Order Number: . . . . . Option:.....

Thesis submitted to the

UNIVERSITY OF MOHAMED BOUDIAF – MSILA

FACULTY OF MATHMATICS AND COMPUTER SCIENCE
DEPARTEMENT OF COMPUTER SCIENCE

In partial fulfillment of the requirements for the degree of

Master in **Computer Science**

By

TAHRI Zakaria

FEIDJEL Ismail

Title of the thesis

DESIGN & IMPLEMENTATION OF A COMPREHENSIVE FREELANCING AND SELF-EMPLOYING PLATFORM

Under the supervision of

Prof. AKHROUF Samir

Composition of the jury

Dr. KHETTAF Abdelouahab	University of Msila	President
Dr. BOUZAROURA Ahlem	University of Msila	Examiner

June, 2023

DEDICATIONS

*"We would like to dedicate this thesis to **our parents**, **family**, and **friends**, whose unwavering support, encouragement, and love have been our driving force throughout this journey. Their constant belief in us, even in the face of challenges, has been a source of inspiration and motivation. We are immensely grateful for their guidance and sacrifice, and we owe them everything. This accomplishment would not have been possible without their love and unwavering support. We dedicate this work to them with love and appreciation."*

Tahri Zakaria, Feidjel Ismail

"In loving memory of my dear grandmother. Though you are no longer with us, your spirit lives on in every achievement I attain. Allah, please grant her a place in Jannah".

Tahri Zakaria

ACKNOWLEDGMENTS

We would like to express our sincere gratitude to “Prof. Akhrouf Samir”, our supervisor, for his invaluable guidance, support, and encouragement throughout the entire process of conducting this research and writing this thesis.

We are also grateful to the members of the jury, “Dr. Khettaf Abdelouahab” and “Dr. Bouzaroura Ahlem”, for taking the time to review and evaluate our work, and for their constructive feedback and insightful comments.

We would like to extend our thanks to the business incubator of the University “Mohamed Boudiaf – Msila”, for providing us with the necessary resources and facilities to carry out this project.

Moreover, we would like to thank all the participants who answered our surveys and interviews, for their valuable contributions to our study. Without their willingness to share their experiences and insights, this research would not have been possible.

TABLE OF CONTENT:

INTRODUCTION **1**

CHAPTER 1: LITERATURE REVIEW **4**

1. Definition of Freelancing and its Importance: 4
2. Freelancing Work Fields: 5
   - *2.1. Programming and Tech:* *5*
   - *2.2. Graphic and Design:* *5*
   - *2.3. Digital Marketing:* *6*
   - *2.4. Writing and Translation:* *6*
   - *2.5. Video and Animation:* *6*
   - *2.6. Audio and Music:* *6*
3. Overview of Freelancing Platforms: 7
4. Types of Existing Freelancing Platforms: 8
5. Comparison of Popular Freelance Platforms: 8
6. Advantages and Limitations of Existing Freelancing Platforms: 11

CHAPTER 2: METHODOLOGY **12**

1. Research Approach: 12
   - *1.1. Definition of Research Approach and Its Types:* *12*
   - *1.2. Choice and Rationale of The Adopted Research Approach:* *12*
2. Research Methods: 13
   - *2.1. Types of research Methods:* *13*
   - *2.2. Selection and Rationale of the Employed Research Methods:* *13*
3. Data Collection: 14
   - *3.1. Survey-based Data Collection:* *14*
   - *3.2. Acquisition of Data Through Interviews:* *15*
   - *3.3. Data Collection through Observational Techniques:* *15*
4. Data Analysis: 16
   - *4.1. Quantitative Analysis:* *16*
   - *4.2. Qualitative Analysis:* *21*
5. Findings From the Research: 25
   - *5.1. Problems and Suggested Solutions:* *25*
   - *5.2. The Best Practices for Designing and Implementing:* *26*
   - *5.3. Strategies for Managing and Resolving Disputes:* *27*
   - *5.4. Factors Contribute to User Satisfaction and Loyalty:* *27*

CHAPTER 3: SYSTEM REQUIREMENTS AND DESIGN **28**

1. PROJECT MANAGEMENT METHODOLOGY (AGILE): 28
1.1. Details of Agile Methodology: 28
1.2. Rational of Using Agile Methodology: 29
2. FUNCTIONAL REQUIREMENTS: 30
3. NON-FUNCTIONAL REQUIREMENTS: 31
4. DATABASE DESIGN: 32
4.1. Database Modeling: 33
4.2. Database Tables: 34
5. SYSTEM MODELING: 35
5.1. Use Case Diagram: 35
5.2. Sequence Diagrams: 37
5.3. Class Diagrams: 41

CHAPTER 4: IMPLEMENTATION AND TESTING 42

1. PROGRAMMING LANGUAGES AND FRAMEWORKS: 42
2. PROGRAMMING TOOLS: 43
3. ADOPTED SOFTWARE ARCHITECTURES: 43
4. PROGRAMMING TASKS: 44
4.1. Determining Tasks: 45
4.2. Setup The Database: 45
4.3. Laravel Backend Setup: 46
4.4. ReactJS Frontend Setup: 48
4.5. Version Control with Git: 50
5. TESTING METHODOLOGY: 51
6. FINAL LOOK OF THE PLATFORM: 52
7. LIMITATIONS OF THE SYSTEM: 58
8. ASPIRATIONS FOR THE FUTURE: 58

CONCLUSION 59

REFERENCES: 60

ANNEX 1: (SURVEY QUESTIONS) 66

ANNEX 2: (INTERVIEW GUIDES) 67

ANNEX 3: (OFFICIAL JOURNAL ALGERIA) 68

ANNEX 4: (CODES) 70

ANNEX 5: (FOR 1275 ORDER) 77

TABLE OF ILLUSTRATIONS:

List of Figures:

FIGURE 1.1: SELF-EMPLOYED, TOTAL (% OF TOTAL EMPLOYMENT) 4

FIGURE 2.1: DISTRIBUTION OF FREELANCERS' FIELDS OF WORK. 17

FIGURE 2.2: YEARS OF EXPERIENCE OF FREELANCERS IN THE FIELD. 18

FIGURE 2.3: MOST FREQUENTLY USED FREELANCE PLATFORMS. 18

FIGURE 2.4: RANKING OF COMMON PROBLEMS ENCOUNTERED BY FREELANCERS. 19

FIGURE 2.5: RANKING OF COMMON PROBLEMS ENCOUNTERED BY FREELANCERS OUTSIDE FREELANCING PLATFORMS. 20

FIGURE 2.6: AWARENESS AND REGISTRATION OF LAW ON SELF-EMPLOYMENT. 21

FIGURE 3.1: AGILE METHODOLOGY 29

FIGURE 3.2: THE DATABASE MODEL. 33

FIGURE 3.3: USE CASE DIAGRAM OF THE FREELANCING PLATFORM. 36

FIGURE 3.4: SEQUENCE DIAGRAM OF SIGNUP PROCESS. 37

FIGURE 3.5: SEQUENCE DIAGRAM OF LOGIN PROCESS. 38

FIGURE 3.6: SEQUENCE DIAGRAM OF PROJECT LIFE. 39

FIGURE 3.7: SEQUENCE DIAGRAM OF DISPUTE AND REFUND MANAGEMENT. 40

FIGURE 4.1: MVC ARCHITECTURE PATTERN 44

FIGURE 4.2: THE USED EXCEL SHEET TO RATE THE PROJECT PROGRESS 45

FIGURE 4.3: PROJECT STRUCTURE. 50

FIGURE 4.4: SING IN PAGE. 53

FIGURE 4.5: SIGN UP PAGE. 53

FIGURE 4.6: HOME PAGE. 54

FIGURE 4.7: HOME PAGE (NOTIFICATIONS PANEL). 54

FIGURE 4.8: PROFILE PAGE (HOME). 55

FIGURE 4.9: PORTFOLIO (CV). 55

FIGURE 4.10: DASHBOARD PAGE. 56

FIGURE 4.11: PROFILE PAGE (SERVICES). 56

FIGURE 4.12: MESSAGING PAGE. 57

FIGURE 4.13: PROJECT DETAILS. 57

INTRODUCTION

The freelancing industry has experienced significant growth in recent years, with more professionals opting for flexible work arrangements and businesses seeking specialized talent for project-based engagements. This thesis aims to address the challenges and limitations faced by freelancers and clients in the context of the Algerian market and propose solutions to enhance the freelancing experience. Additionally, the research explores the improvement of existing freelancing platforms, the best practices for designing and implementing user-friendly platforms, secure payment systems, strategies for managing disputes, and factors influencing user satisfaction and loyalty.

The research questions encompassed in this study are as follows:

- What are the problems that freelancers and clients face, especially in Algeria? How can these problems be solved?
- How can existing freelancing platforms be improved to better meet the needs of freelancers and clients?
- What are the best practices for designing and implementing a user-friendly and efficient freelancing platform?
- How can freelancing platforms ensure secure and reliable payment systems for clients and freelancers?
- What are the most effective strategies for managing and resolving disputes between clients and freelancers in a freelancing platform?
- What factors contribute to user satisfaction and loyalty on freelancing platforms, and how can these factors be improved?

The first section of this thesis provides a comprehensive literature review on freelancing, its definition, and its importance in the modern work landscape. It delves into various freelancing work fields, including programming and tech, graphic and design, digital marketing, writing and translation, video and animation, and audio and music. Additionally, an overview of existing freelancing platforms is discussed, highlighting the types of platforms available, including general

and specialized platforms. A comparison of popular freelance platforms is presented, along with an analysis of the advantages and limitations of existing platforms.

The market analysis methodology is adopted. The research approach is defined, considering the different types of research approaches and the rationale behind choosing the specific approach. Various research methods, such as survey-based data collection, interviews, and observational techniques, are employed to gather relevant data. The data analysis process involves both quantitative and qualitative analysis techniques, exploring factors such as freelancers' fields of work, years of experience, preferred platforms, challenges encountered, awareness of self-employment laws, and more. The findings from the research provide insights into the problems faced by freelancers and clients, along with suggested solutions, best practices for platform design and implementation, strategies for managing disputes, and factors contributing to user satisfaction and loyalty.

Moving forward, based on the methodology findings the thesis focuses on the system requirements and design phase, outlining the functional and non-functional requirements of the proposed freelancing platform. A detailed database design is presented, including database modeling and the structure of different tables. System modeling is explored through use case diagrams, sequence diagrams for key processes such as sign-up, login, project and contract management, and dispute and refund management. Class diagrams depict the relationships between different classes within the system.

The next section discusses the implementation and testing phase, starting with an explanation of the chosen software development methodology, namely the Agile methodology. The programming languages, frameworks, and tools utilized in the development process are outlined, considering both web and mobile application platforms. Software architectures, such as the Model-View-Controller (MVC) and component-based architecture, are discussed in relation to the system design. The programming tasks involved in setting up the database, configuring the Laravel backend, and building the ReactJS frontend are presented. The testing methodology involves the use of PHPUnit for testing automation, and the results of the tests are discussed. The final look of the platform is showcased. The limitations of the system are acknowledged, highlighting any constraints or challenges faced during the development process. Then the thesis discuss the future aspiration for establishing the startup.

Overall, this thesis provides a comprehensive exploration of the freelancing industry, the challenges faced by freelancers and clients in Algeria, and the proposed solutions to enhance the freelancing experience. By addressing the research questions and incorporating market analysis, system requirements and design, implementation, and testing, this thesis aims to contribute to the understanding and improvement of freelancing platforms, paving the way for future startup endeavors in the Algerian freelancing market.

Chapter 1

Literature Review

1. Definition of Freelancing and its Importance:

In the field of work, freelancing refers to the practice of working independently and offering one's services to clients on a project-by-project basis rather than as a full-time employee [1]. Freelancers typically work for a variety of clients and have a diverse portfolio of projects, which allows them to maintain a level of flexibility and control over their workload and income.

The importance of freelancing has grown significantly in recent years, driven in part by advances in technology and the rise of the gig economy. With the ability to work from anywhere with an internet connection, freelancers are able to access a global marketplace of clients and projects, which can offer unique opportunities for personal and professional growth. Freelancing also provides an alternative for individuals who are seeking greater autonomy and control over their careers and lifestyles, as well as for organizations that are looking to access specialized skills and talent on a flexible, project-by-project basis.

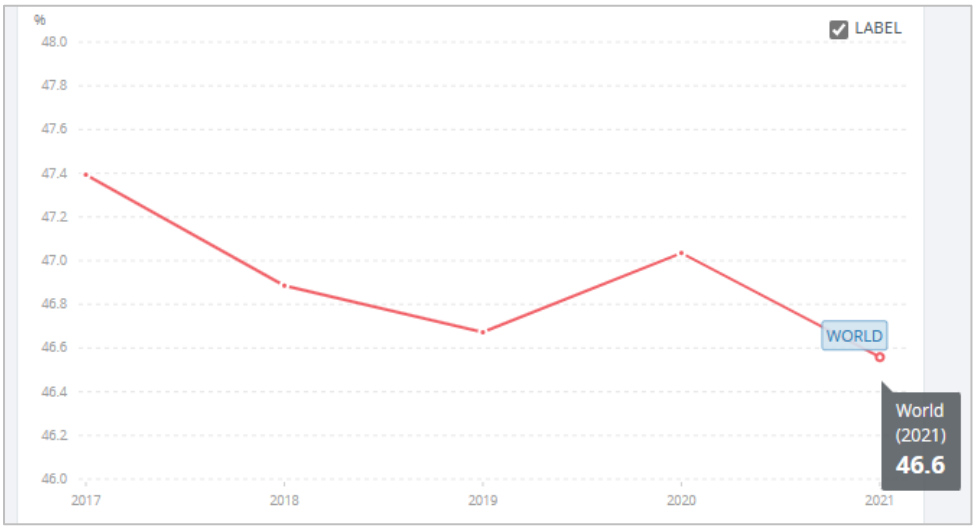


Figure 1.1: Self-employed, total (% of total employment) [2].

According to a study conducted by the world bank, there were 1.56 billion self-employers in the world in 2021, representing 46.4% of the total workforce in the world [2]. This trend is expected to continue to grow in the coming years, highlighting the importance and relevance of freelancing in today's market.

As of December 2022, The Algerian government has shown interest in the freelancers' segment, and issued a presidential law for self-employees, this law includes inclusion in social security and tax and legal facilities [3], in order to encourage them and facilitate their work in Algeria.

Eventually, freelancing plays a crucial role in the modern workforce by providing individuals and organizations with greater flexibility, access to a global marketplace of clients and projects, and the ability to work on a project-by-project basis. As such, it is an important topic for research and analysis in the field of work and employment.

2. Freelancing Work Fields:

Freelancing offers a diverse range of work fields that individuals can pursue. Some of the most commonly cited work fields include:

2.1. Programming and Tech:

It is the process of designing, developing, testing, and maintaining computer software, hardware, and systems [4]. This category includes a wide range of services, such as web development, mobile app development, game development, software engineering, database administration, network and system administration, cybersecurity, data analysis, IT support, and many others. Freelancers in this field are proficient in various programming languages, software tools, and technologies, and they provide their services remotely to clients from various industries.

2.2. Graphic and Design:

It is a creative process that involves designing visual content such as logos, brand identities, web and app design, art and illustration, marketing design, game art, visual design, print design, packaging and covers, architecture and building design, product and character design,

fashion and merchandise, and other related visual communication materials. This creative industry requires artistic skills, technological knowledge, and a deep understanding of visual aesthetics to provide the client with a final product that matches their needs and objectives [5].

2.3. Digital Marketing:

It is the practice of promoting products or services using digital channels, such as search engines, social media, email, and websites. The use of digital marketing techniques has become essential for businesses to reach their target audience and achieve their marketing goals [6]. The scope of digital marketing includes various methods and techniques, such as social media marketing, video marketing, and email marketing, as well as the use of analytics and strategy to optimize marketing campaigns.

2.4. Writing and Translation:

Writing refers to creating written content for various purposes such as articles, blog posts, social media posts, copywriting, technical writing, and more.

Translation in freelancing refers to the process of converting written content from one language to another while maintaining the meaning and context of the original text [7]. This includes various types of content such as documents, articles, websites, and more.

2.5. Video and Animation:

It refers to the process of creating visual content through the use of moving images, including but not limited to 2D and 3D animation, whiteboard animation, explainer videos, promotional videos, music videos, and more [8]. In the context of freelancing, it involves working on video projects and creating animations for clients as a freelance service.

2.6. Audio and Music:

It is the production, composition, recording, editing, and post-production of various types of audio content [9]. Freelancers in this field can provide services such as music composition, sound design, voice-over recording, audio mixing and mastering, podcast production, and audio editing. They may work on projects such as music production, soundtracks for films or

video games, advertising jingles, podcasts, audiobooks, or sound effects for different types of media.

These are not all fields of work in freelance, but rather the most famous of them. freelance work fields are constantly renewed, especially with the rapid technological development witnessed by the contemporary era.

3. Overview of Freelancing Platforms:

Freelancing platforms refer to online marketplaces that connect freelancers with clients in need of their services. These platforms provide a space for freelancers to showcase their skills and for clients to search for the right talent for their projects. Freelancing platforms typically offer a variety of services including project management, payment processing, dispute resolution, and more [10].

In the late 1990s and early 2000s, websites like Elance and oDesk (now Upwork) emerged, offering platforms for freelancers to connect with clients and find work [11][12]. These platforms quickly gained popularity, providing a convenient and efficient way for freelancers to find work and for clients to access a large pool of talent.

In the years since, the freelancing industry has continued to grow, with numerous new platforms entering the market and established players expanding their offerings. Today, freelancing is a multi-billion-dollar industry, and the number of freelancers around the world continues to increase as more people seek flexible, remote work opportunities.

Similarly, the number of freelancing platforms has also increased, with popular platforms such as Upwork, Fiverr, and Freelancer, among others. These platforms offer a wide range of services to both freelancers and clients, making it easier for both parties to find and collaborate on projects.

Freelancing platforms have become an important tool for freelancers and clients alike. They provide a space for freelancers to showcase their skills and for clients to find the right talent for their projects, while also offering a variety of services to make the process of collaboration and payment easier and more secure.

4. Types of Existing Freelancing Platforms:

- **General Freelancing Platforms:**

General freelancing platforms are online platforms that provide a marketplace for freelancers and clients to connect and collaborate on various projects. These platforms offer a wide range of services and cater to a diverse range of industries and skill sets. Some of the most popular general freelancing platforms include: Upwork (formerly Elance-oDesk), Freelancer.com, Fiverr, Khamsat …etc. [13]

- **Specialized Freelancing Platforms:**

Specialized freelancing platforms are a type of freelancing platform that focuses on a specific niche or industry. These platforms offer services for a particular type of work such as graphic design, writing, or programming, such as: Hirable (for software engineers), 99designs (for graphic designers), WriterAccess (for content writers) … [13]

5. Comparison of Popular Freelance Platforms:

The next table provides a comparison of four popular freelance platforms: Fiverr, Upwork, Freelancer and Khamsat. The comparison includes several key factors that are important for freelancers and clients, such as the types of services offered, fee structures, user base, and other features. By examining the similarities and differences between these platforms, it becomes possible to gain a better understanding of their respective strengths and weaknesses, and to make an informed decision about which platform may be the best fit for one's individual needs:

	Fiverr	Upwork	Freelancer	Khamsat
Year Established	2010	2013	2009	2010
Number of Users	Over 3.42 million	Over 16 million	Over 64 million	2 million
Geographic Focus	Global	Global	Global	Middle east and north Africa
Project Types	All types	All types	All types	Only Arabic

Payment Methods	PayPal, credit/debit card, Apple Pay, Google Wallet, and more	Bank transfer, credit/debit card, PayPal	PayPal, credit/debit card, Skrill, Payoneer, and more	Bank transfer, credit/debit card, PayPal, local payment methods
Fees	20% of the project value	20% for the first $500 billed with a client. 10% for lifetime billings with clients between $500 & $10,000. 5% for billings with clients that exceed $10,000	10% or $5 USD, whichever is greater	20% of the project value
Quality Control	Quality control tests for freelancers, monitoring system	Screening process for freelancers, work monitoring tools, dispute resolution system	Verification system for freelancers, monitoring system, contest feature	Verification system for freelancers, work monitoring tools
Dispute Resolution	Resolution Center for disputes	Arbitration for disputes between clients and freelancers	Dispute resolution system	Dispute resolution system
Communication	In-app messaging system	In-app messaging system and video conferencing tools	In-app messaging system, video chat, screen sharing	In-app messaging system
Mobile App	iPhone Operating System (iOS) and Android	iOS and Android	iOS and Android	iOS and Android
Additional Features	Collaboration tools, project management dashboard, video tutorials	Time tracker, collaboration tools, integration with popular project management tools, premium membership	Milestone payments, project management tools, freelancer directory, contests, local currency support	Local currency support, buyer request feature

Table 1.1: Comparison of The Most Popular Freelance Platforms.

Fiverr, Upwork, Freelancer, and Khamsat are popular online freelance marketplaces that connect clients with freelancers from various fields. While they share some similarities, there are also some notable differences among them.

Fiverr is a platform that focuses on providing a wide range of services, including creative work, digital marketing, writing, and programming [14]. It emphasizes fixed-price projects and offers a streamlined, user-friendly interface.

Upwork, on the other hand, offers a more diverse range of project types, including both hourly and fixed-price projects [17]. It also provides more advanced tools and features for managing and tracking projects, such as time tracking software and dispute resolution services.

Freelancer is similar to Upwork in terms of project types, but it emphasizes the competitive bidding process, where freelancers bid on projects posted by clients [15]. It also provides a wider range of payment options, including cryptocurrencies.

Khamsat is a platform that is specific to the Middle East and North Africa region, and it emphasizes Arabic language services, including translation, writing, and social media management [16]. It also offers a fixed-price model and provides local payment options.

In summary, while all four platforms offer opportunities for freelancers to find work and for clients to hire them, each has distinct differences that cater to different needs and preferences.

The selection of Fiverr, Freelancer, Upwork, and Khamsat for comparison in the graduation thesis is justified for several academic reasons. Firstly, these platforms are among the leading online freelancing platforms globally, providing a diverse range of services and attracting a significant number of users. Secondly, their popularity and user base make them representative of the broader freelance marketplace, enabling comprehensive insights into the industry. Thirdly, comparing these platforms allows for an analysis of their unique features, business models, and effectiveness, providing valuable information for individuals seeking freelance work or employers looking to hire freelancers. Lastly, studying these platforms helps understand the impact of online freelancing on the economy and the future of work.

6. Advantages and Limitations of Existing Freelancing Platforms:

- **Advantages of Existing Freelancing Platforms:**

The advantages of existing freelancing platforms are widely researched and documented in various academic journals and reports. Some of the most commonly cited benefits include:

Flexibility: Freelancing platforms provide a flexible working environment that allows freelancers to work from anywhere, at any time, and on their own terms.

Access to a global pool of talent: Freelancing platforms provide businesses with access to a global pool of talent, enabling them to find the best person for the job, regardless of location.

Cost-effective: Hiring freelancers through a freelancing platform can be more cost-effective than hiring full-time employees. This is because businesses only pay for the work that is completed, rather than having to cover benefits, health insurance, and other associated costs.

Increased productivity: Freelancing platforms can increase productivity by allowing businesses to tap into the expertise of a large pool of talented individuals, rather than having to rely on a smaller in-house team [18].

- **Limitations of Existing Freelancing Platforms:**

However, there are also limitations to existing freelancing platforms, including:

Quality control: One of the biggest challenges of using freelancing platforms is ensuring the quality of the work being delivered. While many platforms have quality control measures in place, such as client feedback and rating systems, there is always a risk that the work delivered may not meet the expected standards.

Payment disputes: Disputes over payment are not uncommon on freelancing platforms, particularly when it comes to large projects or complex work.

Intellectual property: Freelancers who work on projects through a freelancing platform may not always have the same level of protection for their intellectual property as they would in a traditional employment setting [19].

Chapter 2

Methodology

1. Research Approach:

Research approach is "a plan or strategy for conducting the study, which guides the researcher in collecting and analyzing data" [20]. Research approach is a crucial aspect of any research study, as it determines the direction of the research, the methodology to be employed, and the methods for collecting and analyzing data.

1.1. Definition of Research Approach and Its Types:

There are generally two main types of research approach: qualitative, quantitative and mixed:

- **Qualitative research approach:** is often used to gain an in-depth understanding of the research topic, by exploring the subjective experiences and perspectives of individuals through observation, interviews, and focus groups [21].
- **Quantitative research approach:** is used to test hypotheses and measure variables using statistical analysis of numerical data collected through surveys or experiments [22].
- **Mixed research approach:** is a methodological approach that combines both quantitative and qualitative research methods to address a research problem or question [20] [23]. It is an approach that recognizes the limitations and strengths of each research method and seeks to maximize the advantages of both methods to enhance the validity and reliability of the research findings [20].

1.2. Choice and Rationale of The Adopted Research Approach:

The current study has adopted a mixed research approach, which involves the integration of both qualitative and quantitative methods in data collection, analysis, and interpretation. This approach has been chosen based on its ability to provide a comprehensive and detailed understanding of the research phenomenon. Additionally, it enables triangulation of data

sources and methods, which enhances the credibility and validity of the findings. The integration of both methods allows for a more robust and comprehensive analysis, thus offering a more in-depth insight into the research question. Overall, the mixed research approach is well-suited to the research objectives and provides a rigorous and systematic methodology for conducting the study.

2. Research Methods:

Research methods refer to the techniques and tools used to gather and analyze data in a research study [20], research methods can be broadly classified into two categories, quantitative and qualitative. Quantitative research methods are used to gather and analyze numerical data, while qualitative research methods are used to gather and analyze non-numerical data, such as opinions, perceptions, and attitudes:

2.1. Types of research Methods:

- **Quantitative research methods:** include experiments, surveys, and statistical analyses [24]. Experiments involve manipulating one or more variables to determine their effect on a dependent variable. Surveys involve collecting data from a sample of individuals through the use of questionnaires or interviews. Statistical analyses involve using mathematical models to analyze numerical data and identify patterns and relationships.
- **Qualitative research methods:** include case studies, interviews, and focus groups [24]. Case studies involve in-depth analysis of a specific individual, group, or situation. Interviews involve collecting data through one-on-one conversations with individuals, while focus groups involve collecting data from a group of individuals through group discussions.
- **Mixed research methods:** combine both quantitative and qualitative research methods in a single study [20]. This approach allows for a more comprehensive understanding of the research question by combining the strengths of both approaches.

2.2. Selection and Rationale of the Employed Research Methods:

Based on our discussions, the employed research methods in this study are surveys with freelancers, interviews with companies as clients, and observation. The choice of these

methods was made based on their ability to provide a comprehensive understanding of the research problem and the research questions. Surveys allow for the collection of large amounts of data from a wide range of freelancers, providing insights into their experiences and needs. Interviews with companies as clients allow for a deeper understanding of their perspectives and requirements when hiring freelancers. Observation provides an opportunity to observe and understand the behavior and interactions of freelancers and clients on existing freelancing platforms. These methods were chosen as they enable us to triangulate data from different sources and provide a more comprehensive view of the research problem.

3. Data Collection:

In order to obtain valuable insights about the freelancing platform, a survey-based data collection was employed. The survey was carried out using Google Forms, and a total of 34 freelancers participated in the survey. The acquisition of data through interviews with companies as clients was a crucial aspect of the study. Observational data collection is a method of gathering information by observing and recording natural behaviors, events, or phenomena without any manipulation of the environment or subjects.

3.1. Survey-based Data Collection:

The survey was specifically designed to gather information about the experiences and perceptions of the freelancers regarding the use of freelancing platforms. The questionnaire comprised of a variety of questions that focused on several aspects, such as the freelancers' demographics, the reasons for using freelancing platforms, the types of projects they undertake, their experience with the platform, their satisfaction level, and the challenges that they face while working. Additionally, the survey attempted to identify the issues that both freelancers and clients face, especially in Algeria, and provided potential solutions to tackle these issues.

Upon analyzing the survey results, valuable insights regarding the strengths and weaknesses of the platform were drawn, and potential areas for improvement were identified. The survey helped to shed light on the problems that freelancers encounter while working, and how these issues can be resolved to improve their overall experience with the platform. Additionally, the survey provided useful information regarding the challenges that freelancers

and clients face in Algeria, and how these challenges can be addressed to improve the overall performance of the platform.

3.2. Acquisition of Data Through Interviews:

The purpose of conducting these interviews was to gain a deeper understanding of what factors motivated companies to hire freelancers and whether they were willing to consider working with freelancers as an alternative to hiring full-time employees. The interviews were conducted with representatives from various companies to gather their insights and opinions on the use of freelancers in their organizations.

During the interviews, a range of topics were covered, including the benefits and challenges of hiring freelancers, the types of projects that were suitable for freelancers, the decision-making process for hiring freelancers, and the factors that influenced the selection of a freelancer. Additionally, the interviews explored the clients' perceptions of the quality of work produced by freelancers and their experiences working with freelancers.

The information obtained from these interviews was analyzed to identify common themes and patterns in the clients' decision-making processes and their perceptions of working with freelancers. This analysis provided insights into the potential opportunities and challenges associated with freelancing in the context of client-companies. Ultimately, the goal of this data collection was to provide a comprehensive understanding of the dynamics of freelancing and client-company relationships, which could inform the development of effective strategies to enhance these relationships.

3.3. Data Collection through Observational Techniques:

The primary aim of observational data collection is to accurately and systematically document behaviors or events as they naturally occur in real-life settings. It is a non-intrusive technique that enables researchers to gather information without interfering with the observed individuals or environment [25].

The process of observational data collection involved closely monitoring the behaviors of both freelancers and clients, with a focus on their interactions and activities on social media platforms and online community forums. By gathering this data, the research team was able to identify the various topics that were being discussed by freelancers and clients, including the

specific challenges they were facing and the strategies they employed to overcome these obstacles. The data collected through observation provided valuable insights into the ways in which freelancers navigate the online labor market and the difficulties they encounter along the way, as well as the approaches that are most effective in addressing these challenges.

4. Data Analysis:

The analysis is divided into two distinct but complementary methods: quantitative analysis and qualitative analysis. The adoption of such a dual approach allows for a comprehensive examination of the selected platforms. Quantitative analysis enables the examination of numerical data, such as user statistics, revenue figures, and market share, offering a quantitative understanding of the platforms' performance and market dynamics. On the other hand, qualitative analysis delves into the subjective aspects, such as user experiences, platform features, and customer satisfaction, providing a nuanced understanding of the platforms' qualitative attributes.

4.1. Quantitative Analysis:

In this study, Excel was utilized as the primary tool for analyzing the quantitative data collected from the survey. Excel is a spreadsheet software application that is widely used in research and data analysis. It is capable of performing a range of statistical analyses, making it a popular choice among researchers [26].

The use of Excel in this study was based on its ability to perform various statistical calculations, including mean, median, mode, standard deviation, and correlation analysis. Additionally, Excel enables researchers to create charts, graphs, and tables to visually represent the data, which can aid in the interpretation and presentation of the results [26].

4.1.1. Distribution of Freelancers' Fields of Work:

According to the survey responses provided by the participating freelancers, it was found that graphic design is the most common field of work, with 35.3% of the respondents working in this area. The second most popular field is programming and technology, with 32.4% of the respondents working in this field. Other fields that were represented in the survey included

digital marketing (8.8%), writing and translation (8.8%), videos and animation (5.9%), audio and music (5.9%), and other fields (2.9%).

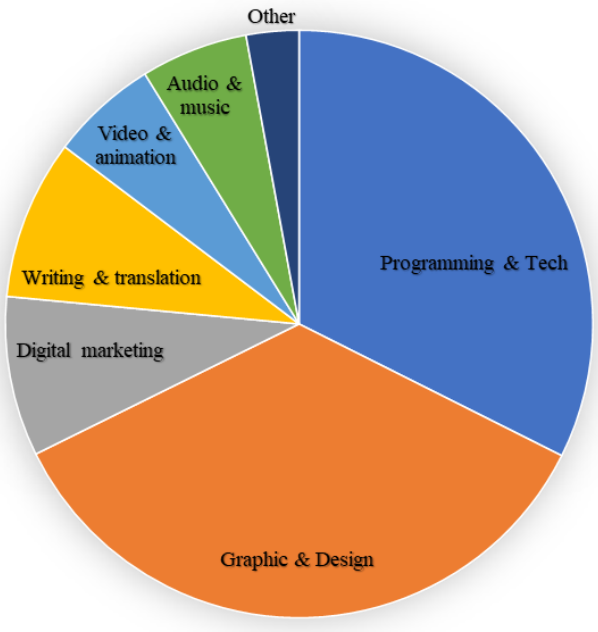


Figure 2.1: Distribution of Freelancers' Fields of Work.

The distribution of freelancers across different fields provides valuable insights into the current trends in the freelance market. These findings suggest that graphic design and programming and technology are among the most popular fields for freelancers, which may reflect the high demand for these skills in the market. Furthermore, this information can be used to identify potential candidates with the required expertise.

4.1.2. Years of Experience of Freelancers in the Field:

The survey also included a question regarding the length of time freelancers have been working in the field. According to the responses, 38.2% have been working for more than three years, while 32.4% have been in the field for less than a year. In addition, 11.8% of the respondents reported that they started working in the field one year ago, while 17.6% began working as freelancers two years ago. These findings suggest that a significant proportion of freelancers have considerable experience in the field, while a sizable portion are relatively new to freelancing. The discrepancy in percentages suggests that a substantial number of freelancers discontinue their work within the first year, signifying potential challenges in the functioning of freelancing.

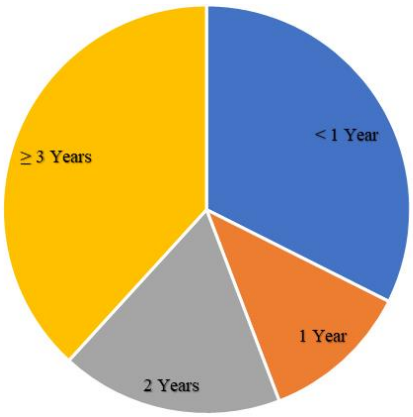


Figure 2.2: Years of Experience of Freelancers in the Field.

4.1.3. Most Frequently Used Freelance Platforms:

Also it was found that 38.2% of the freelancers work on social media platforms (such as Facebook), while 20.6% work on Fiverr, 11.8% work on Mostaqil, 8.8% work on Khamsat, 8.8% work on Upwork, 5.9% work on Shoghlonline, and 5.9% work on other platforms like Freelancer, Appen, and Peopleperhour. These findings suggest that social media platforms are commonly used by freelancers for finding work, followed by dedicated freelance platforms like Fiverr and Mostaqil. It can be inferred from these statistics that social media platforms can be considered as an alternative channel for finding freelance work especially in Algeria, in addition to established freelance platforms.

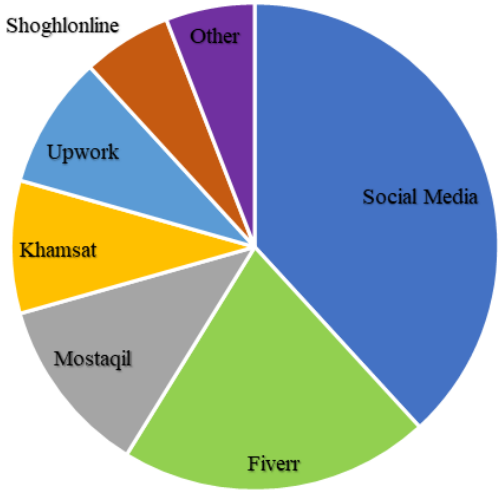


Figure 2.3: Most Frequently Used Freelance Platforms.

4.1.4. Common Problems Encountered by Freelancers in Freelancing Platforms:

The following figure shows the results from the survey conducted among freelancers to rank the most common problems they encounter during their work on freelance platforms. The four most common problems identified were high competition, communication problems, high platform fees, and online payment problems. The percentages of respondents who identified each problem as the most common, second, third, or fourth common problem are presented:

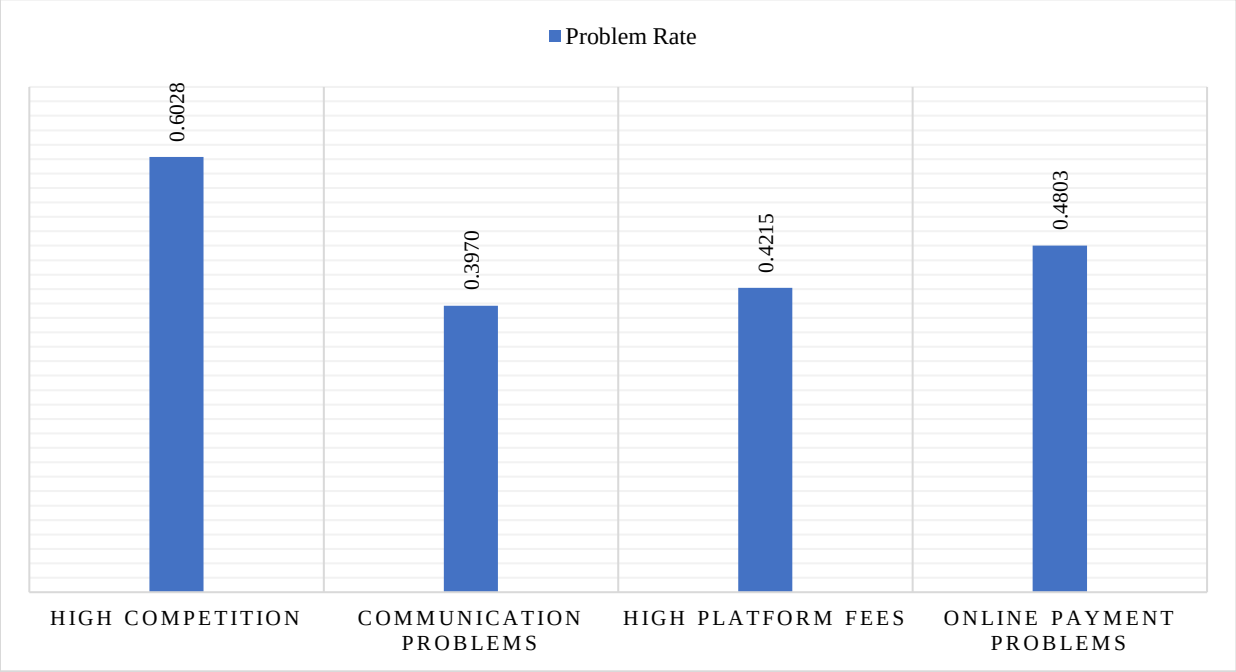


Figure 2.4: Ranking of Common Problems Encountered by Freelancers.

Therefore, we can infer that the most prevalent problem encountered by freelancers on freelancing platforms is high competition, followed by online payment problems as the second most common problem, high platform fees as the third, and finally communication problems as the fourth.

4.1.5. Problems Encountered by Freelancers Outside Freelancing Platforms:

The Next figure shows the results from the survey conducted among freelancers to rank the most common problems they encounter during their work outside the freelancing platforms:

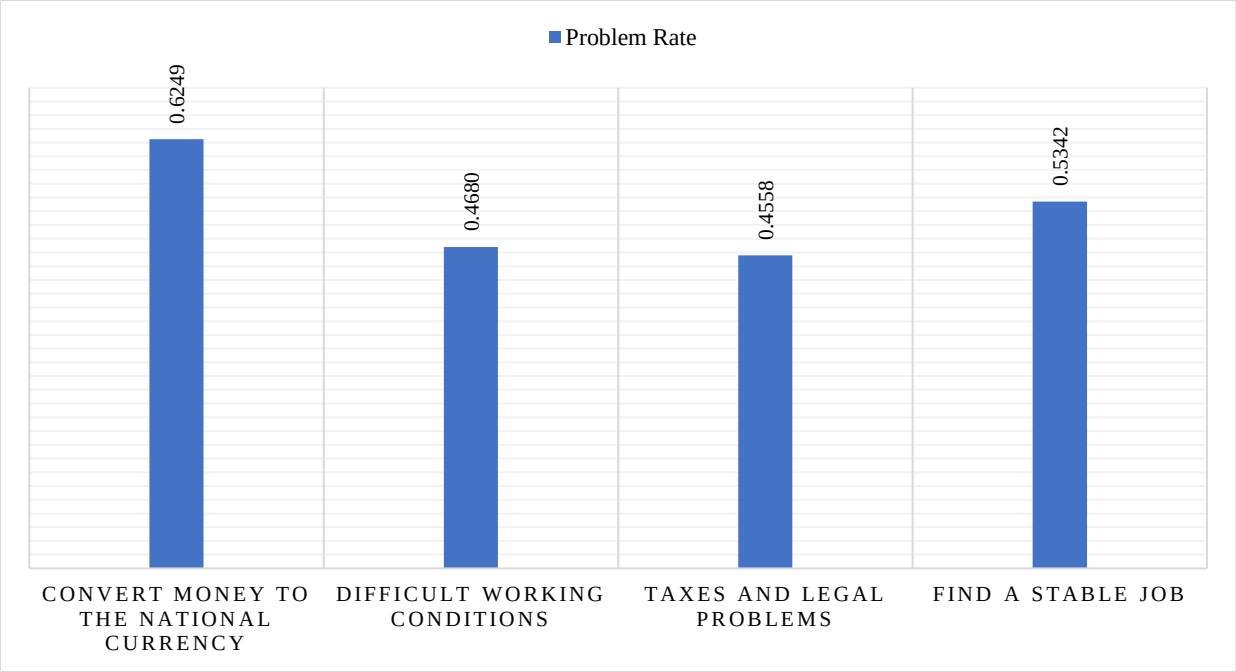


Figure 2.5: Ranking of Common Problems Encountered by Freelancers Outside Freelancing Platforms.

We can deduce that the prevalent challenges encountered by freelancers outside the freelance platforms are ranked as follows: foremost, converting funds into the national currency, followed by securing stable work, then struggling with unfavorable working conditions, and finally grappling with tax and legal issues.

4.1.6. Awareness and Registration of Law on Self-Employment:

Out of the freelancers, 70.6% confirmed that they possess knowledge of the self-employment law, however, they have not completed the registration process to become a self-employed individual. On the other hand, 29.4% of the participants stated that they are not familiar with this law. Notably, none of the participants reported being registered as a self-employed person (0%).

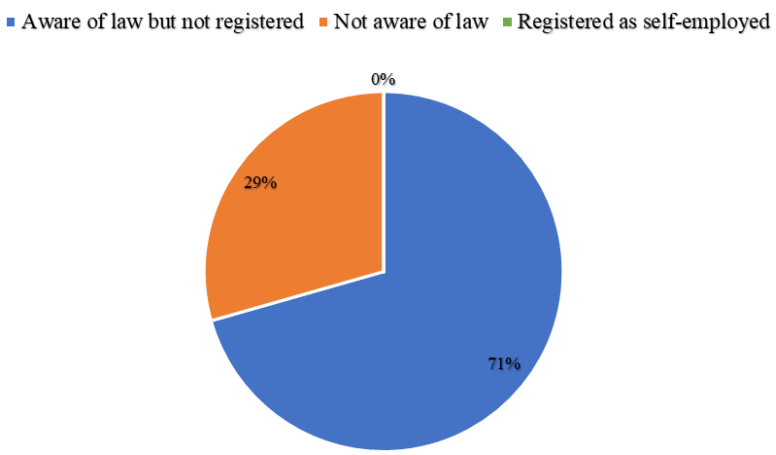


Figure 2.6: Awareness and Registration of Law on Self-Employment.

One of the targeted customer segments of the platform being self-employed individuals, the survey administered to freelancers included questions pertaining to their status as self-employed. This information was deemed necessary in order to better understand the needs and preferences of this particular customer segment, and to develop features and services that cater to their specific requirements. The survey thus sought to ascertain the number of freelancers who identified as self-employed, as well as their awareness of laws and regulations pertaining to self-employment. Through this process, the platform aimed to ensure that it could provide tailored solutions to self-employed individuals, ultimately resulting in a more effective and competitive platform.

4.2. Qualitative Analysis:

The qualitative analysis employed multiple data collection techniques, including surveys, interviews, and observations. The survey comprised of open-ended questions that aimed to capture the participants' perceptions and experiences, which are difficult to quantify. The interviews, on the other hand, were primarily directed towards 5 companies and focused on their interactions with freelancers. The observational techniques entailed tracking the activities of freelancers and their clients, with particular attention to their online activities on social networks and community forums. The observations involved identifying the topics that they discussed, the challenges they encountered, and the solutions they sought. The triangulation of these data collection methods ensured that the study captured a wide range of perspectives and

experiences of the freelancers and companies, which enhanced the credibility and validity of the study findings.

4.2.1. Proposed Solutions by Freelancers to Address their Challenges:

The proposed solutions presented by freelancers in response to the challenges they encounter on freelance platforms encompass several key themes. Foremost among these is the pressing need for improved payment processes, including optimized methods, easier fund withdrawal, reduced platform fees, and the inclusion of bank cards that enable full activation of PayPal without substantial commissions. Communication-related issues also emerged prominently, with suggestions for enhancing platform services, providing clearer project conditions and deposits, and addressing missed opportunity notifications. The significance of personal networks and social capital was emphasized, calling for support to newcomers facing intense competition from established freelancers. Additional solutions encompassed raising awareness about freelancing, facilitating international banking transactions, improving computer hardware import, legalizing self-employment, and addressing money laundering concerns through enhanced oversight and regulation. These proposed solutions underscore the importance of streamlined payment systems, effective communication channels, and supportive measures to bolster the freelancing industry in Algeria, while also acknowledging the need to tackle regulatory and market-related challenges for its growth and prosperity.

4.2.2. Legal and Financial Barriers to Direct Freelancer-Company Transactions:

The lack of a legal framework and financial barriers hinder direct freelancer-company transactions in Algeria. Companies prefer contracting with other companies due to legal obligations and difficulties in obtaining hard currency for paying freelancers. Freelancers face challenges in obtaining commercial records, invoicing transactions, and gaining trust from companies. This lack of trust raises concerns about quality control and fraud risk. Establishing a legal framework that recognizes freelancers, enables legal transactions, and fosters trust is crucial for the growth of the freelance economy in Algeria.

4.2.3. Companies Rely on Connections and Social Networking Sites to Hire Freelancers:

Companies in Algeria heavily rely on connections and social networking sites to hire freelancers. This preference is driven by the trust and assurance derived from personal referrals. Surprisingly, none of the interviewed companies reported using freelance platforms due to perceived risks and a desire for more direct communication and control. However, this reliance on personal networks may limit access to a wider talent pool and hinder the freelance economy's growth. Promoting freelance platforms and establishing trust systems could improve efficiency and facilitate transactions between companies and freelancers.

4.2.4. Companies' Perspectives on Hiring Freelancers vs. Full-Time Employees:

The majority of companies expressed a preference for direct employment over engaging freelancers, reserving the use of freelancers only when internal resources are insufficient. This inclination stems from the perception that many freelancers lack discipline, particularly concerning punctuality. Consequently, companies are cautious about relying on freelancers due to concerns regarding their ability to adhere to agreed-upon timelines.

4.2.5. Primitive Payment Methods an Obstacle to the Growth of the Freelance Economy in Algeria:

The payment methods used by companies to pay freelancers are traditional and lack modern digital payment options. This presents several challenges, including potential security risks associated with handling cash payments, delays in payment processing, and difficulties in tracking and verifying transactions. Moreover, these payment methods limit the companies' ability to engage in cross-border transactions with freelancers outside Algeria. This could be a significant impediment to the growth of the freelance industry as it limits the pool of potential clients and reduces the diversity of projects that freelancers can work on. Therefore, it is recommended that companies explore and adopt modern payment options to facilitate more efficient and secure transactions with freelancers. Such options may include digital payment platforms, mobile money transfers, and other forms of electronic payment that are more convenient, faster, and more secure than traditional payment methods.

4.2.6. The Significance of Project Evaluation in Freelancing Communities:

The observation of freelancing communities and social media platforms reveals that the project evaluation stage is critical for freelancers. The evaluation determines their level of

satisfaction with their work and influences their perception of the quality of their services. Positive evaluations are received with happiness, while negative evaluations lead to frustration and anger. It is noteworthy that the receipt of payment does not always alleviate the negative emotions associated with poor project evaluations.

4.2.7. The Use of SIM Cards as a Payment Method:

The utilization of SIM cards as a payment method in freelance transactions among Algerians has been observed as a prevalent practice. This phenomenon sheds light on the difficulties and constraints associated with conventional payment methods within the country. However, the adoption of alternative payment methods raises concerns regarding the security and transparency of freelance transactions, emphasizing the necessity for stronger legal and regulatory frameworks to safeguard the interests of freelancers and clients alike.

4.2.8. Lack of Clear Project Requirements Leads to Complaints and Disputes:

The lack of clear project requirements has been identified as a significant source of complaints and disputes among freelancers and clients. Freelancers often face challenges when clients do not provide specific details regarding the project's scope, timeline, and budget, making it difficult to meet expectations. Conversely, clients frequently express dissatisfaction with the quality of work, attributing it to the absence of clear requirements. This emphasizes the importance of establishing clear project requirements from the beginning to prevent misunderstandings and foster client-freelancer satisfaction. Enhancing communication and project management skills within Algerian online communities can mitigate conflicts and promote successful outcomes.

4.2.9. Off-platform Transactions in Freelancing Are a Cause for Concern:

The increasing practice of clients and freelancers conducting business off freelancing platforms to avoid platform fees raises concerns in the freelance economy. While the desire to maximize profits is understandable, off-platform transactions pose various problems, including violation of platform terms of service and the risk of account suspension or closure. This trend presents challenges for users and platforms alike. To ensure the integrity and sustainability of freelancing platforms, it is crucial to discourage off-platform work and encourage the utilization of platform services for communication, payment, and dispute resolution.

4.2.10. Addressing Fraudulent Practices in Portfolio Work:

The presentation of fake portfolio work is a significant concern in the freelance industry, involving freelancers falsely claiming completed projects and exposing clients to risks. This practice involves showcasing high-quality work samples that were not actually done for previous clients. Clients often receive subpar work that fails to meet expectations, resulting in financial and resource losses. To tackle this issue, freelance platforms should enforce stricter portfolio verification policies, while clients can seek references, conduct interviews, and use escrow services. Maintaining integrity and trust is crucial for the industry's reputation and ensuring quality services for clients.

5. Findings From the Research:

In the realm of freelance work, prevalent challenges encountered by freelancers involve the scarcity of sophisticated payment systems, the intensifying competition, and the intricacy of converting foreign currency into Algerian dinar. On the other hand, customers often face legal predicaments when dealing with freelancers, as a considerable fraction of them lack the necessary commercial documentation. Meanwhile, inadequacies in payment mechanisms and service quality issues are the topmost concerns that customers typically encounter.

5.1. Problems and Suggested Solutions:

In the world of freelancing, several stumbling blocks frequently plague the path of independent workers, including insufficient access to modern payment infrastructures, fierce competition, and intricate currency exchange procedures. Conversely, customers usually grapple with legal obstacles when collaborating with freelancers, primarily caused by the latter's lack of commercial credentials. Meanwhile, payment methodological insufficiencies and concerns over the quality of service are the most commonly raised issues by customers in their dealings with freelancers.

Based on the problems mentioned in the previous messages, here are some solutions that freelance platforms can provide to address these issues:

- **Payment methods:** Freelance platforms can provide a variety of payment options, such as credit card, PayPal, or wire transfer, to make it easier for clients to pay freelancers. They

can also integrate with payment gateways that accept local currencies and payment methods.

- **Quality control:** Freelance platforms can implement a review and rating system to ensure quality control. Clients can leave feedback on the work done by freelancers, which can be seen by other clients. This will create an incentive for freelancers to produce high-quality work and provide a level of transparency that will give clients confidence in the quality of work they will receive.
- **Legal framework:** Freelance platforms can provide freelancers with tools to obtain commercial records and legally invoice transactions. They can also provide contracts templates, such as non-disclosure agreements and intellectual property agreements, to protect both clients and freelancers.
- **Trust and Safety:** Freelance platforms can also implement identity verification and background checks to build trust and safety among clients and freelancers. This can include verifying the freelancer's identity, qualifications, and experience.

5.2. The Best Practices for Designing and Implementing:

For optimal design and implementation of the freelance platform, it is recommended to adopt a user-friendly interface similar to those of popular platforms such as Facebook and Fiverr. This will enhance user experience and attract more users to the platform. Additionally, integrating the platform accounts with Facebook accounts will allow for easier onboarding and provide access to a wider pool of potential users.

However, to prevent clients and freelancers from moving business off the platform and avoiding platform fees, effective measures should be implemented to combat off-platform transactions. This can be achieved by establishing a clear policy that prohibits off-platform dealings and imposing penalties for non-compliance. Moreover, implementing secure payment methods that facilitate transactions on the platform will incentivize users to stay on the platform and conduct business securely.

Overall, designing and implementing a freelance platform that adopts best practices and prioritizes user experience and security will promote the growth and sustainability of the platform.

5.3. Strategies for Managing and Resolving Disputes:

Effective management of disputes is crucial for the success of any freelance platform. Disputes can arise between clients and freelancers, as well as between the platform and its users. To manage and resolve disputes efficiently, a platform needs to have clear policies and procedures in place. These policies and procedures should be communicated clearly to all users of the platform.

One strategy for managing disputes is to have an arbitration team in place. The role of the arbitration team is to mediate disputes between clients and freelancers. The arbitration team should be composed of experienced professionals with expertise in conflict resolution. The team should be impartial and independent from the platform.

The arbitration team should have the authority to make binding decisions on disputes. The decisions should be based on the terms and conditions of the platform, as well as applicable laws and regulations. The decisions should be communicated to both parties in a clear and timely manner.

In conclusion, effective management of disputes is critical for the success of any freelance platform. A platform can use a variety of strategies, including an arbitration team and a clear escalation process, to manage and resolve disputes efficiently. These strategies can help to build trust and confidence among users and contribute to the long-term success of the platform.

5.4. Factors Contribute to User Satisfaction and Loyalty:

User satisfaction and loyalty are essential factors that determine the success of a platform. Several factors contribute to user satisfaction and loyalty, including usability, functionality, reliability, security, and customer support. Usability refers to the ease of use and user-friendliness of the platform, which should be intuitive and straightforward for users to navigate. The functionality of the platform should be sufficient to meet users' needs and provide them with the necessary features and tools to carry out their tasks effectively.

Reliability is another critical factor that affects user satisfaction and loyalty. The platform should be dependable and available when users need it. Security is also a crucial factor that contributes to user satisfaction and loyalty, as users want to feel confident that their data and information are secure from cyber threats and other security risks.

Chapter 3

System Requirements and Design

1. Project Management Methodology (Agile):

Agile methodology is a project management approach that emphasizes the importance of iterative development and collaboration between cross-functional teams to deliver value to the customers in a timely manner. It originated from the Agile Manifesto, which was created by a group of software developers in 2001 [27]. The Agile approach values working software over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a plan [28].

1.1. Details of Agile Methodology:

Agile methodology is characterized by its flexibility and adaptability. It allows teams to respond quickly to changing requirements and customer needs, and it encourages constant feedback and iteration to improve the product. Agile methodology uses short development cycles, typically two to four weeks, called sprints, to deliver working software incrementally [29]. During each sprint, the team focuses on delivering a set of features or functionality that can be demonstrated to the customer and stakeholders for feedback [30].

One of the key principles of Agile methodology is the self-organizing and cross-functional teams. Agile teams are composed of individuals with different skills and backgrounds who work together to achieve a common goal. They are empowered to make decisions and adapt to changes as needed without the need for formal management approval [31].

Agile methodology also emphasizes the importance of continuous improvement. At the end of each sprint, the team holds a retrospective meeting to reflect on what went well, what could be improved, and what actions to take in the next sprint. This process allows the team to continuously learn and improve its performance over time [32].

Overall, Agile methodology is a customer-centric, collaborative, and flexible approach to project management that values working software and continuous improvement. It has been widely adopted in the software development industry and beyond, and it has proven to be effective in delivering high-quality products in a timely manner [33].

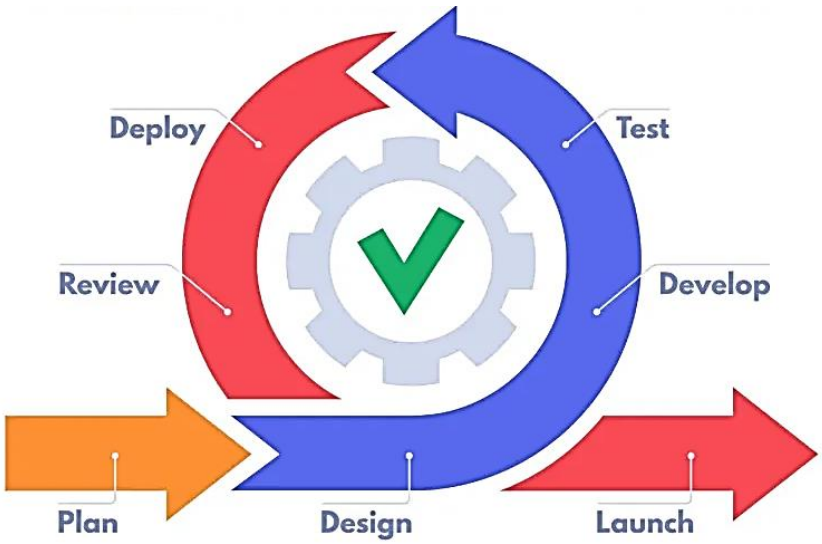


Figure 3.1: Agile Methodology [34].

1.2. Rational of Using Agile Methodology:

The rationale for using Agile methodology in developing a freelancing platform is based on several reasons. Firstly, the Agile methodology provides a customer-centric approach that focuses on delivering value to the end-user through early and frequent delivery of working software. This is particularly important in the freelancing industry, where clients expect quick and efficient delivery of their projects. Secondly, Agile methodology emphasizes collaboration and communication between team members, which is crucial in a complex project like developing a freelancing platform where different stakeholders are involved. Thirdly, Agile methodology promotes continuous feedback and adaptation, allowing the team to respond to changes and evolving requirements in a timely manner.

Moreover, Agile methodology is suitable for the development of complex systems that require a high degree of adaptability and responsiveness to change. In the freelancing industry, where clients have varying needs and requirements, Agile methodology allows the development team to respond quickly to changing market demands and customer preferences.

This is particularly important in a highly competitive industry like freelancing, where platforms need to keep up with the latest trends and technologies to remain relevant and competitive.

2. Functional Requirements:

Functional Requirements pertain to a set of specific requirements that explicitly elucidate the system or software's functionality to meet user or stakeholder needs [35]. These requirements outline how the system should operate in defined circumstances and are crucial to designing and developing a system that effectively fulfills the user's demands [36]. The present platform's Functional Requirements encompass the following requirements:

- **Profile creation and management:** Freelancers must be able to create a profile and showcase their portfolio, skills, and experience. They should also be able to update their profiles easily.
- **Project posting and bidding:** Clients must be able to post their projects and specify the requirements, and freelancers must be able to bid on these projects and submit proposals.
- **Search and filtering:** The platform must have a search and filtering functionality to help clients find the right freelancer for their project based on factors such as skills, experience, location, and portfolio.
- **Payment system:** The platform must have a secure payment system that allows clients to pay freelancers for their work and for the platform to take its commission.
- **Dispute resolution:** The platform must have a mechanism for resolving disputes between clients and freelancers, such as a dispute resolution process or an arbitrator.
- **Messaging system:** The platform must have a messaging system that allows freelancers and clients to communicate efficiently and effectively throughout the project.
- **Review and feedback system:** The platform must have a review and feedback system that allows clients to rate and review the work of freelancers, and freelancers to rate and review the work of clients.
- **Milestone and payment release:** The platform must allow clients to release payments to freelancers based on the completion of milestones or project deliverables.
- **Multi-language support:** The platform must support multiple languages to accommodate freelancers and clients (English, Arabic).

- **Reporting and analytics:** The platform must provide reporting and analytics capabilities to help the business understand the performance of the platform and make informed decisions.
- **Invoicing and billing:** The platform must allow freelancers to generate invoices and track their payments, and clients to view their payments and billing history.
- **Project tracking:** The platform must provide project tracking tools to help clients and freelancers monitor the progress of the project, set milestones, and ensure that deadlines are met.
- **Time tracking:** The platform must have a time tracking system that allows freelancers to track the time they spend on a project, and clients to monitor the time spent by freelancers on their projects.
- **Notification system:** The platform must have a notification system that informs freelancers and clients of important updates, such as new project postings, bids, messages, and payment releases.

3. Non-Functional Requirements:

Non-Functional Requirements are important for ensuring that the system meets the user's expectations and performs effectively in the target environment [37]. These requirements are often derived from the stakeholder's needs and are used to evaluate the system's quality and effectiveness. Non-Functional Requirements are typically classified into categories such as performance, security, reliability, usability, and maintainability [38]. The present platform's Non-Functional Requirements encompass the following requirements:

- **Performance:** The platform must have fast response times and minimal downtime to provide an optimal user experience.
- **Scalability:** The platform must be designed to scale to accommodate a large number of users and projects.
- **Reliability:** The platform must be reliable and provide consistent performance to ensure that freelancers and clients can access it when needed.
- **Usability:** The platform must be user-friendly and easy to navigate to make it accessible to freelancers and clients of all skill levels.

- **Security:** The platform must be secure and protect sensitive information from unauthorized access, theft, or hacking.
- **Privacy:** The platform must respect the privacy of freelancers and clients and protect their personal and financial information.
- **Accessibility:** The platform must be accessible to all users, regardless of their disabilities or limitations, and must comply with relevant accessibility standards.
- **Compatibility:** The platform must be compatible with a wide range of devices and browsers to accommodate users with different technology setups.
- **Maintainability:** The platform must be designed for maintainability and easy to update and maintain over time.
- **Localization:** The platform must support localization and be able to adapt to different languages and cultures to accommodate global users.
- **Disaster recovery:** The platform must have a disaster recovery plan in place to minimize the impact of potential failures or outages.
- **Data backup:** The platform must regularly backup data to prevent data loss in case of failures or disasters.
- **Compliance:** The platform must comply with relevant legal and regulatory requirements, such as data privacy laws, intellectual property laws, and financial regulations.
- **Monitoring:** The platform must be continuously monitored to detect and respond to potential issues and ensure the quality of service.
- **Support:** The platform must provide adequate support and resources to help freelancers and clients resolve any issues or problems they encounter.

4. Database Design:

Database Design is a crucial aspect of system development as it forms the backbone of the system. It involves the design, development, and management of the database, including the schema, tables, and relationships between them. The database design must be efficient, secure, and reliable to ensure the system's performance and data integrity [39]. This section describes the design of the database used in the freelancing platform.

The database design process involves various steps, including identifying the data requirements, creating a conceptual data model, translating it into a logical data model, and finally implementing it in the physical database [40]. The schema design of the database is based on the data entities, their attributes, and the relationships between them.

To ensure data integrity and consistency, the database is normalized using various normal forms, such as First Normal Form (1NF), Second Normal Form (2NF), and Third Normal Form (3NF). The normalization process eliminates data redundancy and reduces the risk of data anomalies.

4.1. Database Modeling:

The database model, which was designed using DbSchema, is depicted in the following figure. DbSchema is a visual database design tool that provides a graphical representation of the database schema [50]. The database model shows the entities, attributes, and relationships between them. It also illustrates the cardinality and optionality of the relationships, as well as the primary and foreign keys. The designed database model aims to efficiently store and manage the data required for the freelancing platform's operation.

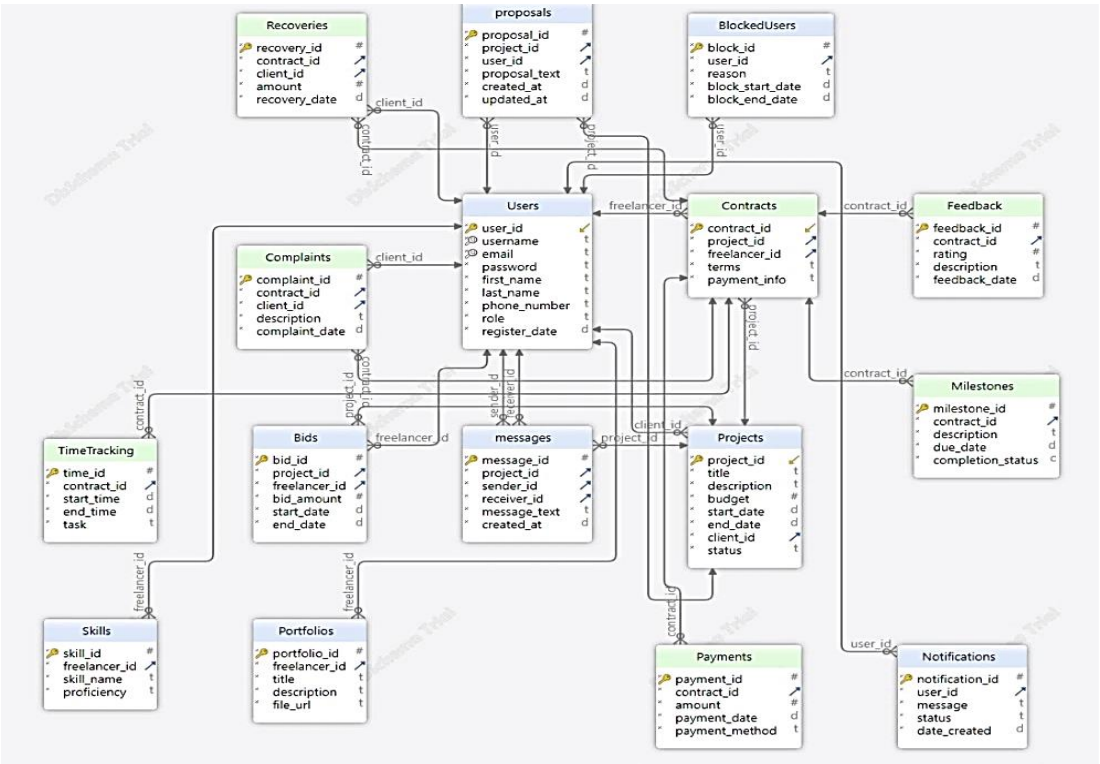


Figure 3.2: The Database Model.

4.2. Database Tables:

- **Users:** This table would store information about the platform's users, including their username, password, email address, and other profile information.
- **Projects:** This table would store information about the projects that are posted on the platform, including project title, description, budget, and deadline.
- **Proposals:** This table would store information about the proposals that freelancers submit for a project, including the proposal text, the price offered, and the freelancer's portfolio or work samples.
- **Contracts:** This table would store information about the contracts that are formed between clients and freelancers, including the project details, the agreed-upon price, and the start and end dates.
- **Payments:** This table would store information about the payments that are made between clients and freelancers, including the amount, the payment method, and the payment status (e.g., pending, paid, or refunded).
- **Skills:** This table would store information about the skills that freelancers have, including their proficiency level (e.g., beginner, intermediate, or expert) and the categories of skills (e.g., web development, graphic design, or writing).
- **Messages:** This table would store information about the messages that are exchanged between clients and freelancers, including the message text, the sender, and the recipient.
- **Bids:** This table stores information about bids made by freelancers on projects, including the bid amount, start and end dates, and the freelancer's profile information.
- **Time tracking:** This table stores information about time spent by freelancers on projects, including the start and end times, and the amount of time spent on specific tasks.
- **Portfolio:** This table stores information related to the portfolios created by freelancers. The main purpose of the portfolios table is to showcase the work of the freelancers and their abilities.
- **Recoveries:** This table stores information about refunds requested by clients, including the refund amount, date, and status.
- **Complaints:** This table stores information about complaints filed by clients, including the complaint description, date, and status.

- **Blocked users:** This table stores information about users who have been blocked from the platform, including the reason for the block and the date.
- **Feedback:** This table stores feedback and ratings left by clients for freelancers, including the rating, description, and date.
- **Milestones:** stores information about each milestone associated with a project.
- **Notifications:** table stores information about notifications that are sent to users of the freelancing platform.

5. System Modeling:

For the system architecture of our platform, we utilized Unified Modeling Language (UML) diagrams, which are graphical notations used for modeling software systems [41]. UML diagrams aid in the visualization, specification, construction, and documentation of software-intensive systems by capturing their architecture, behavior, and interactions [42]. Specifically, we employed three types of UML diagrams in our system architecture design: use case diagrams, sequence diagrams, and class diagrams. Use case diagrams represent the functionality of the system from a user's point of view, sequence diagrams describe the interactions between the system components, and class diagrams illustrate the static structure of the system and the relationships among its classes [43].

To create these UML diagrams, we used StarUML, a software tool for UML-based modeling and diagramming. StarUML provides a user-friendly interface for creating, editing, and viewing UML diagrams, and offers a wide range of features, including support for various UML diagram types, model validation, code generation, and plugin extension [44].

5.1. Use Case Diagram:

The use case diagram depicts the presence of four distinct actors, namely the "New User," "Client," "Freelancer," and the "Support Team." The "Client" holds privileged access to all the use cases of the "New User" as well as the "Freelancer." Similarly, the "Freelancer" has access to all the use cases of the "New User" and the "Client." The fourth actor, "Support Team," constitutes a separate entity, which serves to provide assistance and support to the other three actors.

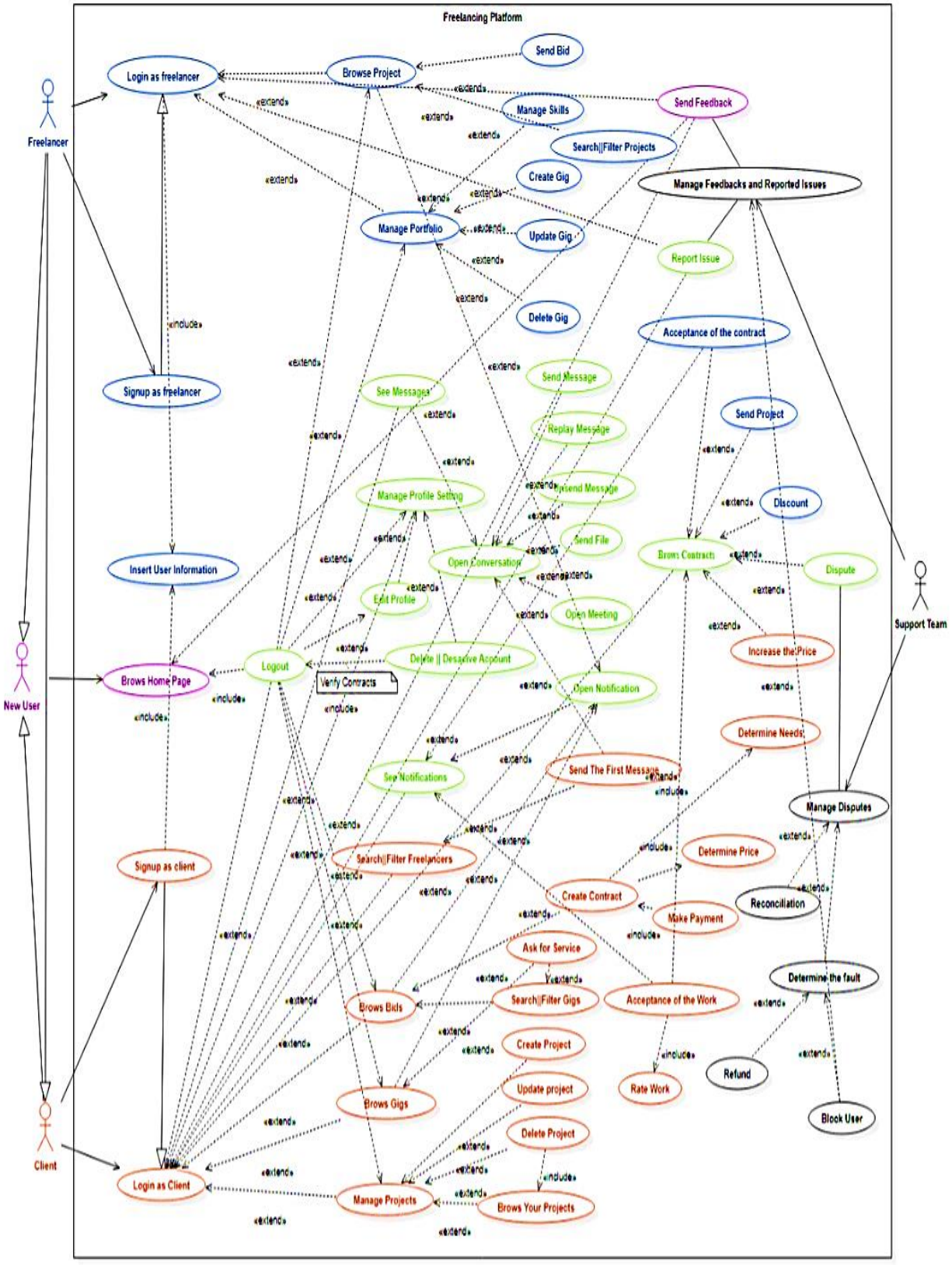


Figure 3.3: Use Case Diagram of the Freelancing Platform.

5.2. Sequence Diagrams:

- **Sign Up Process:**

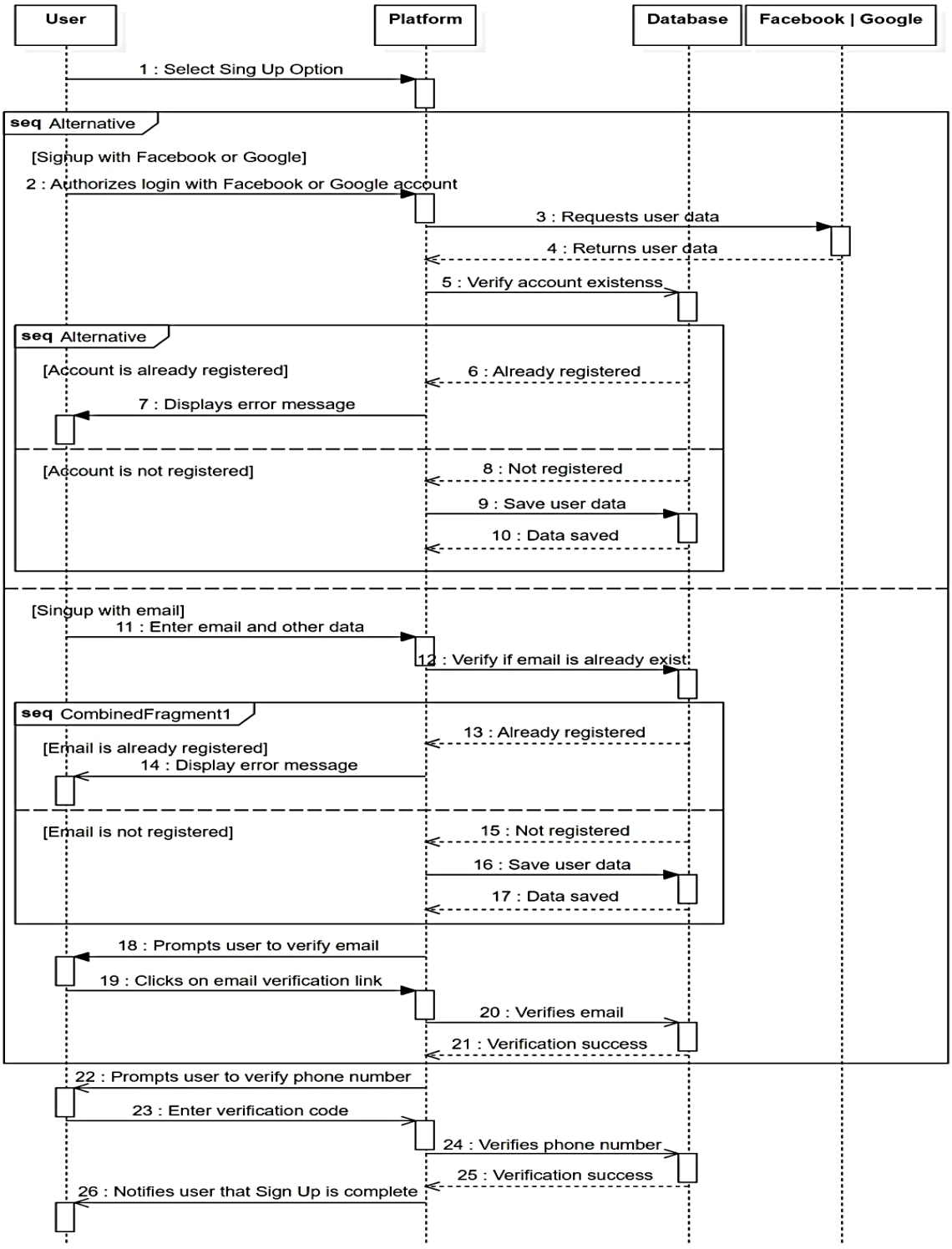


Figure 3.4: Sequence Diagram of Signup Process.

- **Login Process:**

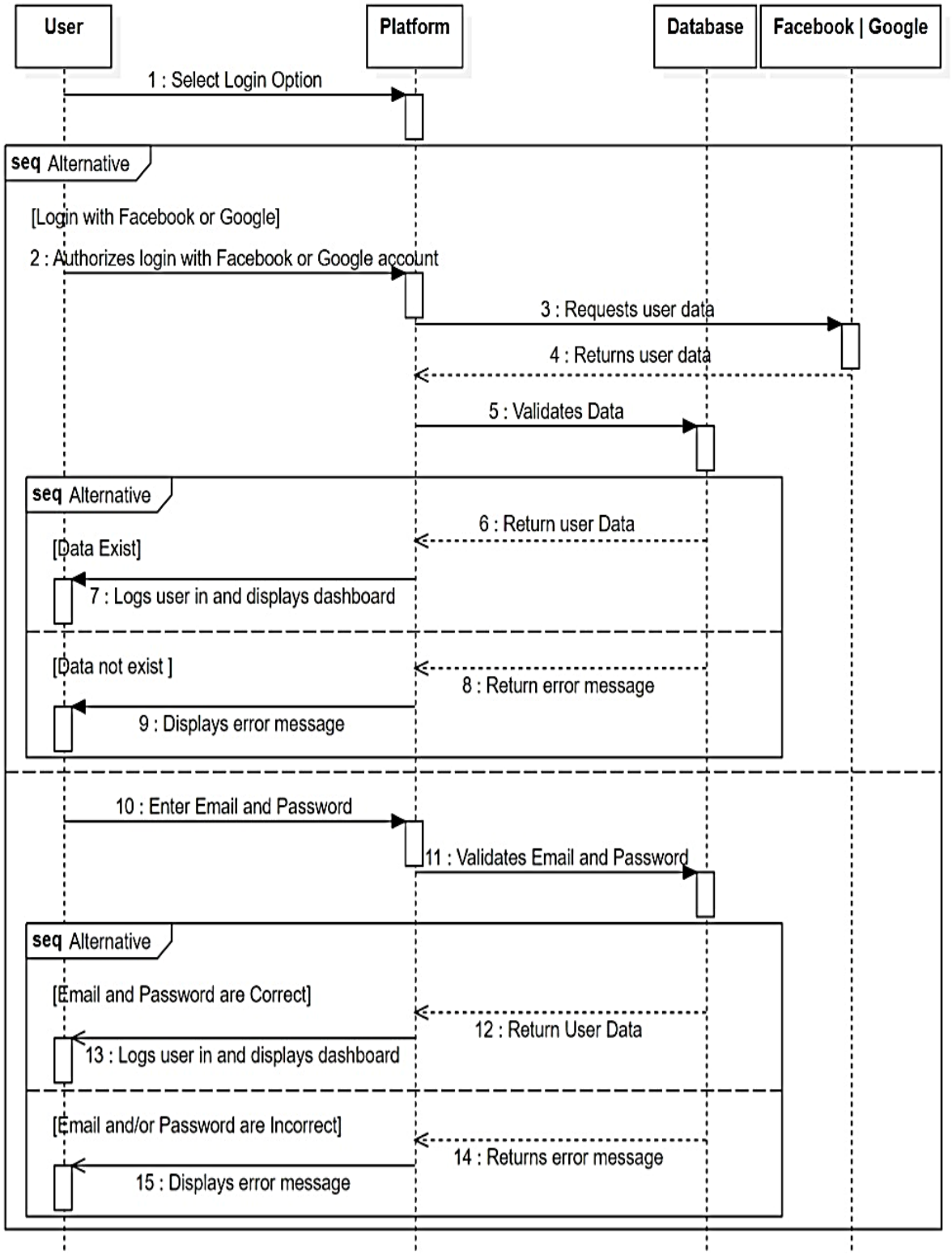


Figure 3.5: Sequence Diagram of Login Process.

- **Project and Contract Management:**

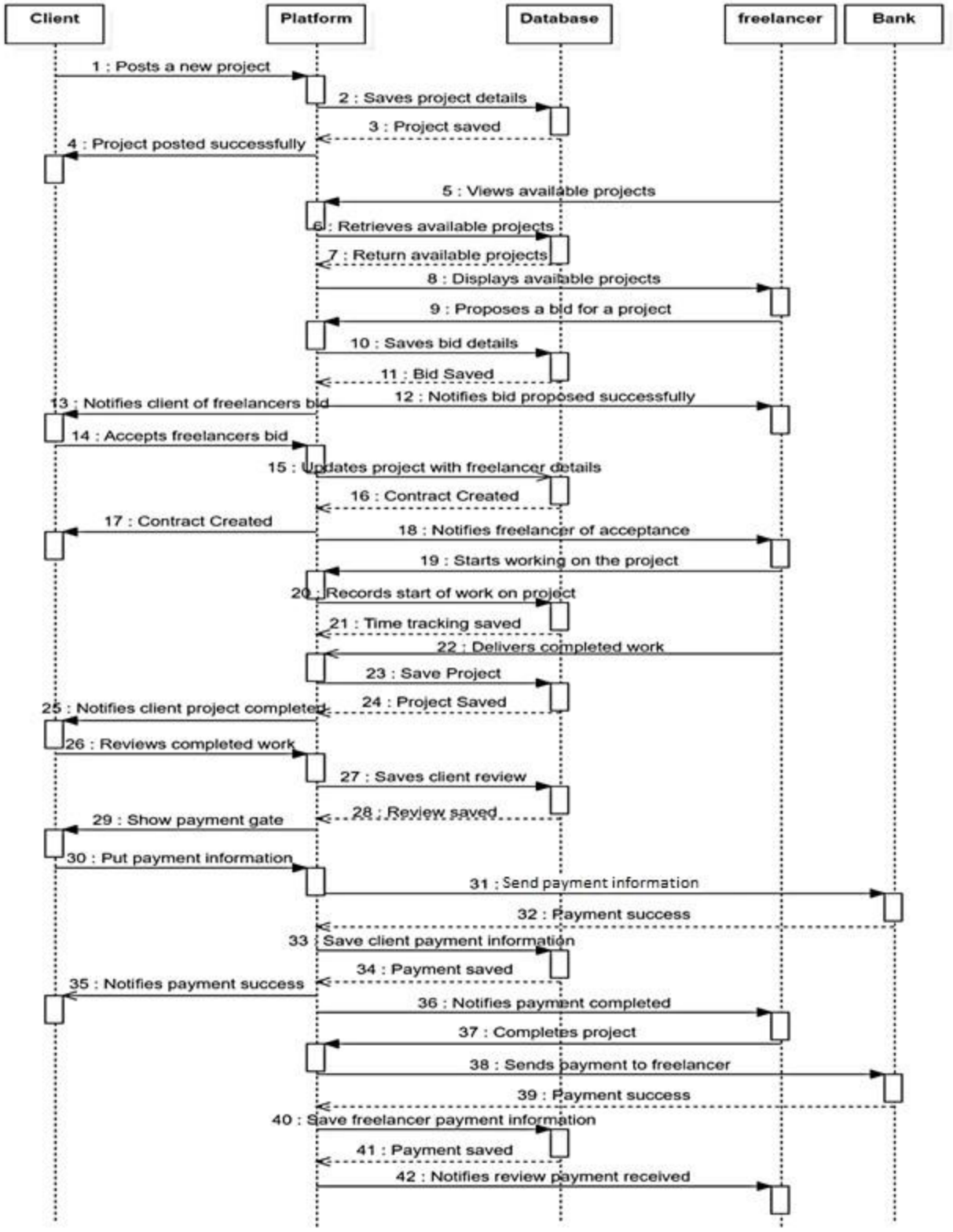


Figure 3.6: Sequence Diagram of Project Life.

- **Dispute and Refund Management:**

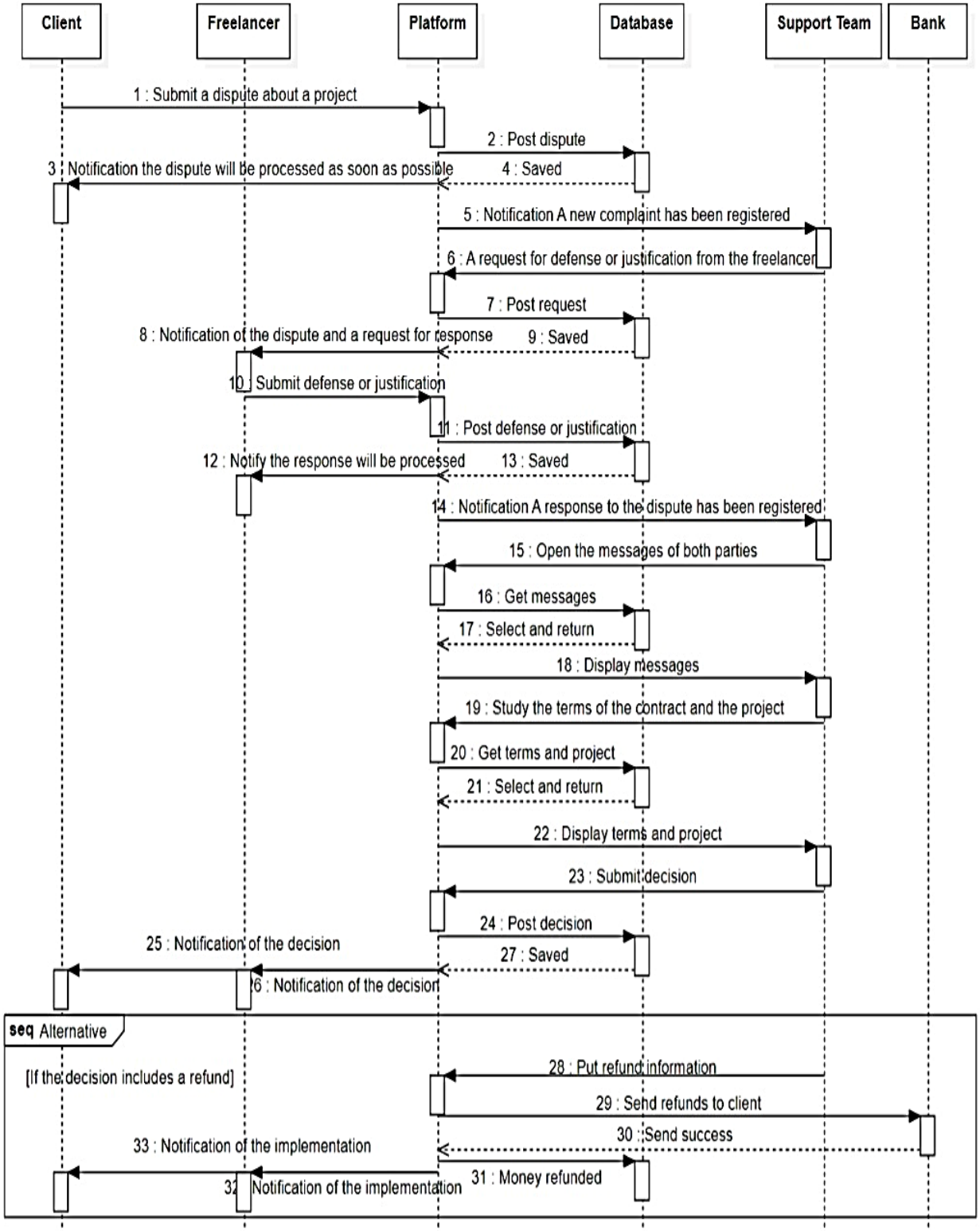


Figure 3.7: Sequence Diagram of Dispute and Refund Management.

5.3. Class Diagrams:

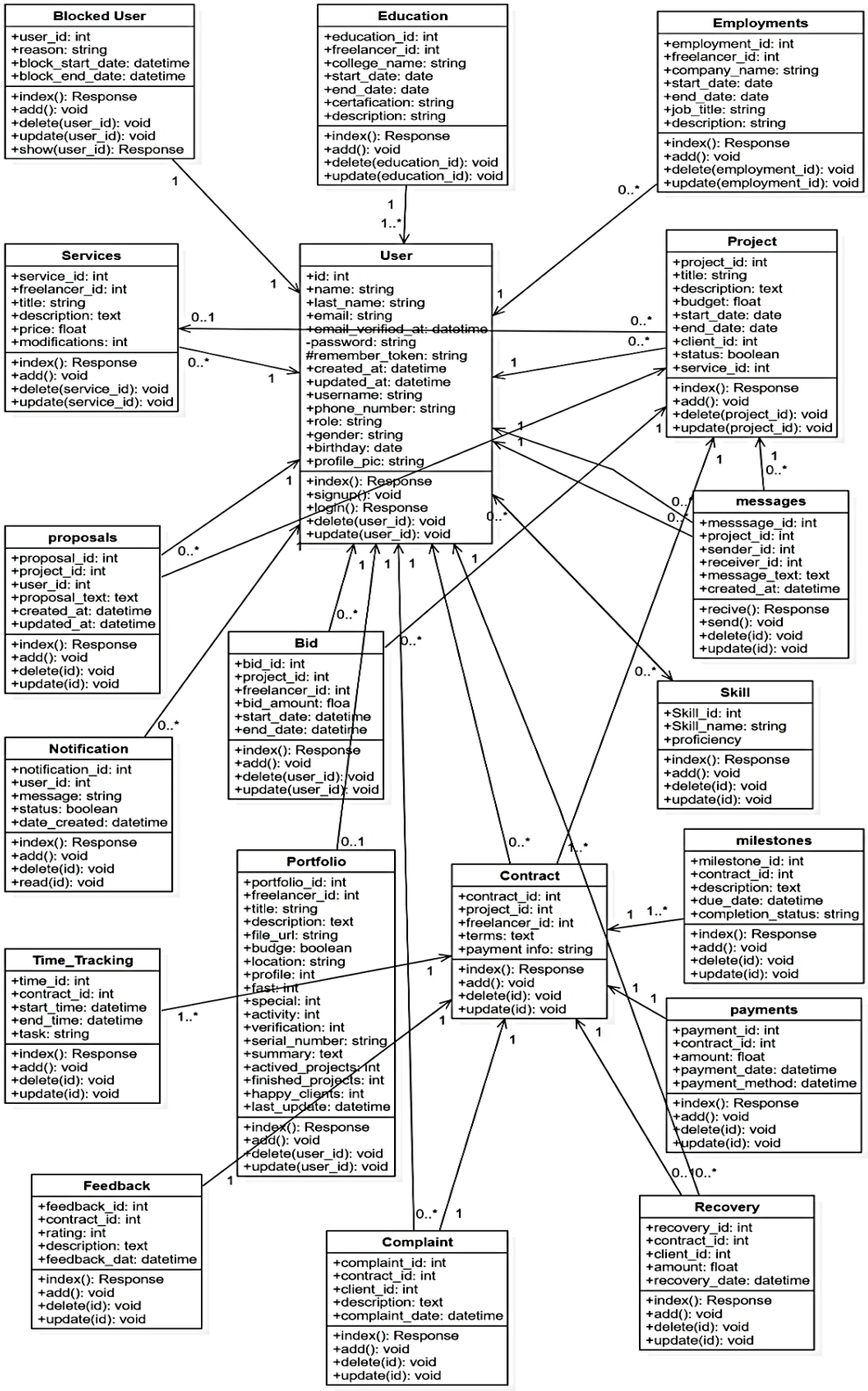


Figure 3.8: Class Diagram

Chapter 4

Implementation and Testing

1. Programming Languages and Frameworks:

For the development of the web platform of the freelancing platform, several technologies were utilized. The front-end of the platform was developed using HyperText Markup Language (HTML), Cascading Style Sheets (CSS), and JavaScript (JS) with the React library, while the back-end was developed using PHP with the Laravel framework. Additionally, MySQL was employed as the database management system. These technologies were chosen due to their popularity, scalability, and versatility, which made them suitable for the development of a large-scale web application such as a freelancing platform.

Laravel is a widely-used PHP framework that is renowned for its robust features, simplicity, and versatility, making it ideal for developing web applications with complex requirements [45].

Similarly, React is a popular JavaScript library that offers a variety of features, including enhanced speed, reusability, and modularity, which facilitate the development of dynamic user interfaces for web applications [46].

MySQL, on the other hand, is a popular relational database management system that offers several benefits, such as high-performance, security, and scalability, making it an ideal choice for large-scale web applications [47].

The use of HTML, CSS, JS (React), PHP (Laravel), and MySQL for the development of the web platform of the freelancing platform was a suitable choice due to their popularity, versatility, and scalability. The combination of these technologies helped to ensure the development of a robust and scalable web application capable of meeting the demands of the users.

2. Programming Tools:

The following table is a summary of the tools used in the development of the freelancing platform, categorized by name, type, and definition. These tools were selected to aid in the design, development, and deployment of both the web platform and mobile application. The table provides a quick overview of each tool's purpose and functionality, allowing for easy reference and understanding for those involved in the development process. The tools listed in the table include Visual Studio Code, Xampp, DbSchema, Git, GitHub, InfinityFree, and Android Studio.

Tool Name	Type	Definition
Visual Studio Code	Code Editor	A lightweight and extensible code editor developed by Microsoft for developing and debugging various programming languages. [48]
Xampp	Web Server Solution	An open-source cross-platform web server solution stack that includes Apache, MySQL, PHP, and Perl. [49]
DbSchema	Database Design Tool	A visual database design and management tool that allows developers to design, document, and manage databases. [50]
Git	Version Control System	A free and open-source distributed version control system that allows developers to track changes to code and collaborate with other developers. [51]
GitHub	Git Hosting Platform	A web-based Git repository hosting service that provides a platform for code collaboration, version control, and project management. [52]

Table 4.1: Tools Used in Developing the Freelancing Platform.

3. Adopted Software Architectures:

The Model-View-Controller (MVC) pattern divides the application logic into three distinct components: the model, the view, and the controller. The model encapsulates the data and business logic of the application [53]. The view handles the presentation layer and user

interface [54]. The controller acts as an intermediary, receiving user input from the view and updating the model or view accordingly [55].

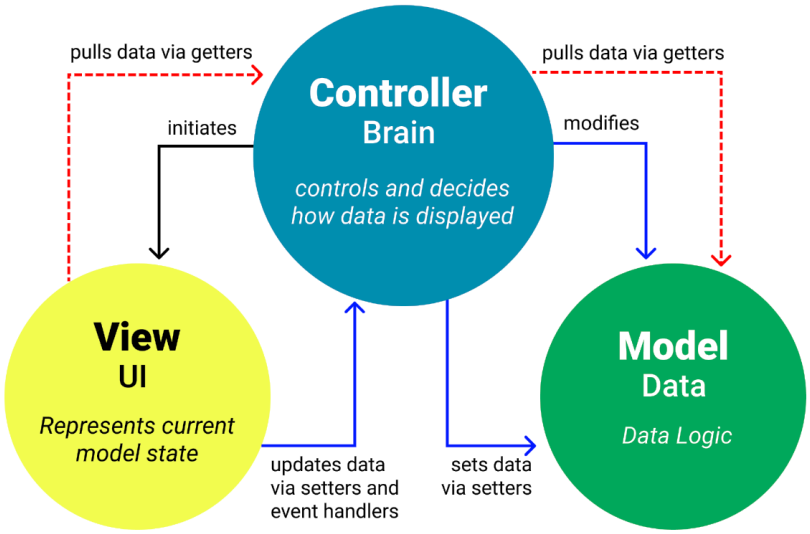


Figure 4.1: MVC Architecture Pattern [56].

Laravel, a prominent PHP web application framework, extensively employs the MVC pattern for its software architecture [57]. Laravel's adoption of MVC promotes separation of concerns and code modularity. The model component represents the application's data and business logic, while the view component handles the user interface and presentation of data. The controller component manages the flow of data between the model and the view, processing user input and triggering appropriate updates [58].

In the other hand Component-based architecture was adopted. It is an approach that focuses on building software systems by breaking them down into modular, self-contained components [59]. Components encapsulate specific functionality and can be easily reused and composed to create complex systems. They exhibit well-defined interfaces, allowing for loose coupling between components and promoting independent development and testing [60].

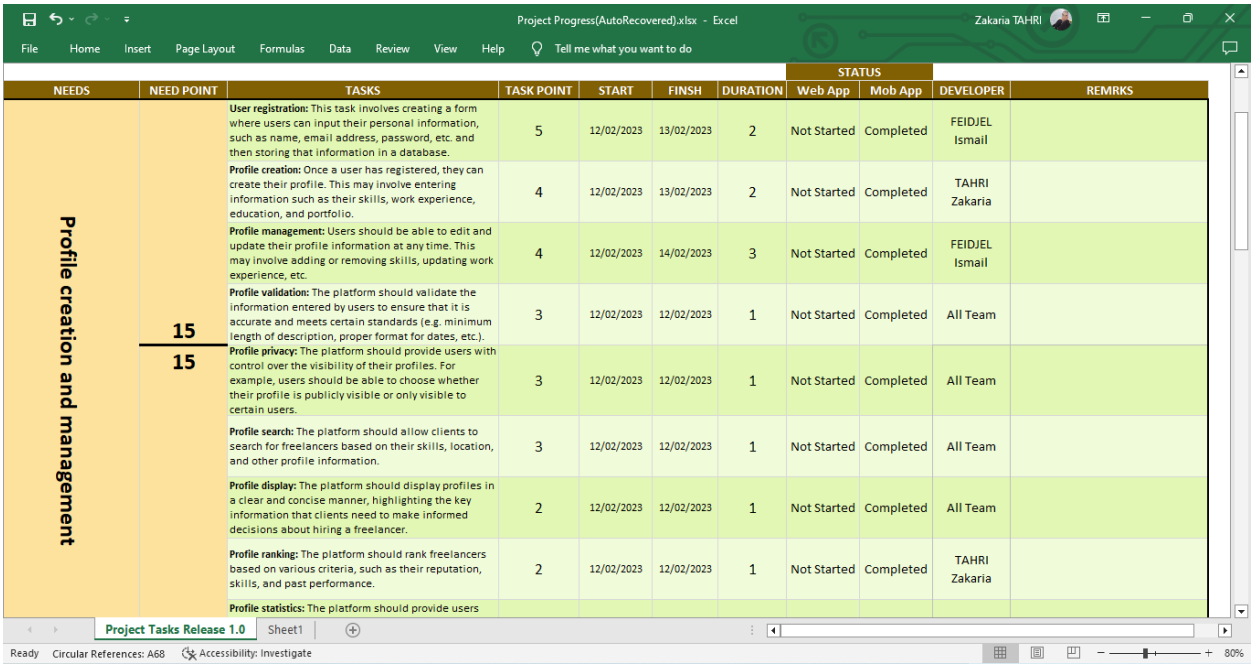
4. Programming Tasks:

Agile methodology was employed in the development of the freelancing platform to manage project needs and tasks effectively. Initially, the project needs were identified, prioritized, and assigned points based on their importance to determine the project's progress

rate. This approach allowed the team to focus on the most crucial needs and features first, ensuring that the platform's critical functionalities were developed and implemented on time.

4.1. Determining Tasks:

To ensure that all tasks were completed and tracked efficiently, an Excel template was used to record all completed and remaining tasks. This approach helped to monitor the project's progress, identify bottlenecks, and mitigate risks. By tracking tasks and project progress in real-time.



NEEDS	NEED POINT	TASKS	TASK POINT	START	FINSH	DURATION	STATUS Web App	STATUS Mob App	DEVELOPER	REMRKS
Profile creation and management	15 / 15	**User registration:** This task involves creating a form where users can input their personal information, such as name, email address, password, etc. and then storing that information in a database.	5	12/02/2023	13/02/2023	2	Not Started	Completed	FEIDJEL Ismail	
		Profile creation: Once a user has registered, they can create their profile. This may involve entering information such as their skills, work experience, education, and portfolio.	4	12/02/2023	13/02/2023	2	Not Started	Completed	TAHRI Zakaria	
		Profile management: Users should be able to edit and update their profile information at any time. This may involve adding or removing skills, updating work experience, etc.	4	12/02/2023	14/02/2023	3	Not Started	Completed	FEIDJEL Ismail	
		Profile validation: The platform should validate the information entered by users to ensure that it is accurate and meets certain standards (e.g. minimum length of description, proper format for dates, etc.).	3	12/02/2023	12/02/2023	1	Not Started	Completed	All Team	
		Profile privacy: The platform should provide users with control over the visibility of their profiles. For example, users should be able to choose whether their profile is publicly visible or only visible to certain users.	3	12/02/2023	12/02/2023	1	Not Started	Completed	All Team	
		Profile search: The platform should allow clients to search for freelancers based on their skills, location, and other profile information.	3	12/02/2023	12/02/2023	1	Not Started	Completed	All Team	
		Profile display: The platform should display profiles in a clear and concise manner, highlighting the key information that clients need to make informed decisions about hiring a freelancer.	2	12/02/2023	12/02/2023	1	Not Started	Completed	All Team	
		Profile ranking: The platform should rank freelancers based on various criteria, such as their reputation, skills, and past performance.	2	12/02/2023	12/02/2023	1	Not Started	Completed	TAHRI Zakaria	
		Profile statistics: The platform should provide users								

Figure 4.2: The Used Excel Sheet to Rate the Project Progress.

Using Agile methodology and tracking project needs and tasks helped to streamline the development process and ensure that the platform was developed to meet the needs of its users. The approach allowed for greater flexibility, adaptability, and collaboration, resulting in a more robust. t and reliable platform that met the project's requirements.

4.2. Setup The Database:

During the development process, XAMPP was utilized as the software package to install and manage the MySQL server. XAMPP provided an easy-to-use interface and bundled the necessary components, including MySQL, Apache, and PHP, required for local development [61].

By installing and configuring the MySQL server, the platform development workflow ensured a robust and reliable database management system. The proper setup of the server with appropriate settings and authentication methods [62] guaranteed secure access and efficient interaction between the platform and the MySQL database.

the MySQL administration tool phpMyAdmin was utilized to create the database. PhpMyAdmin provided a user-friendly interface for managing MySQL databases, facilitating the creation and management of databases and their associated components. To create the database [62], the individuals involved in the platform development accessed phpMyAdmin and proceeded with the required steps: Login and Access phpMyAdmin, Create the Database, Configure Database Options.

4.3.Laravel Backend Setup:

The workflow of building the platform began with the installation of Composer, a dependency management tool for PHP. Composer played a crucial role in managing the project's dependencies and ensuring smooth integration of various components [63][64].

By installing Composer, setting up Laravel, and configuring the web server, the workflow laid a strong foundation for building the platform. These steps established the necessary infrastructure to start developing the backend functionalities and application programming interfaces (API)s, enabling seamless integration with the ReactJS frontend.

- **Database Connection Configuration:**

configuring the database connection in Laravel involved modifying the .env file. The '`.env`' file [65], located in the root directory of the Laravel project, stored environment-specific configuration variables, including the database connection settings.

- **Data Migrations:**

Data migration is a crucial aspect of Laravel development that enables the creation and modification of database tables and structures using version-controlled files [66]. Laravel provides a convenient way to manage database schema changes and keep them synchronized across different environments. The following steps outline the process of setting up the database using Laravel's data migration feature.

During the development process of building the platform, the Artisan command-line tool was utilized to generate migration files [66]. These migration files were responsible for defining the necessary database schema changes required for the application [66].

By running the migrations through the Artisan command-line tool, we were able to automate the process of implementing the defined database changes [66]. The '`migrate`' command facilitated the execution of the migration files (`up()` functions), which contained the instructions for creating tables, defining columns, and performing other necessary database modifications.

During the platform development process, Laravel's command-line interface offered additional commands for managing migrations, specifically for rolling back or resetting migrations [66]. These commands proved to be valuable when we needed to undo specific database changes or revert the entire migration history.

- **Creating Models:**

The Artisan command-line tool was utilized to generate model classes, automating the process of creating the necessary boilerplate code [67]. These model classes served as an abstraction layer between the application and the underlying database [67], allowing us to interact with the data in a simplified and object-oriented manner.

Laravel's Eloquent ORM (Object-Relational Mapping) system facilitated the definition of relationships between models . By utilizing Eloquent, we were able to establish associations such as one-to-one, one-to-many, or many-to-many relationships between different models [67]. These relationships provided a convenient way to navigate and manipulate related data, enhancing the flexibility and efficiency of data retrieval and manipulation operations [67].

- **Creating Controllers:**

Controllers played a critical role in handling HTTP requests, interacting with models, and returning responses to clients [67].

The Artisan command-line tool was employed to generate controller classes with predefined methods [67], streamlining the process of creating these essential components.

Using the Artisan command-line tool, controller classes was generated, that served as intermediaries between the HTTP requests and the corresponding business logic [68].

These controller classes encapsulated the necessary methods for handling various CRUD (Create, Read, Update, Delete) operations, data retrieval, validation, and database updates.

Within each controller method, the required logic to process the incoming requests was implemented. This logic included retrieving data from models, validating user input, performing necessary database operations, and crafting appropriate responses to be returned to clients [68].

- **Defining Routs:**

In the api.php file, the Laravel routing syntax is utilized to define routes, enabling the specification of the HTTP method, URL endpoint, and the associated controller method. These routes can be created for a range of API operations, encompassing `GET`, `POST`, `PUT`, `DELETE`, and more [69]. By mapping the defined routes to the relevant controller methods, the execution of necessary business logic is facilitated, allowing for the seamless processing of incoming API requests [69].

Defining routes in the api.php file establishes the API endpoints for consumption by the ReactJS frontend [69]. Laravel's clear and expressive syntax streamlines the mapping of URLs to controller methods, facilitating the efficient handling of API requests and responses.

4.4. ReactJS Frontend Setup:

During the workflow of building the comprehensive freelancing platform, the ReactJS frontend setup was initiated by installing Node.js, which included npm, enabling efficient management of project dependencies [70]. A new directory was created specifically for the frontend, and we navigated to it using the command-line interface. To bootstrap a new ReactJS project, the "create-react-app" command was executed.

By installing Node.js, creating a dedicated directory, and utilizing the "create-react-app" command, we successfully established the foundation for the ReactJS frontend, allowing for further development and implementation of the comprehensive freelancing platform [70].

- **Project Structure:**

During the development process of the comprehensive freelancing platform, the ReactJS project structure was carefully established to promote organization and modularity [71]. This structure incorporated essential folders, including "src" for housing the source code, "public" for storing static assets, and "node_modules" for managing project dependencies.

- **Dependency Management:**

During the development process of the comprehensive freelancing platform, nmp was leveraged, the Node Package Manager, to install additional dependencies essential for the project's functionality [72]. These dependencies included Axios, a library for making HTTP requests, React Router for handling routing within the ReactJS application, and any other relevant libraries or packages that were deemed necessary [72].

- **Building User Interface Components:**

Throughout the development phase of the comprehensive freelancing platform, a wide array of user interface components were thoughtfully designed and implemented using ReactJS [73]. These components encompassed essential elements such as forms, buttons, navigation menus, lists, and various interactive elements that played a vital role in enhancing the overall user experience of the platform [73].

- **Integrating with Backend APIs:**

The ReactJS frontend seamlessly integrated with the Laravel backend as Axios or similar libraries facilitated smooth communication through HTTP requests [74]. Functions or methods were thoughtfully designed within the ReactJS codebase to handle different API calls, ensuring efficient transmission of data to the backend and processing of responses [74]. By leveraging Axios or similar libraries, a robust interaction between the ReactJS frontend and Laravel backend was achieved, enabling effective data exchange and synchronization.

The Axios client also includes request interceptors to handle authentication. The `axiosClient.interceptors.request.use()` method adds a request interceptor that retrieves the access token from the local storage and adds it to the Authorization header of each request [74]. This ensures that the backend APIs are accessed with the appropriate authentication.

The axiosClient instance can be imported and used throughout the ReactJS codebase to make HTTP requests to the Laravel backend APIs [74]. The features and methods of the Axios library can be leveraged to customize the API calls, handle responses, and implement data processing and error handling logic specific to their application requirements [74].

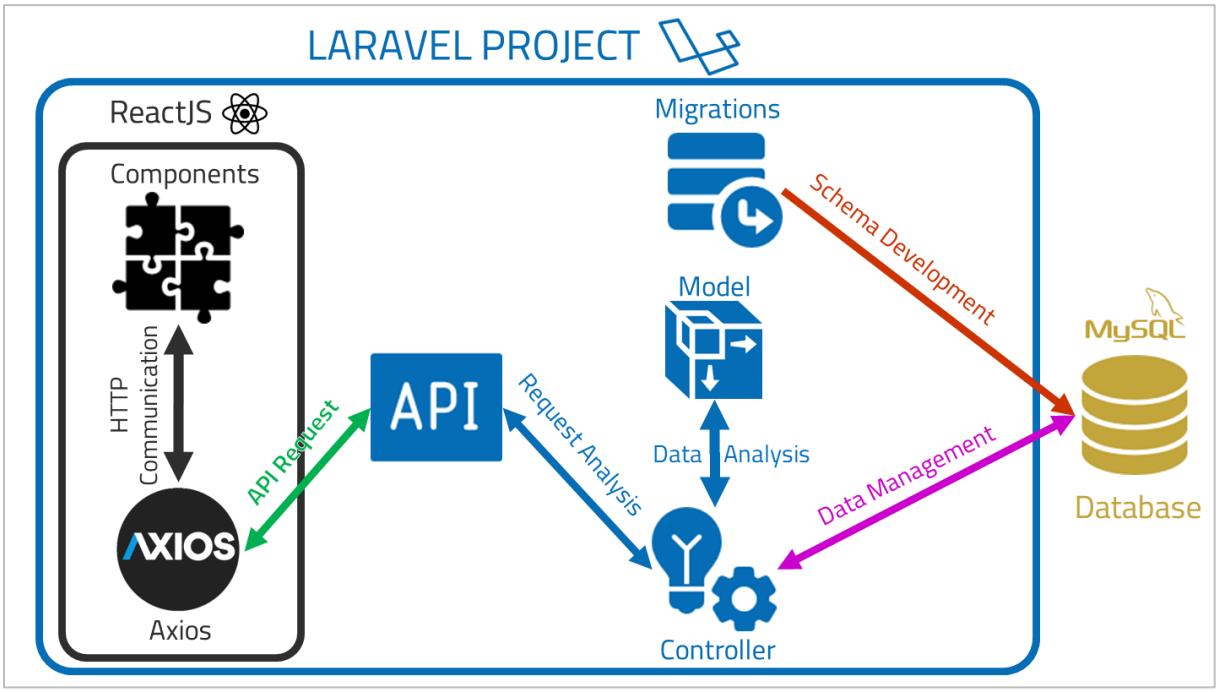


Figure 4.3: Project Structure.

4.5. Version Control with Git:

During the development of the comprehensive freelancing platform, version control with Git was utilized to manage and track changes to the source code. A robust and distributed version control system provided by Git enabled collaboration, manage different versions of the codebase, and easily track modifications made by individual team members [51].

To facilitate version control, Git commands were utilized, and Git functionality was integrated directly within the Visual Studio Code (VSCode) IDE through Git extensions. These extensions provided a user-friendly interface within the IDE, allowing to perform common Git operations such as committing changes, creating branches, merging code, and pushing/pulling changes to/from remote repositories.

These Git commands and the integration of Git within the VSCode IDE facilitated efficient collaboration, code management, and version control throughout the development process of the comprehensive freelancing platform.

5. Testing Methodology:

PHPUnit is a widely-used testing framework for PHP that facilitates unit testing in software development . It offers a range of tools and features to write, organize, and execute tests for PHP code [75]. By utilizing PHPUnit, developers can create automated test cases to verify the correctness and expected behavior of individual units or components of the platform. This framework supports the practice of test-driven development and promotes the creation of testable code through modular design and separation of concerns. With PHPUnit, developers can systematically test different aspects of the platform's functionality, identify bugs and regressions, and ensure that the code meets the specified requirements. By automating the testing process, PHPUnit saves time and effort, enhances code quality, and leads to a more reliable and robust platform [75].

- **Creating Testing Automation using PHPUnit:**

Automated testing is an essential aspect of software development, ensuring efficient and reliable verification of code functionality. In the context of the platform, PHPUnit, a widely adopted testing framework for PHP applications, was employed to facilitate the testing process [76]. By utilizing PHPUnit, the platform's testing activities were streamlined, allowing for effective and thorough verification of the codebase's functionality [76].

To facilitate the creation of tests, the command "./vendor/bin/phpunit" was utilized. This command executed the PHPUnit test suite, enabling us to perform comprehensive and automated testing of different components and functionalities within the platform. By running this command, the platform's test suite was executed, providing valuable insights into the correctness and reliability of the codebase [76].

In addition, us made use of the command "php artisan make:test _Test" to generate test classes using Laravel's Artisan command-line interface. This command allowed them to quickly create test files with predefined boilerplate code, saving time and effort in setting up

the initial structure of the tests. By leveraging this command, we could focus more on writing the actual test cases and ensuring comprehensive test coverage for the platform's features and functionalities [76].

- **Coding Testing Automation:**

The next provided code represents an example test method in a class named "Project_CreationTest" within the "Tests\Feature" namespace [77]. This class extends the base "TestCase" class and includes the "RefreshDatabase" trait, which helps in refreshing the database for each test method [77].

This test case helps in verifying the correct functioning of the project indexing feature and ensures that the view and data passing are as expected.

- **Running Test:**

Running the command "php artisan test" initiates the execution of all tests defined in the application [78]. This command triggers the test runner, which discovers and runs the tests using the configured testing framework (such as PHPUnit) [78].

It provides a comprehensive assessment of the application's functionality and ensures that all defined tests are executed [78]. This command is a convenient and efficient way to validate the integrity and correctness of the application's codebase.

6. Final Look of the Platform:

After implementing the necessary features and conducting thorough testing, the platform has reached its final look and functionality. The user interface has been designed to be intuitive and user-friendly, allowing users to easily navigate through the different sections and perform various actions.

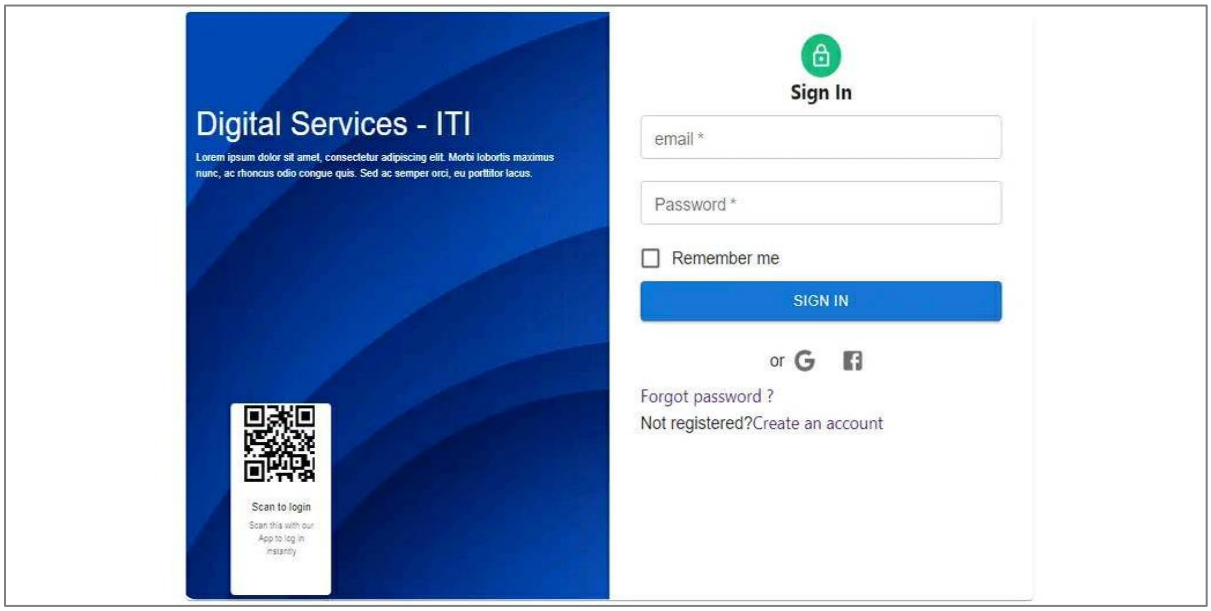


Figure 4.4: Sing In Page.

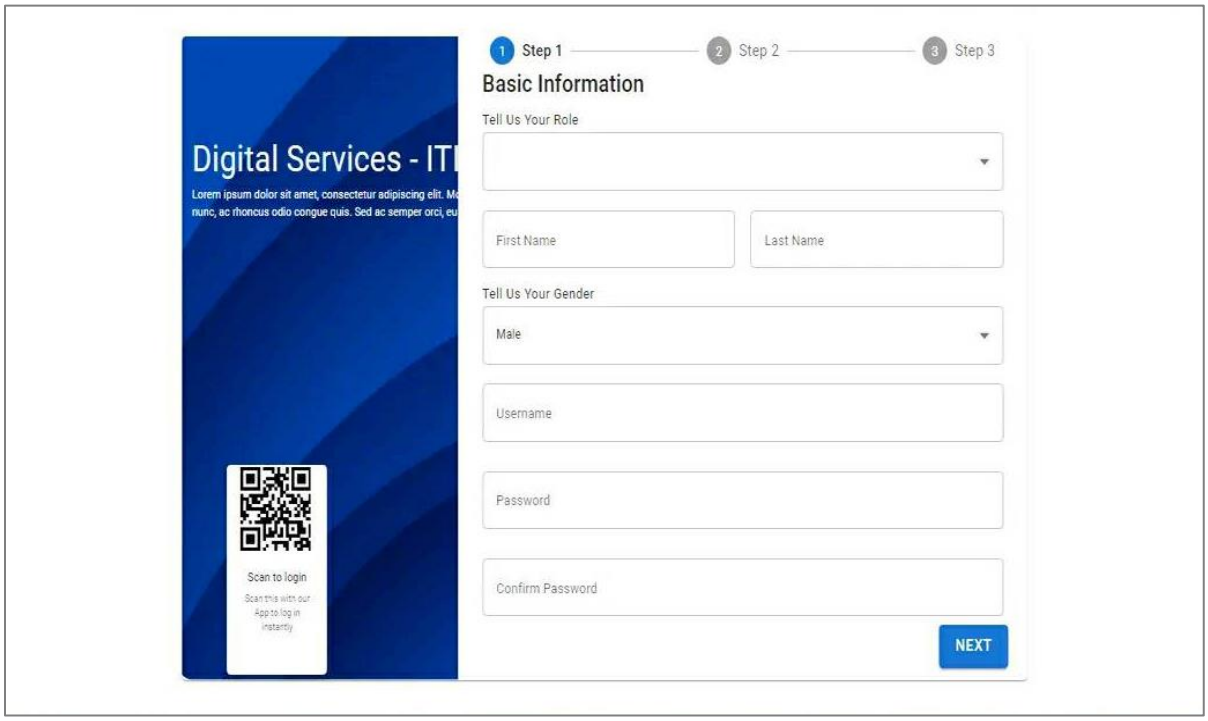


Figure 4.5: Sign Up Page.

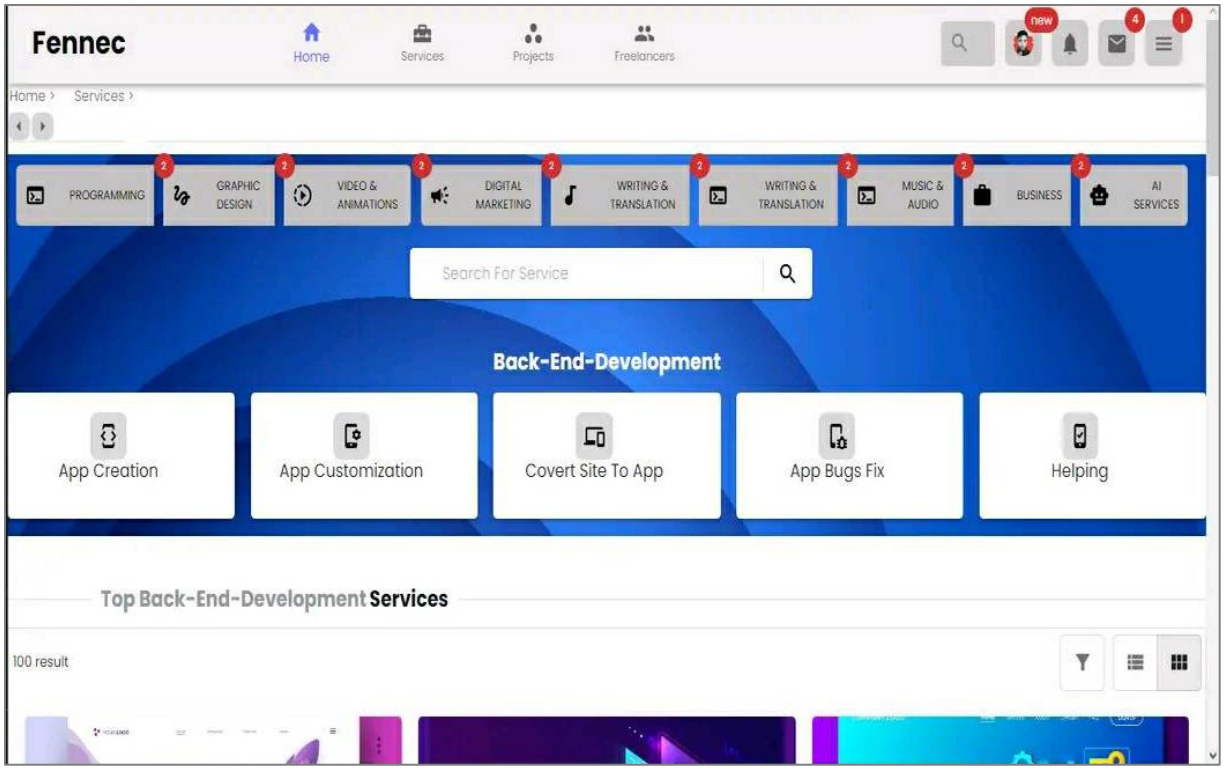


Figure 4.6: Home Page.

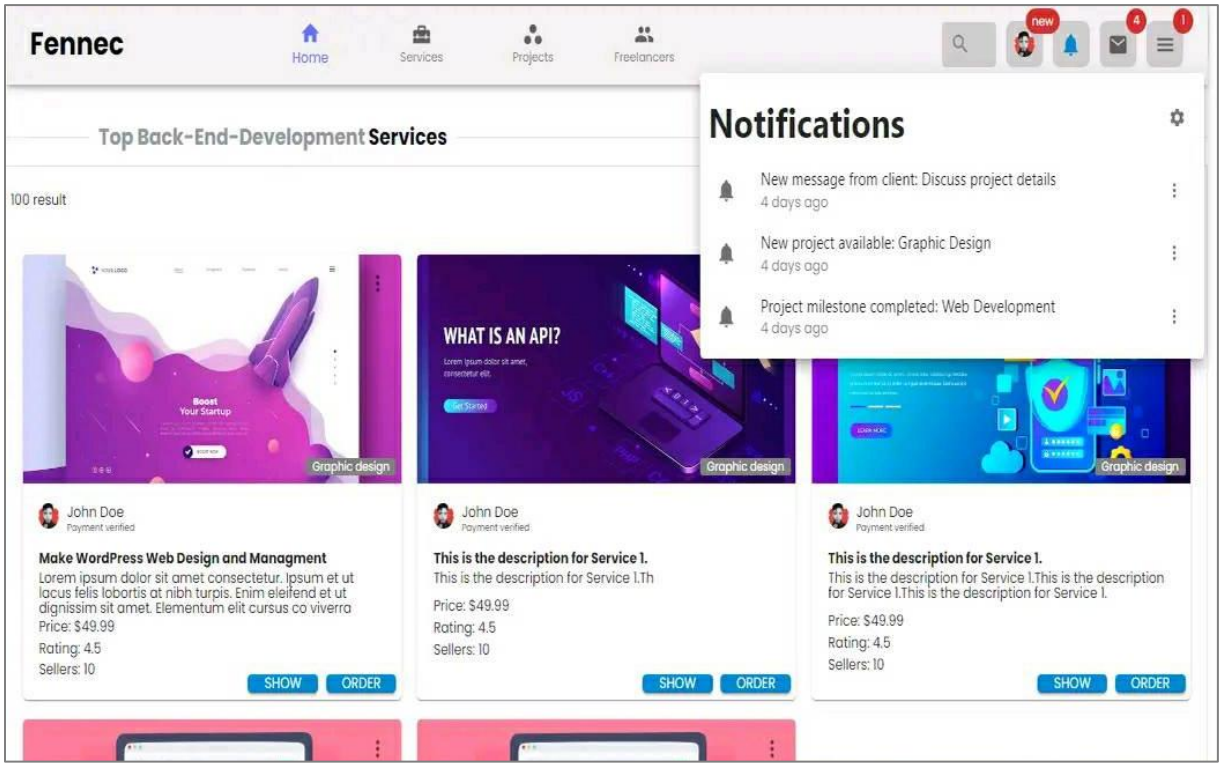


Figure 4.7: Home Page (Notifications Panel).

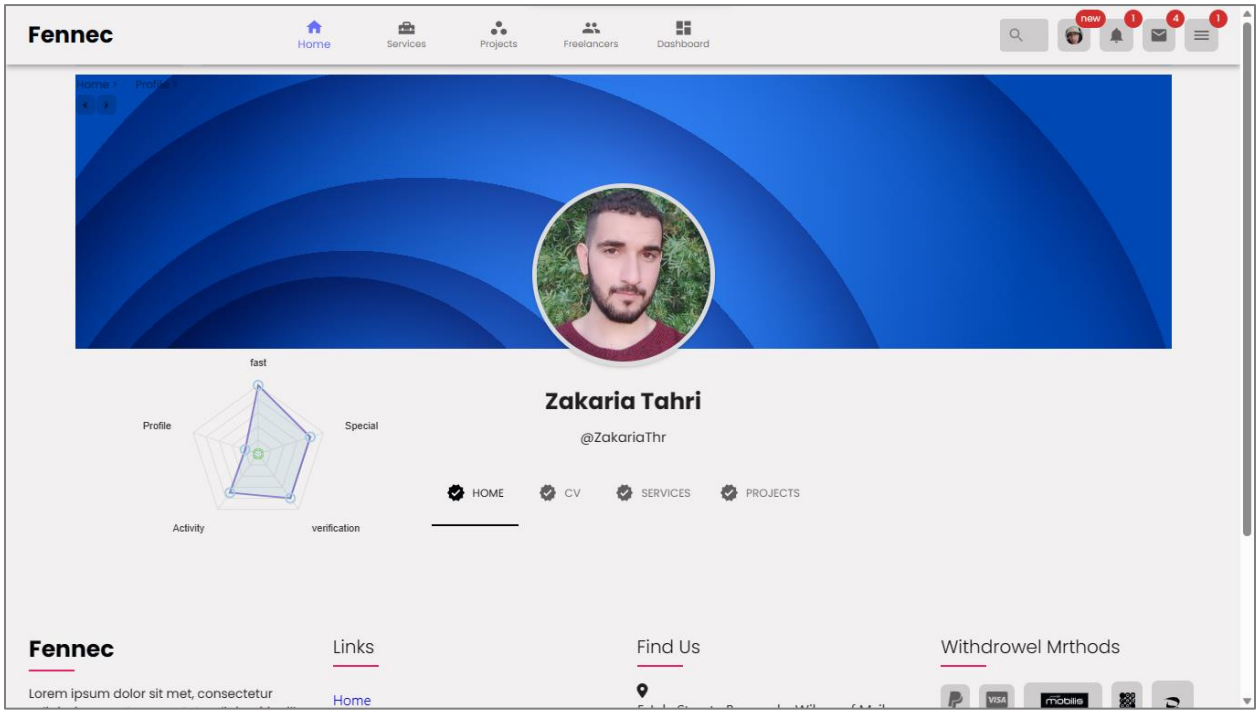


Figure 4.8: Profile Page (Home).

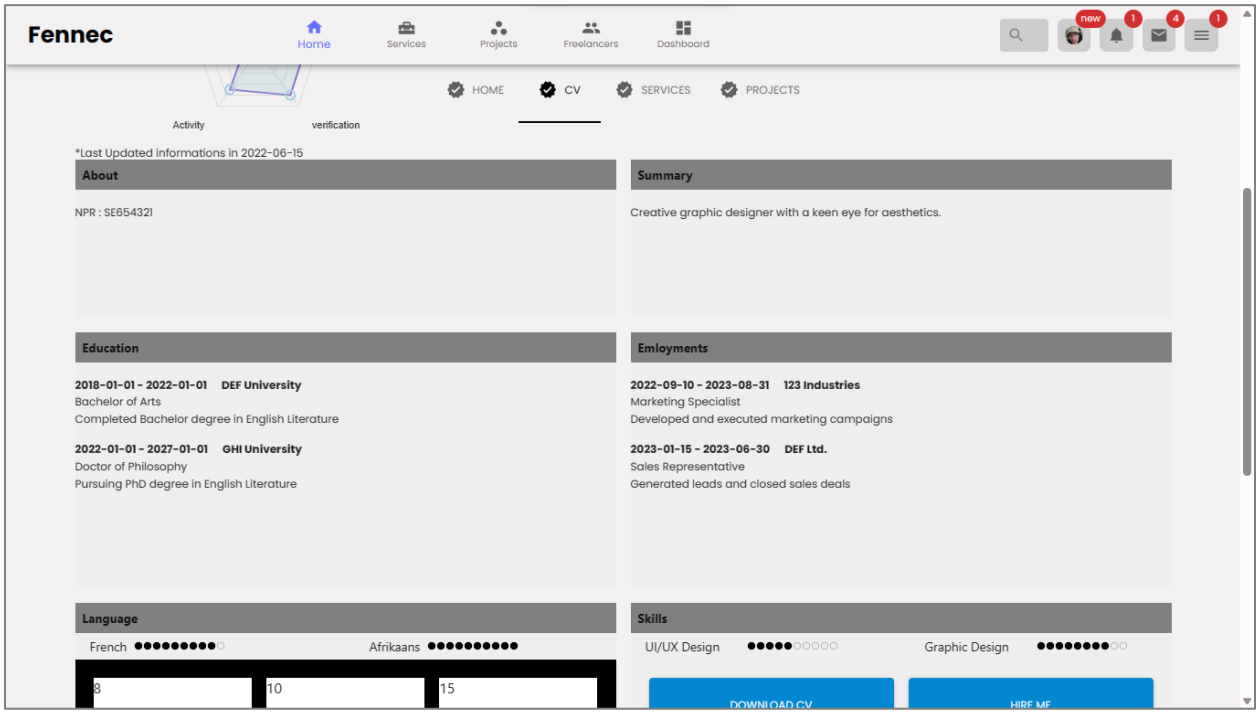


Figure 4.9: Portfolio (CV).

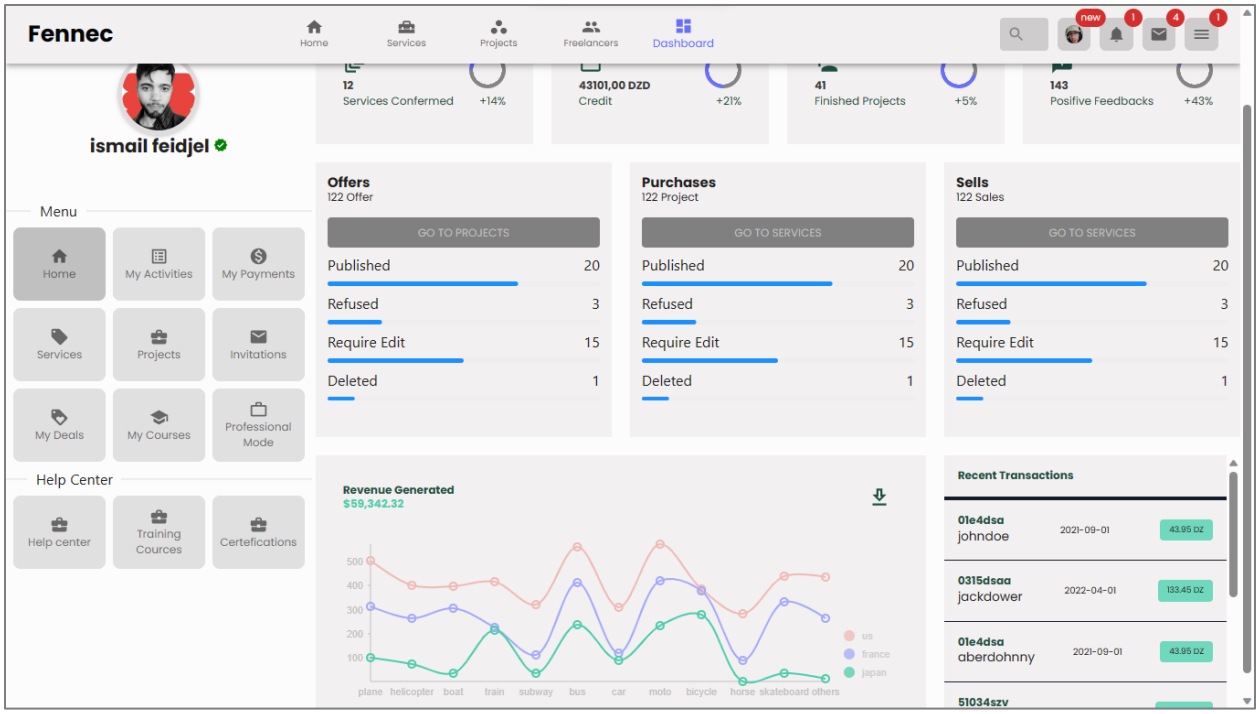


Figure 4.10: Dashboard Page.

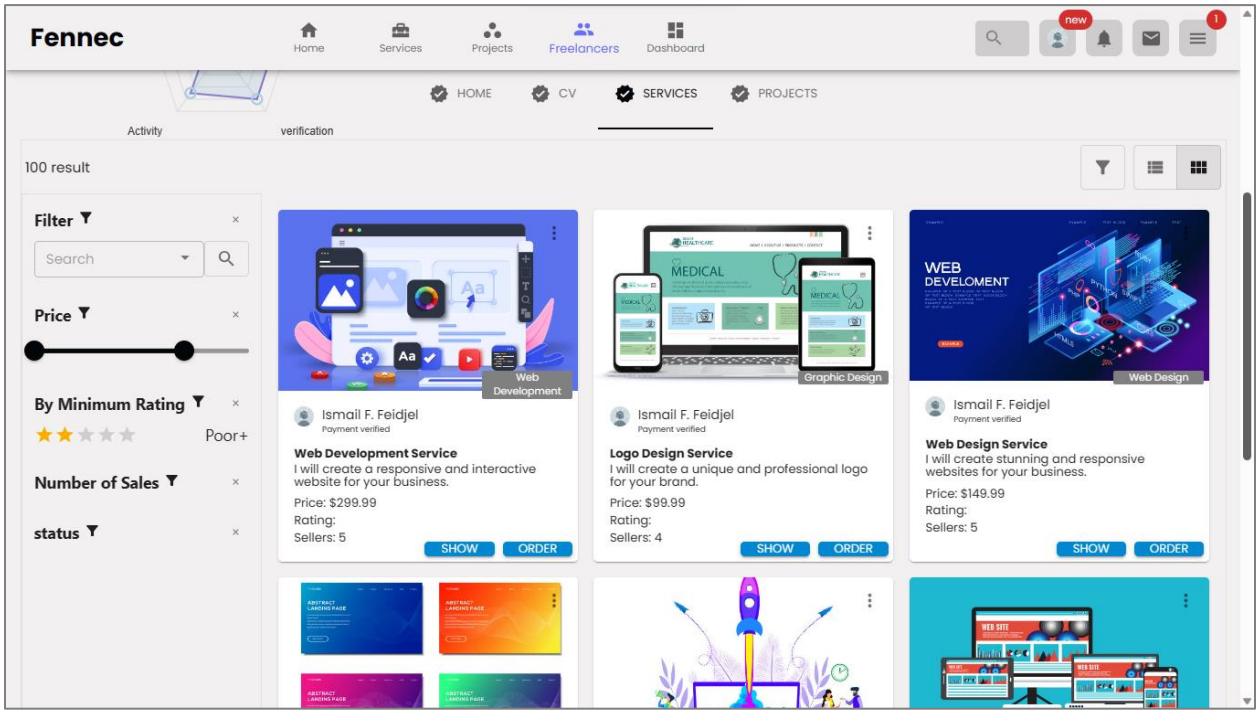


Figure 4.11: Profile Page (Services).

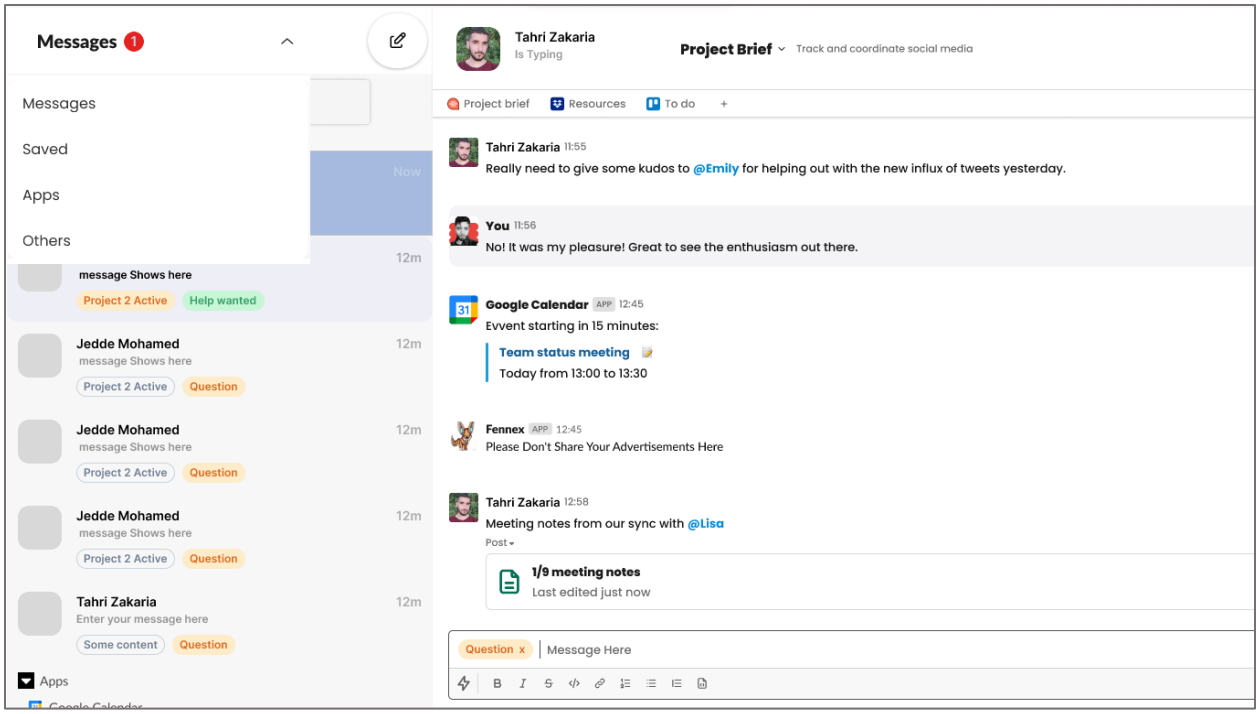


Figure 4.12: Messaging Page.

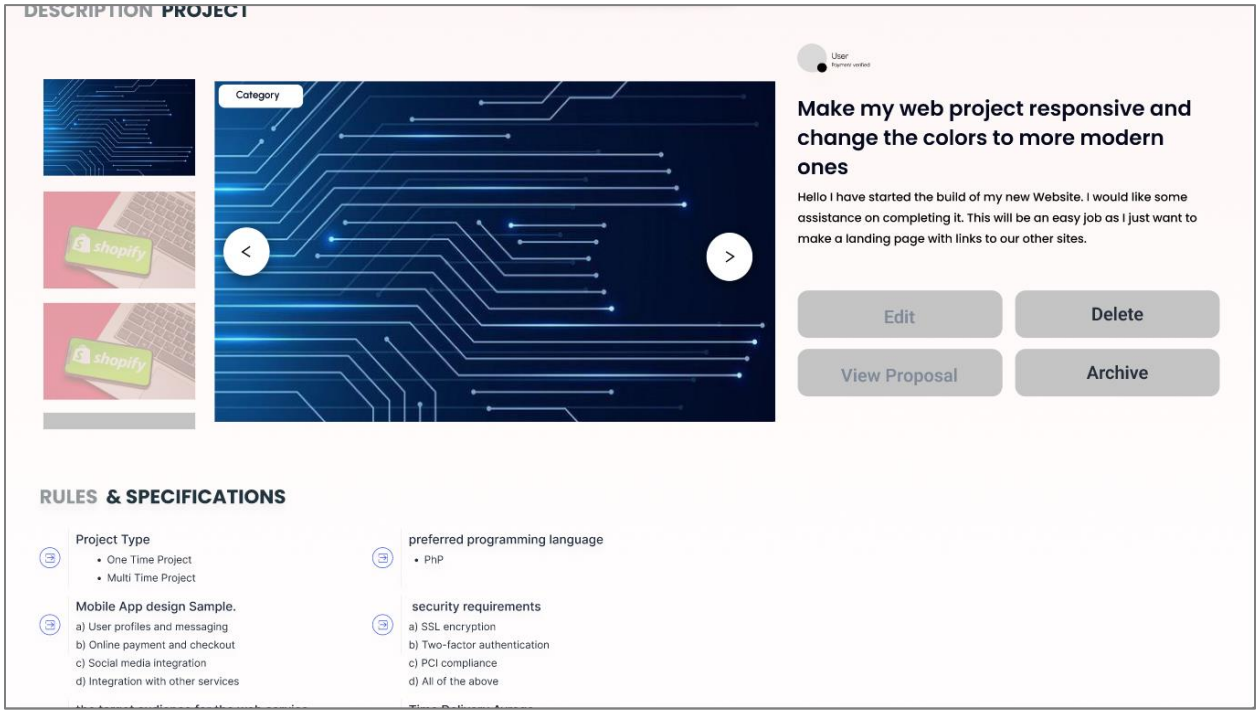


Figure 4.13: Project Details.

7. Limitations of the System:

In the evaluation of the system, several limitations were identified. Firstly, the size of the project posed a challenge as there was insufficient time to fully implement all the planned features, including the development of the mobile application. The project's extensive scope and complexity constrained the ability to accomplish all desired objectives within the given timeframe. Another significant limitation relates to electronic payments. Specifically, the use of Algerian dinars for transactions was not feasible due to the unavailability of the remote payment application programming interface (API) from Algeria Post. Obtaining this API required the fulfillment of certain prerequisites, such as having a commercial registry for electronic commerce [79]. However, the necessary requirements for accessing the remote payment API had not been met during the project's duration, resulting in the unavailability of electronic payment functionality in Algerian dinars. These limitations signify the challenges faced during the system development process, including time constraints and regulatory hurdles, which affected the project's feature completeness and restricted the implementation of specific payment methods.

8. Aspirations for the Future:

The completion of this research project signifies a significant step towards developing a comprehensive freelancing platform tailored to Algeria. Future aspirations include obtaining a Startup Label from the Algerian Ministry of Startups to enhance credibility and visibility. The platform's development will continue, addressing identified limitations and incorporating necessary requirements. A mobile application will be developed to increase accessibility and tap into a wider user base. Expansion beyond national boundaries is also envisioned, aiming to establish a branch outside Algeria to facilitate smoother banking transactions and foster international partnerships. These aspirations align with the goal of creating a thriving freelancing ecosystem in Algeria, empowering freelancers and providing high-quality services to clients. The platform seeks to streamline the freelancing process, connect freelancers with better opportunities, and offer clients access to talented professionals. Through continuous improvement and expansion, the platform aims to contribute to the growth and success of freelancers and clients in Algeria's freelancing landscape

CONCLUSION

In conclusion, this thesis has examined the landscape of freelancing platforms and aimed to contribute to the development of an efficient freelancing platform tailored to the Algerian market. Through a comprehensive literature review, the significance of freelancing platforms in the contemporary economy was highlighted, along with the advantages and limitations of existing platforms. The methodology employed online surveys, interviews, and sampling techniques to gather data, revealing challenges faced by freelancers in Algeria, such as payment issues and high competition. Proposed solutions included the development of local platforms and the use of foreign banks with user-friendly payment methods.

Based on the research findings, the platform's requirements and design were established. The system requirements encompassed functional and non-functional aspects to ensure user satisfaction. The database design and modeling ensured efficient data storage and retrieval, while system modeling employed UML diagrams for clarity.

The implementation and testing phase followed a flexible Agile methodology, utilizing various programming languages and frameworks such as MySQL, Laravel, and ReactJS. Testing was carried out using PHPUnit to validate the platform's functionality and stability.

The evaluation showcased the visually appealing and user-friendly interface of the platform, without providing specific evaluation results. Limitations such as time constraints and regulatory hurdles were acknowledged, along with aspirations for future enhancements. These aspirations included obtaining a Startup Label, developing a mobile application, and expanding internationally.

This thesis has provided valuable insights into the freelancing landscape in Algeria and contributed to the development of a comprehensive platform. By addressing challenges and focusing on user satisfaction, the platform aims to empower freelancers and offer high-quality services to clients. Our goal is that these efforts will lead to the establishment of a successful startup that not only meets the needs of freelancers and clients but also thrives in the competitive market. Further research, development, and continuous improvements based on user feedback will be crucial for achieving this aspiration and ensuring the long-term success of the startup.

REFERENCES:

[1] *"What is freelancing"* July 2022, Accessed on: February 21th, 2023, [Online], Available: https://edu.gcfglobal.org/en/freelancing-101/what-is-freelancing/1/

[2] *"Self-employed, total (% of total employment) (modeled ILO estimate)"*, January 2021, Accessed on: February 09th, 2023. [Online]. Available: https://data.worldbank.org/indicator/SL.EMP.SELF.ZS

[3] Official Journal Algeria, *"The basic law of the self-employee"*, in *"Issue 85/59"*. The official press, December 19th, 2022. pp 5-6. Accessed on: February 09th, 2023. [Online]. Available: https://www.joradp.dz/FTP/jo-arabe/2022/A2022085.pdf

[4] *"Computer Programming Technology, A.S",* May 2013, Accessed on: February 21th, 2023, [Online], Available: https://catalog.mcc.commnet.edu/preview_program.php?catoid=3&poid=261&returnto=659

[5] *"Professional Graphics Design",* August 2022, Accessed on: February 21th, 2023, [Online], Available: https://scholaritinstitute.com/graphics-design-training/

[6] *"Ad infinitum: companies to unleash a deluge of digital marketing",* October 2022, Accessed on: February 21th, 2023. [Online], Available: https://www.ft.com/content/accf6e75-65b4-4be3-93df-7b3dfb3ef06f

[7] *"What is translation in writing, and what types of translation exist?",* January 2020, Accessed on: February 21th, 2023, [Online], Available: https://www.star-uk.co.uk/translation-in-writing/

[8] *"Difference Between Animation and Video",* May 2011, Accessed on: February 21th, 2023, [Online], Available: https://www.differencebetween.com/difference-between-animation-and-vs-video/

[9] *"Who Are Music Audio Freelancers?",* October 2021, Accessed on: February 21th, 2023, [Online], Available: https://brybe.com/freelancer-offers-category/music-audio

[10] *"What are Freelance Platforms? Analysis of Features, Benefits and Pricing",* February 2019, Accessed on: February 21th, 2023, [Online], Available: https://financesonline.com/freelance-platforms-analysis-features-benefits-pricing/

[11] Thomas W. Malone & Robert J. Laubacher. *"The Dawn of the E-Lance Economy"*, in *"Are big companies becoming obsolete?"*. Harvard Business Review, 2018. pp 145-152.

[12] *"The story behind launching oDesk"*, March 2014, Accessed on: February 10th, 2023. [Online]. Available: https://mixergy.com/interviews/gary-swart-odesk-interview/

[13] *"79 Websites to Get Freelance Jobs Fast"*, June 2017, Accessed on: February 13th, 2023. [Online]. Available: https://www.forbes.com/sites/abdullahimuhammed/2017/06/16/79-websites-to-get-freelance-jobs-fast/

[14] *"When Was Fiverr Founded? (Headquarters, History & More)"*, October 2022, Accessed on February 17th, 2023. [Online]. Available: https://sophicalcontent.com/fiverr-headquarters-history-and-more/

[15] *"About Freelancer: company Overview & History"*, February 2023, Accessed on: February 17th, 2023, [Online]. Available: https://www.freelancer.com/about

[16] *"About Khamsat",* October 2022, Accessed on: February 17th, 2023. [online]. Available: https://khamsat.com/about

[17] *"Upwork Revenue, User, and Growth Statistics (2022)",* January 2022, Accessed on: February 17th, 2023, [Online], Available: https://www.luisazhou.com/blog/upwork-revenue/

[18] Elvir M. Akhmetshin & Kseniya E. Kovalenk, *"Freelancing as a type of entrepreneurship"*, Journal of Entrepreneurship Education, Volume 21, Special Issue, pp 4-5, 2018.

[19] Zhang, Y., & Li, Y. *"An analysis of the advantages and disadvantages of online freelance platforms".* International Journal of Information Management, 37(1), pp70-80, 2017.

[20] J. W. Creswell, *"Research design: qualitative, quantitative, and mixed methods approaches"*. Thousand Oaks, CA: Sage, 2014.

[21] U. Flick, *"The Sage handbook of qualitative data analysis"*. Thousand Oaks, CA: Sage, 2014.

[22] N. K. Denzin and Y. S. Lincoln, Eds., *"The Sage handbook of qualitative research"*. Thousand Oaks, CA: Sage, 2011.

[23] Tashakkori, A., & Creswell, J. W. Editorial: *"The new era of mixed methods. Journal of Mixed Methods Research",* 1(1), pp 3-7, 2007.

[24] Neuman, W. L. *"Social research methods: Qualitative and quantitative approaches".* Pearson, 2014.

[25] Stangor, C., & Walinga, J. (2014). *"Observational Research. The SAGE Encyclopedia of Social Science Research Methods"*, 836-838. doi: 10.4135/9781483349798.n322

[26] Shu, Y., Chen, C., & Wang, F. (2014). *"Data analysis using Excel".* International Journal of Engineering Education, 30(1), 168–178.

[27] Beck, K., Beedle, M., Bennekum, A., Cockburn, A., Cunningham, W., Fowler, M., ... & Kern, J. (2001). Manifesto for agile software development. Agile Alliance.

[28] Schwaber, K., & Sutherland, J. (2017). The Scrum guide: The definitive guide to Scrum: The rules of the game. Scrum.org.

[29] Cockburn, A. (2002). Agile software development. Pearson Education.

[30] Rubin, K. (2012). Essential Scrum: A practical guide to the most popular Agile process. Addison-Wesley Professional.

[31] Highsmith, J. (2009). Agile project management: Creating innovative products. Pearson Education.

[32] Derby, E., Larsen, D., & Schwaber, K. (2013). Agile retrospectives: Making good teams great. Pragmatic Bookshelf.

[33] Boehm, B., & Turner, R. (2003). Balancing agility and discipline: A guide for the perplexed. Addison-Wesley Professional.

[34] *"Applying the agile methodology to the modern workplace".* 05 Aprile, 2023. [online]. Available: https://mobile-jon.com/2021/04/05/applying-the-agile-methodology-to-the-modern-workplace/

[35] N. Ben-Gal, *"Software requirements"*, in Encyclopedia of Information Systems, 1st ed., vol. 5, W. W. Song, Ed. Boston, MA: Springer US, 2003, pp. 276-287.

[36] R. S. Pressman, Software engineering: a practitioner's approach. McGraw-Hill Education, 2014.

[37] Sommerville, I. (2011). Software Engineering. Pearson Education Limited.

[38] *"Systems and software engineering - System and software quality requirements and evaluation (SQuaRE) - System and software quality models".* (2018).

[39] Connolly, T. M., & Begg, C. E. (2014). *"Database Systems: A Practical Approach to Design, Implementation and Management".* Pearson Education Limited.

[40] Elmasri, R., & Navathe, S. B. (2015). *"Fundamentals of Database Systems"*. Pearson Education Limited.

[41] OMG. (2017). *"Unified Modeling Language (UML) Specification"*, version 2.5. Available: https://www.omg.org/spec/UML/2.5/ , Accessed on: March 12, 2023.

[42] Ambler, S. W., & Jeffries, R. *"Agile modeling: effective practices for extreme programming and the unified process".* (2002).

[43] Choi, B., & Kim, D. (2015). *"Design and implementation of UML-based web application development framework".* Journal of Information Processing Systems, 11(2), 195-208.

[44] *" About StarUML* ", creating date. Accessed on: Access date. [Online]. Available: Link | StarUML. (n.d.). About StarUML. Retrieved from https://staruml.io March 12, 2023

[45] Laravel Documentation. Laravel. Retrieved from https://laravel.com/docs/4.2

[46] React. (2021). Why React? React. Retrieved from https://reactjs.org/docs/why-react.html

[47] MySQL. (2021). MySQL :: MySQL Community Downloads. MySQL. Retrieved from https://dev.mysql.com/downloads/

[48] Visual Studio Code. (n.d.). Retrieved from https://code.visualstudio.com/

[49] XAMPP. (n.d.). Retrieved from https://www.apachefriends.org/index.html

[50] DbSchema. (n.d.). Retrieved from https://www.dbschema.com/

[51] Git. (n.d.). Retrieved from https://git-scm.com/

[52] GitHub. (n.d.). Retrieved from https://github.com/

[53] Leff, A., & Rayfield, J. T. (2001). Web Application Development Using the Model/View/Controller Design Pattern. IBM Systems Journal, 40(2), 200-215.

[54] Burbeck, S. (1992). Applications Programming in Smalltalk-80: How to use Model-View-Controller (MVC). Journal of Object-Oriented Programming, 5(2), 43-57.

[55] Krasner, G. E., & Pope, S. T. (1988). A Description of the Model-View-Controller User Interface Paradigm in the Smalltalk-80 System. Journal of Object-Oriented Programming, 1(3), 26-49.

[56] The Model View Controller Pattern – MVC Architecture and frameworks explained. Aprile 23, 2021. Accessed on: May 21, 2023. [online]. Avalable on :

https://www.freecodecamp.org/news/the-model-view-controller-pattern-mvc-architecture-and-frameworks-explained/

[57] Laravel Documentation. Laravel - The PHP Framework for Web Artisans. Accessed: May 21, 2023. Retrieved from https://laravel.com/

[58] Taylor, O. (2011). Laravel: A PHP Framework for Web Artisans. PHP User Group Wellington, 18.

[59] Szyperski, C. (2002). Component Software: Beyond Object-Oriented Programming. Addison-Wesley.

[60] Szyperski, C., Gruntz, D., & Murer, S. (2002). Component Software: A Survey. ACM Computing Surveys, 34(2), 191-228.

[61] Apache Friends. (2021). XAMPP. Retrieved from https://www.apachefriends.org/index.html

[62] MySQL AB. (2021). MySQL Documentation. Retrieved from https://dev.mysql.com/doc/

[63] Composer. (2021). Get Composer. Retrieved from https://getcomposer.org/

[64] Laravel. (2021). Laravel - The PHP Framework for Web Artisans. Retrieved from https://laravel.com/

[65] Laravel. (2021). Configuration - Laravel - The PHP Framework for Web Artisans. Retrieved from https://laravel.com/docs/configuration

[66] Laravel. (2021). Migrations - Laravel - The PHP Framework for Web Artisans. Retrieved from https://laravel.com/docs/migrations

[67] Laravel. (2021). Laravel Models - Defining Models - Laravel - The PHP Framework for Web Artisans. Retrieved from https://laravel.com/docs/eloquent#defining-models

[68] Laravel. (2021). Laravel Controllers - Laravel - The PHP Framework for Web Artisans. Retrieved from https://laravel.com/docs/controllers

[69] Laravel. (2021). Laravel Routing - Laravel - The PHP Framework for Web Artisans. Retrieved from https://laravel.com/docs/routing

[70] Node.js. (n.d.). Retrieved from https://nodejs.org/

[71] React. (n.d.). Retrieved from https://reactjs.org/

[72] npm. (n.d.). Retrieved from https://www.npmjs.com/

[73] React Router. (n.d.). Retrieved from https://reactrouter.com/

[74] Axios. (n.d.). Retrieved from https://axios-http.com/

[75] S. Gutschmidt, "PHPUnit: Empowering Reliable Software Testing," in 2020 29th International Conference on Enabling Technologies: Infrastructure for Collaborative Enterprises (WETICE), 2020, pp. 191-192.

[76] T. N. Ahmed, "Creating Testing Automation using PHPUnit," in 2021 International Conference on Engineering, Technology and Innovation (ICE/ITMC), 2021, pp. 1-6.

[77] M. C. Juan, L. M. Pérez, M. J. Escalona, and M. Mejías, "Testing and Evolution in an Agile Context: A Longitudinal Case Study,", vol. 38, no. 3, pp. 44-51, May/June 2021.

[78] P. Wnuk, A. Aurum, M. Hoda and J. Börstler, *"How Do Practitioners Perceive the Relevance of Software Engineering Research?,"* vol. 47, no. 9, pp. 888-907, Sept. 2021.

[79] *"ePayment in Algeria".* September 25, 2020. Accessed on: May 28, 2023. [online]. Available: https://guiddini.com.dz/e-paiement-en-algerie/

ANNEX 1: (Survey Questions)

Description:

Help us identify the challenges faced by the Algerian freelancer. The survey will only take a few minutes, and the information will be kept confidential and anonymous. Your participation will be greatly appreciated and will contribute to improving the conditions of the freelance community in Algeria.

Thanks in advance for the time you will spend with us!

Questions:

1) What is your field of work in Freelance?

2) How long have you been working in the field?

3) What is the electronic platform you work on most often?

4) Why do you prefer social media platforms over self-employment platforms? *(This question arises if it is stated that the freelancer prefers to work in social media platforms)*

5) Rank from first to last the most common problems you encounter on freelancing platforms:

◯ High Competition. ◯ Communication problems.

◯ High platform fees. ◯ Online payment problems.

6) What other problems do you encounter with these platforms?

7) Are there proposed solutions to improve work on these platforms? Please mention it.

8) Rank from first to last the problems you encounter outside the freelancing platforms:

◯ Convert money to the national currency. ◯ Difficult working conditions.

◯ Taxes and legal problems. ◯ Find a stable job.

9) Are there any other problems faced by the Algerian freelancer? Please mention it.

10) Are there proposed solutions to solve these problems? Please mention it.

11) Have you already heard or have knowledge of the law on self-employment in Algeria?

The End of the Survey.

ANNEX 2: (Interview Guides)

Introduction:

- Introduction of the researcher
- Background of the topic

Questions:

1) Tell a little bit about yourself and your role in the company.

2) Tell briefly about your company's business.

3) Has your company ever requested a Freelance service?

4) What kind of services do you typically request?

5) How did you manage to reach the freelancers who provided you with the services?

6) If through a platform, which platform did you rely on?

7) If it is through a social media platform, why do you prefer to order on social media platforms instead of freelance platforms?

8) What are the problems that you faced as a company in receiving service from freelancers?

9) What was the payment method?

10) Is there an opportunity to replace your recruitment methodology with the adoption of freelancers instead of full-time employment?

- **End words:**
  - How do you see the development of freelance market?
  - Is there anything else you would like to say about the topic?
  - Thank you for the interview!

The End of the Interview.

ANNEX 3: (Official Journal Algeria)

قانون رقم 22-23 مؤرخ في 24 جمادى الأولى عام 1444 الموافق 18 ديسمبر سنة 2022، يتضمن القانون الأساسي للمقاول الذاتي.

إنّ رئيس الجمهورية،

– بناء على الدستور، لا سيما المواد 61 و141 (الفقرة 2) و143 و144 (الفقرة 2) و145 و148 و198 منه،

– وبمقتضى الأمر رقم 75-58 المؤرخ في 20 رمضان عام 1395 الموافق 26 سبتمبر سنة 1975 والمتضمن القانون المدني، المعدل والمتمم،

– وبمقتضى القانون رقم 83-11 المؤرخ في 21 رمضان عام 1403 الموافق 2 يوليو سنة 1983 والمتعلق بالتأمينات الاجتماعية، المعدل والمتمم،

– وبمقتضى القانون رقم 83-12 المؤرخ في 21 رمضان عام 1403 الموافق 2 يوليو سنة 1983 والمتعلق بالتقاعد، المعدل والمتمم،

– وبمقتضى القانون رقم 83-14 المؤرخ في 21 رمضان عام 1403 الموافق 2 يوليو سنة 1983 والمتعلق بالتزامات المكلفين في مجال الضمان الاجتماعي، المعدل والمتمم،

– وبمقتضى القانون رقم 08-09 المؤرخ في 18 صفر عام 1429 الموافق 25 فبراير سنة 2008 والمتضمن قانون الاجراءات المدنية والإدارية، المعدل والمتمم،

– وبمقتضى القانون رقم 09-03 المؤرخ في 29 صفر عام 1430 الموافق 25 فبراير سنة 2009 والمتعلق بحماية المستهلك وقمع الغش، المعدل والمتمم،

– وبعد رأي مجلس الدولة،

– وبعد مصادقة البرلمان،

يصدر القانون الآتي نصه :

الفصل الأول

أحكام عامة

المادة الأولى : يهدف هذا القانون الذي يتضمن القانون الأساسي للمقاول الذاتي، إلى تحديد القواعد والشروط المطبقة على ممارسة نشاط المقاول الذاتي.

المادة 2 : يقصد بالمقاول الذاتي كل شخص طبيعي يمارس بصفة فردية نشاطا مربحا يندرج ضمن قائمة النشاطات المؤهلة للاستفادة من القانون الأساسي للمقاول الذاتي ولا يتعدى رقم أعماله السنوي حدا يحدد طبقا للتشريع المعمول به.

تستثنى من قائمة النشاطات المذكورة في الفقرة أعلاه، المهن الحرة والمهن والنشاطات المقننة والحرفية.

تحدد قائمة النشاطات المؤهلة للاستفادة من القانون الأساسي للمقاول الذاتي، عن طريق التنظيم.

المادة 3 : يؤهل للاستفادة من القانون الأساسي للمقاول الذاتي، كل شخص طبيعي يستوفي الشروط الآتية :

– بلوغ السن القانونية للعمل،

– أن يكون من جنسية جزائرية ومقيما بالجزائر أو أجنبيا مقيما وفقا للتشريع والتنظيم الساريي المفعول،

– أن يمارس نشاطا مدرجا في قائمة النشاطات المؤهلة للاستفادة من القانون الأساسي للمقاول الذاتي.

المادة 4 : يجب على كل شخص طبيعي استوفى الشروط المحددة في المادة 3 أعلاه، أن يقدم طلبا للتسجيل في السجل الوطني للمقاول الذاتي.

تحدد كيفيات تطبيق هذه المادة عن طريق التنظيم.

المادة 5 : يمسك السجل الوطني للمقاول الذاتي من قبل مؤسسة عمومية تدعى في صلب النص "المؤسسة".

تكلف المؤسسة خصوصا بمسك السجل المذكور أعلاه، ومرافقة ومراقبة أنشطة المقاول الذاتي.

يحدد تنظيم المؤسسة وسيرها عن طريق التنظيم.

المادة 6 : تسلّم المؤسسة للمقاول الذاتي "بطاقة المقاول الذاتي" تحمل رقم تسجيل وطني وحيد.

يحدد نموذج بطاقة المقاول الذاتي عن طريق التنظيم.

المادة 7 : يمكن المقاول الذاتي أن يقيم نشاطه في محل إقامته أو في فضاءات عمل مشتركة.

المادة 8 : لا يمكن حجز محل الإقامة الشخصية والعائلية الذي يستغل كمقر لنشاط المقاول الذاتي بسبب الديون أو الأضرار الناجمة عن نشاطه.

الفصل الثاني

الامتيازات الممنوحة للمقاول الذاتي

المادّة 9 : يستفيد المقاول الذاتي من الامتيازات الآتية :

– مسك محاسبة مبسطة على سجل مرقم ومؤشر عليه من قبل مصالح الضرائب المختصة إقليميا، تقيد فيه الإيرادات والنفقات المتعلقة بالنشاط،

– الإعفاء من إلزام القيد في السجل التجاري،

– نظام ضريبي تفضيلي،

– فتح حساب بنكي تجاري.

الفصل الثالث

التزامات المقاول الذاتي

المادّة 10 : يخضع المقاول الذاتي لإلزام الحصول على رقم التعريف الضريبي والتصريح لدى هيئة الضمان الاجتماعي لغير الأجراء.

المادّة 11 : يلزم كل مقاول ذاتي بما يأتي :

– إيداع طلب التسجيل في السجل الوطني للمقاول الذاتي لدى المؤسسة أو عن طريق المنصة الرقمية للمقاول الذاتي المنشأة لهذا الغرض من طرف المؤسسة،

– التصريح بالوجود لدى مصالح الضرائب المختصة إقليميا من أجل الحصول على رقم التعريف الضريبي في أجل ثلاثين (30) يوما، ابتداء من تاريخ الحصول على بطاقة المقاول الذاتي،

– إيداع لدى المؤسسة شهادة إدارية سنويا مسلّمة من مصلحة إدارة الضرائب تتضمن رقم الأعمال السنوي المحقق حسب النموذج المحدد من طرف المديرية العامة للضرائب،

– التصريح لدى المصالح الجبائية برقم الأعمال وتسديد المستحقات ذات الصلة طبقا للتشريع والتنظيم الجبائيين المعمول بهما.

المادّة 12 : يخضع المقاول الذاتي في إطار ممارسة نشاطاته إلى الأحكام التشريعية والتنظيمية السارية المفعول.

المادّة 13 : في حال تجاوز رقم الأعمال السنوي المحدد عن طريق التشريع المعمول به لمدة ثلاث (3) سنوات متتالية، فإنه يتعين على المقاول الذاتي التسجيل في السجل التجاري إذا كان يرغب في مواصلة نشاطه.

الفصل الرابع

الشطب من السجل الوطني للمقاول الذاتي

وإعادة التسجيل

المادّة 14 : يشطب المقاول الذاتي من السجل الوطني للمقاول الذاتي من طرف المؤسسة، لا سيما في الحالات الآتية :

– بناء على طلب منه يودعه لدى المؤسسة أو عن طريق المنصة الرقمية،

– في حالة عدم التصريح برقم الأعمال أو التصريح برقم أعمال منعدم خلال السنوات الثلاث (3) التي تلي التسجيل في السجل الوطني للمقاول الذاتي،

– في حال تجاوز حد رقم الأعمال السنوي المحدد عن طريق التشريع والتنظيم المعمول بهما، خلال ثلاث (3) سنوات متتالية،

– في حالة وجود أي مانع قانوني أو قضائي يحول دون ممارسة هذا النشاط،

– في حالة وفاة المقاول الذاتي.

المادّة 15 : يبلّغ قرار الشطب من طرف المؤسسة بكل وسيلة ممكنة، في أجل خمسة عشر (15) يوما، من تاريخ قرار الشطب، إلى كل من المقاول الذاتي ومصالح الضرائب وهيئة الضمان الاجتماعي والمؤسسة البنكية و/أو البريدية المعنية.

يؤدي الشطب من السجل الوطني للمقاول الذاتي إلى إلغاء بطاقة المقاول الذاتي.

المادّة 16 : يمكن المقاول الذاتي طلب إعادة تسجيله في السجل الوطني للمقاول الذاتي بعد إزالة أسباب الشطب، ودفع الديون الجبائية وشبه الجبائية المستحقة، إن وجدت.

المادّة 17 : ينشر هذا القانون في الجريدة الرسمية للجمهورية الجزائرية الديمقراطية الشّعبية.

حرر بالجزائر في 24 جمادى الأولى عام 1444 الموافق 18 ديسمبر سنة 2022.

عبد المجيد تبون

ANNEX 4: (Codes)

```
composer create-project --prefer-dist laravel/laravel
dzonlineworkers-app
```

Example Command to Create Project

```
    DB_CONNECTION=mysql
    DB_HOST=127.0.0.1
    DB_PORT=3306
    DB_DATABASE=dzonlineworker_db
    DB_USERNAME=root
    DB_PASSWORD=root
```

Code 4.1: Database Connection Configuration (.env file).

```
php artisan make:migration create_notifications_table
```

Creating a Migration for the Notifications Table.

```
use Illuminate\Database\Migrations\Migration;
use Illuminate\Database\Schema\Blueprint;
class CreateNotificationsTable extends Migration
{
    public function up()
    {
        Schema::create('notifications', function (Blueprint $table) {
            $table->id('notification_id');
            $table->unsignedBigInteger('user_id');
            $table->string('message', 500);
            $table->boolean('status');
            $table->datetime('date_created');
        });
    }
    public function down()
    {
        Schema::dropIfExists('notifications');
    }
}
```

Migration File from the Project (create_notifications_table.php).

```
php artisan migrate
```

Migration Execute Command.

```
php artisan migrate:rollback
```

Migration rollback Command.

```
php artisan migrate:reset
```

Migrations Reset Command.

```
php artisan make:model Project
```

Creating a Model for the Project Entity.

```php
namespace App\Models;

use Illuminate\Database\Eloquent\Factories\HasFactory;
use Illuminate\Database\Eloquent\Model;
use App\Models\User;

class Project extends Model
{
    use HasFactory;
    protected $table = 'projects';
    protected $primaryKey = 'project_id';
    protected $fillable = [
        'project_id',
        'title',
        'description',
        'budget',
        'start_date',
        'end_date',
        'client_id',
        'status'
    ];
    public $timestamps = false;
}
```

Example Model from the Project (Project.php).

```php
    //User.php
    public function projects()
    {
        return $this->hasMany(Project::class, 'client_id');
    }
```

```php
    //Projetc.php
    public function client()
    {
        return $this->belongsTo(User::class, 'client_id');
    }
```

Example Code for Relationship Between User and Project.

```
php artisan make:controller UserController --resource
```

Creating a Resourceful Controller for the User Entity.

```php
namespace App\Http\Controllers;

use Illuminate\Http\Request;
use App\Models\User;
use Illuminate\Support\Facades\Hash;

class UserController extends Controller
{
    public function index()
    {
        $users = user::all();
        return view('users.index', compact('users'));
    }

    public function create()
    {
        return view('users.create');
    }

    public function store(Request $request)
    {
        $userData = $request->all();
        $userData['password'] = Hash::make($userData['password']);
        User::create($userData);

        return redirect('/users');
    }

    public function show($id)
    {
        $user = user::where('id', $id)->first();
        return view('users.show', compact('user'));
    }

    public function edit($id)
    {
        $user = user::where('id', $id)->first();
        return view('users.edit', compact('user'));
    }

    public function update(Request $request, $id)
    {
```

```
        $user = User::findOrFail($id);
        $userData = $request->all();

        if (isset($userData['password'])) {
            $userData['password'] = Hash::make($userData['password']);
        }

        $user->update($userData);

        return redirect('/users');
    }

    public function destroy($id)
    {
        $user = user::where('id', $id);
        $user->delete();
        return redirect('/users');
    }
}
```

Code of User Controller Class (UserController.php).

```
use App\Http\Controllers\Api\AuthController;
use App\Http\Controllers\UserController;
use Illuminate\Http\Request;
use Illuminate\Support\Facades\Route;
use App\Http\Controllers\NotificationController;
use App\Http\Controllers\PortfolioController;
|--------------------------------------------------------------------------
| API Routes
|--------------------------------------------------------------------------
Route::middleware('auth:sanctum')->group(function () {
    Route::post('/logout', [AuthController::class, 'logout']);

    Route::get('/user', function (Request $request) {
        return $request->user();
    });
Route::apiResource('/users', UserController::class);
Route::get('/notifications', [NotificationController::class, 'index']);
Route::put('/notifications/{id}/mark-as-read',
[NotificationController::class, 'markAsRead']);
});
```

API Routes Configuration Example (api.php).

```
npx create-react-app dzonlineworkers-react
```

Creating a ReactJS App for the Freelancing Platform.

```
npm install axios react-router-dom
```

Creating a ReactJS App for the Freelancing Platform.

```
import {Link, Navigate, Outlet} from "react-router-dom";
import {useStateContext} from "../context/ContextProvider";
import axiosClient from "../axios-client.js";
import {useEffect} from "react";

export default function DefaultLayout() {
  const {user, token, setUser, setToken, notification} =
useStateContext();

  if (!token) {
    return <Navigate to="/login"/>
  }

  const onLogout = ev => {
    ev.preventDefault()

    axiosClient.post('/logout')
      .then(() => {
        setUser({})
        setToken(null)
      })
  }

  useEffect(() => {
    axiosClient.get('/user')
      .then(({data}) => {
         setUser(data)
      })
  }, [])

  return (
    <div id="defaultLayout">
      <aside>
        <Link to="/dashboard">Dashboard</Link>
        <Link to="/users">Users</Link>
      </aside>
      <div className="content">
        <header>
          <div>
```

```
            Header
          </div>
          <div>
            {user.name}    
            <a onClick={onLogout} className="btn-logout"
href="#">Logout</a>
          </div>
        </header>
        <main>
          <Outlet/>
        </main>
        {notification &&
          <div className="notification">
            {notification}
          </div>
        }
      </div>
    </div>
  )
}
```

Implementation of DefaultLayout Component (DefaultLayout.jsx)

```
import axios from "axios";
import { useStateContext } from "./context/ContextProvider.jsx";
const axiosClient = axios.create({
    baseURL: `${import.meta.env.VITE_API_BASE_URL}/api`,
});

axiosClient.interceptors.request.use((config) => {
    const token = localStorage.getItem("ACCESS_TOKEN");
    config.headers.Authorization = `Bearer ${token}`;
    return config;
});

axiosClient.interceptors.response.use(
    (response) => {
        return response;
    },
    (error) => {
        const { response } = error;
        if (response.status === 401) {
            localStorage.removeItem("ACCESS_TOKEN");
            // window.location.reload();
        } else if (response.status === 404) {
            //Show not found
```

```
        }
        throw error;
    }
);
export default axiosClient;
```

Creating an Axios Client for Backend Integration (axios-client.js)

```
./vendor/bin/phpunit
```

Running PHPUnit Test Suite.

```
php artisan make:test User_LoginTest
```

Creating User Login Test.

```
php artisan test
```

Creating User Login Test.

ANNEX 5: (For 1275 Order)

الجمهورية الجزائرية الديمقراطية الشعبية

وزارة التعليم العالي و البحث العلمي

جامعة محمد بوضياف - المسيلة

عنوان المشروع:

منصة رقمية لوساطات المقاولات الذاتية والأعمال الحرة في الجزائر

مشروع لنيل شهادة مؤسسة ناشئة في إطار القرار الوزاري 1275

الاسم التجاري

FENNEX

بطاقة معلومات:

حول فريق الاشراف وفريق العمل

1- فريق الاشراف:

فريق الاشراف	
المشرف الرئيسي:**(01)** البروفيسور. اخروف سمير	:التخصص إعلام آلي

2- فريق العمل:

فريق المشروع	التخصص	الكلية
الطالب: طاهري زكرياء	إعلام آلي	الرياضيات والإعلام آلي
الطالب: فيجل إسماعيل	إعلام آلي	الرياضيات والإعلام الآلي

1. فكرة المشروع (الحل المقترح)

- ✓ **مجال النشاط:** ستركز المنصة على الخدمات، مثل الكتابة والترجمة والتصميم الجرافيكي وتطوير الويب والتسويق. كما سيوفر فرصًا للعمل الحر في القطاعات الصناعية والتجارية بشكل قانوني في إطار القانون رقم 22-23 المتعلق بالقانون الأساسي للمقاول الذاتي.
- ✓ **كيف بدأت الفكرة وكيف تطورت؟** بدأت فكرة المنصة عندما رأينا العديد من أصحاب المهارات في الجزائر الذين كانوا يكافحون من أجل العثور على عمل ويعانون كذلك من أجل العمل بشكل قانوني ورسمي. أدركنا أن هناك حاجة لمنصة تربط هؤلاء الأشخاص بفرص العمل المستقل وبدء أعمالهم التجارية الخاصة بشكل قانوني.
- ✓ **ما الذي سوف نقوم به؟** سنقوم بتطوير المنصة وتسويقها للمستخدمين المحتملين. سنعمل أيضًا مع الشركات والمؤسسات لمساعدتهم في العثور على ممتهني العمل الحر والمقاولين الذاتيين.
- ✓ **كيف سيكون ذلك؟** ستكون المنصة موقعًا سهل الاستخدام يتيح للمستخدمين إنشاء ملفات تعريف وطرح المشاريع والعثور على العاملين الأحرار والمقاولين الذاتيين الخاص. ستوفر المنصة أيضًا الموارد البشرية وفريق دعم العملاء لمساعدة المستخدمين على النجاح في مشاريعهم.
- ✓ **من الذي سينجز ذلك؟** سنكون المطورين الأساسيين للمنصة، لكننا سنحتاج أيضًا إلى مساعدة من فريق من المصممين والمسوقين وممثلي دعم العملاء.
- ✓ **أين سيتم إنجازه؟** سيتم تطوير المنصة واستضافتها في الجزائر.

2. القيم المقترحة

يمكن أن تنشأ القيم المقترحة أو المقدمة للزبائن من خلال العناصر التالية:

- **الحداثة:** نؤمن بتلبية احتياجات جديدة تمامًا لم تكن هناك عروض مماثلة لها من قبل خاصة فيما يتعلق بالجانب القانوني داخل السوق الجزائري. نريد أن ننشئ منصة تبتكر باستمرار وتوفر فرصًا جديدة للموظفين المستقلين والعاملين لحسابهم الخاص، وستكون كذلك أول منصة تعمل مع المقاولين الذاتيين في الجزائر.
- **الأداء:** نعتقد أن أداء منصتنا يجب أن يكون أعلى أو مساويًا لتوقعات العملاء. نريد توفير منصة موثوقة وفعالة وسهلة الاستخدام.
- **التكييف:** نؤمن بالمرونة في التعديل والتغيير لتكييف المنتجات والخدمات حسب الاحتياجات المحددة للعملاء. نريد أن نكون منصة تستجيب لاحتياجات مستخدمينا ويمكن أن تتكيف مع ظروف السوق المتغيرة.

- **إنجاز المهمة:** نؤمن بمساعدة العميل على إكمال مهام محددة. نريد أن نطور نظامًا أساسيًا يوفر للمستخدمين الموارد البشرية والدعم التقني الذي يحتاجون إليه للنجاح في مشاريعهم الخاصة داخل المنصة.
- **التصميم:** نؤمن بجعل التصميمات متوافقة مع رغبات وشروط العميل. نريد أن نكوّن منصة سهلة الاستخدام وتلبي احتياجات مستخدمينا.
- **خفض التكاليف:** نحن نؤمن بمساعدة العملاء على تقليل تكاليفهم. نريد أن نصمم نظامًا أساسيًا يوفر للمستخدمين إمكانية الوصول إلى الخدمات والموارد بأسعار معقولة.
- **الحد من المخاطر:** نؤمن بتقليل احتمالية تعرض العملاء للمخاطر عند شراء الخدمات من خلال تقديم الضمانات. نريد أن ننشئ منصة موثوقة وجديرة بالثقة.
- **سهولة الوصول:** نؤمن بإتاحة المنتجات للعملاء الذين لم يتمكنوا من الوصول إليها من قبل. نريد أن نبتكر منصة شاملة توفر الفرص للجميع.
- **الملاءمة/سهولة الاستخدام:** نؤمن بأن توفير سهولة الاستخدام عامل أساسي في نجاح المنصة. نريد أن نستحدث نظامًا أساسيًا سهل الاستخدام ويسهل على المستخدمين العثور على الخدمات والموارد التي يحتاجون إليها.

3. <u>فريق العمل :</u>

- **المهارات والمؤهلات التعليمية:** يتكون الفريق طلبة ذوي خبرة واختصاص في المجال ولديهم مجموعة واسعة من المهارات والمؤهلات التعليمية. يضم الفريق بشكل مبدئي مطوري البرامج والمصممين وسيضم لاحقا المسوقين وممثلي دعم العملاء.

- **الدورات التدريبية التي تم الحصول عليها:** تلقى الفريق تعليما ممتازا في مجالات علوم الحاسوب، هندسة البرمجيات ونظم المعلوماتية. خاصة فيما يتعلق بتطوير البرمجيات والتصميم. يتعلم الفريق أيضًا ويتطور باستمرار، ويبحثون دائمًا عن طرق جديدة لتحسين مهاراتهم ومعرفتهم.

- **الأدوار في المشروع:** سيلعب كل من أعضاء الفريق دورًا حيويًا في المشروع. سيقوم مطورو البرامج بتطوير النظام الأساسي، وسيقوم المصممون بإنشاء واجهة المستخدم، وسيقوم المسوقون بالترويج للمنصة، وسيساعد ممثلو دعم العملاء المستخدمين في حل أي مشاكل قد يواجهونها.

- **التنظيم المناسب (توزيع المهام والمسؤوليات):** سيتم تنظيم الفريق بطريقة أكثر فاعلية للمشروع. سيتم توزيع المهام والمسؤوليات بالتساوي بين أعضاء الفريق، وسيعمل الفريق معًا لضمان اكتمال المشروع في الوقت المحدد وفي حدود الميزانية.

- **طرق التفاعل والتواصل بين الفريق:** سيستخدم الفريق مجموعة متنوعة من الأساليب للتفاعل والتواصل مع بعضهم البعض. سيجتمع الفريق بانتظام لمناقشة التقدم، وسيستخدمون أيضًا البريد الإلكتروني والرسائل الفورية ومؤتمرات الفيديو للتواصل مع بعضهم البعض.

4. أهداف المشروع :

- توفير منصة تربط ممتهني العمل الحر والمقاولين الذاتيين الخاص مع الشركات والمؤسسات التي تحتاج إلى خدماتهم.
- تطوير نظام أساسي يتيح للمستخدمين إنشاء ملفات تعريف ونشر الوظائف والعثور على المستقلين والعاملين لحسابهم الخاص.
- ابتكار منصة سهلة الاستخدام وتلبي احتياجات المستخدمين.
- إقامة وسيلة ميسورة التكلفة ومتاحة للجميع.
- اصدار منصة موثوقة وجديرة بالثقة.
- استحداث منصة مبتكرة ومتطورة باستمرار.

5. الجدول الزمني لتحقيق المشروع :

الأشهر

			1	2	3	4	5	6- 7	8
1		تحديد أهداف المشروع	✓	✓					
2		البحث ودراسة السوق		✓	✓				
3		تصميم وهندسة المنصة		✓	✓	✓			
4		تطوير وبرمجة المنصة			✓	✓	✓		
5		الوصول إلى النموذج الأولي والحصول على وسم المشروع المبتكر						✓	
6		إطلاق المنصة في السوق							✓

الأعمال

6. عرض القطاع السوقي :

- ✓ **السوق المحتمل:** ا السوق المحتمل للعمل الحر والعمل الحر في الجزائر كبير ومتنامي. وبحسب البنك الدولي، فإن نسبة العمالة الذاتية في الجزائر تبلغ 30.53٪، وهي أعلى من المتوسط العالمي البالغ 27.3٪. يشمل السوق المحتمل للمنصة ممتهني العمل الحر والمقاولين الذاتين والشركات والمؤسسات في الجزائر.
- ✓ **السوق المستهدف (الشريحة):** السوق المستهدف للمنصة هو ممتهني العمل الحر والمقولين الذاتين في الجزائر وكذلك الشركات والزبائن الذين يحتاجون خدماتهم. هذا السوق كبير ومتنامي، ولا تخدمه المنصات الحالية. ستوفر المنصة للعاملين لحسابهم الخاص والمقاولين الذاتيين للعثور على عمل والتواصل مع الشركات وتنمية أعمالهم.
- ✓ **تم اختيار السوق المستهدف للأسباب التالية:**
  - السوق كبير ونموه متسارع.
  - يوجد نقص كبير في المنصات التي توفر هذه الخدمات.
  - هناك طلب قوي على خدمات المنصة.
- ✓ **تتمتع المنصة بميزة تنافسية في هذا السوق:** تتمتع المنصة بإمكانية إبرام عقود شراء مع بعض العملاء المهمين، مثل الشركات والمؤسسات الكبرى في الجزائر. من المرجح أن يكون هؤلاء العملاء مهتمين بخدمات المنصة لأنها يمكن أن تساعدهم في توفير الوقت والمال، ويمكن أن تساعدهم في العثور على أفضل العاملين لحسابهم الخاص والعاملين لحسابهم الخاص لتلبية احتياجاتهم.

7. <u>قياس شدة المنافسة :</u>

- ✓ **المنافسون المباشرون:** بالنسبة للسوق الجزائري فلا توجد منصة جزائرية تشكل منافسة حقيقية. أما بالنسبة للسوق العالمية فتتضمن هذه المنصات **Upwork** و **Fiverr** و **Freelancer.com** و خمسات.
- ✓ **المنافسون غير المباشرين:** المنافسون غير المباشرين للمنصة هم منصات أخرى تقدم خدمات لأصحاب الأعمال الحرة والعاملين لحسابهم الخاص، مثل منصات الدفع عبر الإنترنت، وأدوات إدارة المشاريع، ومنصات التسويق،
- ✓ **الأرقام وحصص السوق:** عدد المنافسين المباشرين صغير، لكن الحصة السوقية كبيرة. المنصة لديها القدرة على الاستحواذ على حصة كبيرة من السوق.
- ✓ **نقاط القوة والضعف:** تشمل نقاط القوة المنافسين في النظام الأساسي تصميمه سهل الاستخدام، وأسعاره المعقولة، ومجموعة واسعة من الخدمات. تشمل نقاط الضعف في النظام الأساسي افتقارها إلى الاعتراف بالعلامة التجارية ومحدودية وصولها إلى السوق الجزائرية.

8. التكاليف والأعباء :

✓ **التكاليف الثابتة:**

- **تطوير موقع الويب:** التكلفة الأولية لتطوير موقع الويب الخاص بالمنصة، بما في ذلك التصميم والترميز والاختبار.
- **البنية التحتية:** الاستثمارات في الخوادم والاستضافة والبنية التحتية التكنولوجية الأخرى لضمان التشغيل السلس.
- **الامتثال القانوني والتنظيمي:** النفقات المتعلقة بالحصول على التراخيص والتصاريح اللازمة والامتثال للقوانين واللوائح الجزائرية.
- **التسويق والترويج:** الأموال المخصصة للحملات التسويقية والإعلان الرقمي واكتساب المستخدمين لجذب المستقلين والعملاء إلى المنصة.
- **الموظفون والرواتب:** التكاليف المرتبطة بتعيين فريق لصيانة النظام الأساسي ودعم العملاء وتطوير الأعمال.

✓ **التكاليف المتغيرة:**

- **رسوم المعاملات:** نسبة مئوية أو مبلغ ثابت يتم فرضه على المعاملات الناجحة التي تتم عبر المنصة.
- **رسوم بوابة الدفع:** الرسوم التي يتم تكبدها عند تسهيل معاملات الدفع الآمنة بين المستقلين والعملاء.
- **دعم العملاء:** النفقات المتغيرة لتقديم خدمات دعم العملاء الفعالة لكل من العاملين لحسابهم الخاص والعملاء.
- **ترقيات النظام الأساسي وصيانته:** التكاليف المستمرة للحفاظ على وظائف النظام الأساسي والأمان وتجربة المستخدم وتحسينها.

9. رقم الاعمال :

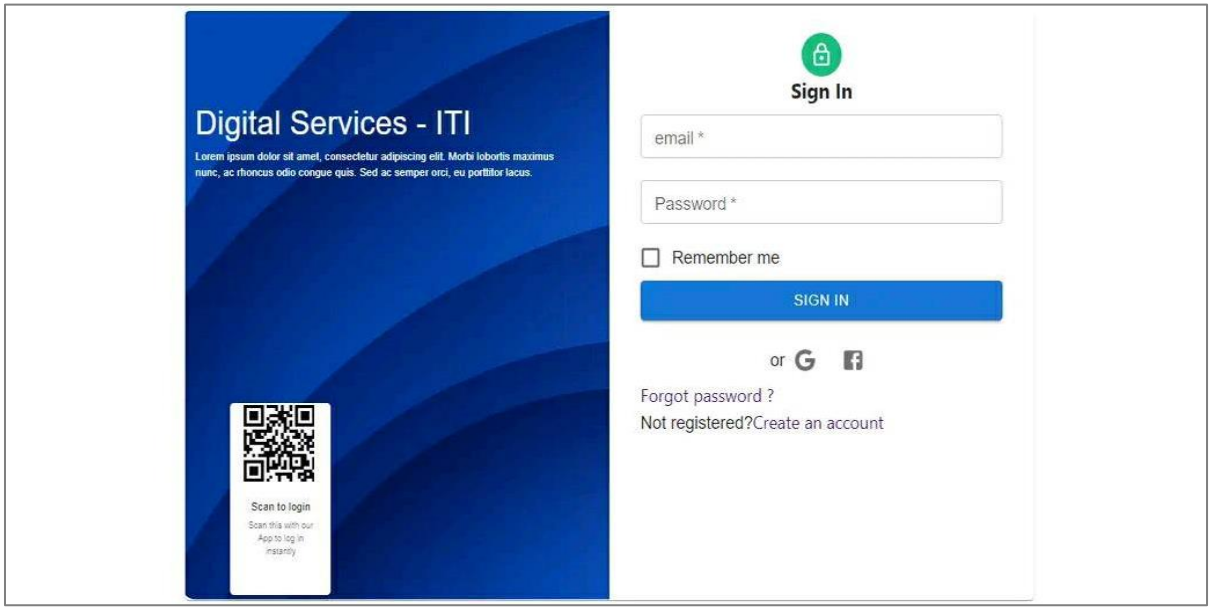
✓ سيتم إنشاء معدل رقم أعمال المنصة من خلال الرسوم المفروضة على المعاملات الناجحة بين المستقلين والعملاء (من 5% إلى 20%). سيتم احتساب هذه الرسوم كنسبة مئوية من القيمة الإجمالية للخدمات المقدمة من خلال المنصة.

✓ لتقدير حجم الأعمال المحتمل ، نحتاج إلى النظر في عوامل مثل حجم سوق العمل المستقل في الجزائر ، والعدد المتوقع من العاملين الأحرار والمقاولين الذاتيين المسجلين والعملاء على المنصة ، ومتوسط قيمة المعاملات. سيتم إجراء بحث وتحليل شامل للسوق للتنبؤ بدقة حجم الأعمال.

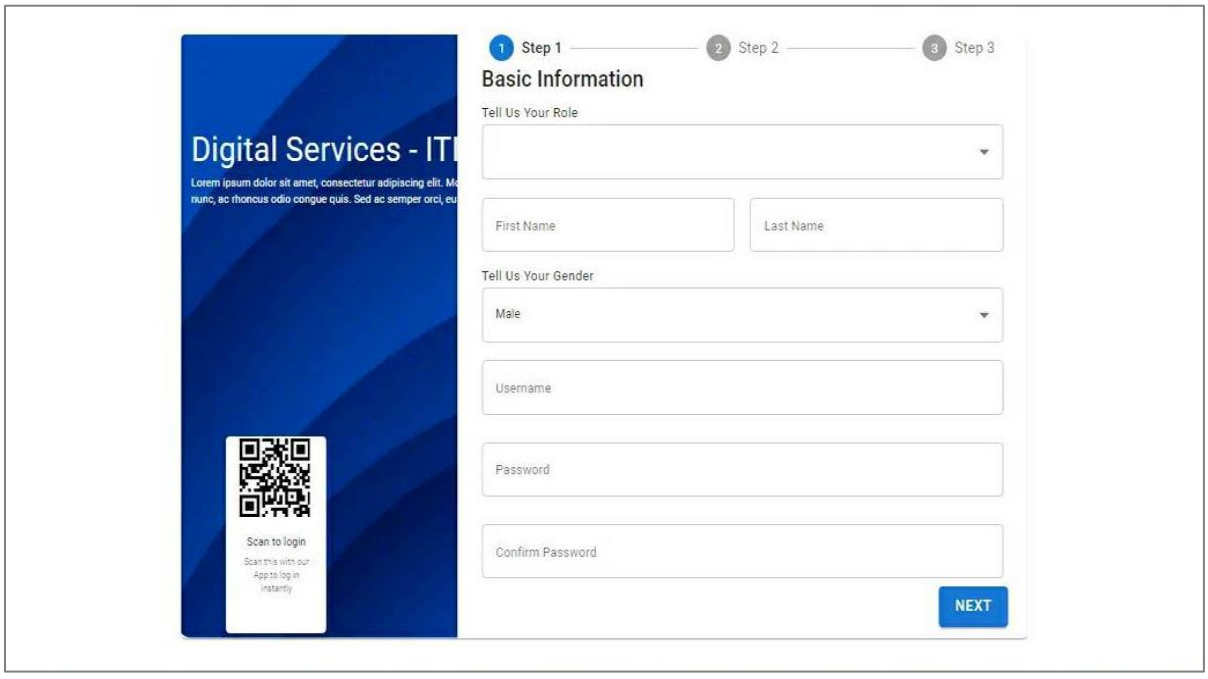
- ✓ من المهم ملاحظة أن نجاح النظام الأساسي وقدرته على جذب قاعدة مستخدمين كبيرة سيكون أمرًا حاسمًا في تحديد رقم الأعمال الإجمالي. ستكون استراتيجيات التسويق الفعالة والواجهات سهلة الاستخدام ونظام الدفع الموثوق أمرًا ضروريًا لتعزيز الثقة وتشجيع حجم كبير من المعاملات.

10. النموذج الاولي التجريبي:

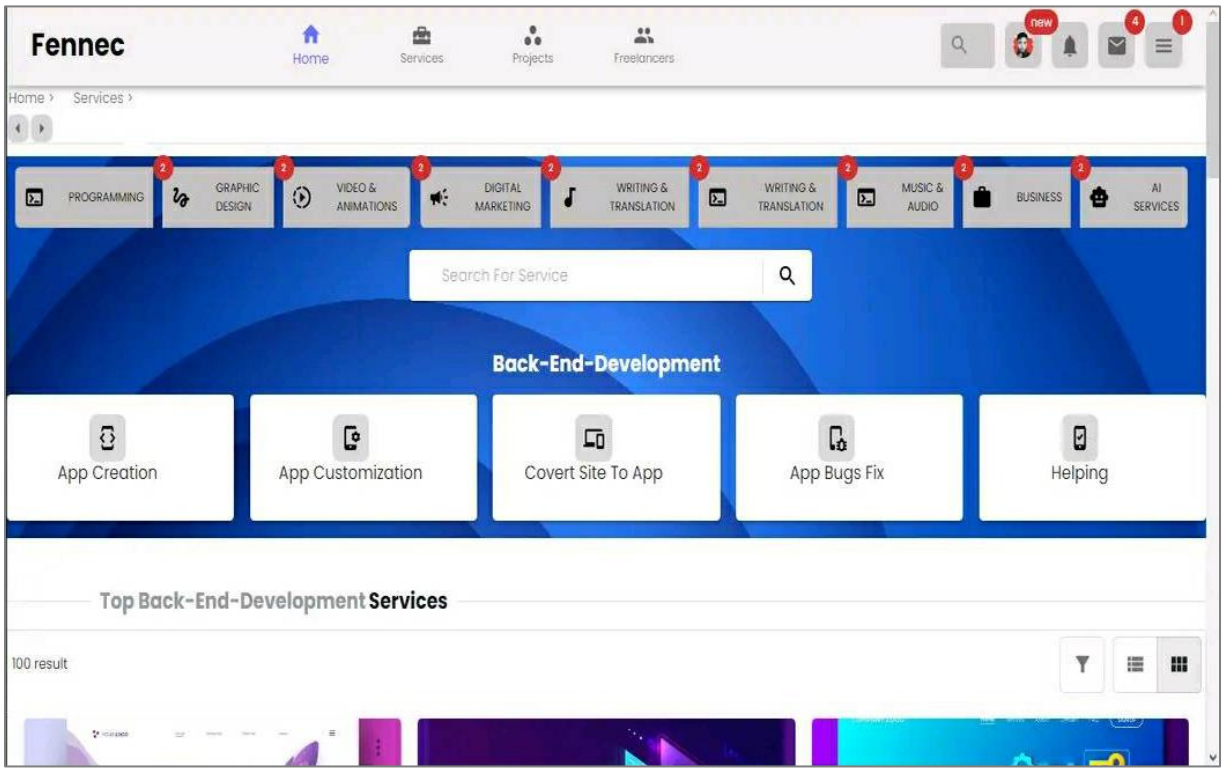
تعرض الأشكال التالية الشكل النهائي لبعض صفحات النموذج الأولي للمنصة.



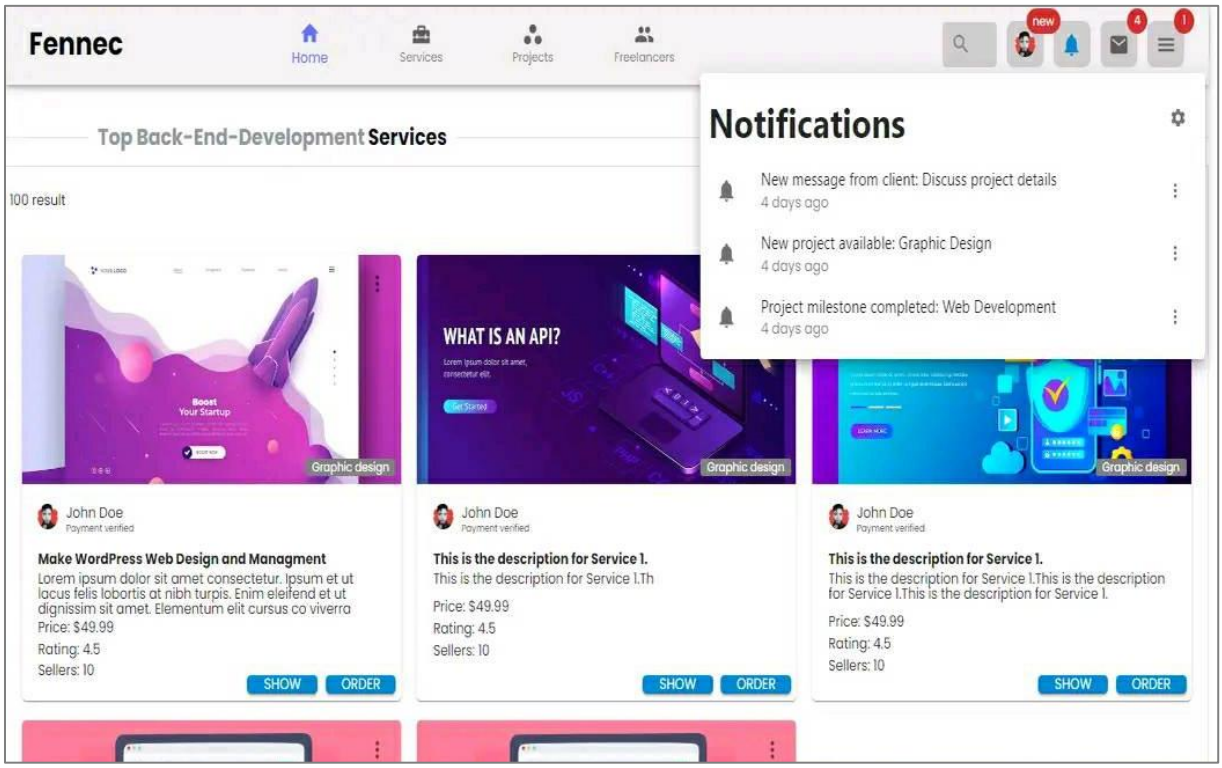
الشكل 1: صفحة تسجيل الدخول.



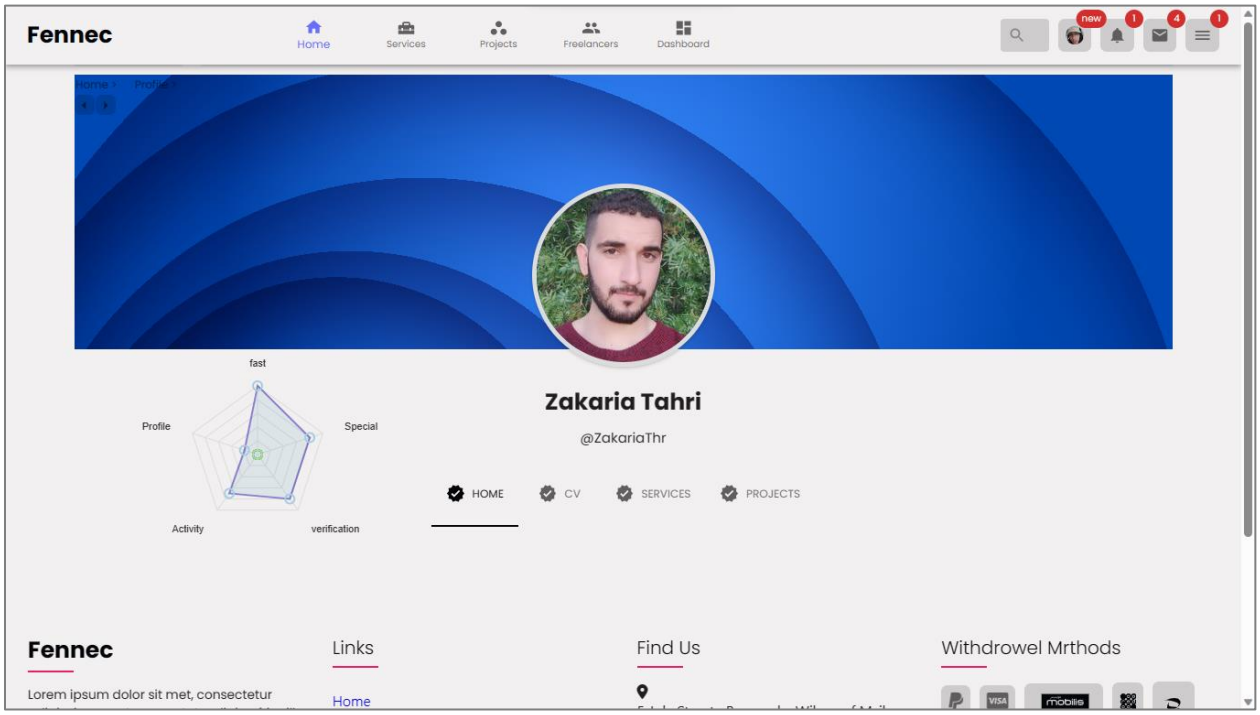
الشكل 2: صفحة إنشاء الحساب.



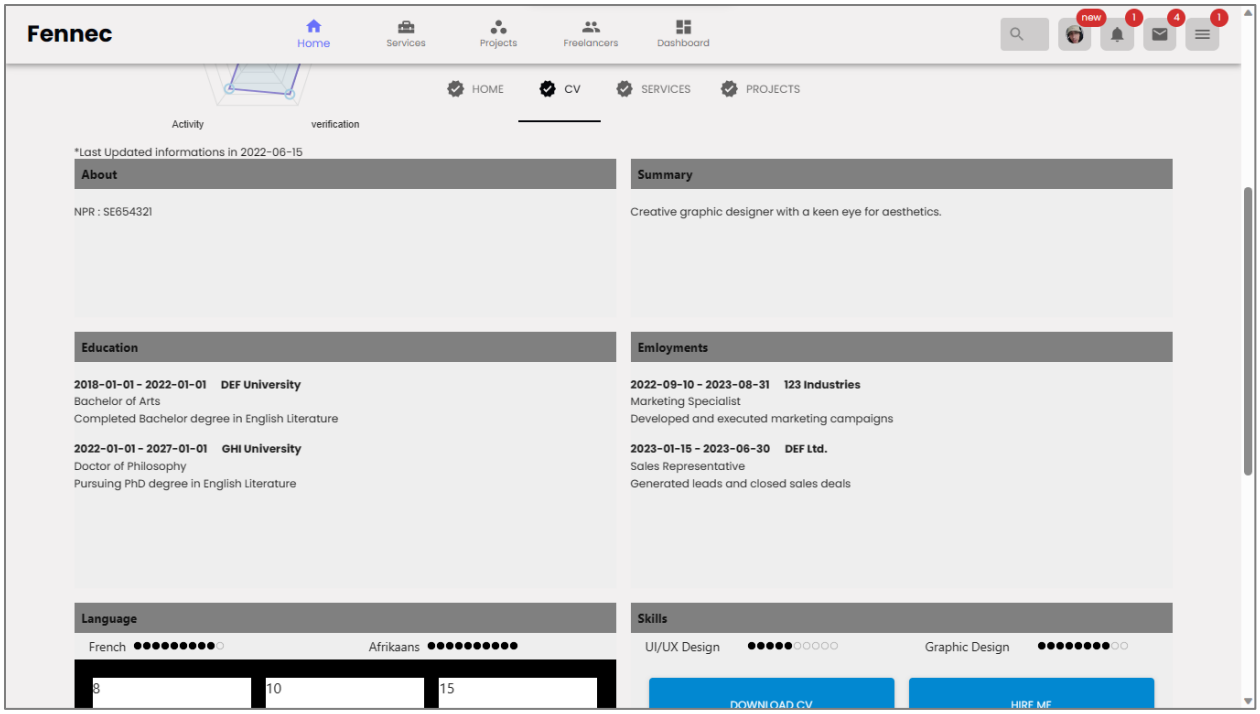
الشكل 3: الصفحة الرئيسية.



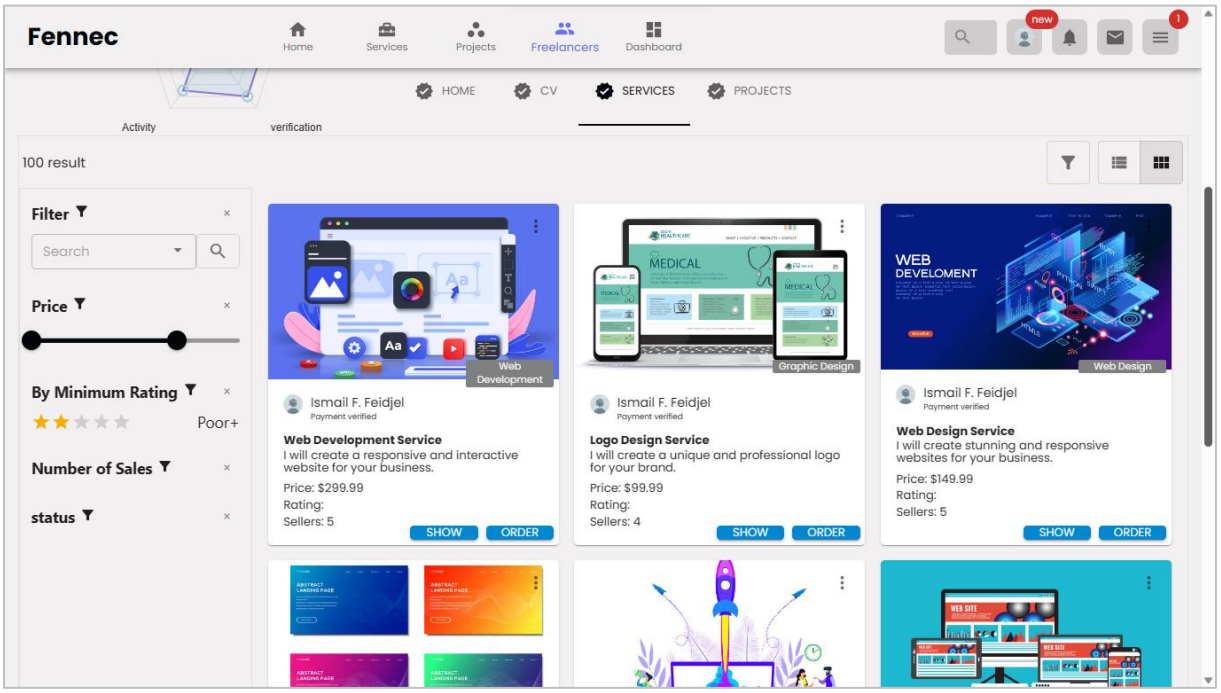
الشكل 4: نافذة الإشعارات.



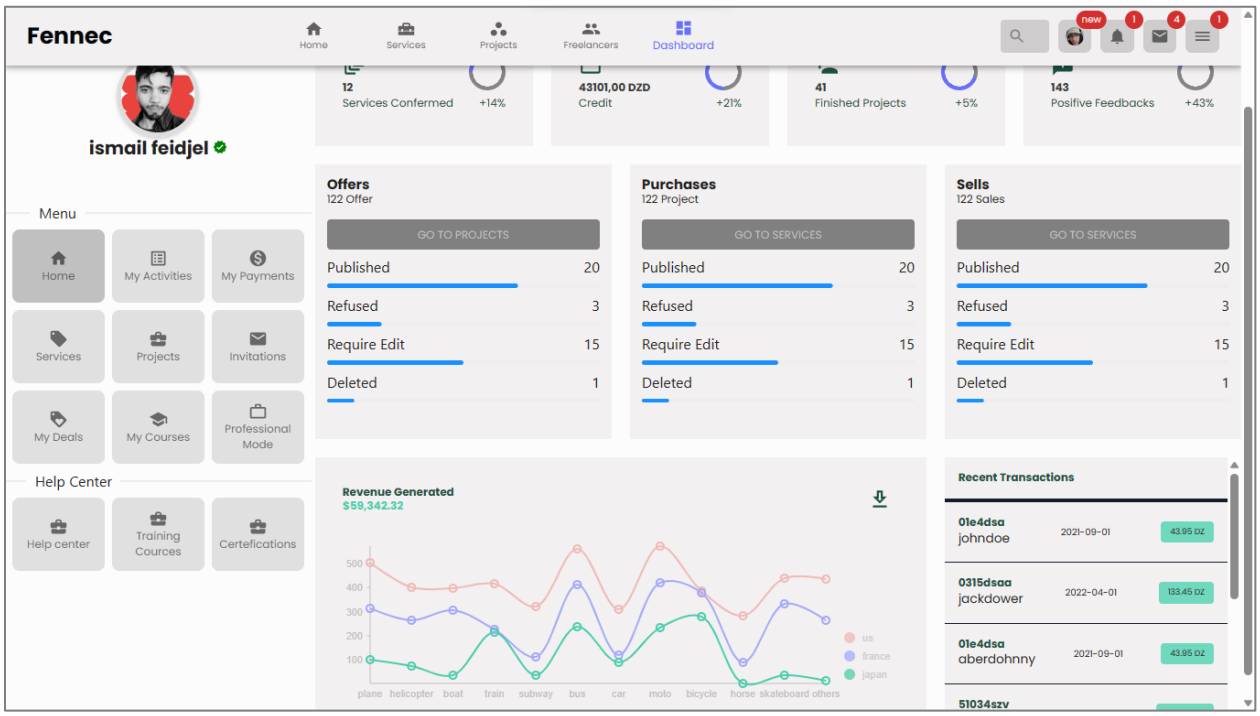
الشكل 5: صفحة البروفايل.



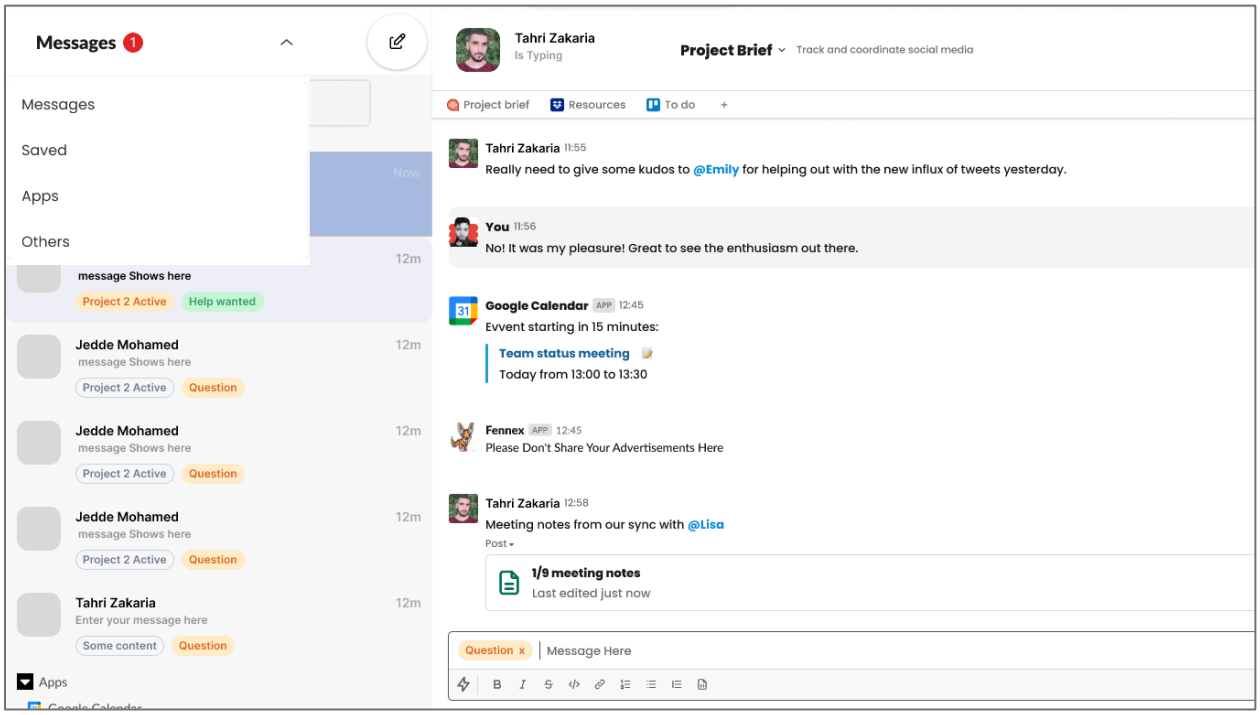
الشكل 6: صفحة البورت فوليو.



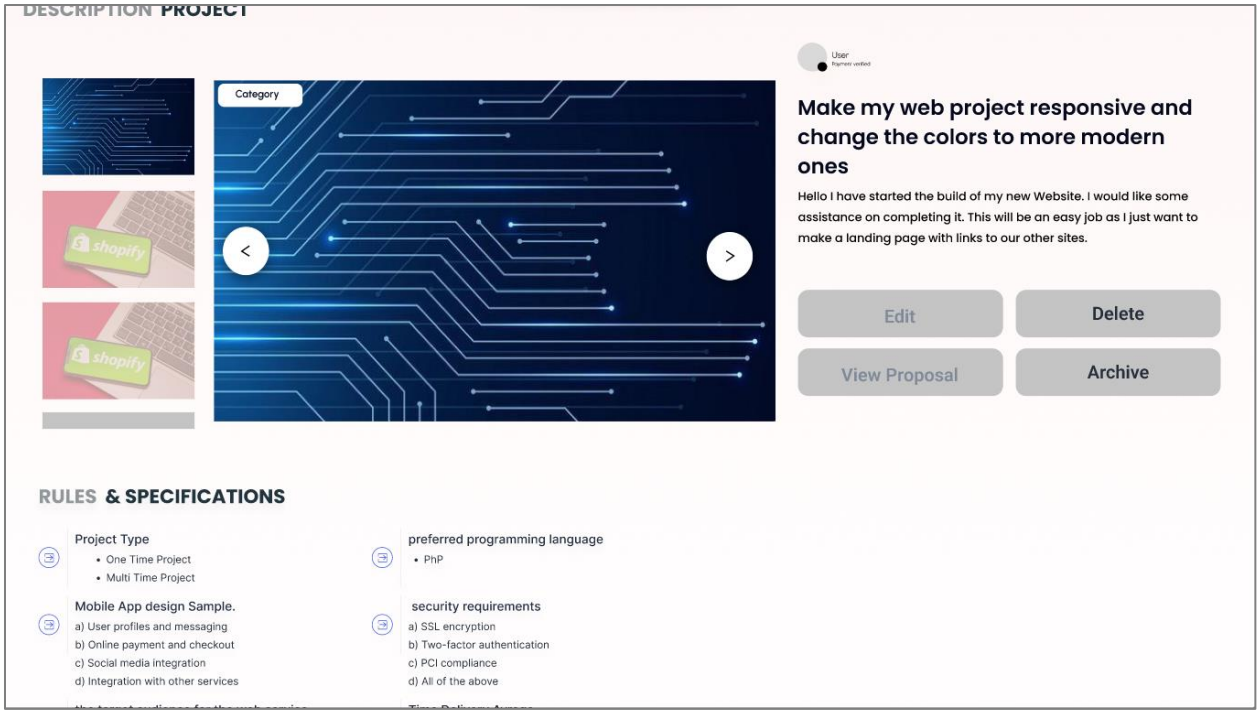
الشكل 7: صفحة الخدمات.



الشكل 8: صفحة لوحة القيادة.



الشكل 9: صفحة المراسلات.



الصفحة 10: صفحة تفاصيل المشروع.

مخطط نموذج العمل التجاري: FENNEX (منصة رقمية لوساطات المقاولات الذاتية والأعمال الحرة الرقمية في الجزائر)

الشريحة المستهدفة

ستستهدف المنصة الشركات الصغيرة والمتوسطة الحجم والشركات الناشئة ورجال الأعمال وكذلك الأشخاص البسطاء الذين يحتاجون إلى الاستعانة بمصادر خارجية في العمل خاصة أصحاب المهارات المحترفين في المجالات الرقمية. ستستهدف المنصة أيضًا المقاولين الذاتيين، وأصحاب الأعمال الحرة الذين يبحثون عن فرص عمل جديدة وطريقة مبسطة لإدارة مشاريعهم.

العلاقات مع العملاء

توفير منصة سهلة الاستخدام وفعالة، وتقديم دعم خدمة العملاء لكل من العملاء والمقاولين الذاتيين وأصحاب الأعمال الحرة، وبناء الثقة والسمعة من خلال أنظمة دفع موثوقة وعمليات تسوية المنازعات العادلة.

قنوات التواصل

الإعلان عبر وسائل التواصل الاجتماعي وتسويق المحتوى لجذب عملاء جدد ومقاولين ذاتيين وأصحاب أعمال حرة، وبرنامج إحالة لتحفيز العملاء الحاليين والمقاولين الذاتيين وأصحاب الأعمال الحرة على دعوة أقرانهم، وتحسين محرك البحث لزيادة ظهور النظام الأساسي وجذب العملاء للمنصة.

القيمة المضافة

توفير منصة تمكن للشركات من العثور بسهولة على المقاولين الذاتيين وأصحاب الأعمال الحرة وتوظيفهم لإكمال المشاريع قصيرة الأجل أو الأعمال الجارية في إطار قانوني ورسمي مواكبةً للقانون الرئاسي رقم 22-23 المتضمن القانون الأساسي للمقاول الذاتي. ستوفر المنصة مجموعة من الميزات، بما في ذلك أدوات إدارة المشاريع، والمراسلات، وتتبع الوقت، والفواتير وغيرها.

الأنشطة الرئيسية

ستركز المنصة على تطوير وصيانة منصة سهلة الاستخدام وآمنة توفر مجموعة من الميزات للمقاولين الذاتيين وأصحاب العمل الحر وكذلك الشركات. ستستثمر المنصة أيضًا في التسويق والإعلان لجذب مستخدمين جدد وبناء الوعي بالعلامة التجارية.

الموارد الرئيسية

تشمل الموارد الرئيسية للمنصة فريقًا من المطورين والمصممين ذوي الخبرة للحفاظ على المنصة وتحسينها، وموظفي خدمة العملاء لدعم المستخدمين والفصل في الخصومات الحاصلة في المنصة، وموارد التسويق والإعلان للترويج للمنصة وكذلك الأجهزة المستخدمة في التطوير والصيانة.

الشركاء الرئيسيون

ستشترك المنصة مع بوابات الدفع الالكتروني لتسهيل المدفوعات الآمنة والفعالة بين العملاء والمقاولين الذاتيين وأصحاب الأعمال الحرة. ستشترك المنصة أيضًا صندوق تمويل المؤسسات وكذلك مع المجتمعات عبر الإنترنت لبناء شبكة من المقاولين الذاتيين وأصحاب العمل الحر والشركات.

مصادر الإيرادات

ستحقق المنصة إيرادات من خلال نموذج قائم على العمولة. على سبيل المثال، ستفرض المنصة عمولة على كل مشروع يتم إنجازه، وتتراوح عادةً من 5٪ إلى 20٪ من قيمة المشروع.

هيكل التكاليف

ستشمل تكاليف المنصة في المقام الأول التكاليف المتغيرة مثل تطوير البرمجيات وصيانتها، وخدمة العملاء والدعم، وشراء الأجهزة وصيانتها. والتكاليف المتغيرة والتسويق والإعلان، والنفقات الإدارية الخاصة بالضرائب والتأمين وغيرها. ستحتاج المنصة أيضًا إلى الاستثمار في الأمن وحماية البيانات لضمان أمن بيانات المستخدمين.

Abstract:

This thesis explores the landscape of freelancing platforms and aims to develop an effective and efficient platform for freelancers and self-employers in Algeria. The research provides a comprehensive literature review of freelancing platforms, identifies their advantages and limitations, and proposes solutions to address the challenges faced by freelancers and self-employers. The methodology encompasses data collection and analysis, based on the findings, the system requirements and design are established, followed by the implementation and testing of the platform. The evaluation highlights the platform's final look, system performance, limitations, and future aspirations. The study contributes to the development of a thriving freelancing ecosystem and a successful startup in the Algerian market, benefiting freelancers and clients alike.

الملخص:

تقدم هذه المذكرة نظرة كاملة على منصات العمل الحر وتهدف إلى تطوير منصة ناجحة وفعالة لأصحاب العمل الحر والمقاولين الذاتين في الجزائر. يتوفر البحث على مراجعة شاملة للمنصات العمل الحر وتحدد مزاياها وقيودها، وتقترح حلولًا لمعالجة التحديات التي يواجهها أصحاب العمل الحر والمقاولين الذاتيين. تتضمن المنهجية جمع البيانات وتحليلها. واستنادًا إلى النتائج المقدمة، يتم تحديد متطلبات النظام وتصميمه، يليها التطوير واختبار المنصة. مع طرح تقييم على الشكل النهائي للمنصة وأداء النظام والقيود التي واجهت تطوير المنصة والتطرق بعدها للطموحات المستقبلية. تسهم الدراسة في تطوير بيئة عمل حر مزدهرة وشركة ناشئة ناجحة في السوق الجزائري، مما يعود بالفائدة على أصحاب العمل الحر والزبائن على حد سواء.