PAK FUEL



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| --- | --- |
| Kaleem Uallah |  |
| Waleed Ahmed | 52916 |
| Muzamil Khan | 53643 |

DEPARTMENT OF COMPUTER SCIENCE

**BALOCHISTAN UNIVERSITY OF INFORMATION TECHNOLOGY, ENGINEERING, AND MANAGEMENT SCIENCES**

**Fall 2023**

PAK FUEL



By

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| --- | --- |
| Kaleemullah | CMS ID |
| Waleed Ahmed | 52916 |
| Muzamil khan | 53643 |

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| Supervisor: Dr. Mahmood Baryalai  Co-Supervisor: Co-Supervisor Name |

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A project report submitted to the

**Department of Computer Science**

in partial fulfillment of requirements for the degree of Bachelor of Science in Computer Science at Balochistan University of Information Technology, Engineering and Management Sciences

Fall 2023

Signature of Supervisor: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of FYP Coordinator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of Co-Supervisor (If any): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# **Undertaking**

It is certified that this work titled “PAK FUEL” is our own work. The work has not been presented elsewhere for assessment. Where material has been used from other sources it has been properly acknowledged / referred to.

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Kaleem ullah

CMS

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Waleed Ahmed

52916

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Muzamil khan

53643

# **Acknowledgements**

We express our deepest gratitude to our supervisor, Dr. Mehmood Baryalai, whose guidance and insights have been invaluable throughout the development of Pak Fuel. His unwavering support and expertise have greatly enriched our project. Special thanks to our dedicated team members, for their collaborative efforts and commitment to excellence. Each team member's unique contributions have played a crucial role in the success of this endeavor. We extend appreciation to the academic staff and mentors who provided assistance and feedback, contributing to the refinement of our project.

# **Dedication**

This project is truly dedicated to all of the people who have supported and believed in us throughout the entire experience, including our instructor, friends, fellow students, family members, and anybody else who has shown us that we can succeed. We dedicate this to our loved ones.

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| *\*All information in this form should be typed.* **Date:** 28 / November / 2023 | | | | |
| **1. Project Title:** *Pak Fuel (Digitalizing Payment and Service System for Vehicle Fueling and Maintenance)* | | | | |
| **2. Supervisor Details:** | | | | |
| **Supervisor Name** | Dr. Mehmood Baryalai | | | |
| **Designation** | Chair Person | | | |
| **Department** | Computer Science | | | |
| **Research Group (if any)** |  | | | |
| **3. Group Members:** | | | | |
| **Name** | **CMS ID** | **CNIC No.** | **Contact No.** | **Email** |
| **Kaleemuallah** |  |  |  |  |
| **Waleed Ahmed** | 52916 |  |  |  |
| **Muzamil khan** | 53643 | 5440026216989 | 03108236177 | muzamilkakar16@gmail.com |

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| C:\Users\Fast\Desktop\Balochistan University Logo.jpg | **Balochistan University of Information Technology, Engineering and Management Sciences, Quetta** |
| BUITEMS | *Quality & Excellence in Education* |
| **Final Year Project Intellectual Property Form, FICT** | |
| *Project Title: Pak Fuel (Digitalizing Payment and Service System for Vehicle Fueling and Maintenance)* | |

**Declaration**

We agree that the information related to the project titled Pak Fuel (Digitalizing Payment and Service System for Vehicle Fueling and Maintenance) under the supervision of Dr.Mehmood Baryalai will be kept confidential. This includes:

1. All the technical and scientific data relating to project discussions, research, design and simulation, processes, and business and/or marketing plans that are developed or are under development.
2. This information will be disclosed solely to individuals who have a signed non-disclosure agreement with, or who have express approval from **Dr.Mehmood Baryalai** and **\_\_\_\_\_(HOD Name)\_\_\_\_\_**, in written, to receive this information.

Understood and agreed on the \_\_\_(nth day)\_\_\_ of \_\_\_\_\_\_(month)\_\_\_\_\_\_\_ in \_\_\_\_(year)\_\_\_\_.

|  |  |
| --- | --- |
| **4. Group Members Signature:** | |
| **Members’ Name** | **Signatures** |
| Kaleemullah |  |
| Waleed Ahmed |  |
| Muzamil khan |  |

|  |  |  |
| --- | --- | --- |
| **5. Supervisor Remarks:** | | |
| **Supervisor Name** | **Remarks** | **Signature/Stamp** |
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# **Abstract**

The **PAK FUEL** project marks an innovative attempt composed to redefine the fuel purchasing landscape. In the pursuit of transforming user experiences within the fuel industry, our project integrates innovative technologies and user-centric features. The overarching goal is to streamline transactions, introduce captivating loyalty programs, and deliver an unparalleled fueling experience.

In response to the inefficiencies and inconveniences widespread in traditional fuel purchase processes, **PAK FUEL** emerges as a catalyst for change. The project envisions a seamless user journey, allowing individuals to effortlessly select and pay for their desired fuel amount through a dedicated mobile application, eliminating the constraints of conventional payment methods. A key aspect of **PAK FUEL** revolves around the implementation of dynamic loyalty programs. Users engaging with the platform will have the opportunity to accrue points or enjoy discounts based on their transactions, fostering enduring relationships between consumers and petrol station proprietors.

The user interface design stands as a foundation stone, prioritizing intuitive and aesthetically pleasing interactions. Transparent and secure transaction processing workflows form the backbone of **PAK FUEL**. Leveraging reliable payment gateways, transaction logs, and real-time notifications, the project addresses the imperative need for accountability, simultaneously mitigating the risk of theft or fraud.

In conclusion, **PAK FUEL** encapsulates a vision for a future where fueling becomes a seamlessly integrated and rewarding experience. This abstract provides a succinct overview of the project's core objectives, emphasizing its potential to redefine industry norms and deliver a superior fueling experience for a diverse audience.

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**Chapter No. 1**

# **INTRODUCTION**

## **Background**

The **PAK FUEL** project is situated within the realm of the fuel and service industries, aiming to revolutionize the traditional processes associated with fuel purchasing at petrol stations. The prevalent methods, often dependent on cash transactions at the pump, have resulted in a suboptimal user experience and presented challenges for petrol pump owners in terms of customer retention and transparent payment systems.

In this context, **PAK FUEL** becomes a beacon of innovation, addressing the inefficiencies and limitations of current fueling practices. The project is designed to provide a digitalized alternative, leveraging advanced technologies to offer a more user-friendly and efficient fuel purchasing experience.

## **Problem statement**

The fuel industry is currently facing significant challenges due to the persistent use of cash in gas transactions, leading to inconveniences and safety concerns for both consumers and petrol pump owners. The outdated payment method contributes to security risks associated with carrying cash, and a lack of incentives for customer loyalty. Petrol pump owners are confronted with difficulties in maintaining customer satisfaction, witnessing reduced sales, and dealing with an increased risk of theft.

In response to these challenges, the **PAK FUEL** project has emerged with a solution that goes beyond addressing these issues. This innovative initiative aims to revolutionize the fueling experience by introducing a modernized, digitalized payment and service system. The primary objective is to create a seamless and secure process for users, mitigating the inconveniences associated with traditional payment methods. Importantly, the project also recognizes the vital aspect of customer retention.

By embracing this forward-thinking approach, **PAK FUEL** not only seeks to enhance the overall efficiency and transparency of transactions at petrol stations but also aims to foster customer loyalty. The introduction of digitalized payment options is expected to provide customers with added convenience and incentives, thereby improving the overall satisfaction of both consumers and petrol pump owners. This strategic focus on customer retention further solidifies **PAK FUEL's** commitment to ensuring a more satisfactory experience for all stakeholders in the fueling process.

## **Objective**

The objectives of the **PAK FUEL** project are strategically aligned to address the identified challenges in the conventional fuel purchasing process. These objectives are framed using the SMART criteria to ensure clarity, measurability, achievability, relevance, and time-bound specificity.

1. **Implement Seamless Digital Payment:**

* **SMART Goal**: Integrate a digital payment system into the PAK FUEL app within the first six months of development.
* **Contribution to Problem**: Reducing reliance on cash transactions, enhancing user convenience, and streamlining the fuel purchasing process.

1. **Enhance Customer Loyalty Programs:**

* **SMART Goal**: Establish a dynamic loyalty program, allowing users to earn points or discounts, within the first eight months of development.
* **Contribution to Problem:** Fostering customer loyalty, encouraging repeat transactions, and addressing the challenges of customer retention for petrol pump owners.

1. **Optimize User Interface Design:**

* **SMART Goal:** Complete the design and implementation of an intuitive and user-friendly interface within the first five months of development.
* **Contribution to Problem**: Improving the overall user experience, making fuel transactions more accessible and engaging.

1. **Introduce Transparent Transaction Processing:**

* **SMART Goal**: Implement secure payment gateways, transaction logs, and real-time notifications within the first ten months of development.
* **Contribution to Problem**: Enhancing transparency in payment systems, mitigating the risk of theft or fraud, and establishing a reliable mechanism for both users and petrol pump owners.

Achieving these objectives will contribute significantly to addressing the identified problem. The implementation of a seamless digital payment system, coupled with enhanced loyalty programs and an optimized user interface, will collectively revolutionize the fuel purchasing experience. Transparent transaction processing will not only ensure the security of transactions but also build trust among users and petrol pump owners. The SMART goals provide a structured roadmap for the project, guiding its development toward effective solutions to the challenges within the fuel industry.

## **Scope**

The **PAK FUEL** project ambitiously aims to transform the fuel industry by digitalizing payment and service systems at petrol stations. The project's focus is on streamlining the fuel purchasing process and improving user experiences. However, certain boundaries and limitations are acknowledged. The project concentrates primarily on petrol purchasing, excluding other services. Furthermore, broader industry issues such as fuel pricing and geopolitical factors are beyond the project's scope.

The project specifically covers the development of a secure and user-friendly digital payment system, the creation of engaging loyalty programs to enhance customer retention, optimization of the user interface for a more intuitive experience, and the integration of secure payment gateways, transaction logs, and real-time notifications.

## **Significance of the Study**

## **Organization of the Thesis**

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**Chapter No. 2**

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| **REMOVE THIS TABLE AFTER GIVING IT A PROPER READ, AS IT IS JUST TO GIVE THE FORMATTING INFORMATION:** |
| Watch this video to learn more about references in IEEE: <https://youtu.be/Mmj_pc4IkZQ>  You can also read this guide: <https://ieeeauthorcenter.ieee.org/wp-content/uploads/IEEE-Reference-Guide.pdf>  **Helpful Tools/ Online Resources:**   * <https://www.mybib.com/> * <https://scholar.google.com/> * <https://www.mendeley.com/>   **Use IEEE citation style:** In this thesis, we will follow the IEEE citation style for referencing and citing sources. IEEE style is widely used in the field of engineering, computer science, and related disciplines. It provides a standardized format for citing various types of sources, including books, journal articles, conference papers, and websites. Please make sure to adhere to the IEEE citation guidelines throughout your thesis [1].  **Utilize MS Word's citation features:** Microsoft Word offers built-in features that can assist you in managing your citations and references. You can use the "References" tab in MS Word to create a bibliography, insert in-text citations, and manage your reference list. Familiarize yourself with these features to ensure accurate and consistent citations throughout your thesis. |

# **LITERATURE REVIEW**

Literature review must include references of journal articles, books, conference, and research papers from the past five years. It is recommended to include a minimum of twenty citations or references in this chapter of your thesis.

Provide an overview of the purpose and significance of the literature review. Explain how the literature review will contribute to your project and address the research questions or objectives.

## **Review of (Similar Applications / Existing Research)**

**NOTE: For RESEARCH-BASED PROJECTS, the heading of this Section should be " Review of Existing Research". For SOFTWARE-BASED APPLICATION PROJECTS, the heading of this Section should be "Review of Similar Applications"**

Summarize and critically analyze existing research/application, studies, or projects related to your topic. Identify key themes, trends, or gaps in the existing literature. Highlight the strengths and weaknesses of previous approaches or methodologies [2].

## **Related Projects and Case Studies**

This heading is **optional**. Describe any relevant projects or case studies that are similar or related to your project. Discuss their methodologies, findings, and lessons learned. Analyze how their outcomes or approaches can inform and support your own project.

## **Summary**

This heading is **optional**. Summarize the key findings and insights from the literature review. Identify any gaps or areas where further research is needed. Explain how the literature review has informed the development of your project and its methodology.

This chapter of the FYP refers to the existing work that is related to this project. The literature review chapter provides a detailed review, discussion, and comments on existing work that contributes to this study.

# **References**

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| --- | --- |
| [1] | Tang, Shelden, D. R and C. Pardis , "A review of building information modeling (BIM) and the internet of things (IoT) devices integration: Present status and future trends," *Automation in Construction,* vol. 101, no. Elsevier, pp. 127-139, 2019. |
| [2] | R. Weatherall, "Writing the doctoral thesis differently," *Management Learning,* vol. 50, no. SAGE Publications Sage UK: London, England, pp. 100-113, 2019. |

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