

ENHANCING FOOD CATERING FEEDBACK SYSTEM USING WEB_BASED SYSTEMS: A CASE STUDY APPLIED IN A SAUDI ARABIAN ORGANIZATION

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ABSTRACT: In this paper, we describe the working with one of the Saudi organizations that have a catering department which provides food and services to the organization's staff or to events. The employees are who work in the catering department need to know other employees' opinions on their provided services and food in such systematic way, in order to enhance their performance fast; that will rapidly effect on increasing the level of customer satisfaction, as well as saving time and cost. Enhancing these factor will positively reflect on the organization's reputation. Initial communications with the catering team in the organizations had conducted in the previous months in order to obtain their requirements and feedback on the system. The paper is divided into five sections. The first section provides an introduction to the catering department services to employees in one organization in Saudi Arabia. In addition to a brief description of the problem statement. Research objectives, questions, and hypothesis are clearly described in the second section. A bit of useful related work mentioned in the third section. Section number four will cover the project used techniques, methodologies, and phases. The final section will discuss the implementation and results of the applied system through the organization.

Keywords: Catering services system; customer feedback; follow-up survey; evaluation methods; saving cost and time; increasing satisfaction level.

1. INTRODUCTION

Catering staff always serve food or provide services to employees in an organization or for special events [4]. However, they don't get actual and instant feedback on the food or on their services. They usually hear general feedback or comment on the food taste. Sometimes they get a bad comment due to one of the dishes was not liked by them. This project aimed at building a feedback system that meets the expectations of the employees in the food or services that are provided by catering staff to a large Saudi organization for example. These systems that care about food quality level and customer satisfaction do not exist yet in Saudi Arabia; even in hospitals. According to one of the employees who work for Office Services Division (OSD) in the Catering Department in one of the largest Saudi companies, 'there is no a systematic way to receive employees feedback on the provided food'. Catering staff used to record other employees' feedback or suggestions in paper-based method and met contractors every three weeks to evaluate the provided services or food, as well as discussing the employees' complaints or problems [1]. To the best of our knowledge, this is the first attempt initiated to help catering department in Saudi organizations by prompting employees' feedback using Catering Services System (CSS), and we believe

that our approach will represent a significant change towards increasing the level of customer satisfaction and reducing costs. CSS is an information system-based (sometimes it can be implemented through mobile-based), has many aspects and goals are described in the next section. The following figure shows the main questions of the problem statements.

2. RESEARCH OBJECTIVES, QUESTIONS, AND HYPOTHESIS

This project's goal is to implement an effective system that captures employees' feedback and opinions on food or services that are served by staff who are working in the catering department in the organization. The following list shows the project objectives:

- To obtain system requirements from employees,

considering some health matters, such as; diabetic, blood high pressure, etc. in order to cook proper dishes with their cases;

- Implementing a potential system to optimize food and services feedback;



Figure 1: the problem statement

- Applying the system to the Saudi organization, observing the new results and finding out in order to guarantee that it is a suitable food system for the future of the catering department in Saudi organization;
- To increase the satisfaction level of employees after using the system, and reduce costs of hiring new staff in OSD to receive employees' complaints on food;
- Finally, documenting all of the studies, analyses, and results used for the project work and for future uses.

2.1 Research Questions

- How is it important for an organization to get employee satisfaction on catering services department?
- How it is possible for a system based on users' feedback to reduce costs and save time?
- To what extent a system can be easily used and generalized in other Saudi's sectors (e.g. hospitals)?

So, the research hypothesis is assumed that by using such

an effective catering service system by an organization; can increase the level of staff satisfaction on catering services, and decrease any relevant costs of hiring new staff to meet customer, and receive complaints or suggestions on food. As well as saving time comparing with old strategies that used to meet food contractors every three weeks minimum.

3. RELATED WORK

A case study had been applied to hospitals food waste in Wales, the UK in 2011 [2]. It showed the relations among hospital food waste, catering practices, and public procurement strategies. The study ensured that food catering in hospitals had the largest percentage of food waste rather than organizations. The study raised the need for an integrated approach that utilized all important actors within their food system in hospitals to save costs [2]. A different study conducted in 2011 was focused on older people patients in UK hospitals who served with hospital food [3]. The study aimed at checking the food level that passed through different phases; such as, freezing, regeneration, etc. in the most food catering in UK hospitals. A food committee revealed that the important factors of food journey were appearance, flavor, and mouthfeel. No systemic way to evaluate the food with patients to get their feedback on the provided food [3]. Research in Turkey proposed an analytical tool by using fuzzy to be used among catering firms for comparing and measuring the level of customer satisfaction by interviewing three customers [4]. Furthermore, the work in [5] has presented a new system built on mobile phones, called MyExperience to capture how people use phones. Three case studies had applied on this contribution; SMS usage, GPS, and battery life and charging behavior. Additionally, they aimed at collecting quantitative and qualitative data to support studies on mobile technology [5]. Saudi organizations usually provide food and services to their staff. On the other hand, they attempt to enhance the performance level of the catering department by obtaining actual and instant feedback from the employees. In the past, they tried to capture the staff feedback electronically. However, no efficient system has been proposed [1]. Another work based on users feedback had proposed in [6]. They implemented a system called Roomba, which based on the decision-theoretic framework that guides a dataspace upon to user feedback in a pay-as-you-go fashion. The framework used to order candidate matches for customer confirmation by using the principle of the value of perfect information (VPI). They used different workloads and dataspace for experiments such as Google base and synthetic data [6]. Learning from user feedback in terms of image retrieving from visual databases had proposed in [7]. They developed a new learning algorithm based on the belief percentage to be considered for both positive and negative examples of the user feedback [7]. So the work of this proposal comes to fill in the gap of the customer feedback system in a users' services system especially in the catering field in most Saudi organizations. Next sections illustrate the proposal methodologies, techniques, initial plan and phases in the

next three years.

4. PROJECT METHODOLOGY, TECHNIQUES, AND PHASES

This section views the methodologies and techniques used to achieve the project objectives as following:

- Survey creation tools; such as; survey creator, developing web pages using PHP,
- Data collection methods: interviews, publishing surveys, taking notes, Skype or voice calls
- Data analyzing methods, e.g. R-Language was used to analyze the open text questions of the survey using text mining libraries in R,
- Human-Computer Interaction (HCI) concepts during designing interfaces
- Network protocols and security principles
- Web_based technology, e.g. PHP admin,
- Database tools, e.g. mySql,
- System testing and using samples of users

Figure 2 shows the phases of the project [8]. The four significant phases are; analysis, problem identification, system solutions, and evaluation phase.

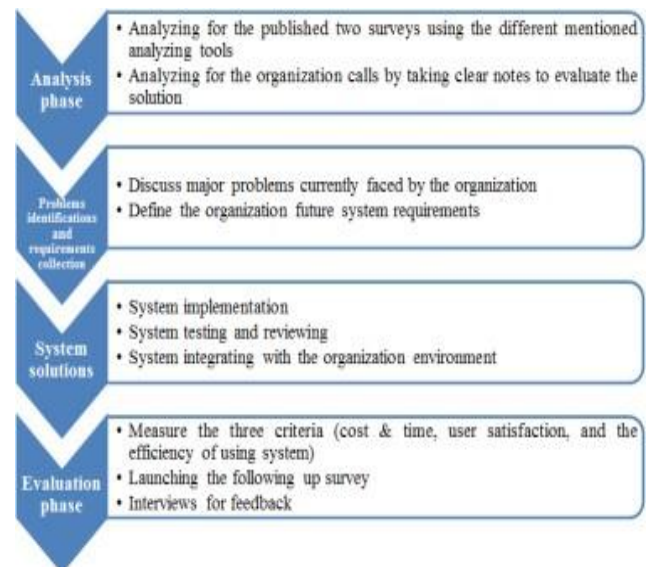


Figure 2: the project plan after [8].

5. IMPLEMENTATION AND RESULTS

5.1 Implementation

The proposed system implemented by using PHP my admin for the web pages, and MYSQL to store employee's details when they rate the provided service by a certain cafeteria. The implemented system launched on the administrator machine, and he can log in as an administrator account. Many supporting operations in the system; such as viewing customer rates or history, communicating with vendors, contacting with the employee, adding new suppliers, etc. One recommendation might enhance the working; is to implement a mobile app for the system. In terms of future work, the system could be

applied in a different sector, e.g. hospitals in order to obtain patients opinions on the provided food. Figure 3 shows the system scenario, followed by the SQL schema diagram appears in figure 4, and finally with the implementation of the scenario.

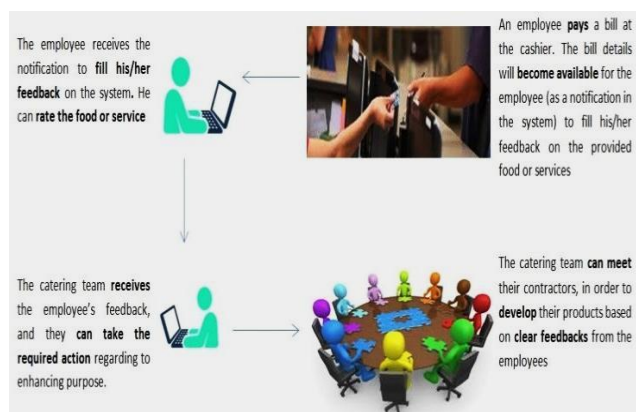


Figure 3: The system scenario.

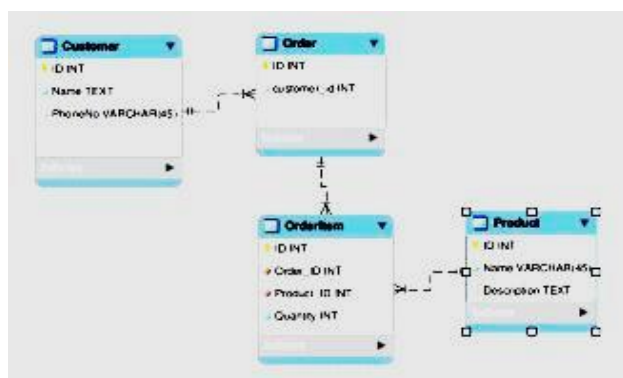


Figure 4: SQL schema diagram.

ID_bill	ID_employee	Order	Price	Feedback
12345	901380	pasta, water, salad	30	
12456	901380	egg, milk, apple	18	
14567	901380	rice, chicken, pepsi	32	
14568	901870	soup, rice, pizza	25	
14590	901870	pastry, sweet, tea	25	
14870	901870	pizza, fruit salad	21	

The cashier able to add the orders into the database, when preceding the order, without filling the feedback column

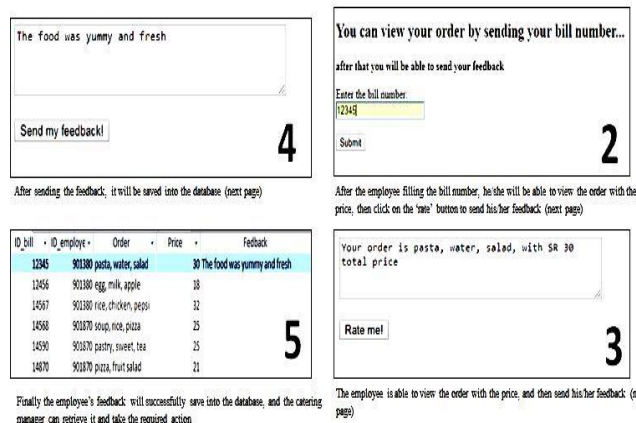


Figure 5: The implementation of the system scenario.

RESULTS AND EVALUATION

After using the proposed system, the feedback on the provided services or food were clear and identified by specific employees. The catering staff can easily see and evaluate the services by clicking on 'the customer feedback' button. In terms of time: the spending time for reviewing employee's feedback was less comparing with the old ways of hearing it. The spent costs on contractors in order to change meals or workers have been reduced. Many of the system feedbacks have been captured by conducting the interviews with some staff. Additionally, the follow-up survey had been launched in order to measure the system usability and efficiency. The survey link is <https://www.esurveycrator.com/s/df7b678>. Analyzing of the third question's answers in a specific (the question was: how did you find the system?) had been done using text mining methods and libraries in R. The following figure shows the frequency of words that were used to answer question three of the follow-up survey. Around 50 times the responses were 'helpful', 'needed', 'useful' about the system.

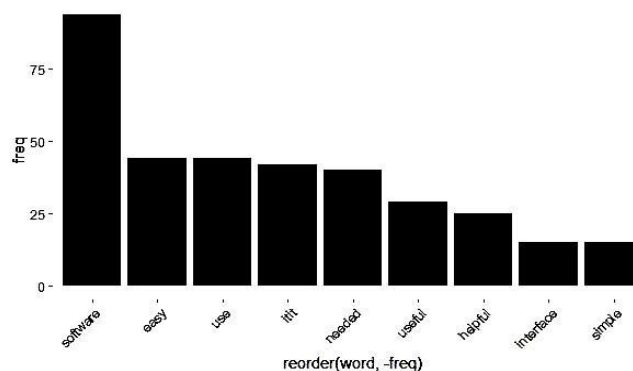


Figure 6: the word frequency of question 3

6. ACKNOWLEDGMENTS

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