An Exclusive Website Application for eat-in / takeaway Restaurant Business.

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**De Montfort University**

**IMAT5314 Project**

**MSc Information Systems Management**

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# **Chapter One: Introduction**

## 1.1 Overview of the Project

# **Chapter Two: Background and Related Research**

## 2.1 Background

Today the restaurant business is the most challenging business in the world. The biggest concern for business owners of the restaurant is to face one of the major issues like managing orders over the phone or in-person (Daries et al., 2018). Delay in delivering orders, mis-match order deliveries, this may lead to bring big loss in the business and customer dissatisfaction. The expectation of the customers is to have good quality of food, good taste and good customer service which is not always the case. There has been a lack of technology and solutions in place to manage and handle the above concerns.

When used alongside revenue management concepts, effective technology will help restaurants of all types increase sales and benefit (Kimes, 2008). This project looks at how things can make easy for customers by introducing a good restaurant business website or application. In this project the implementation of the website includes different types of pages like Home page, Menu page, about us page, contact page and the Cart page where customers can visit the website and order the food online, also customers can add feedback to the restaurant through the website.

In this day and age, the organisational problems at restaurants have a lot to do with automation. It makes the restaurant issues and their solutions for small businesses more difficult. Most restaurant issues are caused by taking orders online. However, these problems can be solved by introducing an online ordering programme on the restaurant website , making the order button clearly visible and tailored for the smartphone (Miranda, Rubio and Chamorro, 2015). This website will be facing the issues by providing a good view of the website to the customers and giving easy navigation of the website to select the appropriate services of the website. There will be many different kinds of pages in website including a menu page where all the food item will be displayed with their price and with detailed description.

This website/application of the restaurant will allow the customer to order the food item online through the website, once the order is placed the customer will get the email notifying the order confirmation and once the order is completed by the restaurant the customer will get an alert on their mobile stating the order is now completed and ready for collection. This will help the customers to keep track of their orders once they have placed. The application will also allow the customer to make a secure payment online after once the customer has placed the order of food item.

## 2.2 Literature Review and Research Questions

A big issue (Ph.D and Borovicka, 2007) for many restaurant owners is that their standards for the launch of a website are Almost always unacknowledged, and their investment benefits mystify them. It is not commonplace to consider how prospective customers arrive at an impression of a restaurant company via a visit to its Website. Restaurant owners were described as being part of a sector Is slow to understand the power of websites which can exert as an instrument for boost or subtract from a company's profile (Ph.D and Borovicka, 2007).

A website is something which allows the restaurant owners to greet the quality of the websites from customer point of view which will promote the preparation and deployment of quality sites which is achievable advantage for the business. Thus, it is essential that the software is straightforward, simple to understand and to implement, and should help the website owner's capacity to take successful charge of the Website smoothly, even if the owner lacks the technological skills to make the changes personally (Bennett, 2017). Most consumers are searching for online guides and social media knowledge about restaurants. Restaurant websites especially include customer feedback that differ in quality and reflectivity. Online contact brings not only obligations relating to trust and partnerships, but also harmful impacts such as consumer deceptions and allegations. While, companies also benefit from this approach advertising in the areas of brand placement, product development and the development of customer value (Qi, Yang and Li, 2013). Websites for restaurant reviews help operators assess their internet activity, recognize their solutions and offer measures on complaints from customers.

In 1994 the Web reached community popularity. In less than two years, many restaurants moved to develop websites and were motivated to consider the new platform as a mediator to redefine the relationship between restaurant owner and consumer (Ph.D and Borovicka, 2007). The scholars of this early research managed to draw up a list of support function on restaurant websites such as email contact, group catering opportunities, booking services and attractive schemes and indicated that web marketing might become a technical requirement rather than an ability. As information technology has introduced a better way of communicating person-to - person, restaurant owners have the space to enhance competitors dominance not only by offering users with the precise data they need when they need it, but also by offering extra venues through which customers can interact with the restaurant owner (Young Namkung MS, Seo-Young Shin PhD and Il-Sun Yang PhD, 2007).

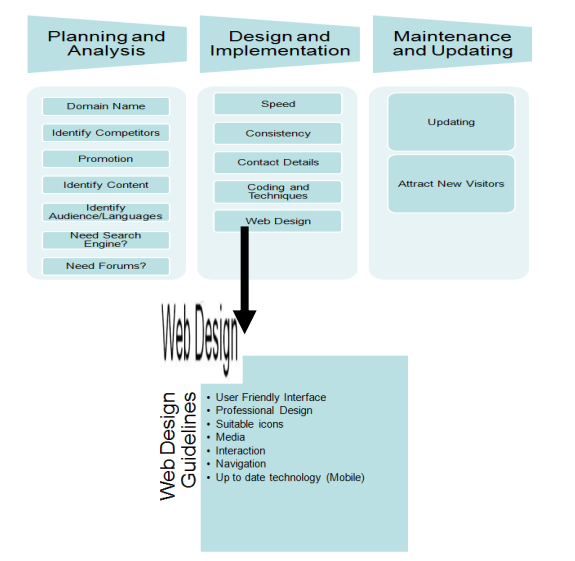
Using the restaurant websites, customers can state their thoughts and concerns about their restaurant experience through e-mails and/or bulletin boards. This knowledge can then be used to create a long-term customer-restaurant relationship by constantly modifying their incorrect acts to meet the needs of the customers. Restaurant websites clarify that users achieve both functional and physiologic advantages when browsing restaurant websites, impacting their real buying aim and fulfilment (Daries-Ramon, Cristobal-Fransi and Mariné-Roig, 2019). Information via the restaurant website has a strong impact on user fulfilment. Additionally, users have content of essential on internet reviews to make buying decisions especially in the restaurant industry. In fact (Lim, 2013) found the addition information quality of restaurant websites has a major impact on eWOM (electronic word-of - mouth), and the performance expectancy reduces the interactions between fulfilment / ego driven demands and eWOM expectations considerably (Lim, 2013). Higher-rate restaurant websites could be assumed to have one Stronger identification of the e-commerce intellect and the content of websites than those in the lower class band (Daries-Ramon, Cristobal-Fransi and Mariné-Roig, 2019).

### 2.2.1 What frameworks are used to implement a successful website?

Picking the right Web development framework (Salas-Zárate et al., 2015)that better suits the needs of the developer is not a simple job, because there are several frameworks focusing on various domains. In addition, choosing an incorrect framework will mean losing time learning the specifics of another language, failing to meet the necessary time if developers are not accustomed to the framework, and spending more time taking appropriate actions to select a new framework. To prevent these issues, understanding and recognising the best practises for Web creation is of great importance (Salas-Zárate et al., 2015).

As far as computer technology is concerned, a framework is an abstraction layer in which common code that typical service features can be preferentially overruled or speculated by developer code, thus providing specific functions (Bifet et al., 2011). The aim of a framework is to encourage designers and developers to concentrate on creating their project's unique characteristics, instead of recreating the system by programming standard, recognisable components available in several websites and web applications (Upadhyay, 2018). Creating effective websites needs to go through three main phases: planning and research, design and implementation, and updating and maintenance. Every of these three stages possesses its own features and Properties. Such aspects differ as per type of company and target market. A framework can be called a pre-constructed pattern / framework that manages most of the specific or redundant functions. As a consequence, unlike a CMS, a framework possibly won't have a user experience. Much of the operation will be accomplished by coding and communicating with the various parts of the framework by code itself (Mohammad, Ghwanmeh and Al-Ibrahim, 2013).

Developing more highly qualified useful site plays a big part in enticing viewers. It ensures the architecture needs to be pleasant and simple. Website creator should also consider whether or not website needs search tool and should be loaded as quickly as possible.



(Mohammad, Ghwanmeh and Al-Ibrahim, 2013)

A framework is a high-level solution for reusing software packages, a step forward in easy library-based reuse that support solutions similar attributes and a domain application's standard logic. This also provides a higher quality standard for the finished product, because one essential aspect of the specification has already been identified inside the system and has thus already been reviewed (Salas-Zárate et al., 2015). Angular is a popular Google-supported JavaScript Platform. It provides a large collection with plenty of user-written extra plugins. This framework is becoming the backbone of several projects because of the reuse of code it provides full front-end development, powerful performance and less development time.

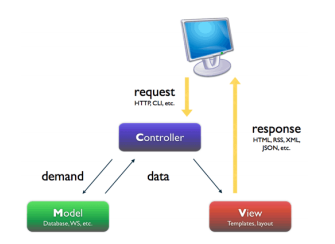
* The use of MVC architectural pattern.
* User Interface can be developed with HTML.
* Ready-made templates to build the framework faster.
* The use of the "plain old JavaScript objects" model.
* The built-in dependency injection subsystem.

This framework is used by such companies as Google, Microsoft, PayPal, and other tech giants (Shirazi, Haefner and Ray, 2017). Frameworks are a particular type of software or scripting libraries, which vary widely from them in that they are reusing abstractions of code wrapped in a well-defined application programming interfaces (API). These also possess some primary distinguishing characteristics that differentiate them from standard libraries (Bifet et al., 2011).

Some advantages of the framework are (Manger, 2010): Open-source, Documentation and support, Efficiency, Security and Integration. Many common frameworks are open-source (or are available for free use) in several languages. They also come with non-restrictive licencing and able to build specific products using those frameworks (Hasan, Morris and Probets, 2013). Also, some of the dis-advantages of the framework has be identified like: Limitations, Performance, Learning bias, Steep learning curve and Cost. Implementation could also be identified as a factor with the relevancy of client-side JavaScript MVC frameworks such as AngularJS, EmberJS and BackboneJS increasing since 2012. The frameworks involve more expertise and experience in implementation than most integrations. Hiring reliable System Developers can also be more costly than inexperienced WordPress Developers (Hasan, Morris and Probets, 2013).

### 2.2.2 How can a website be implemented by using the ASP.NET MVC (Model View Controller) technology?

Model-View-Controller (MVC) programming (Krasner, Pope and Systems, n.d.) is the implementation of this three-way computation, in which artefacts of various classes take over discovering important to the application domain (model), representation of the application state (view), and user interaction with the model and view (controller). ASP.NET MVC is Microsoft's open-source Platform. The software development system puts together the functionality of MVC (Model-View - Controller) design, the most up-to - date Agile development concepts and strategies and the best sections of the current ASP.NET platform (Sarker and Apu, 2014).



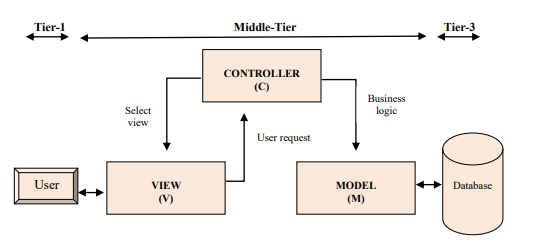
(Pop and Altar, 2014)

Trygve Reenskaug first conceived the MVC architecture model at Xerox Parc in the 1970s. As per him, "MVC 's fundamental aim is to close the gap between cognitive properties of the human user and the digital model present in the machine". The MVC pattern divides responsibilities into three major duties, thus enabling more effective collaboration. Growth, design and integration are those key roles (Pop and Altar, 2014). Software developers who are accountable for the application's logic assume the development role. They do data query, validate, process and more. The design role is for the development team who are responsible for the appearance and feel of the site. They view data provided from the programmers who are operating on the first function. The position of integration combines programmers with accountability for gluing the work of the two previous positions.

The MVC (Model-View-Controller) technology (Prabowo, 2015) is broken down into three different parts, the three different parts are:

* Users
* MVC components
* Database

The very first stage is only composed of users. User can submit requests and get reaction from the middle stage's 'View' components. Secondly, there are three elements called 'Model, View and Controller' in the middle stage. These components can interact with each other, and process information. Finally, the third stage contains only the database where permentally the data is stored (Berardi, Katawazi and Bellinaso, 2009).



(Sarker and Apu, 2014)

User feedback is acknowledged via the graphical user interface (GUI) through the 'View' element. The user interactions can be button clicks or menu selection in a stand-alone GUI client. The 'Controller' mechanisms requests from users. The Controller calls methods in the View and Model to perform the desired action on the basis of the user request. The 'View' takes responsibility for the model 's performance. A simple GUI view connects to a device and allows the display surface to its contents (Berardi, Katawazi and Bellinaso, 2009).

|  |  |
| --- | --- |
| Strengths | Weakness |
| Gives precise control across created HTML | Not event driven by the framework, so it may be more difficult for ASP.NET webform developers to understand |
| Clear separation of concerns | Requires the need to understand, at least at basic level, HTTP, HTML, CSS and JavaScript |
| * Supports all the core ASP.NET features, like authentication, caching, membership and so on | * Third-party library support is not as strong |
| * Size of pages generated typically much smaller because of the lack of view state | * No direct upgrades path from Web Forms |
| * Easy integration with JavaScript frameworks like jQuery or Yahoo UI frameworks | * No ViewState and PostBack model |

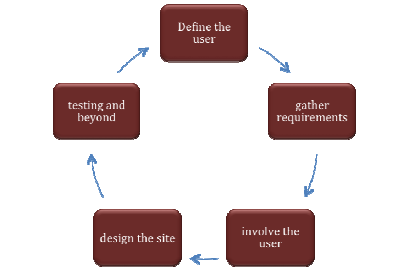
Below are some of the pros & cons of the MVC technology (Pop and Altar, 2014):

### 2.2.3 How communication and good understanding between you and client can make you build a good website?

Web application creation (Bolchini and Paolini, 2003) also needs to use appropriate methods to Facilitate some different features of the requirement analysis process: collecting high-level communication priorities, considering multiple web pages and participants, identifying hypermedia-specific criteria (concerning navigation, content, information structure and presentation aspects) and reusing requirements for an efficient usability evaluation. In addition to client satisfaction, the client must be engaged to each Website production phase and his / her goals and prior experiences should be taken into account. The website must be not only right in itself but, above all, it should fulfil the aims for which it has been created (Alghamdi, 2012). Every communication apparition (and a web application can be called a communication way) is adequately built if and only if it has the quality of congruency, i.e. if it is consistent with the purposes it will meet. For a web application, every overall objective can be to improve the user experience and, at the same time, to meet the needs of the customers that developed the application. Identifying the priorities and the criteria is the Activities have been carried in every development process and the actual quality of a design is primarily related to how well it suits the specifications (Bolchini and Paolini, 2003).

To develop an immersive website (Degelman, 2015) that addresses all user requirements the project goals need to be explained first. Usability criteria are a collection of characteristics that can assess and analyse a given website, and identify and fix the weak points. The essential towards effective website is good contact between web developer and client. Communication problems between both the developer and the customer arise when the developer is not very skilled in assessing the company website ideas / suggestions and if the customer is not sure what he wants for his website the same way the experienced user will face the problems (Mazzoleni, Rembert and Subbian, 2015).

User specifications apply to features / attributes (Bland and Nepustil, 1998) that your programme or framework should have or should execute prospectively from the user. User-centred design is a discipline where needs are gathered and evaluated. User-centred design is a process to system development which focuses on system end-users. The concept is that the programme should match the user, instead of having the user match in with the programme. This is achieved by the use of strategies , procedures, and approaches that concentrate on the consumer during the product lifecycle. (Courage and Baxter, 2005). User-centred web development applies to "a process of designing a website which meets user needs. It emphasizes the importance of user participation in the development process to achieve the highest degree of customer satisfaction. Web design focused on consumers is a very useful approach in ensuring the usability of a website. Facility of use and navigability seem the top UCD (User-centred design) benefit (Alghamdi, 2012).



(Alghamdi, 2012)

The value of collecting requirements is frequently misunderstood on several scales. If budgets are low, schedules are short, and scope creeps, documentation on specifications appears to be the first component to go and the last deliverable to be considered. We typically see two types of specifications in web design and in services. There's also other forms, such as financial and institutional specifications, and the person in charge of managing specifications documents may need further experience in professional writing, visualization of details and more, depending on the context (Geissler, 2001). There are two types of main requirements for the web development: Functional and Non-functional requirement. Functional requirement refers to the functionality of a system: its capabilities, accessibility, functions and processes as they refer to the product's intended purpose. Non-functional requirements cover everything that is not linked to the functionality of a system: its efficiency, reliability, safety and technical specifications, to name only a few examples of non-functional requirements in the digital industry. Documentation of both functional and non-functional specifications is similarly important in its own ways. They live hand in hand; one is influenced directly by the other (Bolchini and Paolini, 2003).

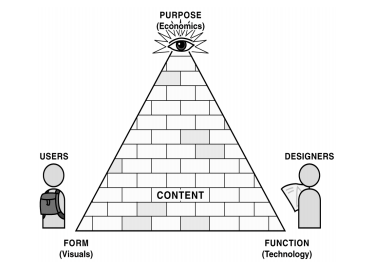
### 2.2.4 How a web-designs is important for the website?

The Web design (Powell, 2002)strategy involved a variety of things for different people. Web design based on the user involves several aspects like graphic design, programming, HTML, problems with navigation, usability and business (e-commerce) issues. In reality, focusing on the project web design can rely from all of these areas so it can really be a very multidiscipline environment. There are four critical elements of web design: content- informing or persuading people, technology- implementing the website feature, graphics- providing website forms and economics- providing intention for the website. The impact of one or the other aspect of site design varies according to the project.

For example, by using the internet, an organisation can easily access consumers and provide them not only with general knowledge about their goods or services but also with the ability to make direct business transactions (Cebi, 2013). Efficient website design also plays a significant role for organisations who want their revenues to be maximised by supporting their services or products in a successful and restricted market. There are various design specifications that must be taken into account concurrently in order to design an effective website. Design specifications can be defined as qualitative and quantitative aspects of a website's physical and functional characteristics which play an important role in efficiency of website design. Due to its dynamic existence based on human perceptions, however, it is not easy to decide the design parameters of a successful web design (Gevorgyan and Porter, 2008). Thus, web designer must take into account a growing number of design parameters such as usability, accessibility, cost, delay, efficiency, protection, maintenance, etc. during the design process to meet the needs of users. Hence, consideration has been given to the design parameters of a successful website to improve the efficiency of the websites (Gevorgyan and Porter, 2008).

Web design is like a pyramid, the content we use as bricks to create the pyramid, the structure of the project is based on graphics and technology and economics makes the project worth doing (Powell, 2002).





(Powell, 2002)

Web design (Flavian, Gurrea and Orús, 2009)has been described as a key factor for website acceptance and performance. In order to create an effective website, we examine from a marketing point of view the key factors that may affect the attitudes and behaviours of online users. Website design has been intensively researched from multiple perspectives, most of them identifying the factors that could reflect the extent of website acceptance, designing is "the method of constructing an object with a scheduled, creative, consistent, meaningful and helpful form structure." Through a customer viewpoint, a website with all these features must be designed to arouse the users' affective states and to improve their online visits or purchase intentions (United States and United States, 2006).

Anyone who wants more control over a page's layout may choose to design a Web page with a fixed width which remains the same for all users, regardless of their monitor size, or the resizing of the window. That web design technique is Based on design concepts learned in print, such as the maintenance of a constant grid, page element relationships and convenient line lengths. Below mentioned will be some advantages and some dis-advantages of the web design technology (Dringus, 1997).

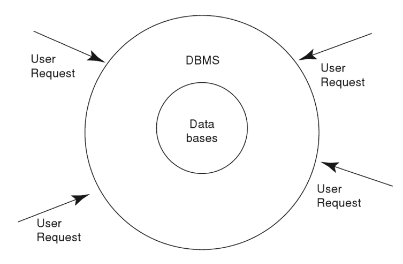
|  |  |
| --- | --- |
| Advantages | Dis-advantages |
| Regardless of the display size the web page would appear the same. That is also the case Crucial for businesses wishing to show a positive corporate picture every member. | If the available browser window is smaller than the grid for the page, parts of the page will not be visible and may require horizontal scrolling to be viewed. |
| Pages and columns with set widths have greater control over line lengths. Tables can be used to avoid lengths of the line from becoming too long when the page is shown on a large monitor. | Management of type size in browsers is still difficult, and objects may still change irregularly due to a larger or smaller type than was used during the design process. |

(Dringus, 1997)

### 2.2.5 How data warehouse or a database can be designed for the project in MS SQL?

A database (Yarger et al., 1999)is an ordered collection of data which defines some function as per the concept of a database. Only getting a DBMS isn't enough to give meaning to your database. The aim determines how you use your data. Database design is part of the learning process of database creation which focuses on the analysis of a proposed solution (specifications and requirements) and includes all the required findings for the construction of a logical data model (Letkowski, 2005). Such as DDL (Data Definition Language) (consists of SQL statements within relational database systems, which generate databases along with their tables, views, indexes, etc. Usually, data models are represented as Entity Relationship Diagrams (ERDs) and perhaps most modern database design tools are capable of translating the diagrams into metadata. Commercial database management systems (Agrawal et al., 2004) support many variations to physical design such as tables, materialised views, and various types of hierarchical data partitioning or indexing structures.

Database (Weikum et al., n.d.) takes as its input a workload comprising of T-SQL (SQL Server language flavour) statements such as SELECT, INSERT, UPDATE, DELETE, stored procedure calls, dynamic SQL and DDL statements and generates a T-SQL script comprising of index suggestions, materialised views as the output (Called Microsoft SQL Server indexed views), and horizontal partitioning. A database can have several tables and columns, clustered or non-clustered indexes, single-column or multi-columns. Relevant data such as originality, source limitations and basic statistics ("small" vs. "big" tables) to produce a database design performs poorly because it ignores valuable information about the workload. Current query optimization techniques use dynamic techniques such as intersection of indexes and access only by number. Thus, making an optimizer's accurate model and keeping it stable as the optimizer progresses is an incredibly difficult job and will possibly result in the collection of indexes that the optimizer does not use when creating a plan as required by the index selection tool (Weikum et al., n.d.).



(Norman, 2006)

Databases include administrators (Chaudhuri and Narasayya, 1997) accountable for performance optimization of databases. With large-scale database deployment, to reduce the role of administration of databases becomes essential. MSQL aren't databases, actually they are computer software which makes user creating, maintaining and managing the electronic databases. This Application group is known as the Database Management System (DBMS). A DBMS acts as the dealer between that database's physical database and its users (Yarger et al., 1999). As SQL is an approved framework for relational databases, and enables for declarative, set level, substantially optimised expressions, it is desirable for users to be able to use SQL primitives such as sorting, group-by, and others such as these within MSQL, and to express nested queries using SQL nested query constructs such as [NOT] IN, [NOT] EXISTS etc (Imieliński and Virmani, 1999).

MsSQL is what has been known as DBMS (Database Management System). The management solution defines how the data is processed, stored and retrieved and how user access to it is managed. Every time the user retrieves data, deletes data or adds more data the request is handled by the DBMS. The user can not directly access the data files and can only talk to the DBMS (Norman, 2006). The input to the method is a set of databases and a workload (a set of queries and procedural calls inserts / updates / deletes / stored). One way to get such a reflective task is to use tools such as the Microsoft SQL Server Profiler that logs server events. Conversely, metrics unique to consumers or to organisations can be used (Agrawal et al., 2004).

### 2.2.6 How to test each feature after development of the project?