ISERV : System anlysis & design

Group 1: Mihir(N1193420)(TL), Haris(N1208191), & Maruf(N1180872)

Ezoff

Table of content

[Table of content 1](#_Toc161989995)

[INTRODUCTION 2](#_Toc161989996)

[INTRODUCTION 2](#_Toc161989997)

[COMPANY 2](#_Toc161989998)

[proJECT SUMMARY 2](#_Toc161989999)

[METHODOLOGY 3](#_Toc161990000)

[PROJECT PLANNING 4](#_Toc161990001)

[FEASIBILITY 4](#_Toc161990002)

[TECHNICAL FEASIBILITY 4](#_Toc161990003)

[TECHNICAL RISK ASSESSMENT 5](#_Toc161990004)

[ECONOMIC FEASIBILITY 5](#_Toc161990005)

[ECONOMIC RISK ASSESSMENT 6](#_Toc161990006)

[Organisational feasibility 7](#_Toc161990007)

[Organisational risk assessment 8](#_Toc161990008)

[PROJECT SCHEDULING 9](#_Toc161990009)

[GANT CHART 9](#_Toc161990010)

[NETWORD DIAGRAM 10](#_Toc161990011)

[REQUIREMENT ANLYSIS 11](#_Toc161990012)

[REQUIREMENT CAPTURING METHOD 11](#_Toc161990013)

[REQUIREMENT LIST 13](#_Toc161990014)

[FUNCTIONAL LIST 13](#_Toc161990015)

[NON – FUNCTIONAL LIST 13](#_Toc161990016)

[FUNCTIONAL ANALYSIS 14](#_Toc161990017)

[CASE DIAGRAM 14](#_Toc161990018)

[STRUCTURAL ANALYSIS 15](#_Toc161990019)

[CLASS DIAGRAM 15](#_Toc161990020)

[ENTITY RELATIONSHIP DIAGRAM (ERD) 16](#_Toc161990021)

[SAMPLE SQL 16](#_Toc161990022)

[USER INTERFACE (UI) DESIGN 17](#_Toc161990023)

[UI PROTOTYPE 17](#_Toc161990024)

[1 – USER LOGIN 17](#_Toc161990025)

[NAVIGATION DIAGRAM 17](#_Toc161990026)

[2 – ISERV ADMIN 18](#_Toc161990027)

[3-vendor manage services 19](#_Toc161990028)

[INDIVIDUAL REFLECTION 20](#_Toc161990029)

[MIHIR 20](#_Toc161990030)

[MARUF 20](#_Toc161990031)

[HARIS 20](#_Toc161990032)

[REFERENCES 21](#_Toc161990033)

A logo with colorful lines

Description automatically generated with medium confidenceINTRODUCTION

INTRODUCTION

COMPANY

Welcome to Ezoff, where software creativity and efficiency collide. Ezoff is a software firm that is committed to revolutionising industries by utilising state-of-the-art technology and unmatched skills. We take great satisfaction in offering customised software solutions that enable companies to prosper in the digital age. At Ezoff, with ever changing technology, we are aware of companies must overcome obstacles to stay relevant in today’s modern society. Our motto being, secure software made simple, is at the forefront of every step of our procedures. We are dedicated to offering reliable and scalable software solutions catered to your specific requirements, whether they include improving operational workflows, improving customer experiences, or completely changing management procedures.

proJECT SUMMARY

In this project we are collaborating with iServ, a company that provides cleaning services for residential, commercial, and other properties. The organisation collaborates with third-party vendors that offer services such as air conditioning, plumbing, and installation. But modern demands require simplified client services to be quicker and more efficient. IServ is undergoing a digital transformation to computerise its management system to provide a more streamlined and user-friendly platform. According to a study in 2023, almost 90% of firms are hindered in their development and effectiveness by outdated technology (PSP, 2023). Therefore, the goal is to provide a management system solution that automates essential company processes like services offered, client inquiries, work scheduling, vendor collaborations, financial transactions, and evaluations. With the aim of this modification is to increase efficiency in business processes and provide a secure and resilient customer platform to promote satisfaction among customers.

Our team at Ezoff, consists of skilled individuals Mihir, Haris and Maruf, each of whom contributes their unique expertise in their roles. Together we collaborate in developing the proposed system by carrying out many roles, from project planning to analysing the requirements, functional aspects, and structural areas. Additionally, developing database and user interface design for customer, vendor, and iServ admin operations. We have established an adaptable environment within our team where open communication is encouraged, allowing us to collaboratively enhance each step with utmost creativity and quality. Our aim is to provide iServ with a seamless system solution to automate their operations and establish a benchmark for future scalability and innovation.

METHODOLOGY

During a system development life cycle, planning is the first step and the foundation of developing a system, this includes following an opted methodology which is critical for developing a successful software. A set methodology in place provides a structured framework for a project, which is essential when working with a team given allocated time and budget. As this creates a clear plan with goals needed to be met within the process creating clear communication for maximum efficiency as progress can be monitored by Improving scalability and flexibility.

With this project of developing the IServ service management system we have opted for an agile development methodology called Scrum. The Scrum development methodology streamlines software development through an incremental process. This methodology focuses on having a series of iterations called “small sprints” that incorporate new functions into the management system. Moving in sync as team and with the IServ stakeholders ensuring each step-in development is fulfilling the needed requirements to move on (Bhaskar, 2024) This is done with frequent meeting with stakeholders obtaining requirements at the start of each sprint to work on until the next. The decision to use the scrum methodology arises from its benefits of being more suited to smaller team like ours at Ezoff, allowing easier management whist ensuring that each team member plays their part efficiently and effectively increasing quality of product provided (Vasiliauskas, 2023).With continuous collaboration IServs complex project can be broken down and achieved efficiently. The frequent meetings reduce overhead expenses ensuring project is under the £60,000 budget.(Taylor, 2023). Also, Scrum offers a flexible and adaptable approach suited to fluently accommodate any changes from IServs stakeholders, customers, or vendor’s needs (Vasiliauskas, 2023). With frequent communication from IServs stakeholders the final product can confidently meet all IServs requirements producing a very robust management system leading to increased client satisfaction.

Compared to the parallel development methodology, whilst both involve multi team collaborations. Scrum is more focused by integrating each member collectively progressing on singular sprints minimising risk. Whereas a parallel approach sees multiple teams work on different components simultaneously, therefore increased risk of miscommunication and misalignment. However, that’s not to say that this is only a focused approach, as it is very flexible accommodating to any IServ user’s needs. This is in contract to the Waterfall methodology following a strict sequential order, creating challenges when needing to include any requirement changes. Overall Scrum development methodology provide a robust yet flexible framework that is adaptable to any changes in user requirement making it ideal for IServs management system.

PROJECT PLANNING

FEASIBILITY

TECHNICAL FEASIBILITY

**Functional area**

First part of assessing the technical feasibility of this project is the familiarity with the functional area within Fiserv. This project involves the development of a comprehensive service management system for cleaning services. Our team possess excellent undertesting of such system management systems, with each member possess expertise in operational processes of service requests, scheduling, payments, and vendor management. This is due to the fact with modern technology such streamlined management systems are very common within today's companies' operation, therefore having thorough market research to follow makes this system much more familiar.

**Familiarity with Technology**

Being familiar with technical aspect of iServ project is essential and the foundation to the success of this project. As this covers the vast amount of time and challenges our team will face. Therefore, we have ensured our technical team is well equipped in the skills/applications essential to produced iServ its robust service management system.

* Database: Our team has assigned Haris as the individual with the most database experience therefore responsible for database management of the system including sorting and retrieving data. This includes MySQL expertise in Microsoft Access and excel.
* Scalability /security: Our security leader Maruf is responsible for the scalability of this system whilst ensuring data security too. This Leveraging AWS for reliable hosting of the system.
* Development/UI: Our development leader Mihir has been assigned with the task of developing the management service along with the user interface. As Mihir stans out with his expertise and in-depth knowledge utilizing programming applications such as HTML, CSS, and JavaScript.

**Project size**

Our team consists of 3 individuals with the essential experience and expertise in the field, tasked to create iServs management system. The size of the team is considerably small therefore managing a team of this size causes less risk. But sets clear constraints in terms of delivering a functioning management system, considering the complexity of the system it could generate risk in term so project size. But after assessing with the technical team with a budget of £60,000 and a timeline of 4 month the IServ project is classified as medium-sized, therefore positively feasible for completion.

TECHNICAL RISK ASSESSMENT

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Risk | Probability | IMPACT | | Risk category | | Ways to mitigate | |
| 1  Employee Training and Adoptions | **5** | | **6** | | **Medium** | | Comprehensive taring programs will be provided, providing user support. | |
| 2  Compliance Issues | **8** | | **5** | | **Low** | | By staying informed about the relevant regulations, performing regular audits to make sure the system complies with all necessary standards. | |
| 3  System Downtime | **5** | | **10** | | **Medium** | | By conducting regular system check-ups during off peak hours and keeping a recovering plan in place | |
| 4  Data security And Privacy | **5** | | **10** | | **Medium** | | By Implementing strong encryption for confidential information, carry out frequent security assessments, follow by laws related to data security, and train users on safe behaviours. | |

ECONOMIC FEASIBILITY

The economic feasibility of the iServ Service Management System involves analysing both tangible and intangible costs and benefits to determine the project's overall value and return on investment. This analysis helps in understanding whether the financial benefits outweigh the costs and if the project is viable from an economic standpoint.

**Tangible Costs and benefits**

**Hardware**: This includes the teams needed in terms of systems needed, computers, monitors and any storage needed

**Cost of development team/applications**: Our development team consists of software developers, UI developers, security lead. The £60,000 would need to cover the salaries of the develops along with any additional expertise needed, along with the application used cost.

**Benefits**

**Increase growth/sales:** By having a streamlined management system it would enhance customer experience leading to more returning customers whilst attracting new ones, increasing sales and revenue.

**Efficacy/decrease**: A automated management service would reduce overall completion time of tasks within the company, decreasing labour cost.

**Intangible Costs**

**Errors**: With the system being implemented a major shift in the current operation of iServ, this could lead to errors when admin handling request as admins and customers would need time to get are familiar

**Technical/cyber-Issues**: The system could experience downtime prolonging services completion time. Also, an automated system available for users to user online could be venerable to cyber-attacks causing access to private data

**Intangible Benefits**

**Market advantage**: By having a robust automated service this could give iServ an advantage over competitors due to development in technology put them ahead and an increased online presence.

Overall, economically this project seems to be feasible and showing a positive outcome to the development of this project. Considering both the intangible and tangible benefits outweigh the costs. However careful management of system's performance will be crucial to realizing these benefits and mitigating any associated costs.

ECONOMIC RISK ASSESSMENT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Risk | Description | Probability | impact | risk category | Ways to mitigate |
| 1  Inaccurate budget assessment | Project budgets exceed expectations due to inaccurate estimations can result in delays and compromise in software delivered | **4** | **8** | **Medium** | Create strict budget models that contain accurate cost estimations or the company to view. Also have it flexible enough to add unexpected cost within the budget. |
| 2  Increased cost issue | Like inaccurate budget estimation. But costs for certain stages of development may not align with iServ estimations and therefore lead to a disagreement in cost | **6** | **7** | **Medium** | Regularly review and update budget according to each stage of development by having meeting with stakeholders in iServ to ensure correct budget allocated to the project. |

Organisational feasibility

IServs stakeholders proposed project is to computerise their business, by incorporating a management system to manage all their services. The purpose of such system is to streamline business operation by automating services, scheduling, payments, and vendor management. Therefore, creating an efficient system for admins, vendors, and customers. This aligns with IServ strategic pursuit of improving customer service by delivering a modern and efficient service system increasing customer satisfaction. This also expands the business to an online market to increase market share and attract new customers.

The three key users within the system include employees(admins), vendors and customers. Each will need to be accepting of this system for it to be successful and functioning well. Employees will need effective training to understand the new changes, along with the benefits to their efficiency for them to accept and successfully run the system. Vendors and customers would be accepting of the system provided a clear yet appealing user interface whilst maintaining excellent customer/vendor support to attract more users.

Overall, having these user requirements met will lead to a successful adaption to the management system from all users. With the set requirements being manageable and the strategic goals of the company/management system aligning, from an organisation aspect this project is positively feasible.

Organisational risk assessment

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Risk | Description | Probability | impact | risk category | Ways to mitigate |
| 1  Staff Absent | The unexpected absent one of main member of the team could lead to projects delay. | **5** | **6** | **Medium** | Make sure have contact with all the staff. Share work amongst teammates. Keep updating absent teammate. |
| 2  Poor Communication | Lack of interaction regarding the project, modification, and schedule of the project could result in miscommunication | **5** | **8** | **Medium** | Provide regular report on the status and modification of the project, create group on MS team or WhatsApp for communication. |

PROJECT SCHEDULING

GANT CHART

A screenshot of a computer

Description automatically generatedA white background with black dots

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Fig 1

Fig 1 Shows a Gannt chart showing, 15 -12 – 23 as a start date and 22 – 03 – 24 as finish date of the project for iServ. The duration for the project is 71 days which includes all the weekdays as well as weekends. Moreover, the given chart includes all the dependencies which should be finished before moving further with the project and all the milestones for the project which includes the last milestone is final report submitted.

A screenshot of a computer screen

Description automatically generatedNetwork DIAGRAM

A grid with a diagram

Description automatically generatedFig 2

Fig 3

Figure 2 shows a zoomed network diagram and figure 3 shows the complete network diagram as a whole. 15 -12 – 23 as a start date and 22 – 03 – 24 as finish date of the project for iServ.

REQUIREMENT ANLYSIS

REQUIREMENT CAPTURING METHOD

We will use variety of techniques like asking questions, documents analysis and setting up an interview with the stockholders and the managing director of the company moreover, we will also conduct surveys for getting a better idea. After understanding the needs and expectations of the stockholders, including the owner and staff. After studying them we will go through with existing documents for example, business procedure, handbooks and related materials which will provide valuable details/insights of the project.

|  |  |  |
| --- | --- | --- |
| **No.** | **Capturing Methods** | **Questions to ask** |
| **1.** | Document analysis - | 1 - What are the present procedures used in the organisation to handle administrative responsibilities, vendor management, and client requests?  2 - Is there any guidelines or instructions that the system has to follow? |
| 2. | Interviews - | 1 - Which major issues with the existing processes need to be resolved?  2 - Which features are essential for effectively managing suppliers and clients?  3 – What are their long-term goals for iServ?  4 - Which issues or problems do you expect the system will solve with the existing manual processes?  5 - Are there any particular features or functionalities that you believe are essential to the system's success?  6 - How will the iServ Service Management System's effectiveness be evaluated? |
| 3 | Surveys – | Questions to vendors –  1 - At what extent are you happy with the way that iServ is currently cooperating with you as a vendor?  2 - What difficulties or inefficiencies do you run into when using iServe to manage payments and services?  3 - How easy is it for vendors to access and administer their services with the present system?  4 - How would you rate the communication and collaboration between iServ and its vendors?  5 - Are there any particular features or resources that might improve your iServ vendor experience?  Questions to Employees –  1 - How well does your current system help you with your daily work of paying employees, managing services, and keeping track of staff?  2 - How easy is it to utilise the system to manage customer/vendor data, staff information, and task scheduling?  3 - What extra features or devices might simplify your tasks and improve your total output?  Questions to Customer –  1 - How happy are you with how you currently request and manage iServ cleaning services?  2 - What problems or challenges, if any, have you encountered with the current system?  4 - Would you like to see any particular features or functionalities included in the new service management system? |

REQUIREMENT LIST

FUNCTIONAL LIST

**Following are the requirements for Customer: -**

|  |  |  |
| --- | --- | --- |
| **No.** | **Customer Requirements** | **Priority** |
| 1 | Register | High |
| 2 | Login | High |
| 3 | Send Request | High |
| 4 | Make payment | High |
| 5 | Make Complaint | High |

**Following are the requirements for Vendor: -**

|  |  |  |
| --- | --- | --- |
| **No.** | **Vendor Requirements** | **Priority** |
| 1 | Register | High |
| 2 | Login | High |
| 3 | Manage services | High |
| 4 | Update Profile | Medium |
| 5 | Invoice | Medium |

**Following are the requirements for iServ Administrator department: -**

|  |  |  |
| --- | --- | --- |
| **No.** | **Administrator Requirements** | **Priority** |
| 1 | Manages Customer, Employees and Vendor | High |
| 2 | Manage Coupons | High |
| 3 | Manage job Scheduling | High |
| 4 | Manage Customer Payments | High |
| 5 | Manage reports - Employee, Customer, and Vendor. | High |
| 6 | Monitor Compliance | Medium |
| 7 | System Configuration and customisation | Low |
| 8 | Customer Review Management | Low |

NON – FUNCTIONAL LIST

**Non - Functional requirement list: -**

|  |  |  |
| --- | --- | --- |
| **No.** | **Non – Functional Requirements** | **Priority** |
| 1 | Cost | High |
| 2 | Reliability | Low |
| 3 | Availability | Medium |
| 4 | Performance | Medium |
| 5 | Useability | High |
| 6 | Maintainability | Low |
| 7 | Security | High |

FUNCTIONAL ANALYSIS

CASE DIAGRAM

A diagram of a company

Description automatically generated

Fig 4

Figure 4 presents as proposed by the IServ, a use case diagram has been developed to address the requirements of the user, vendors, and iServ Admin department.

STRUCTURAL ANALYSIS

CLASS DIAGRAM

A diagram of a server

Description automatically generated

Fig. 5

Figure 5 presents a Class diagram that illustrates the interconnections among the functions within the system. Furthermore, it demonstrates the characteristics and the approach to adhere to those characteristics.

A diagram of a company

Description automatically generatedENTITY RELATIONSHIP DIAGRAM (ERD)

Fig 6

Fig 6 shows the database design which fulfils all the requirement, shows all the connection and the methods.

SAMPLE SQL

***Example: “View list of payments above £2500”***

SELECT payment\_id, customer\_id, amount, payment\_date

FROM CustomerPayment

WHERE amount > 2500 ;

***Exampe : “Retrieve all vendors.”***

SELECT vendor\_id, service\_name, contact

FROM Vendor;

USER INTERFACE (UI) DESIGN

UI PROTOTYPE

A screenshot of a computer

Description automatically generated1 – USER LOGIN

Fig 7

A diagram of a diagram

Description automatically generatedNAVIGATION DIAGRAM

The homepage of the iServ website is indicated by Figure 7. Users can select their user type, such as customer, admin, or vendor, on the homepage. The system will initially present the user and offer the default choices. In order to avail oneself of this particular feature, the user is required to authenticate themselves by verifying their credentials, which encompass a password and username. Furthermore, individuals possess the capability to execute financial transactions, lodge grievances, and submit inquiries directly from the homepage. At the top right corner, there are three lines that serve as options to access the main menu, contact support, and close those three lines.

A screenshot of a computer

Description automatically generated2 – ISERV ADMIN

A diagram of a company

Description automatically generatedfig 8

Figure 8 indicates the admin's homepage, which contains all the necessary options for the admin. On the left side, there will be a user profile image accompanied by pertinent information such as the user's name, date of birth, and email address. At the top right corner, there are three lines that serve as options to access the main menu, contact support, and close those three lines.

A screenshot of a computer

Description automatically generated3-vendor manage services

A diagram of a diagram

Description automatically generatedFig 9

Figure 9 portrays the vendor who has successfully logged in and chosen the service management option. Within this interface, the vendor is provided with the ability to both add and remove services. Additionally, users have the ability to access the main menu and choose the log out option to log out and exit the website. They can simply click on the exit button. The upper right corner of the interface features three lines that function as alternatives for accessing the primary menu, contacting support, and closing said lines.

INDIVIDUAL REFLECTION

MIHIR

In this coursework, I accepted the role of team leader, responsible for assigning roles to my colleagues and determining my own role for the project. Given that our group consisted of only three members, we faced challenges in completing the project due to the need for overtime. Initially, we established communication as this was our inaugural project, and we were unfamiliar with each other due to the absence of synergy between us. In order to address this issue, I have organised several team meetings that facilitate mutual understanding of each other's perspectives. Furthermore, I have established a WhatsApp group that greatly facilitated prompt communication as our team was working overtime due to a shortage of personnel. The primary responsibilities I was assigned included designing the company logo, developing the methodology, conducting risk assessments, scheduling projects, capturing requirements, creating a requirement list, and creating user interface prototypes. In addition, I conducted an examination of the Use Case Diagram, Class Diagram, Database Design, and SQL. Overall, all members were involved in every aspect of the work, including both my own creations and their reviews, as well as their own creations and my reviews. Throughout the course of my experience, I have acquired a diverse range of skills and knowledge. These include effective communication skills, the ability to collaborate and manage teams, the capacity to articulate my ideas to the team, proficiency in learning new Entity-Relationship Diagram (ERD) software, and a comprehensive understanding of various aspects such as explaining introductions, project planning, requirement analysis, functional analysis, structural analysis, database design, and user interface (UI) design. To summarise, managing a small team during this coursework presented difficulties, but employing efficient communication and collaboration techniques allowed us to surmount barriers. My role involved a wide range of tasks, which helped me gain a thorough understanding of project development. This experience has facilitated the acquisition of valuable skills in communication, teamwork, and technical proficiency, thereby developing personal and professional development in the field of software development.

MARUF

In this course work me and my pears worked on a report on system analysis design. Where we had to design a system for a company, which is going internet base for the first. As a member of this group, I have played various part as an active member of the group and contributed to all sections in report. I have worked with my group closely to ensure that we have done all criteria for the coursework. Even though sometimes we could not come to some of the classes for various reason, but we had group conversation on WhatsApp, what we have done on report. Upon reflect on duration of group course work. We as a group of three (one team leader and two members) we communicated every day. We divided part of work amongst ourselves. When I done my parts of the coursework, I asked other members of the group for have a look and any way to make better. The main tasks I was assigned with were part of the risk assessment, use case diagram, class diagram, navigation diagram along with analysis of UI and description of each diagram. But all members within my group supported with contributions to aid me to complete my tasks. When they did their parts of work, they also told me to have look and give them any suggestion for their work. This way we all had overarching complete understanding what we need to do to complete the report.

HARIS

Having competed the system analysis and design report, our group consisted of three members being (me, Maruf and Mihir). Together from the start point of this project we established that communication and constant collaboration would be key. Therefore, we had a WhatsApp group chat, weekly meeting and shared one drive report access. We discussed our ideas, progress, concerns, and delegated tasks to each member through them three forms of communication. Each member volunteered/delegated to a task based on previous experience and expertise resulting in quality and efficiency. But we constantly collaborated, helping, and covering each other’s needs. We followed a set procedure which I will explain now, for example: an individual would present their completed task to the group, which we would use as a bassline. The work is then reviewed by the other two members and together all three agree upon further improvements to be made. Depending on who is more suitable and willing, these improvements are carried out by the individual suggesting or the original member tasked with the work. The main tasks I was assigned with were the introduction, the methodology, feasibility analysis, part of risk assessment, the entity relationship diagrams along with the SQLs. But as mentioned all members would consistently help me with support and collaborate in improving areas.

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