Kenyatta University

Department of Computing & Information Technology

SCO400: Project Proposal

Title: Online Hotel Management System For Chicken-Land Pilau Hotel Kasarani With Sentiment Analysis

Name: James Muturi Mwangi
Reg No: J17/0678/2018

Project Supervisor: Dr. Abraham Mutua

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Chapter 1: Introduction

1.1 Background of the study.

This project involves making an online hotel management system with sentiment analysis for Chicken-Land Pilau Hotel. Chicken-Land Pilau Hotel is a business located at Nairobi's Kasarani area near Equity Bank Kasarani branch. The business is a sole proprietorship with two employees making up a team of three people. The hotel mainly serves in-person customers who order food after brief interaction with a printed menu before ordering food and beverages. After the order is served, a customer can pay in cash or through mobile payment. The transactions details are recorded in paper receipts. At the close of business, the owner has to use these receipts to reconcile the records with available cash so as to find out the profit. This project was conceived due to a need to keep proper record that can be referred to at any time to enable smoother running of business operations.

1.2 Problem statements

The main challenge with the current manual system of operation is the lack of proper records. There is also inconveniences when updating the menu every time there is a change. The business is also unable to collect customer feedback and reviews accurately over time. The current system does not provide for a way that the business can reach out to customers after they leave the premises.

1.3 Objectives

The following are the project objectives:

- Develop an online menu to be easily accessed through scanning a QR code.
- Design and implement a database model for the hotel.
- Design and develop a web application to manage order records, collect customer feedback and obtain customer email addresses.

- Build a sentiment analysis model and train it to analyse the hotel's customer feedback.
- Create a dashboard for user to access and use the sentiment analysis function.
- Create a webpage to send email messages to all the collected email addresses.

1.4 Scope and limitations of the project

This project will include a concept paper, this project proposal, analysis and design, implementation and demonstration of the solution to the project supervisor, documentation and a presentation to show before the project panel. The following will be part of the project deliverables:

- Concept paper
- Project proposal
- Analysis document
- Solution design
- Online menu webpage
- Web application accessing the database.
- A trained sentiment analysis model
- Sentiment analysis dashboard
- Email sending webpage

Due to time constraint the project will not encompass payroll management, inventory management and electronic payment verification.

1.5 Justification

This project is worthwhile for the one academic year SCO400 unit as it involves application of skills gathered in the Bachelor of Science in Computer Science undergraduate program in an attempt to solve a real world problem. The skills used will include those learnt in the following course units:

- Object oriented programming
- Artificial intelligence
- Database systems
- Research methodology and technical writing
- Software testing and quality assurance
- System analysis and design

These are only some of the units applied. The project will also include extensive learning and fieldwork.

Chapter 2: Literature review

There is an increased use of information technology to access daily services and manage everyday transactions. Facebook alone has more than one billion users, and there are more than six billion mobile phones. (Westerman & Mcafee, 2012) With such levels of mobile computing and easy access to data, businesses have had to shift online. The COVID-19 pandemic has led to increased interaction with electronic devices as a result of reduced human interaction. Significant restrictions on movement outside the home due to the global COVID-19 pandemic have intensified the importance of everyday digital technologies for communicating remotely with intimate others. (Watson et al., 2020) It is in light of such trends that a business would want to manage its operations online to keep up with the current lifestyle. This project seeks to establish a way for the Hotel business to fit into the digital technology usage trend and take advantage of it to streamline operations, improve customer experience and increase profits.

Online menus help restaurateurs provide an outstanding experience to their guests through an attractive display and ease of adding or removing orders, addressing waiters, and finding menu choices. Such applications such as Uber Eats, Jumia Food and Bolt Food have been known to revolutionize the food industry in Kenya. Uber Eats for example has more than 700 registered eateries. (*Three Years Of Uber Eats In Kenya - Africa.Com*, n.d.). The advent of these services has led to better customer experience and a myriad of problems for local restauranteurs who have to cope with the comparison. However it has been observed that these brands mainly engage in the sale and delivery of fast foods. The convenience of these applications may present a greater risk to adverse health outcomes among overweight or obese individuals, who consume more calories than their normal weight counterparts. (Liu et al., 2020)

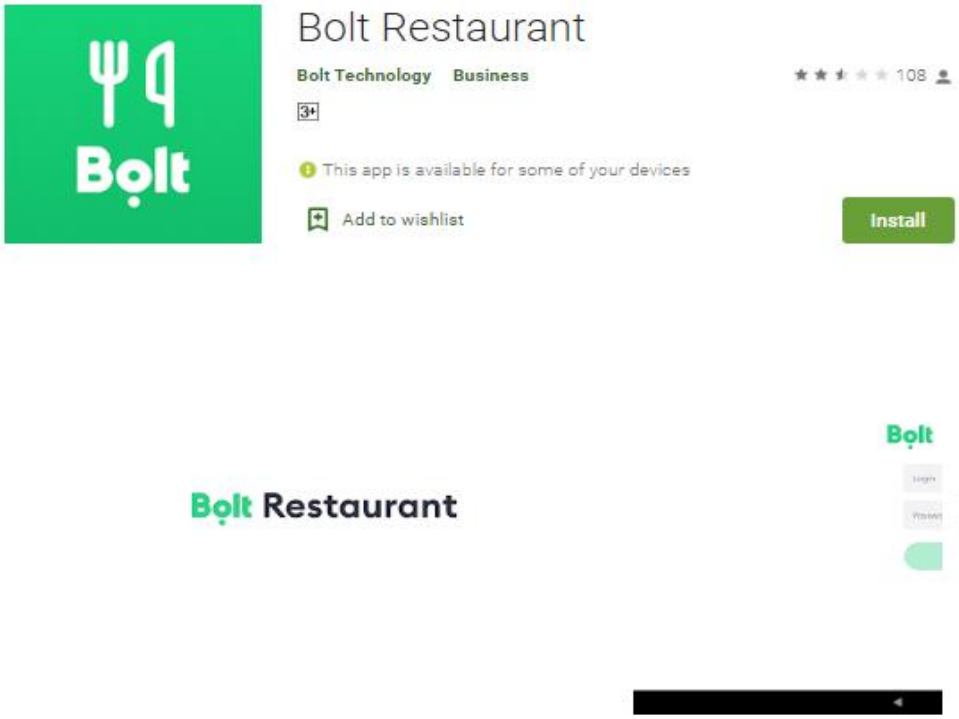
Hotel and restaurant businesses have more needs than what the mentioned systems can offer. They need not to just manage orders and day to day finances but also to get customer reviews and analyse them, reach out to customers, track performance over time and more. A research study in found that organizations that use social media along with the management tools were better off than those who used social

media alone. (Gikaro, n.d.) Some needs have to be addressed by the use of a custom-made solution to an organization's setup. The customers' revisiting intentions to a hotel can be captured in their online feedback reviews, by collecting and analysing the large-scale customer review data. The service provider can attempt to attract more customers by addressing the dependable responses, reviews, and perceptions of customers willing to revisit. (Park et al., 2020)

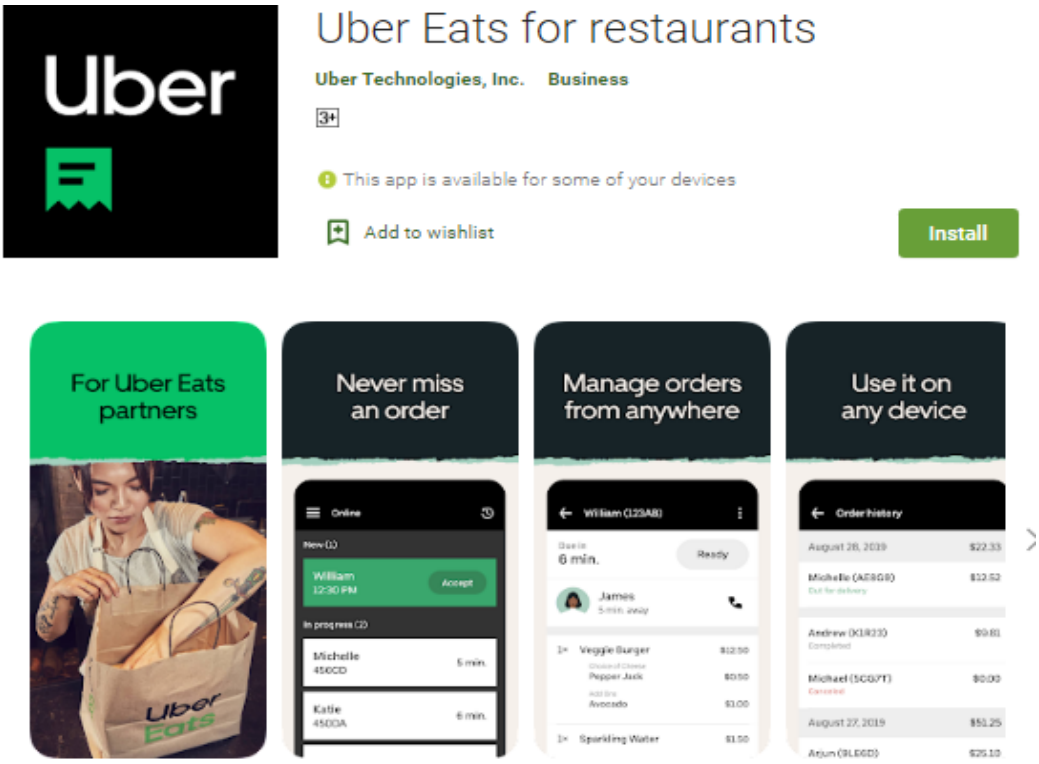
The following are systems similar to the one being considered.

Jumia Food Vendor App

Bolt Restaurant



Uber Eats for restaurants



'This app allows you to manage your restaurant on Uber Eats in a single, centralised place. Whether you'd rather have a single device in your store or an app that all your restaurant staff can use on their own phones, Uber Eats for restaurants flexes to fit your kitchen's unique needs! Here's everything the app offers:

Device flexibility. Run the app on a single tablet or on multiple mobile phones! Uber Eats for restaurants flexes to meet your needs.

The above mentioned applications are all similar in that:

- They are mobile applications.
- They help manage orders on a day to day to day basis; order can be accepted or rejected.
- They provide order history.
- Enable hotel to link to a delivery service
- Generate receipts.

The system being considered will provide additional functionality such as:

- Create a direct link between customer and hotel. The customer can directly provide feedback and the hotel can reach out easily at a later time.

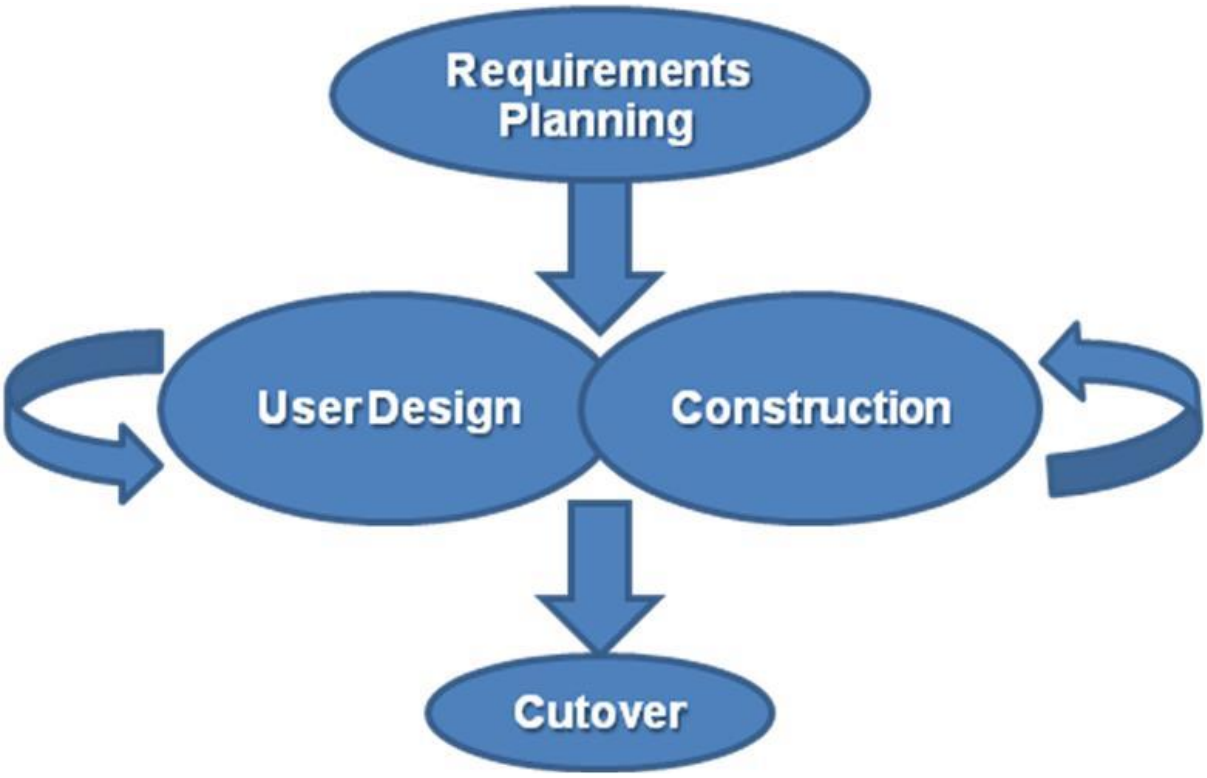
- A sentiment analysis dashboard.
- The hotel will be in control of the data.

The system will be in the form of a web application. This makes it easier to use without the need for installation which would be an unnecessary use of memory space and time.

Chapter 3: Methodology

3.1 Introduction

This project will be carried out under the Rapid Application Development (RAD) methodology (Martin, 1991) which is a type of agile software development lifecycle. This methodology suits the project as it involves the user more than any other methodology. The product of this project will be highly customised and it is absolutely necessary to involve the users all the way. RAD can be summed up by the diagram shown below.



The requirements planning will be done by gathering data from users through interviews, literature review, document review and brainstorming. This phase

combines elements of the system planning and system analysis phases of the software development lifecycle (SDLC). This phase involves establishing business needs, project scope, constraints and system requirements.

User design involves considering user feedback and then building the prototype according to the feedback. In this phase, the users interact with system analysts and develop models and prototypes that represent system processes. CASE tools are utilised to translate user needs into working models. This project will embrace an evolutionary prototyping approach where eventually the prototype becomes the system.

Construction focuses on application development. However, users continue to participate and can still suggest changes or improvements while the system is being actually developed. By iterating between user design and construction phases, the project is kept within a manageable scope and is likely to lead an acceptable final product for both parties.

Cutover phase involves testing the product, deployment and finalising the documentation. This is the endpoint of the project. After this phase, the project can be presented before the final panel for examination. (Martin, 1991).

3.1.1 The sentiment analysis

This project will involve the implementation of VADER (Valence Aware Dictionary for sEntiment Reasoning). VADER is a rule based model for analysing microblogs. In this project's case, the model will be implemented using PHP programming language to analyse customer feedback obtained from the web application that will be developed. VADER provides for a way to analyse a text's polarity and intensity. Polarity means classifying if a text is neutral, positive or negative. Intensity is the measurement/description of how positive or negative the sentiment is.

3.1.2 Implementation Tools

Programming languages

- PHP (server side language to program business logic, database connections, authentication, routing, sentiment analysis)
- JavaScript (client side language. Mainly to make web page dynamic and interactive)

Development environment

- XAMPP (PHP, MySQL and Apache server configuration)
- Visual Studio Code (Code editor)

Framework

- React JS (Client-side framework for single page applications)
- Bootstrap CSS (CSS framework)

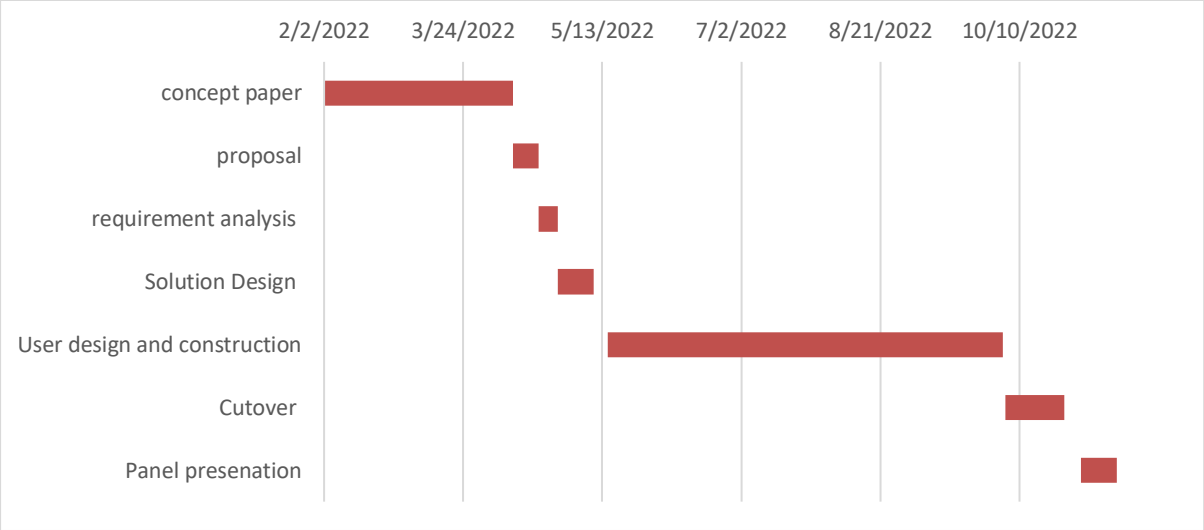
CASE tools

- Draw.io (Software tool for making Use-Case diagrams, DFD and other models.

Database technology

- MySQL (Relational database management system.)

3.2 Time plan



3.3 Project budget

This is the budget estimate for the project:

ITEM	UNIT COST	QUANTITY	TOTAL COST
WIFI	4500	2	9000
Printing charges	10	50	500
Travel expenses	100	12	1200
Cell phone airtime	4	100	400
		Total budget cost=11,100	

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