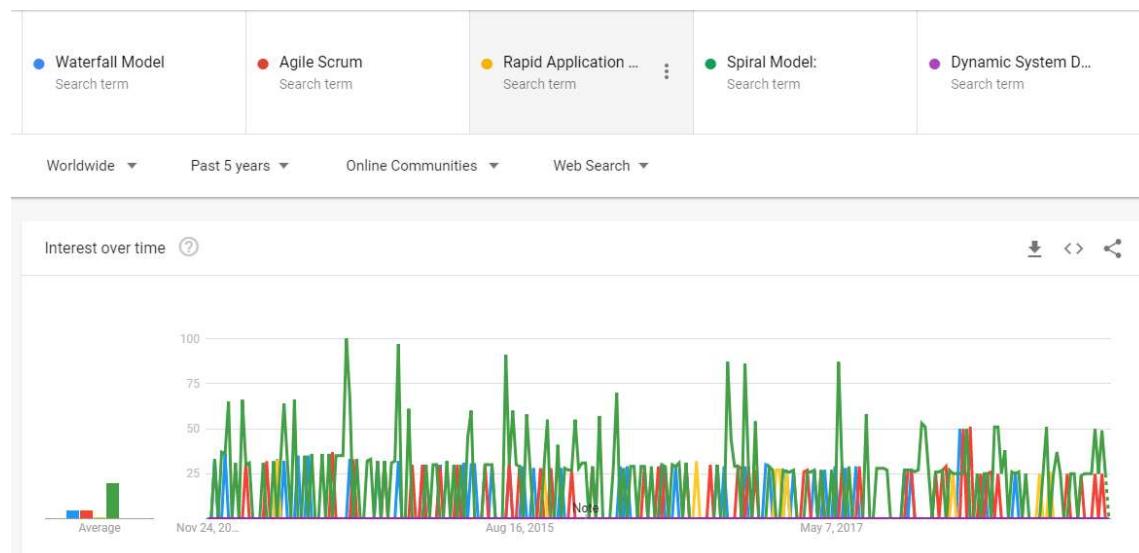
### **Disadvantage**

The amount of functionality of JQuery is enormous but it also has its limitations, and pure JavaScript can limit it in some cases.

JQuery requires a separate file and the size of the data is small, but this is still a disadvantage when loading web pages.

## 2.6 Software Development Methodologies

To design and manage a good project we need to choose the best way to handle it. Managers and developers need to test a variety of methods and select a plan for software development. Make the work easier, all means have their strengths and weaknesses, and they serve their purposes and their projects. It is a combination of life cycles for us to develop software, or software production process, that brings together methods for their practice, roles, and philosophy. The primary purpose of these methods is to increase productivity to get the product as fast as possible. Most of our production processes are now study in detail, and the primary goal is to provide tangible products. To build a quality system or product, we must take advantage of our production processes and be standardized and automated, which creates a method for producing reliable products, depending on the product. Different products have different models and ways of doing things, and some software is not suitable for automation, software that is growing with instability and rapid change needs to change in time. To indeed build reliable, high-quality software that does not ignore the unique and unique nature of software, bring software products to the process and turn it into a production line. Develop them into stages, create different life cycles, then provide unique roles so that they can work in stages and adequately control by the practice that comes with tools should be used and supported to avoid software failure and increase software efficiency.



**Figure 14 Compare search terms for Waterfall, Agile Scrum, Spiral Model, Rapid Application Development, Dynamic System Modeling Methodology (Google trends 11/2018).**

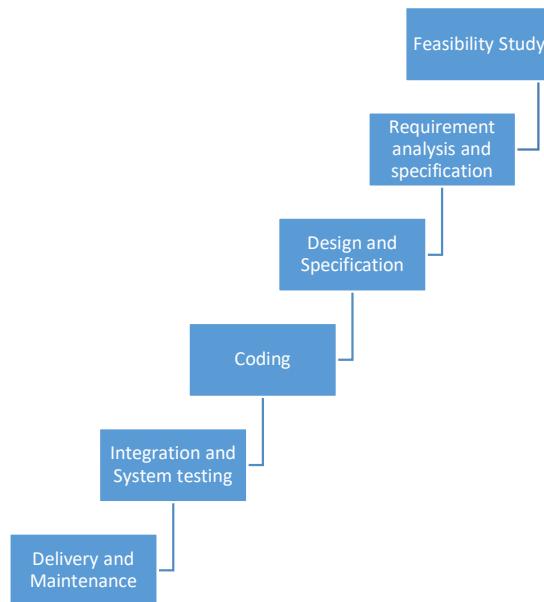
### 2.6.1 Traditional Development Methodologies

The first developmental method we know of is the traditional method of development. These development models based on a product life cycle, and they develop through all stages. With the control of the processes, the product has achieved high efficiency but also become rigid and difficult to customize, adapt and expand, difficulty in change as needed.

## Waterfall Methodologies

The waterfall development model was first used in the late 1950s in a related project called SAGE, which was an anti-aircraft software system but was only available in the 1970s. It used when success and standard appear in most software engineering manuals. The waterfall development model divided into phases, and each model organized in a set of actions that can operate concurrently. We have input each step as the result of the previous period, and the outputs of each stage finalize the systems. Waterfall Model also has many variants, and they have the same basic philosophy as a feasibility study, requirement analysis, and specification, design, and specification, coding, integration and system testing, delivery and maintenance.

According to Acodex.in, there are many software methodologies used to produce software that aggregate search data from bings and google. The top categories used are Waterfall development methodology, Rapid application development methodology, Agile development methodology, DevOps deployment methodology, and so on. Each method has its characteristics and works well in different cases so to choose a method before developing the software we must analyze them thoroughly. The following steps to develop a waterfall model will help us understand why large and stable projects often use such a waterfall model.



**Figure 15 Structure of Waterfall model**

### Feasibility Study

This stage hardly sees them appearing in the variants of other developmental models, the reason being that they are not applied in practice on a regular basis. When a problem arises, we need a feasibility study, an analysis, and a review of them with alternative solutions. Therefore, this part is often essential and

should explore expensive because it takes a lot of time and money for the developer. When we implement this part of the routine, we can see that the output is a feasible solution instead of the generic one. We also know that feasibility studies usually were done in a short period and that it will bring much pressure on the investigator, resources, and simulation that can be explored and studied over time was estimated. After implementing the above, we have suggestions including alternative measures, costs for money and time for each proposed solution.

### **Requirements Analysis and Specification**

Through this section, we can understand the problem, find out the best solution, the purpose of this section is to define the functions; clearly, the technical requirements must state in the previous section with the solutions, the solutions, and the reasons. Its meaning is not how it should be, and we need to list what functions should be implemented or developed. After completing this section, we will have materials with specific requirements, which can be modified and updated along with other members such as customers to clarify the comments and functionality.

These types of requirements we can divide into three categories as follows:

- *Non-functional requirements*: They are requirements that speak of the quality of the application and are often related to performance, quality, and so on.
- *Functional Requirements*: This requirement speaks about the functions to do and which are the essential functions of the system.
- *Development and Maintenance Requirements*: We have the requirements to modify and update before handing over to the customer.

### **Design and Specification**

In this part, we need to design the documentation to describe and simulate the build and model of the product. They intended on requirements that have been created and drawn since before, which will be divided into several parts as different modules and connect them. This part can happen in a loop, and there are different levels, they start at a point or a stage and then go through the modules. This process, known as the navigation process for applications or software, ambiguous terms, and requirements, is turned into a clear description so developers can quickly develop the app.

### **Coding and Module Testing**

When done to this part means that the software has made and built, we move all the languages we have designed and simulated into the programming language. When implementing the components of a module, it must follow the specification specifications of the documentation beforehand, which will be thoroughly tested and tested before integration into the next stage or sequel. Ensure clear test quality of the test such as white-box or black box testing. However, some developers claim that accuracy in this stage is not high due to the poor quality of the modules.

### **Integration and System Testing**

This part is a near-complete application that integrates everything, examining modules that are connected and assembled and sometimes not up to date, but they still incorporated into the coding phase,

each type has different types of tests. Caring should be taken to ensure that the relationship and quality of the modules matched to previously designed specifications. The software should test in the real environment, and it should work in all its parts, such as hardware, software, and related systems. The purpose of this part is to have a complete software package, edit as possible. The developer must also guarantee to test by the general software process and standard including documentation and tests for them.

### **Delivery and Maintenance**

This part is the delivery of products to customers, applications and software are fully ready to work well, the distribution and delivery of products must also phase in accordance with standard steps, so pay attention if not, the system could also have a negative impact on the delivery and understanding of the system to the customer. Usually, we have test clients, they try the product first to test the system and are called beta stage. After the delivery of the product, modifications and maintenance are necessary, especially today, the demand for quick change and change requirements are also very fast so the waterfall model can also implement many loops.

### **Advantages of Waterfall**

Waterfall models are suitable and beneficial, and they have the following benefits: They are quite simple and easy to understand and easy to implement. Each segment has clear outputs, and we can see them explicitly, and users and developers can see the difference over each stage. Management and participation in the project for easy tracking and control of the project can be seen at each output easily, schedule and time are also made clear over time, and continual testing causes the project to go under control, with relatively important projects and high priority to quality output such as cost and time, this is a good choice.

### **Disadvantages of Waterfall**

When implementing a project, it is almost impossible for developers to follow sequential steps that repeatedly repeated so that changes made to errors and mistakes. Customer requirements often changed, but in this model, it is frozen because of the significant impact on the execution flow if it changes between periods of development. With the speed of development of the industry today, the change is very fast so for long-term projects, software and hardware requirements frozen, so this is a significant weakness. Changes to the specification from the outset are not encouraged to be detrimental to the systems and systems that have developed but are also difficult to return to previous phases, which are costly.

Moreover, for reality, some software industries fit the Waterfall model such as commercial projects, databases, and network protocols such as Paypal Payments, Airplane Control Software. As can be seen in **Figure 12**, it is evident that traditional software development models such as the waterfall model are still of great interest and search in Google's search statistics.

## 2.6.2 Rapid Application Development

The RAD shows us the change in importance during the planning stages, which given as a solution to rapid emergence. The use of RAD has opened the door for us to plan less and theoretically in less action and fast-acting methods and behaviors protect them. The method of rapid application development RAD was first published in a book by James Martin in 1991 and based on a work by Scott Schultz. In addition to this approach, we know of several other methods in the world, such as RIPP, Spiral, Boehm, Win-Win and Waterfall model.

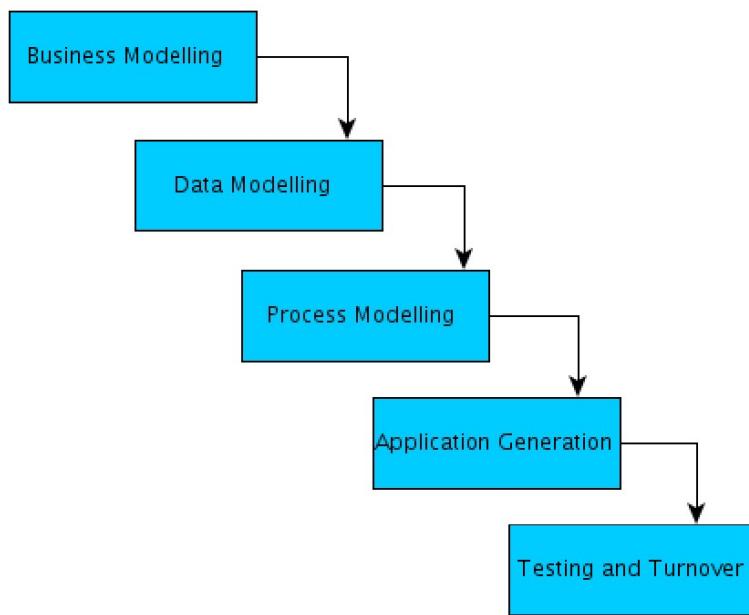
As shown in **Figure 12** above, the RAD method is only to be found at some point in time, but not at all, and as far as the end of the chart is less visible and almost completely disappears at the end of the chart. RAD is to say that this quick method has many advantages, but it is quite tricky to fit into modern software development, or maybe something else that we do not know yet. For the search term, this keyword is declining, not according to Google Trends.

For traditional methods often found in software development, especially large projects need solidity of the system. A great deal of development time and cost will be spent exploring and exploring the project before commencing the project. To be consistent with small projects, flexibility and, most importantly, shortening the development time of the project. James Martin took the RIPP to edit and change, creating another variation called RAD, a fast-growing method. This development model works the way through the following steps.

- **Prototyping:** It was the first basis for the evolution of the model. However, RAD built the design in the early stages. First, the model will make the first version in a short time, this version as a version for customers and use it to be able to negotiate and discuss with users about the functions and requirements. The prototype used in conjunction with CASE (Computer Aided Software Engineering), which aims at capturing and understanding requirements, converting data into a programming language or database.
- **Repeat development:** We do this with the implementation of the spiral model, the length or duration of each iteration or the number of repetitions that have been modified and updated over a short period, which demonstrates the model's robustness.
- **Time Boxing:** Time management so that we can plan the delivery of products in a short period, we will not set the goal of providing complete products for a long time, dividing them into intervals. Delivery time make sure the handover is right to achieve the best expectation if using the wrong time will affect a previous loop and go again.
- **Team Members:** The RAD model requires team members to have excellent personal skills and teamwork skills that will be useful throughout the development process of the application. How the team members develop will play a variety of roles if it possible so as not to overlook essential aspects.

- Demonstrate control: For RAD, people should actively participate in management; this is the best way to control the project, follow the process, observe certain risks, especially for the development process, in the long run, it is even more critical. Emphasizes attention to balancing the functions and processes of the application, eliminating the difficulties and obstacles related to internal or external factors.
- Tools: Today's tools used to develop application systems are extremely important, so use the new tools to avoid outdated application development faster.

RAD can divide into many categories and stages, and James Kerr has split into five groups:



**Figure 16 RAD: Source: (Sim ~ ao, n.d.)**

**Business Modelling:** This part is the first stage of the process because it identifies the first steps that an organization or business will follow for the system to serve that purpose. The processes in the industry will replace, the task of this section is to understand the system requirements and applications to minimize the possible changes and the need for the emergence of new functions.

**Data Modelling:** With a result of the previous steps, we know that resources and human resources needed for the development process, so the data will be transferred and modeled according to the business model we have defined before.

**Process Modelling:** The system will begin to implement the information provided, provided previously, to fulfill the requirements provided. It publishes with specific objects, and the system will handle those objects.

**Creating an application:** We will create applications based on existing software and applications to minimize the development, reuse current software as needed, and tools to automate the workflow encouraging to enhance the software development.

**Testing and Turnover:** Testing and testing always integrated into the system and that is still a guarantee of the success of the application or software. When implementing RAD, it encourages software reuse and reduces testing time for faster system development.

### Advantages of RAD

With RAD systems, they will help the system to grow faster and more systematically, minimizing the cost of time and money, but the quality is guaranteed. Developing applications using RAD is more comfortable than using new and different abstractions and applications, giving users an early and holistic view of the form as they produced quickly. RAD helps developers reduce the time and development cycles of software, reduce the risk of using existing software or CASE tools.

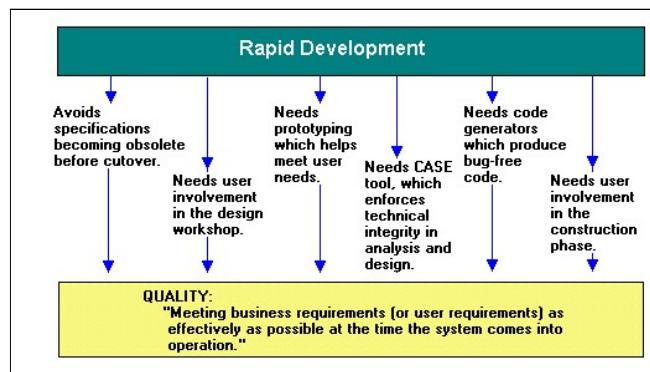


Figure 17 RAD Model. Source: Taking the Risk out of Rapid Application Development

### Disadvantages of RAD

In addition to the benefits, RAD also brings inconvenience to some cases, human resources without experience will adversely affect the efficiency of the project. Usually, it also costs hardware and software very. There are no official methods used to evaluate them which lead to loss of accuracy. Empowerment may also occur in the early days of software project implementation.

RAD represents the simplification of previous methods while retaining substantial portions of software quality assurance and primarily focuses on the use of time boxes, demand and risk analysis, and lastly, is prototyping.

#### 2.6.3 Agile Development Methodologies

This Agile is a methodology that includes processes and is also known as a way of working, helping to develop systems or applications such as Rapid Programming or Scrum. Agile includes fast-growing methods and divides them into individual pieces, and we call them functional parts. The actual work consists of the control of the working version, the standards for the job being repeated weekly for the

parties involved. Fast-paced, agile methods create unique development modes, eliminating unnecessary parts, creating a nimble Agile.

### ***Agile Scrum***

In the early 1990s Scrum was used and developed for product development and management, and they widely deployed to do things like research, identification of demand and markets, new technologies and feasibility of the product software development and re-engineering, Cloud, product maintenance and renewal. Scrum has been used extensively for the development of software systems, hardware, embedded software, interactive functions, government software and many of the products we use daily, when the technology is becoming more complex, Scrum is a key to handling the complexity that simplifies them. Scrum defined by dividing the group into small groups, making the group very flexible and easy to change. The strengths of Scrum continue to help us grow and sustain the work of the product line and the people.

### **Advantages of Agile Scrum**

- Always meet customer requirements: Projects implemented by Agile Scrum always look very carefully before the customer, not only require customers to participate at the beginning of the project but also frequently Communicate with customers in Sprint meetings or meetings. Listening to business analytics from the customer helps to minimize the risk of designing the wrong application, changing business needs will also address because of frequent customer interactions.
- Flexibility: As we know even at the beginning of the project, the world is continually changing, needs, people, functions, and development need to change. Agile Scrum is designed to accommodate adaptation and evolution, iterations and life cycles are extremely short and enough time for developers to adapt to those changes.
- Output consistent with expectations: Often customers do not know about technology and technology; they only care the output, Agile Scrum has done that when regularly meeting customers to listen to business analysis. Customers are always present in all Agile Scrum operations and are also called the most critical activities.
- The motivation for the development team: Scum's relationship with the customer always brings the positive in behavior and trust in the functionality that done, the project is managed primarily by the product owner.
- Good quality software: The product always achieves some purpose: the frequent interaction with customers has proved that the customer involved in product development in the same group, the product is always on the right track. The applications are still fixing defects by consistently producing results so that we can test them in the development phase. The reliability of the product is high, and maintenance is the same, instead of sequential programming Agile has

evolved in the direction of coupling essential functions, so they always ensure the system to achieve the purpose most important.

- Cost and time are always guaranteed: In this section, the project manager and the Scrum Master assume that the project execution time is irreversible and intrusive, we can see that the fixed costs of money always set and the best and the time also, the cost and money management of the project is reasonable to have a successful project.

### **Disadvantages of Agile Scrum**

There is no such thing as always become perfect and Agile Scrum also, and they have some disadvantages as well:

- This method causes the handover date always to have new functions published. If a function is not clearly defined and easy to understand, cost and time estimates will be severely flawed and will result in a sprint.
- If a member of a group not satisfied or no cam, the group will not complete the job, the project is only suitable for small groups, and it works well with small groups.
- The team to have good work experience and if the project does not have enough, the plan will fail. Managers will have to trust the team, and if the management is too strict, it will cause morale and make the project fail.
- Team to have good work experience and if the project does not have enough, the plan will fail. Managers will have to trust the team, and if the management is too strict, it will cause morale and make the project fail.
- If any developer is withdrawing from the project, that is a terrible influence on the project, and the quality of the project can not be estimated accurately unless the Sprint complete.

Planning a project is essential, it helps us make smart decisions to perform tasks efficiently, for small projects and needs to complete the development is very useful.

### **Traditional Newspapers and Online newspapers.**

With the massive difference in the number of traditional newspaper readers and online newspaper readings according to Google statistics *Figure 18*, many will argue that the dominance of new media will be a substitute for traditional media. It will be surprising to see that the BBC News 2013 chart compares the number of users, The survey was conducted in the 10 largest cities in the United States.

**Figure 19 A diagram presented by BBC News (BBC News 2013).**

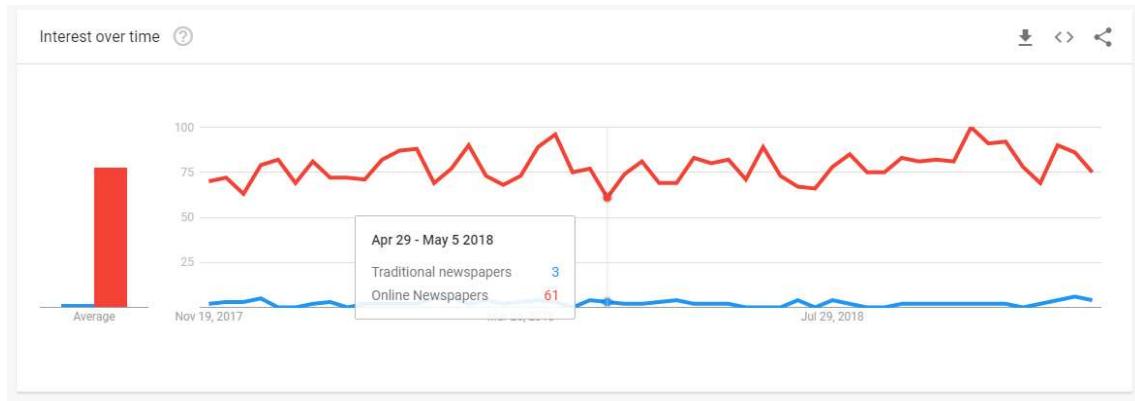
It can be seen that the number of users using traditional newspapers is much higher than the number of users of modern media. One of the possible explanations for this confusion is that Kate Garland's (2013) research shows that the human brain tends to remember information on print rather than an online version.

However, Figure 15 is the study of BBC News in 2013 and 10 US cities. It has some conflicts with what is in Figure 11 of Google. That means, the growing trend of online newspapers and modern media will take the percentage of users. Traditional newspapers will have a smaller but cannot be completely replaceable.

#### **2.6.4 Traditional Newspapers.**

##### ***Structures of Traditional Newspapers***

Newspapers see the most useful news channel that people know, and it has always existed and along with humans to this day. Traditional newsprint is a group of paper clips that are pinned together and filled with information on paper. Printed newspapers are meant to be more meaningful to older people and are valued by young people. The older generation liked the print because they felt it was familiar. Especially old people born before the time of invention, they have to struggle with the online news because it requires the use of an electronic device to access the internet.



**Figure 20 Compare users between Traditional News and Online News 11/2018 from Google Trend**

#### **Advantages of Traditional Newspapers.**

Printed matter is a physical object and can be touched. It creates a sense of security and trustworthiness for the reader rather than something they can not touch, and there is a print in we hand that can be kept and re-read whenever we want without worrying about missing or difficult to find again. A print is permanent and can not changed while articles can be hidden or deleted on an online website.

#### **Disadvantages of Traditional Newspapers.**

One of the significant drawbacks of print newspapers is that it is not free. The price of a newspaper, though small, is one of the biggest reasons for the decline of prints. All most people believe that instead of losing money and having to go to the newsstand to buy a newspaper, they can get all the information they need online and for free.

Reducing the flow of prints affects advertising. When an advertiser sees a drop in circulation for a particular newspaper, it indicates that the number of people reaching the ad is decreasing and that it makes their ads less effective. As a consequence, the decline in circulation of printed media leading to a drop in advertising has shown lousy news for any newspaper.

From the chart, it can seen that, at the bottom of the graph, the number of people using online news methods is much higher than that of traditional news, which is mainly through the newspaper's methodology. That said, the drawbacks of traditional news are far from how news made online.

#### **2.6.5 Online Newspapers.**

##### **Structures of Online Newspapers.**

An online newspaper is an online version of a newspaper or a standalone publication or an online version of a periodical journal.

Online creates many opportunities for the newspaper to develop and report in the fastest and most timely way to the reader. Many in the industry sees the strong credibility and recognition of newspapers combined with advertising as an opportunity for growth. Moving out of the printing process also reduces

costs. Based on the trend graph of Google trends in *Figure 15*, it can be seen that the number of online readers is 70 to 100 times higher than that of print readers. Therefore, the ability of users to read advertising information on the site is also much higher than the traditional way.

### **Advantages of Online News.**

Online newspapers Convenient and we can access and view news instantly. With the busy life and the thought of the time is not enough today, taking advantage of the time to travel on the bus or train to the site to read the news is necessary. We will not have to spend time running to the newsstand and losing money to buy newspapers and still read the news almost for free.

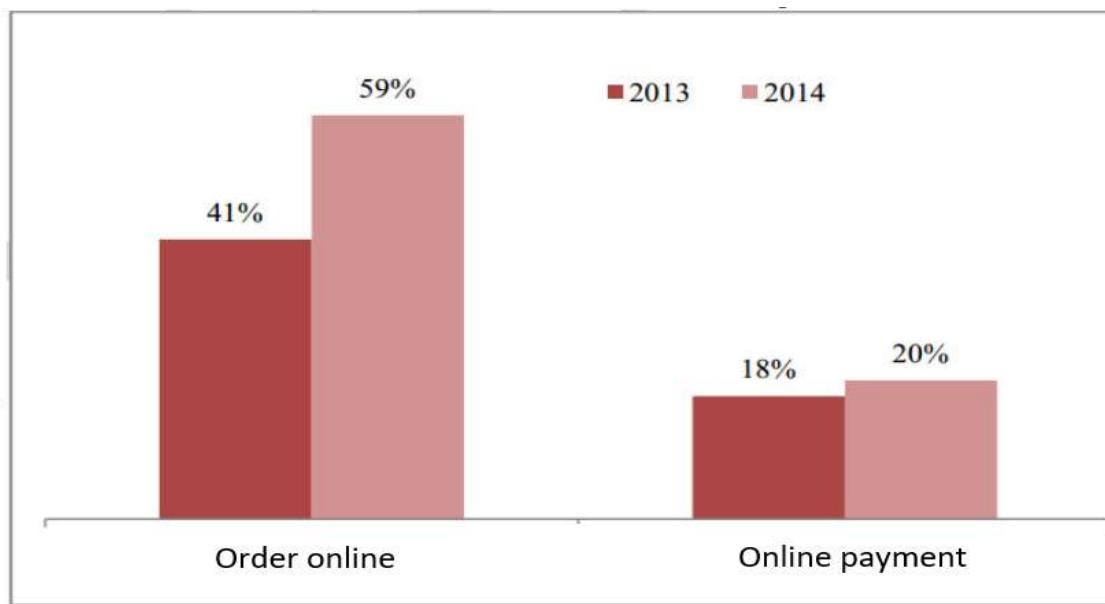
Another face, the hot air, and the most will be at the focus section, help for the lost user does not lose it for information for reading. With traditional newspapers, we will take a few time and second job to execute, it only takes only a second for now.

### **Disadvantages of Online Newspapers.**

Online newspapers do not include everything. Sometimes, online news has removed some of the content of the printed press. Besides, if it is a day there is a lot of hot news and online content is rampant, the risk of small news will not appear on the site is very high, online readers will be less information than the newspaper reader.

## 2.7 Payment

According to a survey in Vietnam in 2014, the number of internet users is 35 million. Of which more than 58% of internet users have shopped online. According to a survey by the Department of E-Commerce in 2014, the average online shopping value of one person in the year estimated at \$ 145 and revenue from B2C e-commerce is about \$ 2.97 billion and 2,12 % of total retail revenue across the country. In Vietnam, the vast majority of shoppers choose to pay in cash for transparency and partly because of underdeveloped infrastructure.



**Figure 21 Compare the website with order online and online payment of 2013 and 2014.**

The number of business customers choosing to pay via the internet increased by 47%, the number of individual customers increased by 37% compared to the end of 2016. Mobile banking services and the number of customers registered to use the service to make online payments increase rapidly. The number of transactions via internet banking for business customers increased by 13%, the number of personal customer transactions increased by 30%, and the number of transactions via mobile banking increased sharply by 96%.

According to Mr. Ngo Trung Linh, General Director of VietUnion Online Services Joint Stock Company with Payoo e-wallet said: In 2017 Payoo grew significantly when linked with more than 6000 points on Nationwide convenience store chains, supermarkets, and electrical outlets connect directly to over 30 banks to help customers pay more than 200 different utility bills. A large number of users regularly make the total transaction value through Payoo reached about \$ 2 billion per year

According to Sean Preston, Visa Manager in three Southeast Asian countries: Vietnam, Cambodia, and Laos have seen the potential of electronic payment: In 2017, transactions made in the shopping channel. Online in Vietnam in particular increased 135% and increased to 61% for transactions at international shopping. On average, each transaction costs about \$ 42. Travel-related products such as airline tickets or train tickets and travel products are among the "most expensive." From there we go deeper into what electronic payment is and its effect.

Electronic payment is the form of payment made on the Internet, through the electronic payment system network users can conduct the payment, payment and money transfer activities.

Electronic payments used when users make purchases through virtual supermarkets and online payments. Making a payment, the supermarket's server system must have payment software on its website. Current forms of electronic payment include payment via card (POS, ATM), on the internet through bank accounts such as internet banking, through mobile phones and online payments. Participants in online payments are subject to a general rule such as SWIFT or CITAD.

The clear distinction between electronic payment and media payment is through electronic means, eliminating most traditional paperwork and signing procedures with new authentication methods. Use a new form to confirm the right person to proceed with payment without direct contact. The benefits that it offers are enormous, not only the cost savings to facilitate the transaction, but the amount of money spent on e-business is meager. The cost is mainly the initial investment, the technology of rapid development of investment costs also significantly reduced businesses do not have to invest too much in personnel, location, and cost.

Through electronic payment transactions are conducted quickly compared to traditional methods. It only takes about 15 minutes for customers to make a transfer via mobile or network transfer. With electronic payment transactions can proceed even though geographically far away. For consumers, they can sit a place to order, purchase a variety of goods or services quickly. Not having to carry much cash, minimize the risk of loss of assets and minimize the lack of transparency over cash transactions. Currently, there are three popular online payment methods: PayPal, Alipay and Apple Pay.

### **2.7.1 PayPal**

was founded in 1998 based in Sanjose, California, USA. PayPal is an international online trading tool, which is very useful for foreign buyers and those who make money online. This payment system allows buyers to send money to the seller without disclosing personal information, debit card or credit card numbers. PayPal is accepted most of the world and transparency when paying online. PayPal operates on a digital platform that allows direct payments. PalPay can be considered a 3rd party as an intermediary between the seller and the buyer. Buyers (A) send money to PayPal, the buyer (A) needs to buy from the seller (B) and ask PayPal to pay the seller (B).

## 2.7.2 Alipay

支付宝 (zhifubao) is the 3rd party electronic wallet in China. When trading via Alipay, we will not be charged; it was released in 2004 by Jack Ma and the Alibaba Group owned and developed. The birth of Alipay has set a milestone marking independence and beating foreign players on the world's most populated market. Alipay currently operates with 65 financial institutions Visa and MasterCard to provide payment services for Taobao, Tmall and 460000 businesses in China. Alipay has the function of payment guarantee in online transactions, in which consumers can check items later when satisfied they have completed payment to the seller. The specific tasks of Alipay are as follows:

When a user submits a purchase order to a user, Alipay will act as a third party as an intermediary to ensure that the seller and buyer comply strictly and adhere to the rules in the deal. After the negotiation, the buyer will pay. Here Alipay's mission will receive the buyer's money, freeze the payment and then inform the seller of the proceeds to the address of the buyer as committed. After the buyer receives the goods and completes the check, the customer will send confirmation information to Alipay to clear the payment. Then the seller will receive the money, and the transaction completed.

In addition to these capabilities, Alipay can transfer from we Alipay account to we bank card within minutes. With active and popular development, owning an Alipay online payment account will help we to bring more convenience in online payment, airline ticket payment, and so one. by a simple operation.

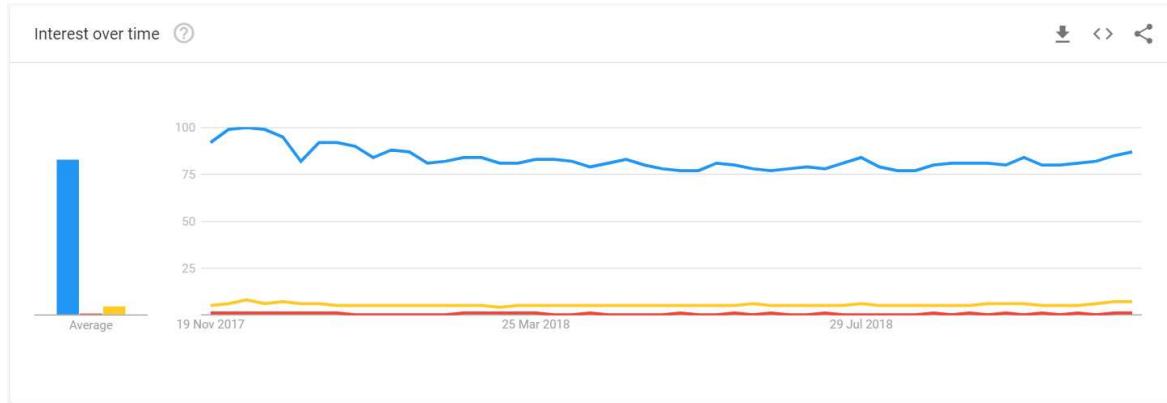
**Apple Pay** was introduced in 2014 to help people do not have to carry too many bank cards at the same time to pay. Apple Pay uses the Near Field Communication (NFC) chip attached to iPhone6, and the iPhone6 + and Apple Watch, to pay for the goods you buy. Users only need to carry their mobile device with a card reader, and Apple Pay will act as an online bank card. We can use Apple Pay to make simple payments on some applications, which are encrypted and can replace we credit card or debit card number and PIN code. Similar to the types of payments used in many countries, with the use of authentication through Face ID, PIN or password.

When making payments using Apple Pay, the device will use the "Device Account Number" to communicate with the cash register where your actual card number will not be used for the transaction. For each transaction, Apple will generate a one-time transaction code (the same OTP code) for transaction authentication. Then, to complete the transaction it requires a final authentication step to ensure that we are the person performing the transaction by password, touch ID, or face ID to ensure that we are the implementer deal.

One notable feature of Apple Pay is that it does not store all transactional information as well as information related to the user's bank card. If we accidentally lose our phone, do not worry, we can use Find My Phone to lock our phone or if we have a Touch ID to pay successfully. Currently, Apple Pay is not supported in Vietnam but only supports in some countries as shown below:

Area	Asia Pacific	Europe	Middle East	North America
Country	Australia, Japan, Taiwan, Hong Kong, New Zealand, Singapore, China (can only pay in stores and apps)	Denmark, Isle of Man, Spain, Finland, Italy, Sweden, France, Jersey, Switzerland, Guernsey, Russia, England, Ireland, San Marino, Vatican City	United Arab Emirates	Canada, America

Based on google trend, compare 3 types of online payment is shown below:



**Figure 22 Compare Alipay, ApplePay, PayPal (Google trends 11/2018).**

As you can see based on Google Trend, comparison shows that PayPal is leading the world in all areas. Alipay can pay on many banks as well as many applications but only in China. This causes obstacles for applying it to the project. Apple Pay is capable of worldwide transaction and has very high security, which makes it a good choice. But now it is not supported in Vietnam so PayPal is the best choice.

## 2.8 Data-Mining

Data is created by humans more and more in terms of quantity, rapid increase in volume, thrive in scale classification, selection, exploitation and use met certain difficulties. The concept of data mining was born to support this work. Then what is data mining specifically, how is data mining exploited?

Data mining is one of the new terms that emerged in the early 21st century as a result of the Internet boom that culminated. According to an Intel statement in September 2013, we received 1 petabyte of

data every 11 seconds, equivalent to a 13-year HD video. Data mining is the process of mining extracting, exploiting and using potentially valuable data from within a large amount of data stored in database, data center and more than is Big databased on techniques such as neural networks, coarse-grained theory, fuzzy sets, knowledge representation. This is a step in the “cleaning” of data. In the data mining process of data mining is based on the methods: classification, clustering, summarization, dependency modeling, regression, change and deviation detection. By using the map, we are able to better understand what data mining is, Data Mining is how much work in the process of cleaning the data can.

### **2.8.1 Association Rule**

Association rule is a rule-based approach to finding relationships between variables within a vast database. The purpose of the algorithm is to predict trends that may occur, future behaviors or search for useful sets of information that only with the standard link of the variables inside. Exam database cannot found. Based on the rules of the association rule, three people named Rakesh Agrawal, Tomasz Imieliński and Arun Swami showed the relationship between supermarket products and predicted some specific future scenarios. High can happen. For example, when a person goes to a supermarket and buys onions and potatoes, the likelihood is very high that he or she will buy minced meat. Rule is one of the interesting links that the Association rule seeks.

#### **Advantages**

Through the close association rules of the Association rule, a large number of candidates in the list of selected data will be eliminated by unintended output to the amount of data to filtered.

Another advantage is that for databases that are sparse in transactions, this algorithm is still quite useful and suitable to apply more than other algorithms.

#### **Disadvantages.**

Although these rules of association rule can help users find special relationships and to predict future occurrences, it is limited to the results. The results that Association rule predicts are often not as abundant as other algorithms. Another disadvantage of the association rule is that the required data structures are large aggregates of unspecified candidates. Data requirements for aggregatioeasily exceeded for what the database has.

### **2.8.2 Apriori Algorithms**

Apriori is an algorithm for use in setting up mining processes and linking items frequently on a database. The Apriori rule introduced by R. Agrawal and R. Srikant in 1994. The name of the algorithm is the reason it uses the knowledge of the properties of the constants of the regular set. In order to improve the search results of the Apriori algorithm, an important attribute that frequently searched will be considered part of the Apriori algorithm, which significantly reduces the search space.

### **Advantages**

The outstanding benefits of the Apriori algorithm are an efficient algorithm that uses very little memory. This is one of the major advantages because with a large amount of information consumed memory is easy to understand, and if the memory is low, it will cause memory loss or slow processing. An easy way to do it. The algorithm uses Apriori's property to remove filtered objects so that the remaining parts to check for added support reduced.

### **Disadvantages.**

The algorithm requires more than one access to the database to scan for the required information. The part is necessary because after each scan the algorithms will have more data needed to save time to perform the next scan, but too many scans will consume a lot of time and resources. The Apriori algorithm allows for minimal support and is only good for small databases because it scans too many times and allows too little support. It only explains or indicates the necessary part of the database. WE can shorten the appropriate overview or makes the result go away if the entire database is to processed.

### **2.8.3 FP-Growth**

The goal is to find a simple and easy-to-use search algorithm that will save we time and money. The FP-Growth algorithm takes advantage of the structure of the values and protocols to find support values. With this way of accessing information without having to access the database, one of FP-Growth's most well-known structures is how to do problem-solving called FP-Tree.

FP-Tree has a stored structure defined as follows: The root node is valued null. The child node usually contains information consisting of three components: the name of the node and the node. The number of times transactions executed from the root node to the lightning node; The information to move to the next node is lightning, if the node is lightning is the last node of the tree, it will hold the next node information is null. Header table has the number of items required lightning. Each line has no three nodes as normal — the node-link points to the last node of the tree's items.

### **Advantages**

The most striking advantage of this algorithm is that it is much faster than the other mining algorithms, which is consistent with the goal that the founders desired. It uses a compressed representation database, which will cause the database not to need to access too many times into the database.

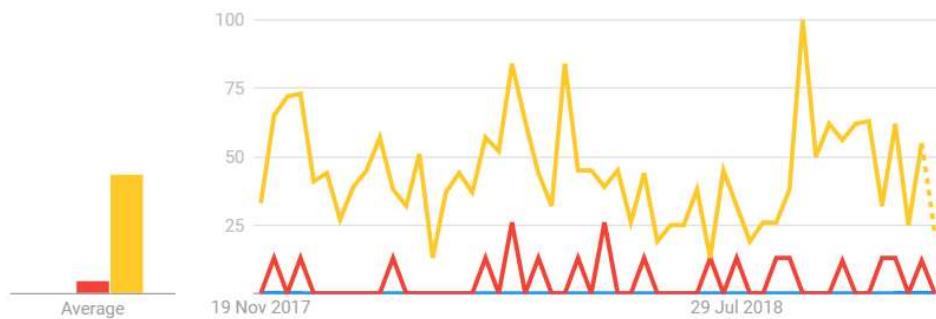
### **Disadvantages.**

FP-Grow has three big drawbacks: it consumes much memory and increases gradually after each synthesis. Next, the algorithm is not used to exploit the types of interactions. It is strange that results on the same database but results are not likely to overlap and may give each result a different result.



**Figure 23 Data-mining in the data processing chain**

By using data mining, we can solve problems like 2 million transactions per day of Wal-Mart or the large amounts of data from YouTube and Google. The way to use data mining is through rule and algorithms such as: **Association Rule, Apriori Algorithms, FP-Growth**.



**Figure 24 Association Rule, Apriori Algorithms, FP-Growth (Google Trends 11/2018).**

Based on the google trend to compare the economic benefits of Association Rule, Apriori Algorithms and FP-Growth. From there we can see that Association Rule has the highest economic benefit and lowest is Apriori Algorithms.

### 3 E-COMMERCE

Traditional trading enterprises widely defined as the exchange of products or service objects between at least two parties. These activities include all the processes that the two parties commit and what we usually see is the exchange of products. These activities are guaranteed, and most organizations do the same and commercialize them is called business. We can look through some processes such as money transfer, customer information, picking and placing orders, sending invoices to customers and finally delivery.

Moreover, we can see some products that are more suitable for sale with traditional business such as fragile or valuable items. The products that can trade over the internet are mostly soft downloadable products, and services such as tickets and travel services. Websites often also support flexible payments in a variety of ways, or in conjunction with banks to support payments, and below is a summary of the comparison between traditional e-commerce and business. That draws the business strategy between the two types of business.

**Comparison table E-Commerce and Traditional Commerce.**

Basic for compares	Traditional Commerce	E-Commerce
Meaning	Traditional Commerce is a sector that focuses on the exchange of goods and services to increase the exchange of goods in various ways.	E-commerce is the exchange of information or commercial activities through the internet.
Processing of Transactions	Manual, performing by hand.	Automatic, performed by machine.
Accessibility	Limited time several hours per the day	Unlimited accessed anytime 24/7.
Physical inspection	Goods checked size, quality, form, sample before purchase.	Can not check before buying
Customer interaction	Direct dialogue with customers	Indirect dialogue with customers via internet connected devices
Scope of business	The range is limited to a specific area around the shop selling the product.	Global reach, anyone with internet surfing equipment.
Information exchange	There is no uniform basis or standard for the exchange of information	Provides a unified platform and standards for exchanging information with customers
Resource focus	meet the needs of the supply side.	Meet the demand side needs.

Business Relationship	Linear through intermediates.	Directly, sellers and buyers do not go through intermediaries
Marketing	One way marketing.	One-to-one marketing
Payment	Many forms of payment: Cash, credit card, and so on.	One form of payment: fund transfer.
Delivery of goods	Instantly	Takes time

Each business for us found for the following products and the environment, environment, and it provides the different benefit, and according to digitalcommerce360.com E-commerce, the growth rate of e-commerce is growing, and the growth rate is higher than that of retailing. Some retailers cannot sell online such as houses, cars and so on.

**Figure 25 Comparing growth. Source: digitalcommerce360**

So, E-commerce is now the trend of the world, it provides item quickly, bringing an extensive range of product to users, save time for users so that such websites are increasingly gaining consumers' heart.

## **4 ONLINE NEWSPAPER**

For a comparison of efficiency and popularity, there is no much debate between the traditional method and the online method. The number of people using online newspapers is always much higher, even hundreds of times higher than that of traditional print, according to Google Trends figure 15. With outstanding advantages such as fast updates, no cost, hot topics are highlighted to help users quickly find the information they need and spread quickly and widely thanks to the internet. However, the benefits of the network are clear, but the reason why we mention and turn it into a part of this report is mentioned. In this section, I will show we why.

Our goal in building a website is to create a place to trade agricultural products online that gives shoppers more options and sellers have one more store at no extra cost physical store. However, in order to meet the needs and trends of consumers promptly, our website needs to catch up with the trend and then to bring marketing to the customers whose products we are selling.

We will first base on surveys, reviews from customers and experts to determine what items are liked, which items are selling, what items are trending, what are Which items are showing signs of decline and more specifically which commodities are suitable for what period because the agricultural products are seasonal. From that information, we will create articles based on our products and the opinions of market experts, nutrition experts and agricultural specialists to increase the amount of produce. Farm products sold. Compare and point out the benefits to the user with the right choices. For example, compare the whole rice bran and bran-free rice. Whole grain rice has a nutritious, protein-rich shell that has many effects on human health. It contains substances that work well in controlling blood sugar, helping to prevent and treat diabetes. Meanwhile, rice bran has a shiny appearance and attracts users.

With products that are or are about to attract the attention of users whose site is not currently available, we will actively seek out suppliers or find ways to collaborate and produce with the Agricultural production companies to have timely products to meet the needs of consumers. In addition to finding or creating a product, we will also create articles to talk about our new products to avoid consumer confusion or to find another site to find products.

We want to combine the advantages of online news with the sale of agricultural products to achieve the best effect for buyers and sellers. That is the purpose why we created this project.

## 5 DEVELOPMENT TECHNOLOGIES

After exploring technologies for development such as JSP, PHP, and ASP.NET, we can see that *ASP.NET MVC* is best suited for system design, as this is a large system that includes Data-mining and e-commerce need to have a good modularization system.

### 5.1 Back – End Technologies

When ASP.NET was released, we saw many changes, and VBScript was no longer popular with users. The .Net has received widespread support from developers to developers. Continuously strong and change rapidly. Moreover, now let's see what's new about Active Server Pages (ASP) that make this language so attractive and so accessible. The way that ASP.NET works are to include both the server and client side depending on the level of information that we want to transmit. The history of ASP.NET began in 1995 when Microsoft realized that it was experiencing technological reduction when it was not involved in the Internet, and then focused on developing network systems. They built a powerful Internet strategy, and they even launched Internet Explorer and even dominated the Internet browsing market using Internet Information Server (IIS). When the web world and the number of web users are small, we do not have the choice of tools or languages for web development, wanting to have useful websites with users but at the time being limit. Developers have incorporated platforms such as desktops and computers to create solutions but are still stuck with programs like (CGI), languages like C are still inexperienced, other languages as Perl and Rexx also launched on systems like UNIX. It was not until 1996 that Microsoft made a big push by introducing ISAPI into IIS. It developed and researched to create software that enables software and servers to interact with each other through IIS. However, it still has many limitations due to the complexity is too large and requires perfect programming knowledge to implement. Technologies such as ISAPI and IDC have been upgraded and optimized for web servers and made them Internet applications with first-ever necessary interactive actions. In addition to Microsoft, other companies support and produce additional software such as Netscape Livewire, which uses Javascript to solve logic problems for the site. At that time, not everyone had the programming skills to implement ISAPI applications, which required compiling programs and other complicated steps that slowed application development. New Developers need to learn a broader and more empirical language, C ++, which is used to compile the system into simple (.DLL) files.

#### Versions and variations of the ASP.NET version

ASP.net is a server-side open source used to develop and create dynamic websites. Designed by Microsoft Company to allow web developers to build. ASP.NET was public in 2002 with version 1.0 of Microsoft's.NET. ASP.NET made on the CLR will enable developers to write ASP.NET code in any language that supported. The ASP.NET SOAP extensions allow ASP.NET components to execute

SOAP messages. Then there is the ASP.NET core, which is a redeployment of ASP.NET into a framework as modules, the new framework using the open source ASP.NET compiler platform, and the cross-platform. ASP.NET MVC, ASP.NET APIs, ASP.NET Web pages and has incorporated a unified MVC. (John Alexander, n.d.)

No.	ASP.NET Version	Details
1	1.0	It supports the use of statically-driven programming for the Web, using (.DLL) library.
2	1.1	Enabling ASP.NET on Mobile, supporting services for ODBC and database systems, and support for IPv6.
3	2.0	Support for views for faster programming like Gridview, DetailsView. Allowing access to database systems via Datasource such as Access, SQL, XML, and Sitemap.
4	4.0	Support for ASP.NET services such as ID control, such as ClientIDMode, Routing support, support for search engines such as Meta tags, Meta Description, and meta keywords, supports the use of charts for the web.
5	4.5	Supports many efficiency improvements for websites like Bundling and Minification, Friendly links, HTML 5 features fully supported, functions to ensure OAuth supported.
6	4.6.1	New features supported in .NET such as encryption support, ADO.NET, WPF, NGen, and Profiling.

With .NET, Microsoft has shown that they are a good candidate for the technology of the world and even lead the web technology. It is suitable for virtually any technology that wants to interact with it, and Microsoft has developed it and makes ASP.NET an easy-to-use language.

With ASP.NET all we need is always available for us to use, libraries that are common to all classes, inherit all cross-functional and inheritance capabilities part. ASP. NET supports us to develop applications from basic to advanced without having to worry about having to use external libraries too much; everything has prepared for ASP.NET support.

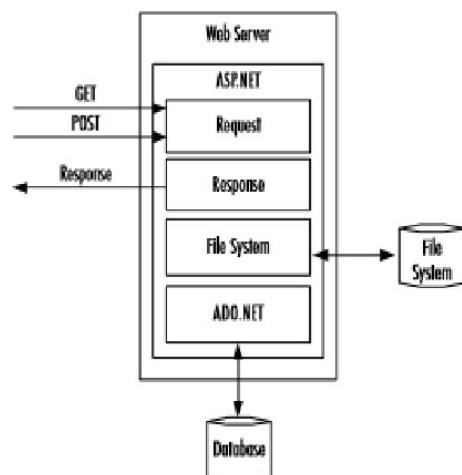
ASP.NET is also a standardization technology that integrates most standard techniques in the world such as XML, SOAP, ADO.NET, and various libraries to design applications that help to do the job. It is easy for developers, including Java.

An ASP.NET programmer does not need to be too technical about technical requirements, just a computer and a programmable Notepad program and the ability to pass protocols are possible to design the web using ASP.NET. NET framework is now supported on XML, making the website design more

diverse. Microsoft has integrated a variety of libraries, including TCP / IP, Domain Controller (DNS), and more, such as XML, Web Service.

### How ASP.NET works

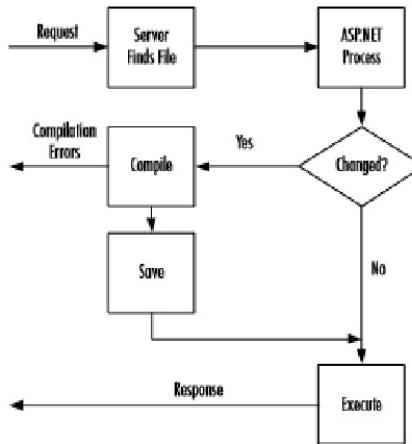
**Web Servers Execute ASP Files:** When a request sent to a web address, the browser will contact the URL of the server. An HTTP request is set up and delivered to ASP.NET for compilation and processing and sent to the user's browser. The machine will only identify the client browser and return the appropriate mark. When forms sent back to the client browser, it is also attached to the previous ASP version. This code extends the functionality of the form such as validation, events, and the ability to maintain form. All form values received by ASP will be maintained in the "State Bags" and compressed into page elements called "ViewState." **Figure 21** shows the process of requesting and receiving two HTTP methods are GET and POST.



**Figure 26 How the Client and Server Communicate (Ahmed, et al., n.d.).**

GET is the method that a browser uses to compile a URL. For example, "<https://www.facebook.com/?stype=lo&jlou=AfeC>." Will the path be "? stype = lo & jlou = AfeC", which is followed by the address of the site and then the GET method receives the data and queries to the address received. The POST method is used to send information, but the information in the compiler is sent separately in the HTTP header for various reasons, so it can not be seen in the URL of the GET method.

**Server-Side Processing:** After receiving the request, the server will find the requested page. With classic ASP versions, there are not many of these steps, although part of the cache still processes and retrieves information. **Figure 21** below outlines this process to facilitate faster processing and delivery.



**Figure 27 The Server-Side Compilation and Delivery Process (Ahmed, et al., n.d.).**

The server has a special.dll mechanism for ASP.NET pages. Versions of .NET always have a collection of databases and feedback components for HTTP requests to process information. Once the processed information processed it is sent back to the client browser, and the information is usually in HTML format.

### Compiling and Delivering ASP.NET Pages.

ASP.NET's compilation and distribution process will typically run in nine stages:

1. IIS translates the request of that URL to find the path of the incoming request.
2. Once the path information of the request has found, the extension (.aspx) will look up the list of required data to send to the requestor process.
3. If we are first accessing the page or accessing the first time after the updated version, the ASP code will use the CLR to compile the command and then pass it to the MSIL followed by the binary code for execution.
4. The binary code for compile command is a .dll file in .NET. Moreover, only temporary archive in process.
5. After the page compiled, the server will check the information see the change or not, if it has no change, the command will be removed to continue the new code compiled.
6. The code after the resolution will executed, and requests will made.
7. The server can identify the form of the request if it is sent from the web to return the appropriate information, such as the Netscape code or the language code for the mobiles
8. All information after the translation completed will be returned to the web browser of the visitors.
9. The form elements are switched on the client side and matched for subsequent processing requests. Examples: HTML and JavaScript for the web and WML and WMLScript for mobiles

**Running ASP.NET Web Pages:** As recommended by Microsoft, users must install the .NET Framework on machines that already have a Windows 2000 Professional operating system or higher versions or

servers and Internet Information Server 5. The lower versions such as Windows NT or Windows 98 can use the SDK software and download the .NET Framework but lacks the support for information processing, and sandbox security and Web farms.

### **Why choosing ASP.NET**

After over review and through our research, we have compiled a table comparing the three ASP.NET, PHP, and JSP platforms to make the best choice and fit our project.

Feature	JSP	PHP	ASP.NET
Scalability and Ease of Maintenance	<p>Extension and maintenance are factors that depend on the programmer. It does not relate to the programming language or platform we use, but depends on four factors:</p> <ul style="list-style-type: none"> <li>The experience of the programmer.</li> <li>Use of programming methods.</li> <li>Use the programming framework.</li> <li>Do the programming guidelines and standards.</li> </ul>		
Performance and Speed	<p>JSP supports working with almost all databases of vendors such as MSSQL or MySQL ... and on different platforms.</p> <p>It is a highly customizable and highly usable advantage, but when it comes to efficiency and data access, the JSP is slightly more inferior to its rivals PHP or ASP.NET.</p> <p>The section is partly because database management vendors are not the publishers</p>	<p>MySQL as an open source DBMS that comes with the PHP Web programming language, MySQL is the preferred candidate to replace Microsoft SQL Server for commercial applications at meager cost and speed.</p> <p>MySQL does not require as much as MSSQL. MySQL can run on UNIX high end systems and perform better than MSSQL on Windows high end servers in many cases.</p>	<p>Microsoft SQL Server is a relational database management system developed by Microsoft. It is the best and most compatible database management system for ASP.NET.</p> <p>Regarding performance, there are many tests and reports that MSSQL performs less than MySQL in many respects.</p> <p>MSSQL requires vast resources (powerful CPU, lots of RAM ...).</p> <p>Otherwise it is very slow.</p>

	<p>of the JSP, so the compatibility and support for data linking and retrieval will be slightly less.</p> <p>In part because of the way the JSP works, the information that is loaded and compiled over the severed before using it interrupts a reasonably long time and also makes it very difficult to evaluate the JSP. So when comparing the speed of data access, JSP always loses compared to their opponents.</p>	<p>MySQL is used by Google, Facebook, YouTube, Yahoo because of the speed and ease of use of this system. So this is considered as a plus for programming in PHP.</p>	<p>Although it is slower and does not have as many large firms as MySQL, there is not much difference between database access. So what is most influential is the ability of the programmer. Some of the major sites that use ASP.NET are StackOverflow, PlentyOfFish.com and MySpace.</p>
Cost:	Free	Free	Not free, has to buy IIS from Microsoft.
Support and Resources	<p>In terms of the popularity of the language, Java is the leading programming language according to TIOBE Figure 5. Therefore, there is no denying that the JSP user community is growing as well. Besides the open source library is also very rich and diverse.</p>	<p>PHP is the most popular language on the internet and has the largest and most widely used community in the world so there is a lot of support when needed. In addition, the open source content is also very free and free.</p>	<p>JSP and ASP.NET have many powerful developers. However, due to the use of ASP.NET is not free is also one of the reasons for limiting users. Therefore, the user community and open source libraries are not as big as the community using PHP.</p>

	Although the number of vendors and communities are not as good as PHP is the programming language is at the top, but when it comes to programming and especially web programming, it is impossible not to mention Java.		
Platform Independent	JSP is a platform independent that can run on many different platforms.	PHP is platform independent and can run on any platform: Linux, Unix, Mac OS X, Windows	ASP.net is built to run only on Windows platform
Popularity	<p>There is no denying that the popularity of PHP is much bigger than other programming platforms. Netcraft's 2010 report indicates that there are 205,714,253 sites available, 112,945,968 accounted for (54.90%) are hosted on Apache, Next is 53,217,620 (25.87%) are hosted on Windows; The rest is on other platforms.</p> <p>That means PHP accounts for more than half of the sites built. It is two times faster than ASP.NET and much larger than other platforms.</p>		
Security	JSP supports the user in securing the available data such as the security of the HttpServletRequest object used on Servlet. So the security of the JSP is pretty solid and appreciated.	PHP does not have built-in security support. Security depends on the programmer, but not every programmer has the ability and knowledge of that. It becomes a hassle for websites that require high security. The site will create many	ASP.NET supports many built-in security mechanisms such as SQL injection. ASP.NET will do all the work for you in a completely automated way.

		vulnerabilities that could easily be hacked.	
Available for kind of Project	Big and Huge Enterprise Solutions.	Small and Medium Sized Web Applications	Small and Medium Enterprise Solutions

The comparison and evaluations in the table above, and with the requirements of our project. We found that applying ASP.NET to our project was the most feasible and the most appropriate. The following reasons make us choose that. First, we needed a powerful web development tool that suited our Windows platform. Second, there is an open source community and library so we can customize and develop our website. The third comes the powerful built-in user interface. Next up is the security issue, we do not want our information as well as customer information to be out. Finally, that language needs to be easy to learn, with a simple structure. From the above requirements, we choose ASP.NET though it is not free to us it is not a big deal.

## 5.2 Front - End Technologies

It is no coincidence that the number of jQuery users is vast and ranks among the top librarians building user interfaces in the web programming industry. Moreover, below we will point out the reasons for what we have studied.

With the "Write less, do more" guideline, it helps users write less code and simplifies calling and using the code in the library Essential and essential features supported by jQuery.

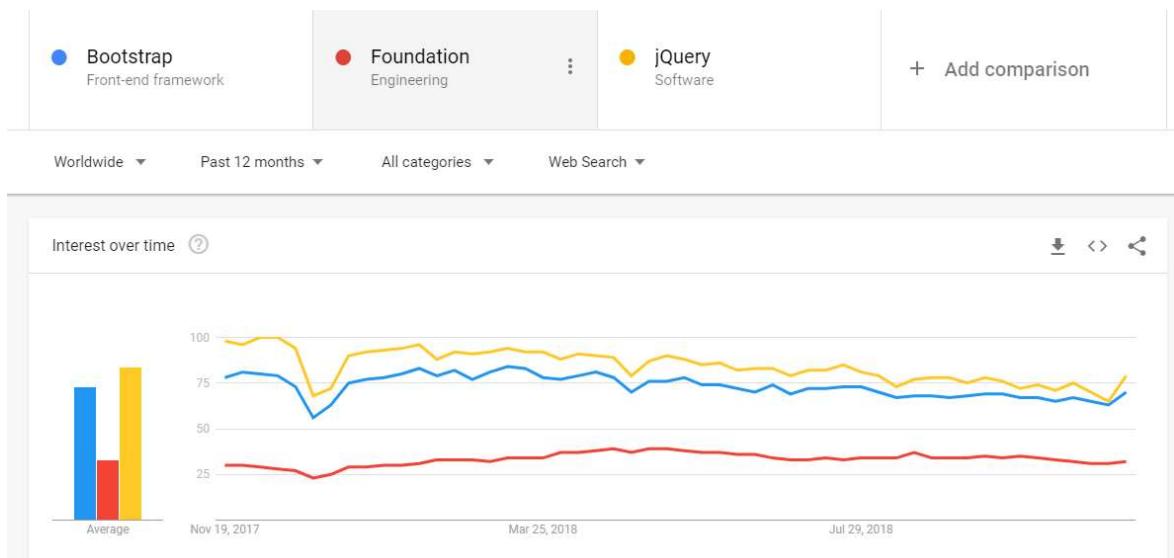


Figure 28 Compare Foundation, jQuery, and Bootstrap (Google trends 11/ 2018).

DOM (Document Object Model): JQuery makes it easy to select elements in the DOM library. Not only that but also their content can be customized through an open source selector called Sizzle. First, we want to use the library we need to download the library or bring the library directly from the CDN (Content Delivery Network) to use.

So the DOM library has been added and call the DOM functions and use it again. Calling a DOM function is easy. Moreover, use the functions in the DOM as they want.

We can also replace DOM elements with another element by merely using the **replaceWith** (content) method. Content is the element we want to replace the original element in the DOM. Content can be either HTML or text.

When we want to remove and don't want to use DOM, Remove DOM element is made by the two universal formats after Method **empty** () remove all node but still use DOM at the node outside node deleted, syntax as following: selector.empty (); Method **removes** (expr) remove all of the selected element and settings from DOM., syntax as following: selector.remove( [ expr ]).

Insert the DOM element, set the user can insert one or more of the new DOM element in an existing document. More multiple methods that jQuery provide to override the other location, but used more than be the first method and insert the contents of the contents already exists. Method **after** (content) used to insert after the contents of the contents is already exists in which before (content) is no backward, that is inserted into the previous content already exists.

## **jQuery Event**

There are about 24 DOM-driven jQuery actions that the programmer can use arbitrarily. I can include some examples and its effects: **append** (content): appends content to within each matched element; **clone** (bool): Emulates the matched DOM elements, and all their Event Handlers, and selects those simulators; **insertAfter** (selector): Inserts all matched elements after a set of other defined elements

Event handling: Provides a way to handle site user events without blurring HTML code with pre-compiled event handlers. JQUERY is very helpful for programmers in setting up responses to handle events. Users can set up **EventHandler** in jQuery with DOM elements using the **bind** () method, with 22 events is used in JQuery provide up for all users for all events to collect the events in the end user.

With the objects of the Event in jQuery, the Callback function will receive the argument, after the object will move for processing. For objects is context will be available Handler used to connect and to process the specific requests or write access when handler.

With the 15 attributes of the property are available for the user settings. E.g.: as **altKey** used to Set true if the Alt is pressed when an event is activated it is not false; **data** attribute value is transport as the second argument to **bind** () when the Handler is set.

There are also other types of methods, such as the methods of the Event object that describe the action or execute specific permissions such as **stopPropagation** () to stop an event bubble to the parent

element, preventing any parent element from being notified of this, methods for manipulating objects, Event Helper, Trigger methods, binding methods, all are easy to use in jQuery.

As in the Overview section I have covered, Jquery supports Ajax very strongly to help programmers simplify the build of the user interfaces optimally.

### Animations

So Ajax has been integrated, and we can use Ajax libraries at our discretion. It is much simpler than using pure Javascript. Shorten the time and effort, as well as limiting many inadequacies in the case of errors arise. jQuery has animated effects that people can use to make the site more attractive and dynamic. Attributes of Animation:

Methods	Method describe
Duration:	May be in numbers or words: slow, fast.
Easing	can use swing or linear (default swing).
Queue	True or false, whether or not to set an animated in the effect queue, if the false animate value is active immediately.
Specialising	a map of one or more CSS attributes defined by the corresponding argument and easing function.
Step	specifies the function that performed after each step in the animation.
Progress	A function called after each step of the animation, only once for each element regardless of the animated number.
Done	a function called after the animate completion (the Promise object resolved).
Fail	a function called after not completing the animate (the Promise object removed).
Always	a function called after the animate completes or stops (the Promise field is resolved or removed).
Complete	a function called after completion of animate.

With these basic properties, the programmers can help reduce the amount of work that is required and spend much time researching it. (Haverbeke, n.d.)

### jQuery AJAX

jQuery easily integrates static or dynamic data with jQueryAJAX via the load () method. This method will initiate an AJAX request to the source server URL. Hosts here are CGI, web development platforms, or framework that produce non-database dynamic data. After submitting the request to the URL, the request will downloaded, and all content will provided HTML tags containing the loading method () .

In situations where the server returns a JSON extension, the jQuery getJSON () function will automatically parse the JSON string to return the result string to the Callback function as the first parameter to perform the next operation. When this method used, a request is sent to the server side and connected through the GET method. Next, the data that directed to the object will provide the name and value to construct the query string. To be connected to a URL. The string will be formatted and encrypted before returning. The behavior of getJSON () is no different from the way the load () method works. There are about nine jQuery AJAX methods and six event methods used to make jQuery binding links to other libraries. (Haverbeke, n.d.)

With many of the advantages described above, jQuery is exceptionally lightweight, at just under 19K, and has cross-browser support for different browsers of different platforms.

### **Conclusion**

If it is difficult for us to choose the back-end technology and need some time to think and think, then choosing front-end technology for us is quite easy. We chose jQuery because ASP.NET pretty well supports it. It is also an open source tool that helps to build a robust and commonly used user interface. Moreover, most importantly, jQuery is an open source library that supports the client side scripting.

## **5.3 Development Methodology**

After exploring technologies for development such as RAD, Waterfall, and Agile Scrum, we can see that *Agile Scrum* is best suited for system design, as it is a large system consisting of news, data -mining and e-commerce should have a systematic quality assurance system.

Agile is the common name for all fast-growing software development methods with an iterative loop increase. With the statements made by the founders aiming always to find the research to find the fastest growing method. The distinctive feature of this statement is that it emphasizes the role of people in software development and that people are new to mind rather than tools.

## **Principles behind the Agile Manifesto**

### ***We follow these principles:***

Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.

Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.

Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.

Business people and developers must work together daily throughout the project.

Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.

The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.

Working software is the primary measure of progress.

Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

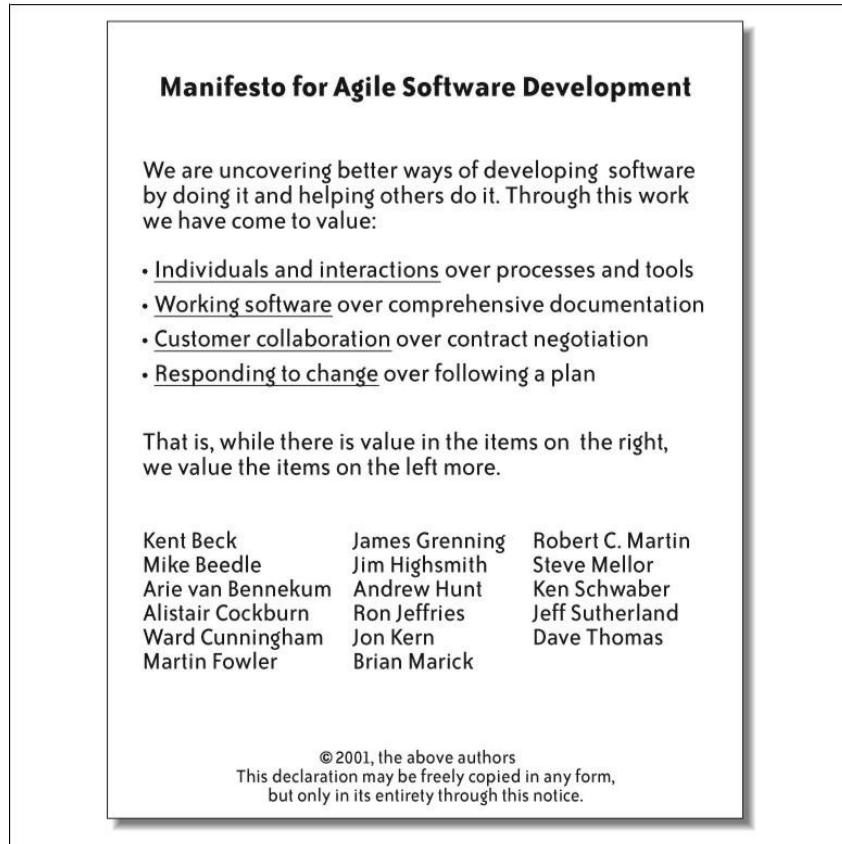
Continuous attention to technical excellence and good design enhances agility.

Simplicity, the art of maximizing the amount of work not done, is essential.

The best architectures, requirements, and designs emerge from self-organizing teams.

At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

**Figure 29 Agile principles. Source: (James Shore and Shane Warden, n.d.)**



**Figure 30 Agile value. (James Shore and Shane Warden, n.d.)**

Agile works based on 12 principles. 12 principles are the guideline for programmers when software development is always oriented to work quickly and effectively. These principles are obvious in **Figure 26** in the Over review of software development methods section of Agile Software Development Methodology. It creates four significant values for the user when applying all Agile development methods, not just one subset method.

**Figure 31 The value of the Agile method. Source: Tezman 2017**

One of the many development methods of the Agile development approach is Scrum. Scrum is used repeatedly and incrementally to increase efficiency and optimize application and risk control and to implement them well; we have three main things: Scrum in development, quality testing, and adaptability.

*Transparency*

The manager and the person responsible for the results always see aspects of the process, all outputs must be understood and have common and well-defined criteria.

*Inspection*

Sprint in Scrum is very important and uses it to detect unwanted flaws, but testing does not need to be too much or often done in a certain way, keep doing it when it develops.

## *Adaptability*

When we consider one aspect or issue of a process to deviate from the product's allowable limits, the product is not accepted, and procedures and processes must strictly adhere to problem-solving tasks should be as early as possible to correct errors. We have Scrum documentation such as Sprint planning, daily scrum, sprint review, and sprint retrospective.

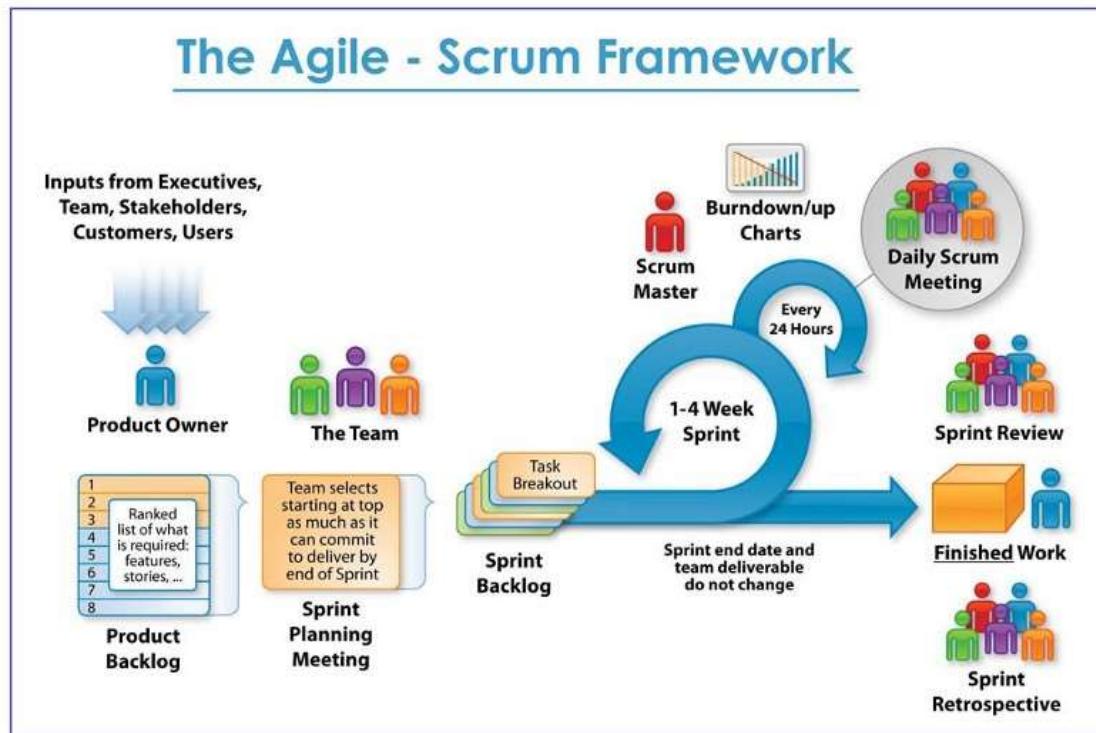


Figure 32 Scrum framework. Source: Mandryk 2016

### **5.3.1 Sprint Planning**

The workflow and detailed requirements listed at Sprint Planning. The Scrum team will record how the job and its capabilities. Sprint is listed and real-time, maximum planning for a Sprint in a month is 8 hours and depending on the level of work. The Scrum Master or Team Leader is responsible for ensuring that the events are complete and that the participants can understand the purpose of the meeting the most clearly, and during the Sprint Planning session, we will often ask the following questions:

- What functions or requirements distributed and handed over in the coming time?
- How does the increase in productivity to achieve the requirement be made?

The home development team of programmers will forecast and list the functions of the product to implement in a Sprint. Product owners are also available to discuss the functions and products that a Sprint will expect and will list in a Sprint Backlog. All team members and programmers must be involved in goal setting.

Identify the functions and write them into Product Backlog, the full time or service will be the members predict. After defining the components in the Product Backlog, they will ship to Sprint for development

and only the application development team can participate in evaluating the Sprint output. Sprint's goal will always be the focus; the Scrum team will accomplish that goal. Sprint's goal is to deploy the features and functionality of Product Backlog and provide a clear view of how software is developing.

The Scrum team will perform system design and tasks to transform the requirements of the Product Backlog into requirements for execution in the application, which begins the incremental process for each function. The work is always estimated and calculated so that it is appropriate to make and arrange the right action to put the functionality into the sprint coming. The development team members will do the work themselves in the Sprint Backlog and when planning for Sprint.

Product owners and applicants will actively identify and understand the items in the selected Product Backlog and take actions to negotiate with the development team to provide feedback and comments. The Scrum team can also invite other members with specialized skills to advise on technology and techniques for the application.

Moreover, by the end of the Sprint development team will be able to explain and hand over to product owners and yet other members like Scrum Master how a system and organization works to accomplish the goal that Sprint has set out.

### ***Sprint goals***

The goal of Sprint is to accomplish the item in Product Backlog, which provides a quick and detailed way for the Scrum team to develop the application and tells the development team what the purpose of each Sprint development is. Each Sprint has requirements and some flexibility in the functionality of Sprint, making the Product Backlog entries coherent and clear. Sprint also helps the general goal team avoid implementing these ideas personally.

### ***Daily Scrum***

We have a short 15 minutes each day. At this brief meeting, the development team will identify the work to do in the next 24 hours. This part helps maximize employment by examining the work done by the members at the Daily Scrum meeting, the time of the meeting being set at the same time every day to simplify the work job. Daily Scrum also has some purpose of tracking progress towards the goals of each Sprint of the team and each member, usually focusing on the accomplishment of the task in a short time, which will optimize the tasks of each member to target each Sprint. At its Daily Scrum meeting, its structure will be set up by the development team and will implement in a variety of ways according to the goals of each Sprint. The development team will use questions to ask each member to achieve their goals:

*“What did I do yesterday that help the Development Team meet the Sprint Goal?*

*What will I do today to support the Development Team meet the Sprint Goal?*

*Do I see any impediment that prevents the Development Team or me from meeting the Sprint Goal?”*

(Ken Schwaber and Jeff Sutherland, n.d.)

### ***Sprint Review***

Carry out a Sprint review at the end of every Sprint so we can evaluate the progress and change, update the Product Backlog if the team feels it is necessary. In the Sprint review, relevant team members should also participate to optimize the values of the functions they have developed. The primary purposes of this meeting were to elicit results and feedback to better collaborate on software production. Usually, the monthly meeting for a Sprint lasts 4 hours or depending on the complexity of the application. Scrum Master or the manager will ensure that all team members understand and grasp the content and keep it in the timebox.

At this meeting, we have elements such as the entire development team including Scrum Master and other stakeholders such as customers. The owner of the product will determine whether the problem has been identified correctly before moving on to another subject. The owner of the project also made a request for a Product Backlog to see how the Sprint components must follow the Product Backlog, and all team members must follow and target Sprint, provides the proof and functionality required for the next Sprint. Consider environments where we need to change trending product functions if needed and plan next for Sprint. After the Sprint Review, we will have an evaluation of the product functionality and modifications required for the Product Backlog.

### ***Sprint Retrospective***

This meeting is an excellent opportunity to upgrade the functionality for Sprint, which allows us to check, control and upgrade to the next Sprint could work better. This meeting can last up to three hours for a Sprint a month. Meeting managers must always ensure that the members always understand the knowledge and purpose. Scrum Master and the manager always make sure that the meeting is still positive and productive and that it includes the following primary goals:

- Check and review the most recent Sprint related sections such as people, relationships, implementation tools, and production processes.
- Identify critical functions and requirements that have identified and progressed well, creating a plan to build the work for a well-developed team.

Scrum Master or team leader encourages teammates to make improvements, which makes the implementation and development of the application more efficient and exciting in the next Sprint. Whenever a Sprint meeting is underway, the development team will plan to continue to increase the quality of the application and the product, and it is acceptable when the product owner accepts it.

### **5.3.2 Scrum artifacts**

This part provides members with transparency to be able to monitor and control the progress of their projects, all parts of Agile Scrum are designed to demonstrate transparency and accountability transparency of the product to the developer.

#### ***Product Backlog***

Product Backlog includes a complete list of requirements that have been identified to improve a product. This part is the only input source required for any function to perform; product owners will be the key

to determining the Product Backlog, including the relevance of business availability. Usually a Product Backlog cannot be completed in the first place, and initially, they are only the most basic requirements for a system to function correctly. This list will accurately reflect the output of the product and may change over time to confirm its suitability, competitiveness, and utility. Product Backlog will contain all functions required by the application, the order will be prioritized from important to less important and will complete when the product owner confirms it is "finished."

As part of Agile Scrum to add value to the product, is a place for feedback and where Product Backlog is complete, as we know the requirements are constantly changing and Product Backlog changes with them, it depends on the business conditions, the business environment and all that will affect the Product Backlog. Scrum teams can also work together on the same product; Product Backlog can also be used to organize upcoming work on the next product. Product Backlog editing actions are a continuous process in collaboration with both the development team and the stakeholders. Screening of unnecessary parts and non-performing functions cost no more than 10% of the effort to the product should be updated regularly. The development team will be responsible for all of the estimates made when implementing Product Backlog. Product owners will help Scrum understand business needs that support the development team make easy-to-make estimates.

### ***Sprint Backlog***

The Sprint Backlog includes the functionality listed in the Product Backlog with an incremental execution plan and Sprint goal. It is a plan and anticipation of what the team has to offer after a Sprint, added functionality and ensures that the team will be able to "done" the whole of that functionality.

In a Sprint Backlog, it displays the entire work listings and functions that the team needs to complete so that Sprint quality is guaranteed it needs to include at least one improvement item added in the previous meeting. It contains full details of the categories in the implementation process that are available in the Daily Scrum. Besides, the Scrum team changed the Sprint Backlog during Sprint, which was learned and approved before making the change. Because of the new nature of the work, Product Backlog is always up to date with the Sprint Backlog, which eliminates unnecessary and unnecessary parts that will remove and only the development team can edit Sprint Backlog.

### ***“Done”***

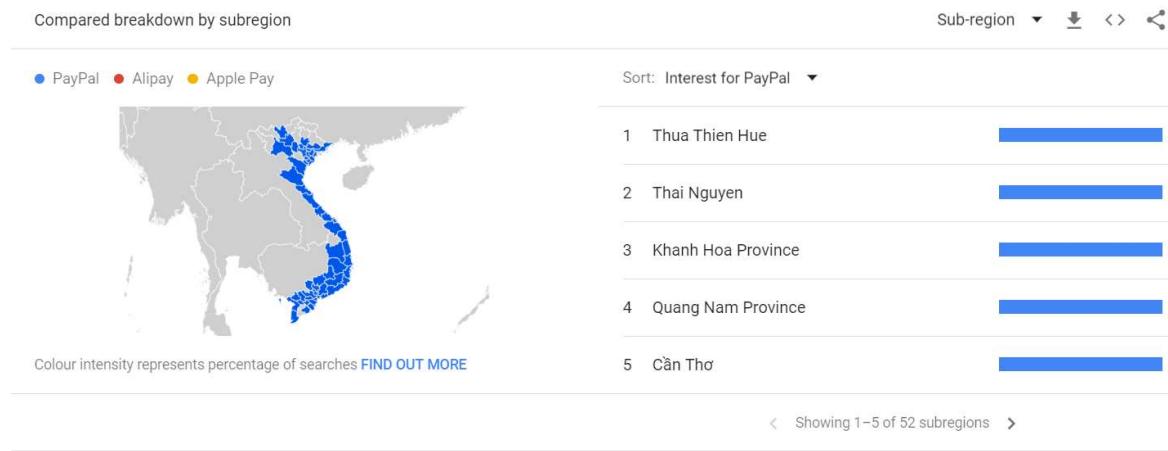
They used when an item in the Product Backlog or Sprint Backlog list wholly completed. It also helps the Scrum development team know how many components in the Product Backlog have been completed and need to complete and provide increased activity on the Sprint Backlog.

### **Conclusion**

With what I have learned in the above software development methods I found the Agile development method to be appropriate for our project, which is precisely the Scrum method. The reasons for choosing Scrum are that we need a fast-paced approach and that the method must focus around people. The part is the way all Agile methods work. Our website is a sales website that needs to be built and put into action quickly, followed by the ability to expand as well as continuously changing tasks based on

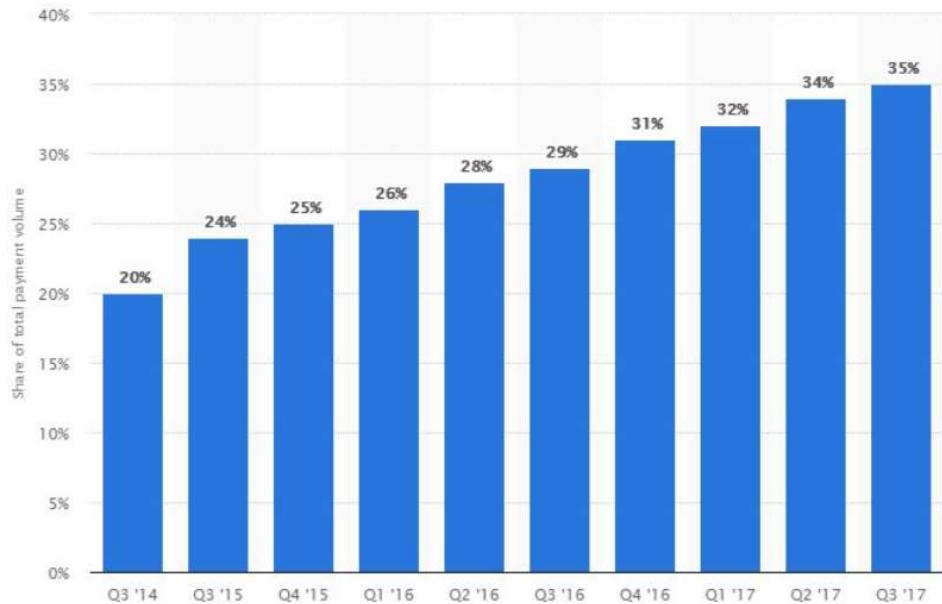
feedback from end users. To make appropriate adjustments, Finally, we need a way to work without the need for too many papers or research papers and still have the most precise and useful job assignments, and those jobs must be consistent with The ability of each member while developing to work efficiency is highest. For all of these reasons, I find that Scrum is the same method that was born for our project development.

## 5.4 Online payment



**Figure 33 Distribution maps of PayPal, AliPay, ApplePay in Vietnam Google Trends 11/2018.**

Because PayPal's scale of operation is almost entirely in the whole territory of Vietnam, in that Alipay and Apple Pay almost no appearance in Vietnam. PayPal will be the optimal choice for this project. The following will be detailed information and explain why PayPal will be applied.



Data visualized by  + a b | e a u

© Statista 2018 

**Figure 34. Source: Anon 2018**

PayPal now accounts for more than 35% of online payments worldwide. In addition to attracting millions of users just a few months after its inception, PayPal is also linked to the majority of shopping sites, suggesting that PayPal is holding the majority of market share.

To open a PayPal account, you need to ensure the following conditions:

Make sure we are 18 and have an ID. This is to make sure that you are an adult and have the capacity and awareness to take full responsibility for our actions, understand what we are doing and take responsibility before the law in the event something happened.

Own a Visa or Mastercard or America Express card. The use of these cards ensures that we have a valid account and payment method for the transaction. These cards are a little more rigid than our other ATM cards, and PayPal only supports payments for these three cards, so users should pay close attention.

Validating email, all transaction information will sent and confirmed by our email. Having a valid email account will make our transaction safer and more convenient.

There is a need for international transactions. PayPal is a form of payment that is widely available throughout the world and is especially suitable for international transactions. If we want to use it for domestic trading, that is fine. The time it takes for we to complete the transaction procedure will be much more time consuming than we would with any transaction. The most common form of payment is where we live.

### *Benefits of using PayPal:*

Quick, instant payment; Easily transfer PayPal between PayPal accounts; No cardholder information: Cardholder's information stored when first registering an account. We do not need to enter and re-enter the cardholder information when making payment. Just choose to pay by PayPal and transfer to our PayPal account. Next, click "PAY NOW" and it is done; User privacy: The information of the cardholder is entirely confidential; Dissemination: The payment network is widely spread all over the world; Support: Customer support service is excellent and fast.

### *How to use PayPal?*

we just need to add our Visa card to our PayPal account and verify it. When dealing internationally, PayPal automatically translates USD into VND and subtracted right into our card.

We can buy individual PayPal, like buying a phone card and loading it into our phone. By purchasing PayPal from someone else, they will send PayPal through our account at a rate of 22-22.5 / PayPal. With the purchase of PayPal, we will reduce costs due to the high level of conversion from VND to USD. (vothanhien.com, n.d.)

Example: we transfer \$ 100 to a friend or make a payment

We transfer money available in the PayPal balance will be free.

Moreover, when we let PayPal withdraw money directly in our VISA card to convert to USD and make payments will cost as follows:

$$100\% + 0.3 \text{ USD} = 3.7 \text{ USD}$$

The safe level of using PayPal is quite high because when we use PayPal purchase, we only need to enter the PayPal email and password, so it is safer than the form of direct use of Visa card. Besides, not only is a well-known business known around the world, but many online merchant sites also offer PayPal support. (vothanhien.com, n.d.)

## **5.5 Data Mining**

After exploring technologies for development such as Association Rule, Apriori, and FP-Growth, we can see that *Association Rule and Apriori* is best suited for system design, as it is a large system consisting, data-mining and e-commerce should have a quick data resolving for the system.

### **Association Rule Mining**

Association rule mining: With a given set of transactions, rules for predicting the probability of occurring in a transaction of these items based on the appearance of other items.

Examples of association rules:

$$\{1\} \rightarrow \{3\}$$

$$\{2, 3\} \rightarrow \{5\}$$

$$\{3\} \rightarrow \{5\}$$

TID	Items
1	1, 3, 4
2	2, 3, 5
3	1, 2, 3, 5
4	2, 5

**Figure 35 Example product data**

**Basic definition:**

- Items: A collection of one or more items. Items k (k-itemset) have entries. For example, 5 items are {1, 2, 3, 4, 5}.
- Law of association - denoted by  $X \rightarrow Y$  ( $X, Y$  is a set of items).
- Counting support - symbol  $\sigma$ : number of occurrences of a set item.
- Support -  $S$  is the transaction rate that contains both  $X$  and  $Y$  for all transactions.
- Confidence - symbol  $c$ : is the ratio of transactions containing both  $X$  and  $Y$  for transactions that contain  $X$ .
- Frequent items (regular/ large itemset): The item supports levels greater than or equal to the threshold value per minute. (Padberg, n.d.)

**Detect association rule**

- With a set of transactions T, the purpose of the problem of finding the association rule is to find all the rules that have:
  - The support level is  $\geq$  minsup value.
  - Reliability  $\geq$  minconf threshold value.
  - Brute-force approach:
    - List all possible association rules.
    - Calculates the level of support and reliability for each rule.
    - Eliminate rules with less than minsup support or less than minconf.

Consider the section: {1, 2, 3, 4, 5}

Example data	
TID	Items
1	1, 2, 5
2	2, 4
3	2, 3

4	1, 2, 4
5	1, 3
6	2, 3
7	1, 3
8	1, 2 ,3 ,5
9	1, 2, 3
10	1, 2

Association rules	
$\{2\} \rightarrow \{1\}$	(s = 0.5, c = 0.625)
$\{1\} \rightarrow \{2\}$	(s = 0.5, c = 0.71)
$\{2\} \rightarrow \{3\}$	(s = 0.5, c = 0.50)
$\{3\} \rightarrow \{2\}$	(s = 0.5, c = 0.67)
$\{2, 3\} \rightarrow \{1\}$	(s = 0.5, c = 0.5)
$\{1, 5\} \rightarrow \{2\}$	(s = 0.5, c = 1)

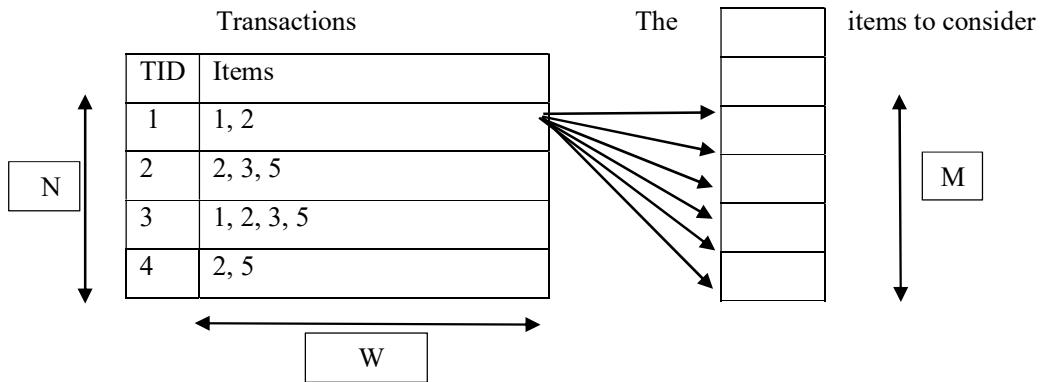
We see that all of the above rules are separated (into two subsets) of the same set: {1, 2, 3, 4, 5}. Rules generated from the same set will have the same support but may differ in reliability. Therefore, in the process of detecting association rules, we can separate the two requirements for support and reliability.

So, the process of detecting association rules will be divided into two crucial stages (two stages):

Generate frequent/large itemset: Generate all items with support  $\geq$  minsup.

Generating association rules: From every regular item (obtained in the preceding step), all high probability laws generated ( $\geq$  minconf). (Padberg, n.d.)

*Brute-force method to generate regular items (step 1):*



Each item in the schema considered.

Calculate the support level of each item, by browsing through all transactions.

For each transaction, compare it to each item considered.

Complexity  $\sim O(N.M.w)$ . If  $M = 2^d$ , this complexity is too large.

=> Based on the analysis above, we have the following strategies:

Reduce the number of items to consider ( $M$ ): Full search  $M = 2^d$ . Then, use the pruning techniques to reduce the  $M$ .

Reduce the number of transactions to consider ( $N$ ): Decrease  $N$ , as the size (number of items) of the item increases.

Reduce the number of matchings/comparisons between itemset and transactions ( $N.M$ ): Use appropriate (useful) data structures to store items or transactions. No need to compare each item with each transaction. (Padberg, n.d.)

### Apriority Algorithms

Apriori algorithm is a rule in data mining applied to a database containing a vast number of transactions. Example, suppose we have a database containing supermarket transactions. A database as a massive spreadsheet in which each row is a customer transaction and each column represents each of the different commodities. By applying the Apriori algorithm, one can easily find grocery items that purchased with the same rules. From there we can find the best selling items. From there, the term item sets represent these items. Apriori is easy to implement and has many derivatives, not to mention it has plenty of memory, space and time-intensive when generating sets. Apriori is available in some types such as tool, Weka, and Orange. (Han, n.d.) To implement this algorithm, it is necessary to identify the following three factors:

The first is the size of the itemsets, and the second is the number of transactions that contain the itemsets divided by the total number of transactions. The third is the Conditional Condition of the item that has some other items in our itemsets.

*Basic Apriori algorithm has 3 steps:*

- 1: Join: It will scan the entire database for the frequency of 1 itemsets
- 2: Prune: Items that meet the requirements for movement into itemsets
- 3: Repeat: This is repeated for each itemsets until it reaches the specified size

An example of the Apriori algorithm

We have a database transaction representation of 4 transactions where TID is a unique identifier for each transaction

Table 1	
TID	Items
T001	1, 3, 4
T002	2, 3, 5
T003	1, 2, 3, 5
T004	2, 5

We will start the first step: The database browsing function determines the number of occurrences for a particular item. Then we get the C1 shown in Table 2.

Table 2	
Itemset	Support
{1}	2
{2}	3
{3}	3
{4}	1
{5}	3

Next step: Trimming, in which the favorite support file compared with the minimum support of 2. We will get the L1 value from this step through

Table 3	
Itemset	Support
{1}	2
{2}	3
{3}	3
{5}	3

Step 3: Create a candidate made in which all contestants can have two favorite candidates created. This table denoted by C2 and is represented by Table 4 showing that the association can derived from general table 3.

Table 4 L1	
Itemset	Support
{1, 2}	1
{1, 3}	2
{1, 5}	1
{2, 3}	2
{2, 5}	3
{3, 5}	2

Based on the minimum support condition, pruning performed. From Table 4, two common sets are eliminated and get the same result as Table 5.

Table 5 L2	
Itemset	Support
{1, 3}	2
{2, 3}	2
{2, 5}	3
{3, 5}	2

The next steps will continue until no common set or candidate set can generate and support more than 2. The process will describe in Tables 6 and 7

Table 6 C3	
Itemset	Support
{2, 3, 5}	2

Table 7 L3	
Itemset	Support
{B, C, E}	2

## Conclusion

From the above analysis, together with the strengths and weaknesses of rule and algorithms: Association Rule and Apriori Algorithms will be applied to the project because of the effectiveness and ability to implement them, as well as the economic benefits they bring.

## 6 IMPLEMENT

### 6.1 Requirement analysis

This analysis is the informational part of the news that made up the functionality of the site, and we chose a way to refer to similar products to find and evaluate actual functionality for inclusion in the section. Determine what to do and what not to do, assessing the feasibility of the system, the rationale, assumptions of other methods to be able to convert user requirements into functionality through evaluation other products.

#### 6.1.1 Amazon

Amazon: Amazon.com is Inc.'s website which mostly for the US market considered as the top retailer in the world. It was considered the most popular e-commerce website (internet shopping).

- Client-side programming language: JavaScript
- Server-side programming language: Java, Perl, C ++.

*View product*

Amazon's home page arranges catalogs by tile, and the top is the list of products that users are interested in based on time. For example, on Black Friday and next Christmas, catalogs of items containing items related to the time will be taken to the top.

**Figure 36 View product home page. Source: Amazon**

*View product category*

When selecting "Black Friday Deals," we will be navigating to a new page to a new page. The vertical line will sort these product categories, prices, promotions, user reviews on the left side of the site. On

the right side will be products with promotional prices and calculated algorithms based on the information posted to the top of the page. Not to mention the "sort by" function will make finding the product more accessible. The part is a tactical hit in customer psychology that increases the likelihood of buying a product

**Figure 37 View product category. Source: Amazon**

*View product detail*

The product page made in detail, and it contains all the product information from the photo to the detailed video. The part will increase the customer's interest in the product because most customers do not read too much. Especially the price of the product is prominent color help customers pay attention and can write deep into there brain. Below are similar products including name, user rating, rating, price, and distributor. The bottom line is the technical specifications and the actual evaluation of the user about the product. Buyers who feel not confident in the product can read through the product comments, which can make a purchase decision quickly. The arrangement comment bottom is wise, proves the Amazon deserves to one of the tops many the e-commerce website.

**Figure 38 Amazon Product detail Source: Amazon**

*Shopping cart and payment*

In the shopping cart of Amazon will display the product catalog in the basket with the product added to the basket will appear first. Besides, when we change the number of products, the total amount of money will immediately change and notify we immediately so that users can immediately ensure the price paid for products in line with spending. The part again hits the buyer's psychology, because compared to other sites, the price will usually be at the bottom right of the order, which will make it difficult for buyers to control their finances with the interface design as this Amazon has made the shopping more convenient and friendlier with customers.

**Figure 39 Shopping cart Source: Amazon**

Currently, when we buy on Amazon, we can pay in two forms: Amazon Gift Card and Visa / Master Card.

#### *Conclusion*

After reviewing the Amazon website, we found that the site allows users to view the product list, search the product through the product catalog, view product details, shopping cart, search products by name, post selling, posting product reviews, registering and logging in, sending payment requests.

### **6.1.2 eBay**

eBay: is an e-commerce website. This place gathers and sells many products from around the world. There is also a website for us to buy products in the form of auctions. Who pays higher will buy that item, and this is the second most popular e-commerce site in the world.

- Client-side programming language: JavaScript
- Server-side programming language: JavaScript, Java
- Database: Oracle Database

#### *View product and interface*

eBay has a nice and soft interface. The homepage consists of popular categories, designed with rounded icons with silly but still elegant. Designing a website as simple as this will make the user can work in the best way with the website. It will make the user easy to find the product they want to buy.

**Figure 40 eBay homepage. Source: eBay**

#### *View product category*

When we choose a product catalog, the site will direct us to a new website that contains product catalogs related to that product category. Each category of related products tied to images that express the type of the product. This makes product selection more manageable and more comfortable for shoppers.

**Figure 41 Ebay product category. Source: eBay**

*View product detail*

In the product details page, it divided into three columns, and the first columns contain all product images, the second columns are quantity information, product price, promotion and the bottom of column 2 are formed shipping with the payment method. eBay accepts payments via PayPal, Visa, MasterCard, American Express and discover. The third column contains the seller's information, including trust, number of feedbacks.

**Figure 42 eBay product detail. Source: eBay**

*Shopping cart and payment*

The eBay product order has the same structure as Amazon, but eBay has a discount for customers for products with quantity more than 1. When increasing the number of a product, the website immediately

reloads and releases discount news for buyers. The part helps to reduce waiting times when shopping for products on the site.

**Figure 43 eBay Shopping cart. Source: eBay**

### *Conclusion*

After reviewing the eBay website, we find that the site allows users to view the product listing, search products by name, post a sale, post a comment on the product, search the product through the product catalog, view product details, shopping cart contains discount information, register and log in, send a payment request.

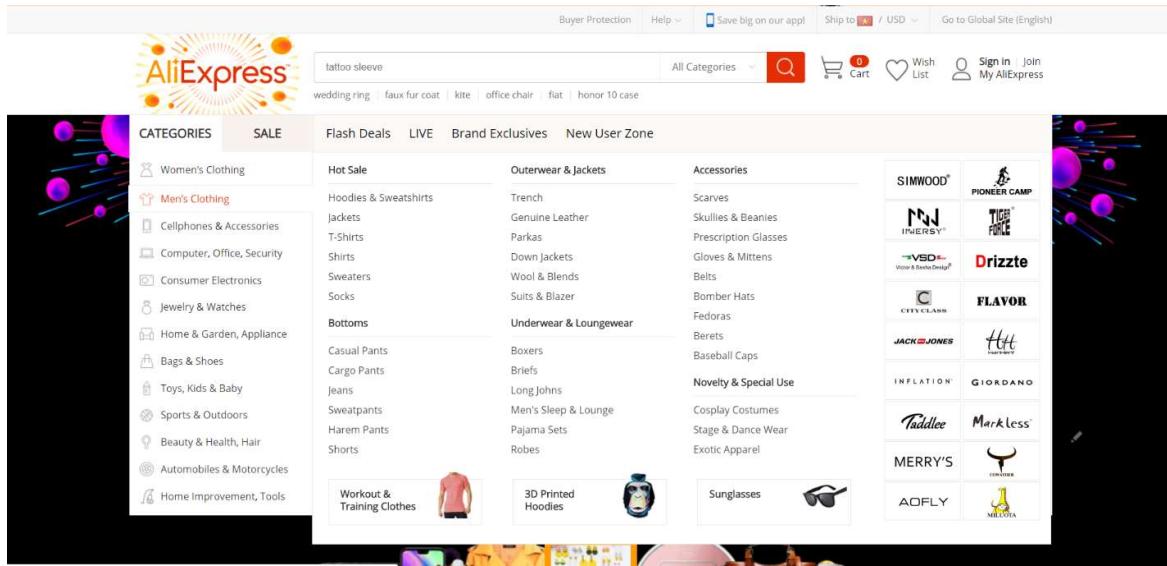
### **6.1.3 AliExpress**

AliExpress: is a website of the Alibaba group. It is one of the leading e-commerce websites in China. Aliexpress.com offers a wide variety of free worldwide shipments that are becoming one of the most popular shopping sites in the world.

- Client-side programming language: JavaScript.
- Server-side programming language: JavaScript, Java.
- Database: Oracle Database.

### *Design*

When talking about AliExpress, we were impressed first by the logo because the animated effect makes shoppers have a deep impression on AliExpress. Next is the product catalog, but it does not bother the user as it is grounded and has a very clear gap. Not to mention bringing the major brands to the list makes customers more confident buying on AliExpress.



**Figure 44** AliExpress homepage. Source: AliExpress

*View product*

The home page includes a slide that runs in the middle of the screen, containing the most popular product categories. Below is a list of products that are highlighted for users to pay attention.

**Figure 45** AliExpress view product. Source: AliExpress

*View product detail*

When choosing a product of the website will take them to another page that the image found on the left of the web page. Details information will be on the right, and all the information about the discount value will be highlighted to attract customer for the purchase.



**Figure 46** AliExpress view product detail. Source: AliExpress

#### *Payment and view cart*

After the user finishes choosing the product, they will pay through the shopping cart. All the details about the product will be fully noted here. AliExpress has many other forms of payment as we can see in the image below. The bottom of the site will have similar products to suggest to users.



**Figure 47** AliExpress view product detail. Source: AliExpress

### *Conclusion*

After reviewing the AliExpress website, we found that the site allows users to view the product list, search the product through the product catalog, view product details, shopping cart, search products by name, post a sale, posting product reviews, register and log in, sending payment requests.

### **Result after reviewing**

Based on review about three e-commerce website Amazon, eBay and AliExpress, evaluating the above products, we can draw some of the main functions, and user permissions and details of the functions will describe in the Use case diagram.

Functions	Admin	Customer	Staff
Log in to the system	Y	Y	Y
Manage accounts in the system	Y	Y	N
Manage Order	N	Y	N
Manage Content/ News	N	Y	N
Manage Product	Y	Y	N
Manage Menu	N	Y	N
Manage Advertisement	N	Y	Y
View analysis report	N	Y	N
Manage profile	Y	Y	Y
View Product	N	Y	Y
View Content	N	Y	Y

## **6.2 Design the system**

Below is the system of the system that that already implemented, it for the build of the product and development a logical and has a system over. It includes diagrams such as Entity Relational Diagram, Use Case Diagram, Flowchart, Activity Diagram, and Class Diagram, UI design *see appendix UI Design*.

### **6.2.1 Use case diagram**

Here is the Use Case diagram, which consists of two central rights: Staff and Customer, and we will now refer to the functions through the objects.

**Figure 48 Use case diagram**

For the customer can see the product and details of the product to know the information needed to buy? Ordering for products that have been selected to purchase that product, customers can also check the status of orders through the order status view. Customers can also read the news, which is the news that customers will like and will care about because they are entirely related to the products that customers regularly purchase. What customers can also pay online via electronic payment gateway is Paypal.

For managers, we can see that they can manage almost the entire system. First, we can manage Orders view the status of orders to proceed with the operation with orders; Order Administration can also be used to track line items to track sales. Managing products and product categories to conduct sales includes things like adding, editing and deleting products, managing news so that users can read information from the site. Manage user accounts as well as user information.

### **6.2.2 Entity relationship diagram**

This relational entity model represents the association of entities with which one can know the type of relationship, determine the necessary information needed by the system and the structure between them, they are intermediaries that can transform the data management requirements in the real environment into relational databases.

**Figure 49 Entity relationship diagram**

First, to discuss the above entity model we can see that is the User, we look through the user delegation to the UserGroup group, a user will have from one to many different UserGroup, and the Credential table is a decentralized table, which also has one to have many different user groups. Each user can have many different orders and may not have any Order; each Order can have more than one OrderDetail. The Product Category will have one to have many products, one Product will have 0 to many OrderDetail, and in this case, OrderDetail is the Weak Entity. The product also has a ContentTag and has between 0 and more ContentTags. ContentCategory is the article, and a Content can have from 0 to many ContentTag like Product.

### **6.2.3 Class diagram**

This diagram is also one of the most critical design drawings of the software, which draws together all components to create the system, which represents the structure of the software. SEE APPENDIX - DIAGRAM

First, we will look at the User table. It has two most important attributes, the Role, and the UserID, which can perform actions such as get the whole user, edit the user, check the log, get the user rights and add a new user. Class Order will have the two most important attributes, OrderID and UserID, which include actions such as adding a new Order, taking the entire Order, changing the Order status, and finally getting the Order status. The OrderDetail class has two main attributes, OrderDetailID and ProductID, which include actions such as addingng an OrderDetail and retrieving the OrderDetail. The OrderDetail will be fetched and pushed into the program. This Class is the part that we will use to analyze the data to retrieve the records, includes classes such as ItemSet and Item, which perform actions such as converting items into ItemSet, adding things to ItemSet, performing data analysis, combining Apriority and Association Rules, combining numbers, and creating connection rules. From the Class Program, the data page is Class Algorithm, which has the main property List <ItemSet>, which consists of converting items to numeric arrays, converting ItemSets to List <ItemSet>, removing duplicate data. In List <Item>, calculate Candidate the different cases. To do the task; data needs to process through the FindSubSet class. This class also has the primary key attribute, List <ItemSet>, which performs actions such as connecting arrays to generate data, take all the subset and finally add it to List <ItemSet> to return to the Algorithm class. The Product Category has an important attribute that is an ID, and it includes actions such as retrieving all Product Categories, adding a new Product Category, editing the Product Category and deleting the Product Category, interacting directly with the Product Class that has a legitimate attribute. The concern is the ProductID and ProductCategoryID, where we take actions that take whole products or get a product, retrieve entire product lists, add new products, edit products, and delete, it also interacts with the OrderDetail table, which is the ProductID commonly used in OrderDetail. The Content Category has the leading attribute, ContentCategoryID, which consists of adding a new Content Category, editing and deleting the Content Category, interacting with the Content Class, the Content Class having the main attributes of the ContentID and the ContentCategoryID. Actions such as retrieving all content, adding views, adding new content, deleting Content, and editing Content.

#### 6.2.4 Activity diagrams

This Activity Diagram that demonstrates the logical modeling of activity modeling that suggested to users flows to another stream emphasizes data transfer and controls the objects in real time present.

**Figure 50 Data-mining suggestion product**

For customers they will look at the product then the system will retrieve the data, and the customer wants to view and analyze them, after analyzing the related data will be given and returned to the user.

### **Figure 51 Activity of order product**

For order and payment operations, the user orders the system then takes the request and executes the order, the customer initiates the payment and completes the transaction.

#### **6.2.5 Data flow diagram**

This diagram shows the relationship between activities in the system when the system exchanges data of the system.

**Figure 52 Payment Data Flow**

In the above diagram, we can see when the customer orders the product, information of the order processed and stored invoice, the user information will also be collected and stored information in order. The invoice information will be processed through Payment, and final information after payment will be sent to the user.

### 6.2.6 Flowchart

This flowchart represents the flowchart of the steps for performing a smart product hint for the user, which give in a particular order to solve the problem already, which used before the code written.

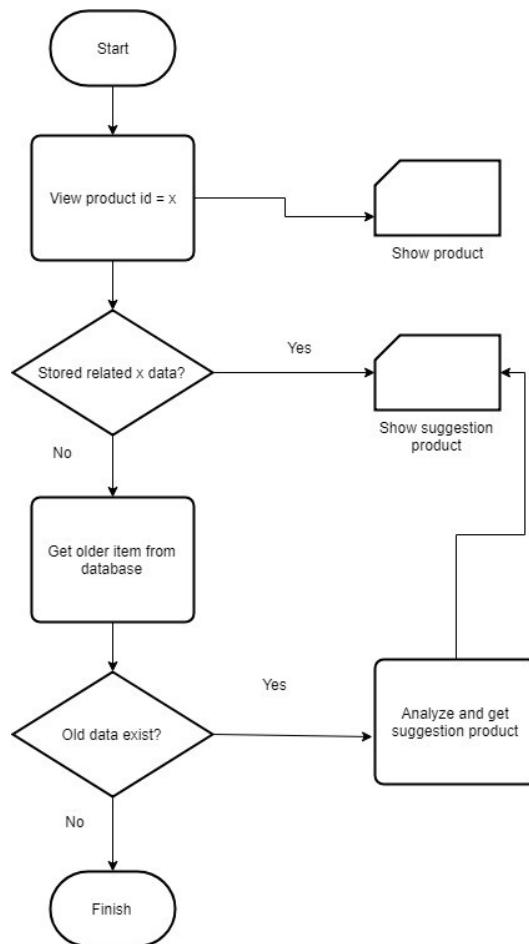
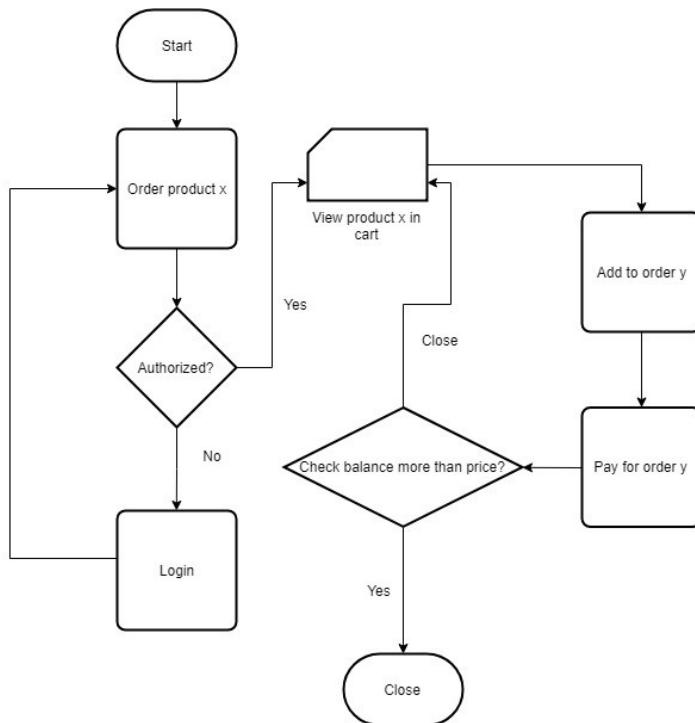


Figure 53 Data-mining suggestion product flowchart

The user first participates in viewing the product and in the graph on it is the X product, the system immediately displays the product and, along with that, makes a review of that product related issues exist or not? If so then the system sends the product to the user. If there is no related product then the system will retrieve the data purchased by the customer stored in the database, the system will continue to check in the database to see the old orders related to the order or not? If so, the system will perform the data analysis and send back to the customer intelligence data, and if not, the system will not send the analysis and exit the quick product release.



**Figure 54 Flowchart order**

First, the user will order the product and in the graph above is product X, will the system check whether the user logged in or not? If we are logged in, the product will be added to the Cart to process the payment. When the payment made, the system will check the balance, and if the balance is greater than the amount of the order, payment will be successful. Incomplete accounts will require inspection and payment failure. If a user is not logged in, ask the user to log in, and the steps will return from adding the product to Cart to proceed with the order.

## 6.3 Development of the system

### Introduction

Visual studio after integrating the open source code as well as the necessary frameworks will be used to develop and build the project and to implement interface design I have used templates like: *bigcommerce*, *adminmetronic* and *24news website*.

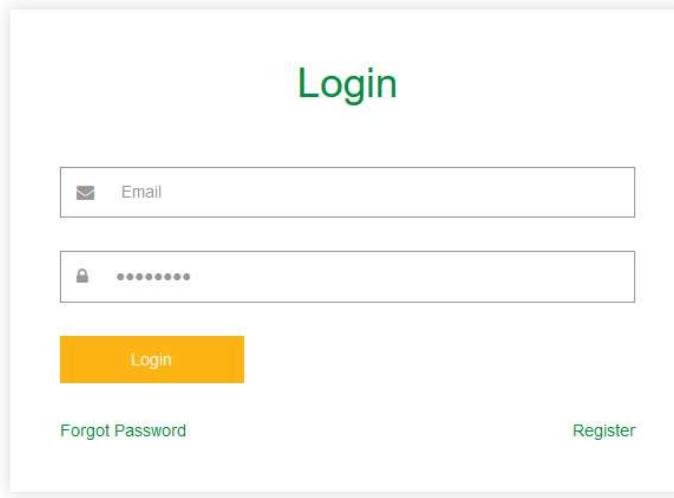
Explanation of these functions will be used repeatedly in our reports in various sections with the aim of giving the reader a better understanding of the system in which we build the way we operate and function of the section.

### 1. Login forms

The default is that there is an account and decentralized in a clear role. Users after accessing the site address will select the login to log their account into the system.

**Figure 55 Homepage**

A login form will appear for users who log in after the user has taken a click on the login button in the corner of the browser.



The image shows a clean, modern login interface. At the top center, the word "Login" is displayed in a large, bold, green font. Below it are two input fields: the first for "Email" (indicated by an envelope icon) and the second for "Password" (indicated by a lock icon). Both fields contain placeholder text ("Email" and "Password"). A large yellow "Login" button is positioned below the password field. At the bottom left is a "Forgot Password" link, and at the bottom right is a "Register" link.

**Figure 56 Login page**

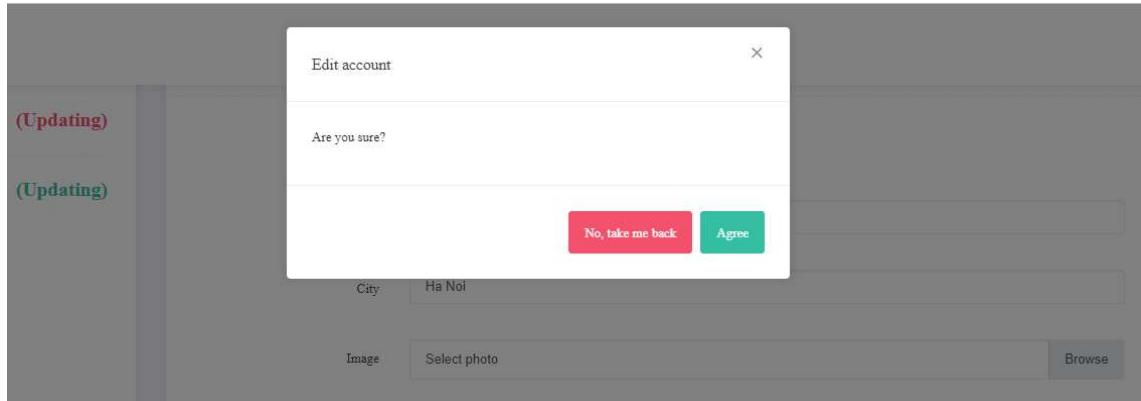
Once logged in to the site's system, the system will automatically return to our home page and display the username instead of the original login location.

Successful login users will select the task that they will perform next. If the user chooses this way to edit personal information. A request will be forwarded and returned to the user who is updating their personal information.

**2. Update User information.**

**Figure 57 Edit profile**

In this page, a user can edit their property information such as picture updates, phone numbers, email or change the access password in the form available.



**Figure 58 Alert to edit profile**

A dialog will appear after we change the information and click on the update button. Does the dialog box warn we are sure with the update? The user selects Yes if we want to complete the update and selects if it is just a wrong action or does not want to update the information. The validate error occurred after the user clicked on the agree with button and before the information saved in the database. Common errors such as misspellings, incorrect format or the use of special characters in unauthorized fields will removed.

### **3. Add a new Product**

Products are divided into many different types of products are very diverse. It may belong to agricultural materials, pesticides or vegetables, and they are further divided into smaller categories. These items have been studied before and are made up of lists; users need to add them by selecting the product category and product type to match the product to add.

**Figure 59 Add new product**

Finally, finish the description of the product and select the image for the product. Remember the status set to on for product to display on the website.

#### **4. Edit Product Details**

To perform this function requires the user to go to the Product Catalog page and select the product to edit the information. To make this business faster and more efficient, users can enter the keyword of the product they want to find in the search field located in the upper corner of the browser screen. Products containing keywords will display as a list below for select users.

**Figure 60 Edit Product**

How to make product updates is the same as the steps and steps in adding new products.

#### **5. Delete Product**

Users who want to delete a product, select the trash can icon in the product line in the product management list.

## **6. View account list**

**Figure 61 Account management**

## **7. Add new staff**

Implementing a new user, the default is to have an existing, decentralized management account that can grant permissions and create a new user, usually with a role in the system as an employee.

After accessing the site and logging in with the account as Admin, the user will use his or her rights to move to the user management page and then select Add new user.

**Figure 62 Add new account**

Complete the new user's information in the fields of the Add New User Page and select Add Users. If the user has not filled in the information and clicks on the button to add new users. A warning dialog will display and remind we to be sure and then show errors during the process of entering information into the same fields as in the Update User Information section.

## **8. Edit Staff information**

Permission to change user information with the Staff role is only available to managers or administrators of the system, and only authorized persons can change the information of subordinates.

The first is a user who is logged in as the manager or Administrator, then follows the user to the user management page, as described above.

**Figure 63 Edit account**

After the user reaches the user management page, the list of subordinates will be displayed, the user's job is now to select a user who needs to change the information and proceed to change the information of the user. Used as an employee. The steps are the same as the steps that take place to change the user's personal information.

## 9. Delete account

Only the person authorized as Administrator or manager has this right. The user logs on to the system and goes to the user management page. The user selects the object to delete in the user list and then performs the deletion of the user as if it were deletion of a product.

View product category

The screenshot shows a web-based grocery store application. At the top, there is a navigation bar with a dropdown menu "Alijub", the logo "24 News Read Everything", and social media links for LinkedIn, Google+, Twitter, and Facebook. Below the navigation bar is a secondary navigation menu with links for HOME, PRODUCT, COOK, SERVICES, and ABOUT. The main content area is titled "Product" and displays five product items in a grid:

- Rice V1**: An image of a bowl of rice. Price: 0-0 1000 D. Offer button. Add to Cart button.
- Fertilizer V2**: An image of a bag of naturalGRO organic compost. Price: 0-0 1500 D. Offer button. Add to Cart button.
- Rice V8**: An image of a bag of rice labeled "STARTER". Price: 0-0 100 D. Offer button. Add to Cart button.
- Fertilizer V9**: An image of a bag of fertilizer. Price: 0-0 1000 D. Offer button. Add to Cart button.
- Rice V10**: An image of a bowl of rice. Offer button.

## 10. View Revenue

Below the following business reports



Figure 64 View revenue

## 11. Shopping cart

Sales volume through the total amount will give the chart rankings by date and self-aggregate by month and send to the mailbox of the manager or site operator.

Shopping cart							
No.	Product Code	Product Name	Price	Image	Quantity	Total	Action
1	8	Rice V8	100.00 \$		1	100 \$	<button>Delete</button>
2	9	Fertilizer V9	1000.00 \$		1	1,000 \$	<button>Delete</button>
3	2	Fertilizer V2	1500.00 \$		1	1,500 \$	<button>Delete</button>

Figure 65 Shopping cart

Buyers can choose one or more items they want to buy, and go to review their shopping carts. Items that buyers do not want to buy can removed from their shopping cart. By selecting the trash can icon in the same line of the item, the buyer would like to remove

## 12. Payment online

The screenshot shows a shopping cart interface. At the top, there's a navigation bar with 'HOME' and 'PRODUCT' links, and social media icons for Q, in, G+, Twitter, and Facebook. A modal window titled 'Buy products' is open, asking 'Are you sure to buy?' with 'No' and 'Yes' buttons. The main area shows a table for the shopping cart:

No.	Product Code	Product Name	Price	Image	Quantity	Total	Action
1	2	Fertilizer V2	1500.00 \$		1	1,500 \$	<input type="button" value="Delete"/>

Total Price: 1,500 \$

Figure 66 Check out

hongminh Minh's Test Store

Hi, test!

Ship to  
test buyer  
1 Main St, San Jose, CA 95131 United States

Change >

Pay with

CREDIT UNION 1 x-6477

Make this bank account my preferred way to pay

Visa x-8503 (backup)

Visa x-8503

+ Add a debit or credit card

+ Apply for PayPal Credit  
Pay over time for your purchase of \$1,210,001.00 with PayPal Credit.  
Subject to credit approval. [See terms](#)

[View PayPal Policies](#) and your payment method rights.

You'll be able to review your order before you complete your purchase.

Figure 67 Payment by PayPal

If we want to pay, click on the cart icon at the top right of the page. We will be directed to a shopping cart page that aggregates the products you have selected, including details, quantities and total prices. we can increase or decrease the quantity or even delete the product. After you have checked the button click payment if you are not logged in the site will ask you to log in at this time you fill in the login information to process payment. The website will be based on your personal information and will be delivered to your address once you have made the transfer payment.

### 13. Content management

**Figure 68 View list of content**

### 14. Add a category for the article.

To add articles, users will log into their account and then go to the article management page.

A list of categories will display to the user; then the user selects the new add button to add a new category for the article if needed.

The screenshot shows a web-based form titled 'ARTICLES MANAGEMENT' under 'List of product categories - Add article category'. The form has a teal header bar with the title. Below it, there's a large input field labeled 'Name list:' with a placeholder 'Nhập tên danh mục'. Underneath is a 'MetaDescription:' field with the placeholder 'Độ dài tối đa nên là 60 từ phục vụ SEO tốt hơn'. A 'Listed by:' dropdown menu is set to 'Not in any category'. At the bottom left is a blue button labeled '+ Add a new one'.

**Figure 69 Add article category**

Users will add the necessary information to a catalog that needs to add. Then select the new add button at the bottom of the form on the add article category page. The order of adding a product catalog is the same as adding a new product.

### 15. Edit and delete category for the article.

Do the same thing when we want to edit and delete a product.

## 16. Add advertise.

If we want to advertise ads, click on "Manage Ads" on the left side of the screen. The site directs us to the trafficking site that contains the full information from the image to the description, time.

MESSAGE MANAGEMENT List of message categories												
LIST OF MESSAGE LIST												
Code	Name list	content	Image	Point to	Describe more	Status	Last Edit	Date added	Made by	Edited by	Erase	Repair
tin_tuc_cua_chung_toi	NEWS ABOUT US	That is also a ....				True	11/24/2018 7:39:29 PM	11/23/2018 10:47:10 AM	staff	staff		
dich_vu_cung_cap	One of the most prestigious food suppliers in Vietnam	The most prestigious clean ....				True	11/24/2018 7:39:37 PM	11/23/2018 10:47:10 AM	staff	staff		

Figure 70 Advertisement/Message on-site management

Click on the icon to edit, and the site immediately takes us to the message edit page.

We can edit the ad content by editing the information in the cells. Then when we have finished editing, we press the edit button at the bottom of the page to proceed to edit the ad. The site will now issue a warning that we want to fix it. Choose to agree to fix or not to cancel the fix. The site will then bring us back to the message management page.

Figure 71 Add message/advertisement

When we want to delete an ad, select the delete button to remove the ad from the page. At this point, the site will ask if we want to delete or not. Opt-in to delete ads, not to cancel. You will then be redirected back to the trafficking page.

## 17. Menu management

When we want to manage the menu click on the menu manager located on the side of the left screen. The site directs us to the menu management page that displays the menu's information. To add new

button on the top of the menu management. To fix this, we need to click on the edit button located on the far right of each row. To delete we select the delete button located in the right place next to the edit button.

**Figure 72 View list of menu**

### **17. Adding a new menu**

By filling in the menu information you want to create in the box then click the new button. The site will ask if you want to add a new one or not. Click OK to add the new one and choose Cancel to cancel the new one. After successful adding, you will be redirected to the menu management page.

**Figure 73 Add menu**

### **18. Edit menu**

The Edit Menu page displays the full information of the menu you want to edit with the menu type name. You change the menu name then press the edit button at the bottom of the screen. The site will ask you if you want to ask for repairs or not. Select agree to repair not to cancel the repair. Successful website fixes will direct you back to lait roasted web menu management.

**Figure 74 Edit menu**

Removing the menu is similar to editing a product. You choose to delete the menu then the site will ask you if you want to delete the menu. Select not to cancel the deletion, agree to delete the menu. Similar to editing a web page after a successful deletion will direct you back to the menu management page.

**Figure 75 Delete menu**

#### **19. Show suggestion product**

Shoppers who view the product select and view product details, data-mining algorithms will automatically view the lightning and record the buyer's history and give suggestions for the items below to help the buyer. More choices without much searching.



**Figure 76 Product smart suggestion**

## 6.4 Project Planning

The project I have started to implement is 182 days which includes tasks such as research, design, planning, and implementation. Detailed graph view on Appendix - Proposer

## 6.5 Testing

In this section I will select Black box testing to perform the test, this test will not interfere with the code of the software.

**Definitions:** Black box testing is a software testing methodology in which the functions of the software to be tested can be a useful function, a module or a test-type subroutine that does not need to be considered. Its internal structure or mode of operation.

**Test Method:** Black box function applied to almost every level for software such as Unit test, Integration test, System test, Acceptance test.

### Features of the Black box test:

- Black box tests rely on the only information required by the requirements of the function to be tested.
- Testers do not need to have knowledge of coding or know about software programming but can still do it.
- The test based on the performance of the function of the test results by the requirements or not, so the tester enters the information to test and see the results are known to the results of the test check.

- The black box test requires the full development of test cases before the examinations are conducted; The test steps are just as in the test case and compare the results with the results in the test case.

**Create a test case and perform a test case:**

*See the test cases in the APPENDIX TEST CASE*

**Overview of the functions of the system.**

The interface is always the first thing to be judged because it is directly displaying information to the user and interacting directly with the user, not the methods or functions inside. The results through the test and work process show the results following the desired and through familiar and highly similar interface with similar sites. The section helps users not to be confused when using.

The role of the user is not cross-cultivated, and the function is separated. It does not happen that everyone decentralizes but still has the same ability in the system. There are always dialogs to notify users before updating changes or deleting any information.

As far as our performance tests are concerned, the system can filter around 93,000 records in a minute to find the results in big-data. That proves that the system works quite well and the ability to respond to results as well as the ability to analyze data is very high. The system works and almost immediately returns results to the user.

The pre-imported data is also validating pretty well. It identifies and classifies data for and gives recommendations to the user for proper formatting or proper input to the system. For example, if the image format is specified as .jpg or .png if not entered correctly, the message will notify the user to re-enter the image in the correct format with .jpg and .png extension. At the same time, the new system continues to operate processes with data.

**Summary**

Of the 48 test cases, 45 test cases were performed using the black box test, and 93.75% performed with the expected results, and three test cases accounted for 6.25%. The results are as expected. The part proves that the functions of the system are quite complete and can be delivered and have been able to be handed over and put into operation. Some test results do not give us the same result as the test-case because it is difficult and requires more time and effort to complete. Unfinished functions will be further refined in the most recent rounds to complete the project.

## 7 ETHICAL AND LEGAL

Today's dependence on people's computers is increasing day by day, and it is a necessity and an essential part of society and yet it also leads to a number of issues related to the legal, ethical, Decision making in relation to professional ethics for software production is also an essential factor in the computer engineering industry. Moreover, now let's look at an issue of ethical and legal issues worth paying attention.

- **Ethic:** This is the problem between the right and wrong in the design of the software along with the ethics of the designer, and with our software, we always judge we actions should do it right, each person has a different point of view. I have relied on the environment and culture of this country to accept the problems when implementing our website development such as not putting the news that the state allowed or negatively impacted the human rule, bringing useful articles to society. Always use the Generally Accepted License code or the publicly available source code of the library that allows users to download and use customizable as JQuery open source code to build the interface. Users or as open source PayPal to build online payments for users. These source codes have the licenses I mentioned above, and there is no piracy when I apply them to this project. The project built on tools; that is a visual studio with a version of ASP.NET that buys Microsoft licensing fees in the selection of tools and platforms for building software. Domains used are other free software that will not harm or compromise the rights of any person or entity.
- **Legal:** At present, ethics education does not have official and clear policy statements and specific guidelines for inclusion in the curriculum of software training, so there are many shortcomings in the perception of behavior — unruly human in software development, which mainly based on the law as the basis for determining the right and wrong of morality. However, the law is limited to certain norms, and it only determines when it goes beyond the limits of right and wrong and is considered the bottom line for moral judgment. In addition to the law that can be changed by religion, the cultural and social situation in different places will have specific laws to suit the culture and people there. This website is always compliant with the laws and regulations in force such as not storing or stealing customer information or product-related information for production purposes with the collection of information of the Big target data is useful for itself. Sources of information collected for newspaper writing and product adjustment are always by the law, and there is always an information consultation from the experts to ensure the authenticity and correctness of the information or do not store the transaction information of customers to take advantage or disperse contrary to the current law. Do not attempt to install malicious code in order to damage the information of the system as well as steal confidential information of customers through transactions as well as information stored in the database: no

misrepresentation or alteration of data, customer data, product or employee use of the system. Do not arbitrarily build and authorize the privacy of us or the individual does not meet the requirements of the project owner to sabotage the system when transferring the product. By self-comparison; with the rules of living and moral standards of us as well as the culture where we live as well as the current law. The things that we do and commit to the following will continue to build on we coder's career and, shortly, during development, upgrading and maintenance of this project; we will take seriously. What laws regulate and allow that to fit we ethical as well as human culture.

## 8 EVALUATION

Overall, the project is almost complete regarding functionality and can be handed over and put into operation. The website has enough primary database of products needed to meet the requirements of the project owner to put into operation. The user interface according to the user's evaluation is consistent with their topic and product, and functions for the buyer performing the transaction are possible.

### *Completed Parts:*

Complete the user interface that fits the theme of the site is the sale of agricultural products so that the primary colors of the banners are green with brown earth, they are considered expression represents the agricultural sector. The interface is built using jQuery's libraries and can be resized to fit multiple devices, along with support for handling user events how to optimize, and best fit the site. Layouts show the content of our site clear and eye-catching, well structured and attract people to our site.

Actions like adding people and stacks work very well. New employees who receive a decentralization cannot exercise rights that do not fall within their scope, such as a user assigned to an employee who cannot have the authority to add, edit, or delete information of others who can only change his information. Validate the fields when a new member is registered, and the most critical part of this section is the validate data of the passwords that have made according to the requirements of the project investor. Actions on adding and deleting product information are also very well done. All fields are required to be Validate information carefully so as not to be missed or left empty when stored in the database.

Payment has been made available through PayPal's open source application to the payment section. The transaction information of the customer is recorded and stored in the database when the customer makes the next transaction. The system will be able to identify the customer and can make calls to customers based on data-mining algorithms. The information of the customer before the transaction checked and if not by the format and requirements, the user will be asked to re-enter with the specific instructions and announcements. A warning will given when the real user enters enough information to make sure that the customer wants to perform the transaction or cancel the transaction.

The site has integrated data-mining algorithms that are used to analyze information that the database records all activity information of the site. The information through the algorithm will be analyzed and

given predictions of the user trend. At the same time, the data will be used for statistics and included in monthly reports as needed.

### **Good and not good at website**

The interface is quite good and highly appreciated by the project owner. However, some images and logos are placed incorrectly and need to be adjusted a bit. The information recorded in the database used, and analysis of the data results to make predictions. These results give very positive and desirable results. The system is stable. However, there are still some doubts about the accuracy of the results when analyzed from the algorithm, and more tests are needed to confirm the correctness of the results. Data to record transactions and perform periodic reporting is still not fully functional.

Although the payment function has been completed and can work well, the payment transaction proceeds without error, however there is no mechanism to ensure and inform customers about the information about the transaction such as sending a successful transaction message or canceling the transaction or sending notice via Email or any form other to tell customers the results as well as the payment process, this makes customers a bit confused and causes insecurity for customers to purchase their money.

There is a shortcoming that has not been applied to the website yet, and there are no security mechanisms applied to secure and secure the data and information that the system holds against hackers. The system is vulnerable to hacking and stealing information. Therefore, the security issue will be one of the next priority requirements in the project development process.

### **Challenge**

Two challenges need to address, the first issue is the security of the site to secure the information of the site hosted by the database system of the project. Avoid data loss, as well as any bad things, happen due to Hackers intrusion and sabotage system. The second problem is the accuracy of the results of the system introduced through the analysis of data-mining algorithms. The more accurately the predictions are finalized and put into action the sooner the anticipated results will help the site get the information to adjust to the consumer as soon as possible.

The website was able to complete the functions of a website used to trade and execute transactions, Despite the difficulties and challenges as well as the implementation is not excellent but professional has completed the full functions of the software. Regardless of the project, the project has maintained and updated the new version. The goal is to improve the tasks as well as to change the necessary tasks. Therefore, the unfinished, as well as the difficult and the challenging, will be the work to be done in the new version shortly.

## **9 FUTURE WORKS**

The future work will be to adjust the inadequacies that present the site and continue to develop software as required by the manufacturer. It is necessary to fix many problems in the system such as database design system to be more closely connected, more explicit locking and relationship setting, the user-side details in more ways to request input are clear and more than just the same site rating. The interfaces also have some minor CSS related issues that need to be corrected, adding attributes to the product when purchasing the product. JQuery also has some bugs when testing in the console that takes time to fix though they do not matter.

The layout of this product for users has some unreasonable and need to split the column and add functions to users such as email account confirmation to increase security and automation for users. Functions can work well, but some features need further improvements such as managing invoices and sending invoices via email to the user or billing status message to the user for billing and interaction. Overcome what is not yet perfect and also remedies what is not reasonable in the user interface. Implement a security mechanism to ensure that the system is secure. Data-mining needs to be re-tested to give the results an authenticity. Add a mechanism to automatically notify customers when making transactions such as automatic messaging or Email notification when the transfer is complete or when the error occurred.

Automatically collects information for periodic reporting. Next comes another possible change that arises from the customer. Users are more accessing, adding SSL to the website is also necessary because this is the online payment system through PayPal, so the information security is critical. For the data-mining algorithm that optimizes it to fit all objects, the algorithm now prefers transferring the input data to the product as an integer, and that is a term when we want flexibility in data processing. Posting news requires many constraints and adding commenting will make the system more attractive as the current system only has a detailed view of the article, whenever the post posted the system should also send mail to the manager when the job for better management.

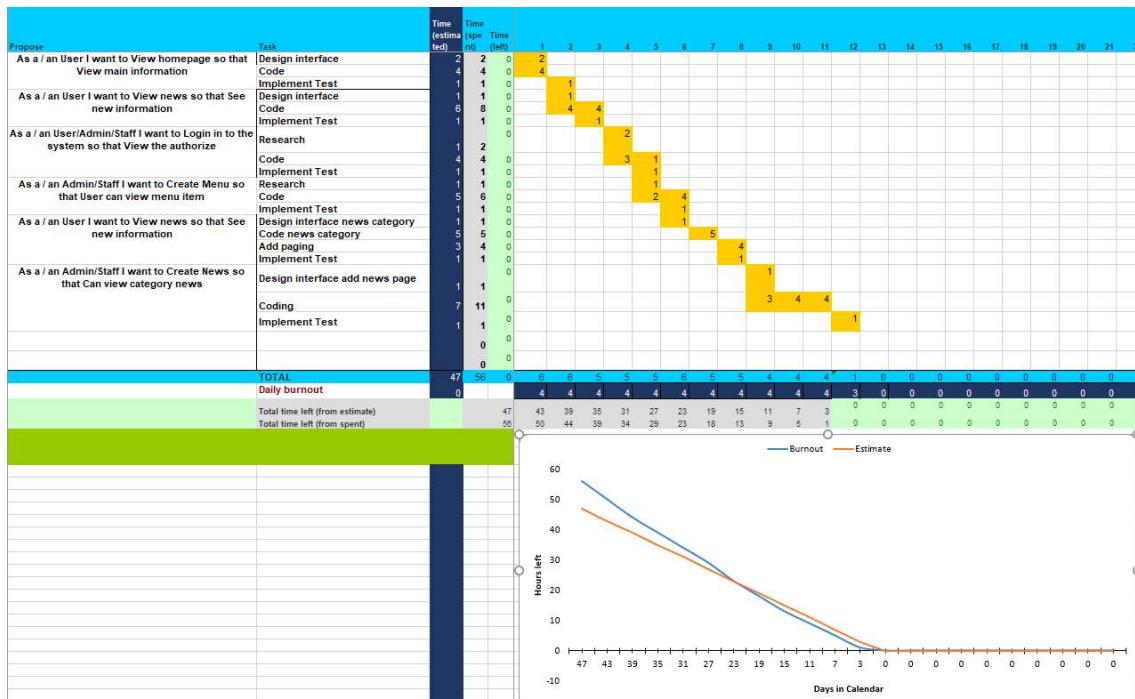
## **10 CONCLUSION**

Developing a system of data mining and their applications in developing news & e-commerce and a system. I find many functions that evaluate components to define goals that need to do like E-commerce and Traditional commerce, Select the database to design the system as MS Access, MSSQL and MySQL from which to choose MSSQL to deploy the system. Explore the selection of technologies to design systems such as ASP.NET, JSP, and PHP from which to choose ASP.NET to implement the system, on the user interface we have also looked through the framework like Bootstrap, Foundation, Jquery, and Ajax to conclude using Bootstrap and JQuery and Ajax to design user interfaces. Evaluate and learn software development methods for quality in software development such as Waterfall model, Rapid application, and Agile Scrum to extract Agile Scrum is the primary development method for the application. We also learned about newspapers such as Online Newspaper and Traditional Newspapers then selected Online Newspaper as the target to reach users. Review and analyze the payment status online through a 3rd party like Paypal, Alipay and choose Paypal as the primary payment method. The study of smart data is hinting through algorithms such as Apriori, FP-Growth, Association Rule, and then using association rules and Apriori as algorithms for data analysis. The system has completed despite some weaknesses, but it has successfully run the most critical functions, and the data-mining system with E-commerce and Newspaper works entirely successfully.

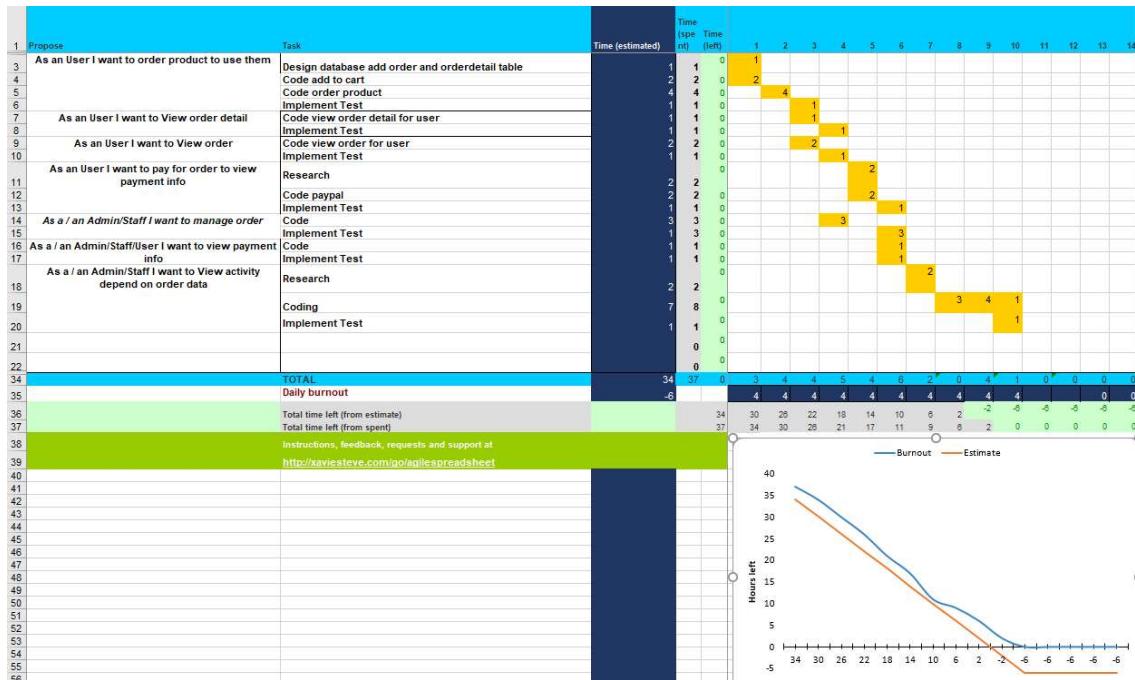
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## **APPENDIX A - Agile planning**



## Figure 77 Sprint 1



### Figure 78 Sprint 2

**Figure 79 Product backlog**

## **APPENDIX B - PROJECT PROPOSER**

### **PROJECT PROPOSER**

**An investigation about data mining and ASP.NET MVC and their applications in developing E-commerce, Newspaper Website.**

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## **12 TASK 1: BE ABLE TO FORMULATE A PROJECT**

### **12.1 Task 1.1 Overview**

Nowadays, the e-commerce and online newspaper has gradually shifted to online business, the whole world is now moving so gradually, together with the analysis of user data becomes more critical. The paper moved from paper to online to facilitate the transmission of information in the digital age; it is not easy to follow the actual situation it has done, the birth of Online newspaper has changed the way we read newspapers, how to store them as our media and newspaper formats make it much more convenient. Along with that, data research is becoming a significant trend in the world, enhancing the experience for customers who want to buy more goods, help businesses know the needs of customers, make biased data the way we do business is becoming more and more important as today's technology is 4.0. All of the above can help to know what the purpose of the customer is to facilitate sales, and that is why we are working on the project to E-Commerce, supporting the Items to earn profits Online instead of traditional business practices, space savers, human resources and costs to make the business more efficient. Design the news website that includes news display tasks for users, information updates, images, text, and video for users to view. In addition to presenting the data mining website can also suggest new information to the user by using the data that users have manipulated or act on the previous site to attract users to use the site better. To increase the interactivity of the system in the future, we used ASP.NET MVC so that external applications can interact with the website, reusing the data retrieval method makes it easier to expand the site. The news website is a type of online newspaper that can reach readers the fastest, with the development of the online publication online has gradually replaced paper newspaper. It brings many benefits such as cost savings, view various types of journals, quick information updates, easy to edit content, and can see the media, so the online newspaper is now a significant site and many people in the world use today. For website development we have used ASP.NET MVC 5 for web development, this is a very stable web development language, with highly customizable security and mechanism and with a news site system containing many data so that using ASP MVC for development is very consistent. By presenting and analyzing data for website managers, we need logic charts to display the data. The Kendo UI works very well and will be applied to perform the data analysis for the website. That is one of the very powerful frameworks that was released many years ago and is used by many developers to design the website interface. The website also uses HTML5 and Jquery; AJAX composes the display more attractive, interactive code system through AJAX software helps to develop more diverse to save time developing software. In addition to developing the entire system, we also use Agile Scrum, which helps increase productivity in software production, minimizes risk and development errors, improves project control and shortens development time software.

## **12.2 Task 1.2 Aim**

This project was made to investigate technologies such as the algorithms used to analyze data such as Apriori, Association rules, follow the demand for information and purchase in the world, ASP.NET MVC 5 razor framework, Bootstrap, Javascript, C sharp, AJAX, MSSQL, Kendo UI, and Agile Scrum. Knowing how to develop software that is more appropriate and standardized like Agile Scrum, understand the necessary components, understand their usage, learn about their strengths and weaknesses to develop better news website. ASP.NET is a server-side open source used to develop and create dynamic websites. It was designed by Microsoft to allow web developers to build. For the asp.net language, ASP.NET MVC is a compelling and accessible language, it consists of three layers which are Model, View, and Controller and we can learn later and use it because it provides a very powerful controller. It is great for interactive user interfaces like HTML, Jquery, and CSS. The technology also allows for easy testing. This framework is quite lightweight, helping we learn how to develop software faster, we can learn about the supporting APIs it helps me produce better software than normal development. The bootstrap library is something we look forward to finding out; it is quite lightweight and easy to learn. However, to do it correctly, we need to have a solid knowledge of HTML and CSS to develop good software. Jquery is an essential library, and almost every web application needs it, we can learn as much as possible about this library. There is a library called Kendo that also uses JQUERY as the platform, and we can know about them for better software. We can to find out about a potent database management tool that is MSSQL, SQL syntax is a very interactive language. Users can efficiently use the tools to people request in the form SQL commands for data management, and programmers can also embed SQL statements into the programming language to interact with the database to better develop the application, so we need to research more about it.

## **12.3 Task 1.3 Objectives**

Work Break Down Structure:

**Figure 80 Breakdown structure**

### **12.3.1 1.3.1 To understand about Data mining and Web development framework and other methodologies.**

Activities:

- 1.3.1.1 Research about Web development framework
- 1.3.1.2 Select an appropriate Web development framework
- 1.3.1.3 Research about Data Mining
- 1.3.1.4 Select an appropriate algorithm for Data Mining
- 1.3.1.5 Research about Software Development Methodologies
- 1.3.1.6 Select an appropriate Software Development Methodologies

Deliverables:

- 1.3.1.1 A report about Web development framework
- 1.3.1.2 A report select an appropriate Web development framework
- 1.3.1.3 A report about Data Mining
- 1.3.1.4 A report Select an appropriate algorithm for Data Mining
- 1.3.1.5 Research about Software Development Methodologies
- 1.3.1.6 Select an appropriate Software Development Methodologies

### **12.3.2 1.3.2 To gather requirements for the system**

Activities:

1.3.2.1 Evaluate similar products

Deliverables:

1.3.2.1 Requirement specification documentation

### **12.3.3 1.3.3 Analysis of the system**

Activities:

1.3.3.1 Create ERD diagram

1.3.3.1 Create the context diagrams

1.3.3.2 Describe the context diagrams

1.3.3.3 Create the use cases diagrams

1.3.3.4 Describe the use cases diagrams

Deliverables:

1.3.3.1 Context diagrams

1.3.3.2 Set of context diagrams

1.3.3.3 Use case diagrams

1.3.3.4 Set of use case diagrams

### **12.3.4 1.3.4 To design the system**

Activities:

1.3.4.1 To create an informational design (DB Design - ERD)

1.3.4.2 To create a functional design (Class diagrams)

1.3.4.3 To do algorithm design (pseudo codes, flow-charts)

1.3.4.4 Interaction Design (or just GUI Design)

Deliverables:

1.3.4.1 DB Design - ERD

1.3.4.2 Set of class diagrams

1.3.4.3 Set of pseudo codes/flowcharts for the algorithms used

1.3.4.4 Interaction Design (or just GUI Design)

### **12.3.5 1.3.5 To implement the system**

Activities:

1.3.5.1 Select an appropriate programming language

1.3.5.2 Select an appropriate programming DBMS

1.3.5.3 Select an appropriate IDE

1.3.5.4 Code

Deliverables:

1.3.5.1 A report about selected programming language

- 1.3.5.2 A report about selected DBMS
- 1.3.5.3 A report about IDE
- 1.3.5.4 The software

### **12.3.6 1.3.6 Testing**

Activities:

- 1.3.6.1 Select test strategy
- 1.3.6.2 Write test cases
- 1.3.6.3 Do test
- 1.3.6.4 Write test result evaluations

Deliverables:

- 1.3.4.1 A report about selected test strategy
- 1.3.4.2 Set of test cases
- 1.3.4.3 Set of test results
- 1.3.4.4 Test result evaluations

### **12.3.7 1.3.7 Evaluations**

Activities:

- 1.3.7.1 Describe about the product built (screenshots + guide steps -> user manual)
- 1.3.7.2 Analyze Strengths/Weaknesses of the products
- 1.3.7.3 Analyze Strengths/Weaknesses of the selected technologies in this case
- 1.3.7.4 Analyze Strengths/Weaknesses of the selected software development methodology in this case

Deliverables:

- 1.3.7.1. A report about a product built
- 1.3.7.2 A report about Strengths/Weaknesses of the products
- 1.3.7.3 A report about Strengths/Weaknesses of the selected technologies in this case
- 1.3.7.4 A report about Strengths/Weaknesses of the selected software development methodology in this case (Betty H.C. Cheng, Rogério de Lemos, Holger Giese, Paola Inverardi, Jeff Magee, n.d.)

### **12.3.8 1.3.8 To write the conclusion and future works**

Activities:

- 1.3.8.1. Write the conclusion
- 1.3.8.2 Write the future work

Deliverables:

- 1.3.8.1 A report about the conclusion

1.3.8.2 A report about the future work ((Editor), n.d.)

### 12.3.9 1.3.11 To write the final report

Activities:

1.3.9.1 A report about the conclusion

1.3.9.2 A report about the future work (Gelenbe, n.d.)

Deliverables:

1.3.9.1 The first draft

1.3.9.2 The complete/final report (Gelenbe, n.d.)

## 12.4 1.4 Legal, Social, Ethical and Professional Legal, Social, Ethical and Professional

While designing this project, I would like to talk about programmer morality. First of all, in order to carry out our work, we have to abide by the rules and regulations issued by organizations, and most industries and occupations have different ethical codes — individuals working in an agency within that country. Programming is similar because the more technology we use in our lives, the more critical our compliance with ethics is.

Moreover, so we have the following rules: Do not make time to create or provide malicious software, never write code that is difficult to understand for others, do not write documents that cause confusion or confusion. the others... (Betty H.C. Cheng, Rogério de Lemos, Holger Giese, Paola Inverardi, Jeff Magee, n.d.)

## 12.5 1.5 Planning

Task Mode	Task Name	Duration	Start	Finish	Predecessors
»	» Data-mining in Ecommerce, Newspaper website	172 days	Thu 3/15/18	Fri 11/23/18	
»	» To understand about Data mining and Web development framework framework and other methodologies	10 days	Sun 3/25/18	Thu 4/5/18	
»	» To gather requirements for the system	10 days	Fri 4/6/18	Thu 4/19/18	10
»	» Analyze the system	10 days	Fri 4/20/18	Thu 5/3/18	16
»	» Design the system	10 days	Fri 5/4/18	Thu 5/17/18	19
»	» To implement the system	90 days	Fri 5/18/18	Thu 9/20/18	25
»	» Testing	10 days	Fri 9/21/18	Thu 10/4/18	34
»	» Evaluations	10 days	Fri 10/5/18	Thu 10/18/18	34
»	» Conclusion and future works	10 days	Fri 10/19/18	Thu 11/1/18	52
»	» Write the final report	6 days	Fri 11/2/18	Wed 11/14/18	61

Figure 81 Project planning in 172 days

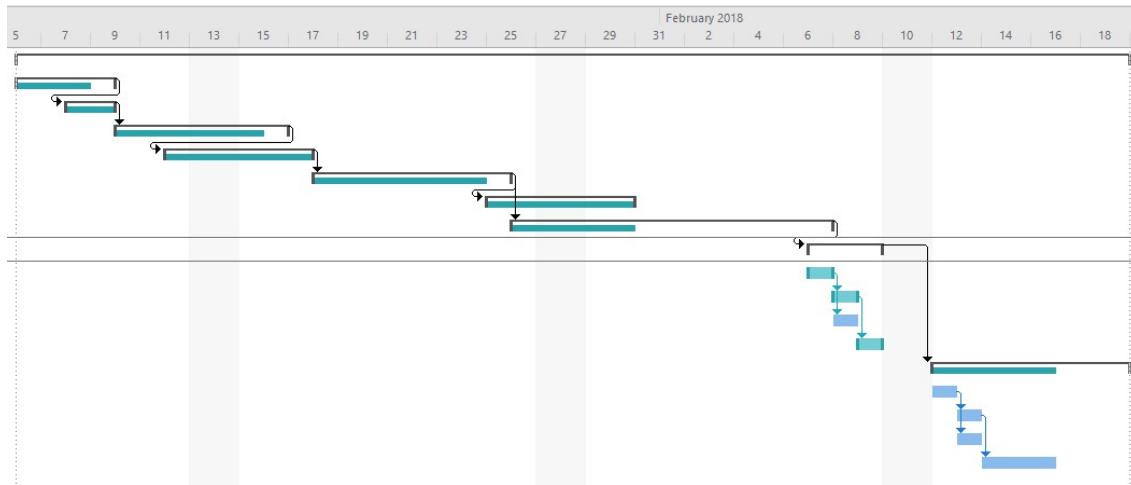


Figure 82 Gantt chart

## 12.6 1.6 Schedule of Work

Here is schedule of Work

Task Mode	Task Name	Duration	Start	Finish	Predecessors	Qtr 1, 2018	Qtr 2, 2018	Qtr 3, 2018
	Task 1: Be able to formulate a project	182 days	Thu 3/15/18	Fri 11/23/18		Mar	Apr	May
▶	Task 1.1 Overview	2 days	Thu 3/15/18	Fri 3/16/18				
▶	Task 1.2 Aim	2 days	Mon 3/19/18	Tue 3/20/18	2			
▶	Task 1.3 Objectives	2 days	Wed 3/21/18	Thu 3/22/18	3			
▶	1.4 Legal, Social, Ethical and Professional	4 days	Fri 3/23/18	Wed 3/28/18	4			
▶	1.5 Planning	175 days	Thu 3/15/18	Wed 11/14/18				

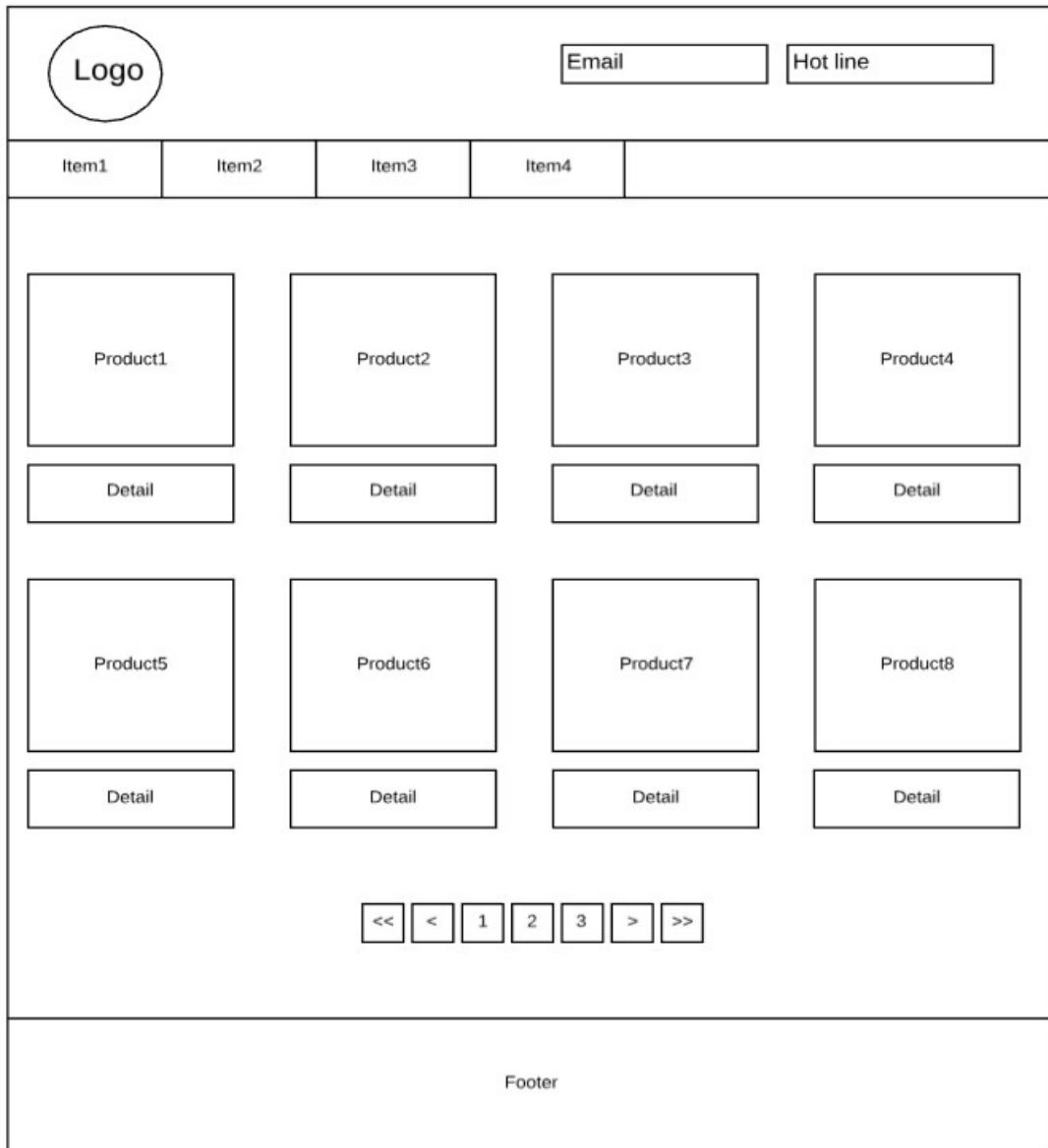
Figure 83 Working this task in 182 days

## **APPENDIX C - DIAGRAM**

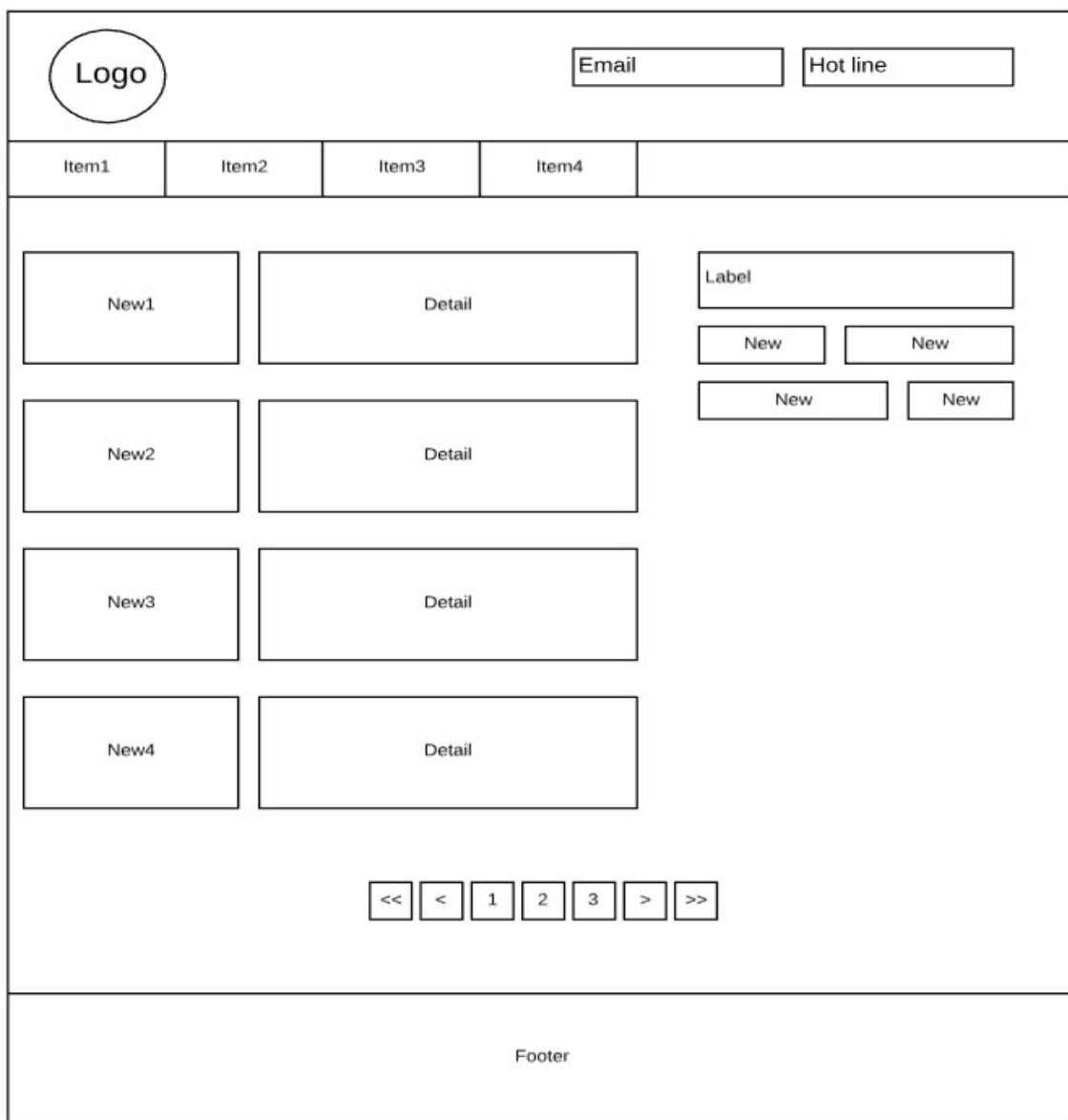
CLASS DIAGRAM

## APPENDIX D - UI DESIGN

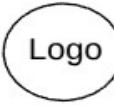
Product:



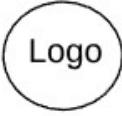
New:



Signin

	Email	Hot line		
Item1	Item2	Item3	Item4	
<div style="border: 1px solid black; padding: 10px; text-align: center;"><h3>Sign in</h3><p>Email: <input type="text"/></p><p>Password: <input type="password"/></p><p><input type="button" value="Signin"/></p><p><input type="button" value="Create account"/></p></div>				
Footer				

## SignUp

		Email	Hot line
Item1	Item2	Item3	Item4
<div style="border: 1px solid black; padding: 10px; text-align: center;"><h3>Register</h3><p>Email: <input type="text"/></p><p>Password: <input type="text"/></p><p>Re-Password: <input type="text"/></p><p><input type="button" value="Register"/></p><p><input type="button" value="Already has account"/></p></div>			
Footer			

Manage Product, Order, ...

	Manager	Manager Images	
Item1	<input type="button" value="Add"/>	Item 1	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Item2		Item 2	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Item3		Item 3	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Item4		Item 4	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Item5		Item 5	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

## Add, Edit Company Information

	Manager	Manager Images	
Item1	<input type="text" value="Company Name"/>	<input type="text"/>	
Item2	<input type="text" value="Slogan"/>	<input type="text"/>	
Item3	<input type="text" value="Address"/>	<input type="text"/>	
Item4	<input type="text" value="Phone number"/>	<input type="text"/>	
Item5	<input type="text" value="Email"/>	<input type="text"/>	
	<input type="text" value="City"/>	<input type="text"/>	
	<input type="text" value="Description"/>	<input type="text"/>	
	<input type="text" value="Status"/>	<input type="checkbox"/>	
	<input type="text" value="Images"/>	<input type="text"/>	<input type="button" value="Choose File"/>
			<input type="button" value="Submit"/>

Add, edit user

	Manager	Manager Images	
Item1	User Name		
Item2	Full Name		
Item3	Address		
Item4	Email		
Item5	Gender		
	Role	<input type="checkbox"/>	
	Phone Number		
	City		
	Status	<input type="checkbox"/>	
	Images	<input type="file"/>	Choose File
		<input type="button" value="Submit"/>	

Add, edit product

	Manager	Manager Images	
Item1	Product Name		
Item2	Type	<input type="checkbox"/>	
Item3	Category		
Item4	Description		
Item5	Meta Description		
	Display		
	Status	<input type="checkbox"/>	
	Images	<input type="file"/>	Choose File
		<input type="button" value="Submit"/>	

Add, edit menu

	Manager	Manager Images	
Item1 Item2 Item3 Item4 Item5	Menu Type	<input type="text"/>	
	Decentralization	<input type="text"/>	
	Name	<input type="text"/>	
	Description	<input type="text"/>	
	Point to page	<input type="text"/>	
	Description	<input type="text"/>	
Display	<input type="text"/>		
Status	<input type="checkbox"/>		
<input type="button" value="Submit"/>			

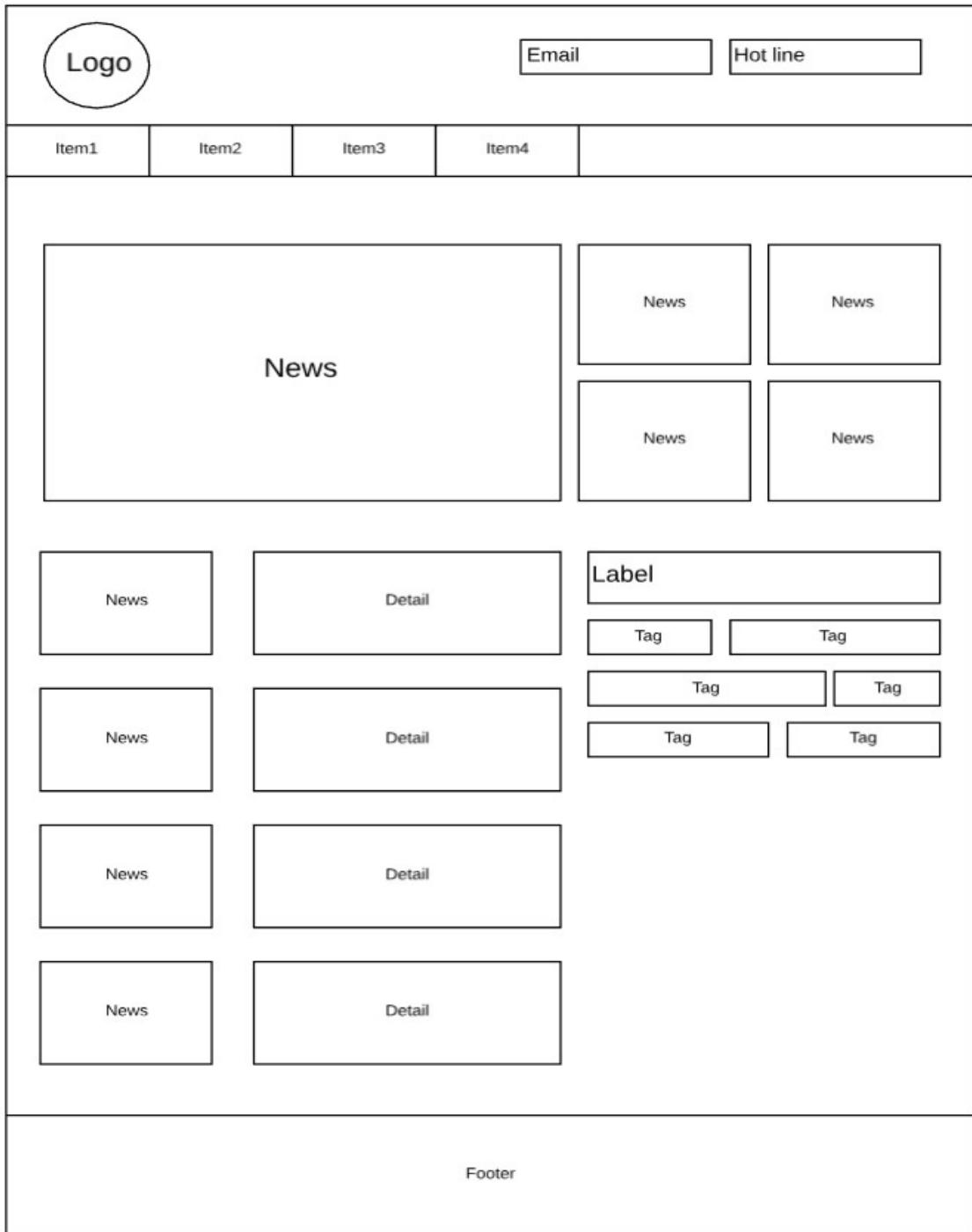
Edit account admin

	Manager	Manager Images	
Item1 Item2 Item3 Item4 Item5	Profile	Full Name	<input type="text"/>
		Email	<input type="text"/>
		Phone Number	<input type="text"/>
		Gender	<input type="text"/>
		Address	<input type="text"/>
		City	<input type="text"/>
Image	<input type="file"/> Choose File		
New Password	<input type="text"/>		
Re-password	<input type="text"/>		
<input type="button" value="Submit"/>			

## Add news

	Manager	Manager Images	
Item1	<input type="text" value="Category"/> <input type="checkbox"/>		
Item2	<input type="text" value="Title"/>		
Item3	<input type="text" value="MetaTitle"/>		
Item4	<input type="text" value="MetaDescription"/>		
Item5	<input type="text" value="Description"/>		
	<input type="text" value="Trending"/>		
	<input type="text" value="Content"/>		
	<input type="text" value="Tag"/>		
	<input type="checkbox" value="Status"/>		
	<input type="text" value="Image"/> <input type="button" value="Choose File"/>		<input type="button" value="Submit"/>

## Homepage



## APPENDIX E - TEST CASE

<b>Test case</b>	TC1
<b>Initial condition</b>	Have an Account with: username: MinhHM; Password: Abc123!@# ; Fullname:Phung Hong Minh; Email:Hongminhlandlight@gmail.com Address:Tuyen Quang – Vietnam; Image: null; Role: Staff;
<b>Input</b>	Login Account in Login form , Username : MinhHM, Password: Abc123!@# ;
<b>Expected output</b>	Login success
<b>Result</b>	PASS
<b>Reality output</b>	Login success
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC2
<b>Initial condition</b>	Have an Account with: username: MinhHM; Password: Abc123!@# ; Fullname:Phung Hong Minh; Email:Hongminhlandlight@gmail.com Address:Tuyen Quang – Vietnam; Image: null; Role: Staff;
<b>Input</b>	Login Account in Login form , Username : M01, Password: Abc123!@# ;
<b>Expected output</b>	Username or password invalid
<b>Result</b>	Fail
<b>Reality output</b>	Username or password invalid
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC3
<b>Initial condition</b>	Have an Account with: username: MinhHM; Password: Abc123!@# ; Fullname:Phung Hong Minh; Email:Hongminhlandlight@gmail.com Address:Tuyen Quang – Vietnam; Image: null; Role: Staff;
<b>Input</b>	Login Account in Login form , Username = MinhHM, Password: 123 ;
<b>Expected output</b>	Username or password invalid
<b>Result</b>	Fail

<b>Reality output</b>	Username or password invalid
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC4
<b>Initial condition</b>	Have an Account with: username: MinhHM; Password: Abc123!@# ; Fullname: Phung Hong Minh; Email: Hongminhlandlight@gmail.com Address: Tuyen Quang – Vietnam; Image: null; Role: Staff;
<b>Input</b>	Login Account in Login form , Username = M01, Password: 123 ;
<b>Expected output</b>	Username or password invalid
<b>Result</b>	Fail
<b>Reality output</b>	Username or password invalid
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC5
<b>Initial condition</b>	Have an Account with: use name: MinhHM; Password: Abc123!@# ; Full name: Phung Hong Minh; Email: Hongminhlandlight@gmail.com Address : Tuyen Quang – Vietnam; Image: null; Role: Staff;
<b>Input</b>	Update Account in Edit account table set: Full name: Phung Hong Minh, Email: Hongminhlandlight@gmail.com Address : Tuyen Quang – Vietnam; ; Image: Pic01.jpg ; Role: Staff;
<b>Expected output</b>	Update data successfully
<b>Result</b>	PASS
<b>Reality output</b>	Update item successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC6
<b>Initial condition</b>	Update Account in Edit account table set: Full name: Phung Hong Minh, Email:Hongminhlandlight@gmail.com Address :Tuyen Quang – Vietnam; ; Image: Pic01.jpg ; Role: Staff;
<b>Input</b>	Update Account in Edit account table set: Full name: ; Email: ; Address : ; Image: Pic01.jpg ; Role: Staff;
<b>Expected output</b>	Could not empty Full name
<b>Result</b>	Fail
<b>Reality output</b>	Could not empty name
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC7
<b>Initial condition</b>	Update Account in Edit account table set: Full name : Phung Hong Minh, Email:Hongminhlandlight@gmail.com Address :Tuyen Quang – Vietnam; ; Image: Pic01.jpg ; Role: Staff;
<b>Input</b>	Update Account in Edit account table set: Full name: Minh HM; Email: ; Address: ; Image: Pic01.jpg ; Role: Staff;
<b>Expected output</b>	Could not empty Email
<b>Result</b>	PASS
<b>Reality output</b>	Could not empty Email
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC8
<b>Initial condition</b>	Update Account in Edit account table set: Full name : Phung Hong Minh, Email:Hongminhlandlight@gmail.com Address :Tuyen Quang – Vietnam; ; Image: Pic01.jpg ; Role: Staff;
<b>Input</b>	Update Account in Edit account table set: Full name: Minh HM; Email: Phunghongminh31101993@gmail.com; Address : ; Image: Pic01.jpg ; Role: Staff;
<b>Expected output</b>	Could not empty Address
<b>Result</b>	Fail
<b>Reality output</b>	Could not empty Address
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC9
<b>Initial condition</b>	Update Account in Edit account table set: Full name : Phung Hong Minh, Email:Hongminhlandlight@gmail.com Address :Tuyen Quang – Vietnam; ; Image: Pic01.jpg ; Role: Staff;
<b>Input</b>	Update Account in Edit account table set: Full name: Minh HM; Email: Phunghongminh31101993@gmail.com; Address :165 Cau Giay ; Image: Minh02.jpg ; Role: Staff;
<b>Expected output</b>	Update data successfully
<b>Result</b>	PASS
<b>Reality output</b>	Update item successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC10
<b>Initial condition</b>	
<b>Input</b>	Add new product in Product table set. Product name = Spinach; [Description] = Working, Price = 10.000; [CategoryId] = 1.
<b>Expected output</b>	Successfully
<b>Result</b>	Pass
<b>Reality output</b>	Successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC11
<b>Initial condition</b>	Product name = Spinach; [Description] = Working, Price = 10.000; [CategoryId] = 1.
<b>Input</b>	Add new product in Product table set. Product name = Spinach; [Description] = Working; Price = 10.000; [CategoryId] = 1.
<b>Expected output</b>	The product already exists
<b>Result</b>	Fail
<b>Reality output</b>	The product already exists
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC12
<b>Initial condition</b>	Product name = Spinach; [Description] = Working, Price = 10.000; [CategoryId] = 1.
<b>Input</b>	Add new product in Product table set. Product name = Spinach; [Description] = Working, Price = 20.000; [CategoryId] = 1.
<b>Expected output</b>	The product already exists
<b>Result</b>	PASS
<b>Reality output</b>	The product already exists
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC13
<b>Initial condition</b>	Product name = Spinach; [Description] = Working, Price = 10.000; [CategoryId] = 1.
<b>Input</b>	Add new product in Product table set. Product name = Spinach; [Description] = Working, Price = 10.000; [CategoryId] = 2.
<b>Expected output</b>	The product already exists
<b>Result</b>	Fail
<b>Reality output</b>	The product already exists
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC145
<b>Initial condition</b>	Product name = Spinach; [Description] = Working, Price = 10.000; [CategoryId] = 1.
<b>Input</b>	Add new product in Product table set. Product name =Kale; [Description] = Working, Price = 10.000; [CategoryId] = 1.
<b>Expected output</b>	Update data successfully
<b>Result</b>	PASS
<b>Reality output</b>	Update item successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC15
<b>Initial condition</b>	
<b>Input</b>	Add new product in Product table set. Product name = ; [Description] = , Price = ; [CategoryId] = .
<b>Expected output</b>	Product name is required
<b>Result</b>	Fail
<b>Reality output</b>	Product name is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC16
<b>Initial condition</b>	

<b>Input</b>	Add new product in Product table set. Product name = Bobbage; [Description]= , Price= ; [CategoryId]= .
<b>Expected output</b>	Description name is required
<b>Result</b>	PASS
<b>Reality output</b>	Description name is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC17
<b>Initial condition</b>	
<b>Input</b>	Add new product in Product table set. Product name = Bobbage; [Description] = Working , Price= ; [CategoryId] =
<b>Expected output</b>	Price name is required
<b>Result</b>	Fail
<b>Reality output</b>	Price name is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC18
<b>Initial condition</b>	
<b>Input</b>	Add new product in Product table set. Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] =
<b>Expected output</b>	CategoryId name is required
<b>Result</b>	Fail
<b>Reality output</b>	CategoryId name is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC19
<b>Initial condition</b>	
<b>Input</b>	Add new product in Product table set. Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] = 1
<b>Expected output</b>	Update data successfully

<b>Result</b>	PASS
<b>Reality output</b>	Update item successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC20
<b>Initial condition</b>	Have a product with Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] = 1
<b>Input</b>	Update item in items table set Product name = Bobbage; [Description] = Stop Sale , Price = 15.000 ; [CategoryId] = 1
<b>Expected output</b>	Update data successfully
<b>Result</b>	PASS
<b>Reality output</b>	Update item successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC21
<b>Initial condition</b>	Have a product with Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] = 1
<b>Input</b>	Update item in items table set, set Product name = Bobbage; [Description] = Stop Sale , Price = 15.000 ; [CategoryId] = 1 ; Where SaleOff = 20%;
<b>Expected output</b>	Update data successfully
<b>Result</b>	PASS
<b>Reality output</b>	Update item successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC22
<b>Initial condition</b>	Have a product with Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] = 1 ; SaleOff = 20%;
<b>Input</b>	Update item in items table set: Product name = ; [Description] = , Price = ; [CategoryId]= ; SaleOff= ;
<b>Expected output</b>	Product name is required
<b>Result</b>	Fail
<b>Reality output</b>	Product name is required

<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC23
<b>Initial condition</b>	Have a product with Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] = 1 ; SaleOff = 20%;
<b>Input</b>	Update item in items table set: Product name = Bobbage ; [Description] = , Price = ; [CategoryId] = ; SaleOff= ;
<b>Expected output</b>	Description name is required
<b>Result</b>	Fail
<b>Reality output</b>	Description name is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC24
<b>Initial condition</b>	Have a product with Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] = 1 ; SaleOff = 20%;
<b>Input</b>	Update item in items table set: Product name = Bobbage ; [Description] = Working , Price = ; [CategoryId] = ; SaleOff= ;
<b>Expected output</b>	Price name is required
<b>Result</b>	Fail
<b>Reality output</b>	Price name is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC25
<b>Initial condition</b>	Have a product with Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] = 1 ; SaleOff = 20%;
<b>Input</b>	Update item in items table set: Product name = Bobbage ; [Description] = Working , Price = 10.000 ; [CategoryId] = ; SaleOff=
<b>Expected output</b>	CategoryId name is required
<b>Result</b>	Fail
<b>Reality output</b>	CategoryId item successfully

<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC26
<b>Initial condition</b>	Have a product with Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] = 1 ; SaleOff = 20%;
<b>Input</b>	Update item in items table set: Product name = Bobbage ; [Description] = Working , Price = 10.000 ; [CategoryId] = 1 ; Sale Off =
<b>Expected output</b>	Sale Off is required
<b>Result</b>	PASS
<b>Reality output</b>	Sale Off is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC27
<b>Initial condition</b>	Have a product with Product name = Bobbage; [Description] = Working , Price = 15.000 ; [CategoryId] = 1 ; SaleOff = 20%;
<b>Input</b>	Update item in items table set: Product name = Bobbage ; [Description] = Working , Price = 10.000 ; [CategoryId] = 1 ; Sale Off = 0%.
<b>Expected output</b>	Update data successfully
<b>Result</b>	PASS
<b>Reality output</b>	Update item successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC28
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = , Email= , Phone numbers= ; Gender= ; Address = ; City= ; Image= ; Role = ;
<b>Expected output</b>	Use name is required
<b>Result</b>	Fail
<b>Reality output</b>	Use name is required

<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC29
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email= , Phone numbers= ; Gender= ; Address= ; City= ; Image= ; Role= ;
<b>Expected output</b>	Email is required
<b>Result</b>	Fail
<b>Reality output</b>	Email is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC30
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=NewmemberAhihi , Phone numbers = ; Gender = ; Address= ; City = ; Image= ; Role = ;
<b>Expected output</b>	Email: Example @ .Email
<b>Result</b>	Fail
<b>Reality output</b>	Email: Example @ .Email
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC31
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = ; Gender = ; Address= ; City = ; Image= ; Role =
<b>Expected output</b>	Phone numbers is required
<b>Result</b>	Fail
<b>Reality output</b>	Phone numbers is required

<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC32
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = ; Gender = ; Address= ; City = ; Image= ; Role =
<b>Expected output</b>	Phone numbers is required
<b>Result</b>	PASS
<b>Reality output</b>	Phone numbers is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC33
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = this is Phone No ; Gender = ; Address= ; City = ; Image= ; Role =
<b>Expected output</b>	Phone numbers are numeric characters
<b>Result</b>	Fail
<b>Reality output</b>	Phone numbers are numeric characters
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC34
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = !@#\$\$%^%\$ ; Gender = ; Address= ; City = ; Image= ; Role =
<b>Expected output</b>	Gender is required
<b>Result</b>	Fail
<b>Reality output</b>	Phone numbers are numeric characters

<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC35
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers =888; Gender = ; Address= ; City = ; Image= ; Role =
<b>Expected output</b>	Gender is required
<b>Result</b>	Fail
<b>Reality output</b>	Phone numbers 10 to 12 characters long
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC36
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com, Phone numbers = 1 ; Gender = ; Address= ; City = ; Image= ; Role =
<b>Expected output</b>	Gender is required
<b>Result</b>	Fail
<b>Reality output</b>	Phone numbers 10 to 12 characters long
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC37
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = ; Address= ; City = ; Image= ; Role =
<b>Expected output</b>	Gender is required
<b>Result</b>	Fail

<b>Reality output</b>	Gender is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC38
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay ; City = ; Image= ; Role =
<b>Expected output</b>	City numbers is required
<b>Result</b>	Fail
<b>Reality output</b>	City numbers is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC39
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male; Address= Cau Giay ; City = Ha Noi ; Image= ; Role =
<b>Expected output</b>	Image numbers is required
<b>Result</b>	PASS
<b>Reality output</b>	Image numbers is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC40
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male; Address= Cau Giay; City = Ha Noi; Image= NewFace.dll ; Role =

<b>Expected output</b>	Pictures in .jpg format
<b>Result</b>	Fail
<b>Reality output</b>	Pictures in .jpg format
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC41
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay; City = Ha Noi; Image= NewFace.txt ; Role =
<b>Expected output</b>	Pictures in .jpg format
<b>Result</b>	Fail
<b>Reality output</b>	Pictures in .jpg format
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC42
<b>Initial condition</b>	
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay; City = Ha Noi ; Image= NewFace.jpg ; Role =
<b>Expected output</b>	Role is required
<b>Result</b>	Fail
<b>Reality output</b>	Role is required
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh
<b>Test case</b>	TC43
<b>Initial condition</b>	

<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay; City = Ha Noi ; Image= NewFace.jpg ; Role = Staff.
<b>Expected output</b>	Successfully
<b>Result</b>	Pass
<b>Reality output</b>	Successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC44
<b>Initial condition</b>	Have an Account existed: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay ; City = Ha Noi ; Image= NewFace.jpg ; Role = Staff.
<b>Input</b>	Add new an Account in Account table set: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay ; City = Ha Noi ; Image= NewFace.jpg ; Role = Staff.
<b>Expected output</b>	Use already exists
<b>Result</b>	Fail
<b>Reality output</b>	Use already exists
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC45
<b>Initial condition</b>	Have an Account existed: Use name = New Member , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay ; City = Ha Noi; Image= NewFace.jpg ; Role = Staff.
<b>Input</b>	Add new an Account in Account table set: Use name = NewMemberNo2 , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay ; City = Ha NoI ; Image= NewFace.jpg ; Role = Staff.
<b>Expected output</b>	Email has been used to register
<b>Result</b>	Fail

<b>Reality output</b>	Email has been used to register
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC46
<b>Initial condition</b>	Have an Account existed: Use name = New Member , Email=NewmemberNo2@gmail.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay ; City = Ha Noi ; Image= NewFace.jpg ; Role = Staff.
<b>Input</b>	Add new an Account in Account table set: Use name = NewMemberNo2 , Email=Newmember@Gamil.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay ; City = Ha Noi; Image= NewFace.jpg ; Role = Staff.
<b>Expected output</b>	The phone number was used to register
<b>Result</b>	Fail
<b>Reality output</b>	The phone number was used to register
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC47
<b>Initial condition</b>	Have an Account existed: Use name = New Member , Email=NewmemberNo2@gmail.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay ; City = Ha Noi ; Image= NewFace.jpg ; Role = Staff.
<b>Input</b>	Add new an Account in Account table set: Use name = NewMemberNo2 , Email=Newmember@Gamil.com , Phone numbers = 0989898989; Gender = Male ; Address= Cau Giay ; City = Ha Noi ; Image= NewFace.jpg ; Role = Staff.
<b>Expected output</b>	Successfully
<b>Result</b>	Pass
<b>Reality output</b>	Successfully
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh

<b>Test case</b>	TC48
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<b>Initial condition</b>	Have an Account existed: Use name = New Member, Email=NewmemberNo2@gmail.com , Phone numbers = 0123456789 ; Gender = Male ; Address= Cau Giay ; City = Ha Noi ; Image= NewFace.jpg ; Role = Staff.
<b>Input</b>	Add new an Account in Account table set: Use name = NewMemberNo2 , Email=Newmember@Gamil.com , Phone numbers = 0989898989; Gender = Male ; Address= Cau Giay ; City = Ha Noi ; Image= NewFace.jpg ; Role = Staff.
<b>Expected output</b>	Use already exists
<b>Result</b>	Pass
<b>Reality output</b>	Use already exists
<b>Date</b>	22/12/2017
<b>Tester</b>	Minh