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FATIH SULTAN MEHMET VAKIF UNIVERSITY

Faculty of Engineering

Department of Software Engineering

Software Enginering Design I
Courses Project

[Transparent Donation Platform for Reliable and Traceable Social Aid Processes]

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[Ömer Faruk DİŞLİTAŞ] - [2121251025]
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Project Supervisor: [Prof. Dr. Ali Yılmaz ÇAMURCU]

Istanbul, [November 2025]

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Jury Members	Signature
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1. INTRODUCTION

1.1 Problem Definition and Motivation

In Türkiye, non-governmental organizations (NGOs) and the culture of philanthropy constitute one of the core dynamics of social solidarity. However, large-scale natural disasters in recent years and the rapid digitalization process have revealed structural problems in the existing donation ecosystem. Especially after the earthquakes centered in Kahramanmaraş on 6 February 2023, serious public debates arose regarding the management and transparency of the collected aid. The fact that well-established institutions such as the Turkish Red Crescent (Kızılay) came to the agenda with commercial activities such as selling tents during the disaster seriously undermined public trust in NGOs [2].

This erosion of trust is supported by quantitative data in reports prepared by TÜSEV (Third Sector Foundation of Turkey). According to research, the level of trust of individuals in NGOs in Türkiye is on a downward trend, and donors are moving away from institutional donations because they cannot track whether their aid actually reaches those in need [1]. Existing donation platforms generally focus on the moment the donation is collected, but remain insufficient in terms of transparency and accountability in the spending process.

The main motivation of this project is to develop a **“Transparent Donation Platform”** that will rebuild the bridge of trust between donors and beneficiaries by using the transparency and traceability opportunities offered by technology.

1.1.1 Main Purpose and Objectives of the Project

The main purpose of the project is to transform donation processes from a “declaration-based” structure into an “evidence-based” structure by using AI-supported communication tools and a traceable data architecture.

The concrete objectives of the project are as follows:

- **Reliable Traceability:** Recording the entire process from the moment a donation enters the system to its final spending point with digital evidence (invoice, delivery report, etc.).

- **Transparency Standardization:** As stated in the academic literature, it is known that operational transparency positively affects donor behavior [4]. In this context, the aim is to digitalize mandatory reporting mechanisms specific to the type of campaign.

- **Accessible Communication:** By using Natural Language Processing (NLP) technologies, users will be able to make donations and obtain information through a natural chat experience instead of complex interfaces.

1.1.2 Why Is This Project Needed?

Traditional donation methods and existing digital platforms (such as crowdfunding sites) generally offer a one-way flow. The donor sends the money, and the process ends there. However, as seen after the 2023 earthquakes, lack of transparency and coordination problems reduce the effectiveness of aid [3].

In addition, there is a need for hybrid systems that balance the protection of personal data and transparency. Existing systems either operate in a fully transparent way that violates data privacy, or function as a completely closed box. This project aims to establish a secure balance between these two extremes by fully complying with Turkish Personal Data Protection Law (KVKK) standards [5].

1.1.3 Project Users and Benefits

The platform will provide the following benefits to the three main stakeholders of the donation ecosystem:

- **Donors:** They can clearly see the impact of their donations with concrete evidence and donate without trust concerns.

- **Foundations and Associations**: They reduce their costs by automating operational processes (issuing receipts, reporting reminders) and expand their donor base with a “verified organization” status.

- **Beneficiaries**: They can access the most appropriate aid organizations for their situation from a single point, while their personal data is protected (anonymized).

1.2 Project Scope

1.2.1 Specific Problem: Transparent Data Flow and Intent Detection

The project focuses on the problems of “non-verifiable data” and “mismatching” within the donation ecosystem. Accurately identifying a donor’s different religious and social intents such as zakat, fitr alms, or general donation and directing them to suitable and auditable campaigns fall within the technical scope of the project

1.2.2 Technologies Used

The project is based on the integration of modern web technologies and artificial intelligence algorithms:

- **Data Management:** PostgreSQL will be used as the database management system to ensure relational data integrity and security.

- **Backend**: Node.js and Express architecture has been chosen for high-performance API management.

- **Artificial Intelligence (AI):** Open-source Large Language Models (LLMs – Llama series) will be used to understand user intent (Intent Classification) and perform intelligent routing.

• **Frontend**: The React-based Next.js library will be used to optimize the user experience.

The most critical constraint in the development process of the project is the obligations under Law No. 6698 on the Protection of Personal Data (KVKK). In particular, the processing of health and economic status data, which fall under the category of “Special Categories of Personal Data”, requires high security standards [5]. In addition, the hardware costs and integration complexity required for AI models to perform accurate routing are among the technical challenges of the project

1.2.4 Success Criteria

• **System Stability**: API response times of the developed platform should remain below the industry standard of 500 ms.

• **User Capacity (Pilot):** Within the scope of the graduation project, the system should successfully pass load tests proving that it can handle 500 active users and 50 corporate accounts without issues.

• **AI Accuracy:** The developed chatbot module should classify user intents (type of donation, aid request, etc.) with an accuracy of 90% or higher.

1.2.5 Expected Outputs

1. Web Platform: A fully functional web application where donation and reporting processes are managed end-to-end.

2. Transparency Algorithm: An automatic evaluation system (Transparency Score) that rates foundations according to their reporting performance.

3. Smart Assistant (Prototype): An AI-based chatbot that answers user questions and provides guidance.

2. RELATED WORK AND LITERATURE REVIEW

In this section, the development of donation platforms in the world and in Türkiye, the technological infrastructures of existing systems, the transparency problems they face, and academic solution proposals for these problems are examined in detail. The literature review was conducted along four main axes: crowdfunding dynamics, transparency theories, data privacy (KVKK/GDPR), and AI-supported human–computer interaction.

2.1 International Donation and Crowdfunding Platforms

Over the last twenty years, the digital donation ecosystem has evolved from structures focused on “fundraising” to platforms focused on “impact tracking”. International examples provide both successful and improvable models that were taken as reference while shaping the architecture of our project.

2.1.1 Analysis of GoFundMe and Individual-Focused Models

Founded in 2010, GoFundMe is the most prominent example of a platform that leverages the power of social networks to spread individual donation campaigns on

a global scale. In a comprehensive study conducted by Mollick, it was found that campaign success rates on such platforms are directly related not to the quality of the project, but to the size of the social network and the speed of engagement in the first 48 hours [6].

However, the literature emphasizes that the biggest weakness of this model is the "verification gap". Since the platform operates on a declaration basis, it is vulnerable to malicious use. According to Solomon's analysis, although the fraud rate on the platform is below 0.1%, this security is ensured through a reactive mechanism based on user complaints rather than a proactive system [7]. Our project aims to adopt the user-friendly interface of GoFundMe while eliminating this security vulnerability by establishing an "evidence-based" verification mechanism instead of a "declaration-based" structure.

2.1.2 JustGiving and Institutional Integration

The UK-based JustGiving offers a model that works in integration with registered charities rather than individual campaigns. Research by Saxton and Wang found that institution-focused platforms enjoy 30% higher donor trust compared to individual platforms [8].
JustGiving's strongest technical feature is its integration with the UK tax system (Gift Aid), which automates tax refunds for donors. However, a criticized aspect of the system is the process defined as the "post-donation black box". After donors send their money, they do not receive systematic and visual feedback on how it is spent. Our project aims to close this gap through a "Transparent Reporting Cycle" and a mandatory proof-upload module.

2.1.3 GiveDirectly and the Efficiency of Cash Transfers

The GiveDirectly platform follows a radical model that eliminates the operational costs of traditional aid organizations by sending donations directly to the beneficiary's mobile wallet. Randomized controlled trials conducted by Haushofer and Shapiro in Kenya showed that unconditional cash transfers lead to faster improvements in education and health indicators compared to in-kind aid [9].

Although this model is revolutionary in terms of transparency, its direct application in countries like Türkiye—where banking penetration varies regionally and the risk of misuse of cash assistance is debated—is difficult. Our project adopts not GiveDirectly's "no-intermediary" vision, but a "hybrid intermediation" vision that positions foundations as auditable operators.

2.2 The Current Ecosystem and Constraints in Türkiye

The digital donation ecosystem in Türkiye is shaped within the framework of the Law No. 2860 on Collection of Aid and KVKK regulations, and structurally differs from international examples.

2.2.1 Açık Açık Platform and Data Transparency

The most significant initiative working on NGO transparency in Türkiye is the Açık Açık platform. In an analysis by Gönenç, it is stated that the platform provides “corporate transparency” by publishing NGOs’ financial statements and board of directors information [10].

However, gap analysis in the literature shows that Açık Açık functions as a passive “information platform”. There is no active donation flow, real-time campaign monitoring, or automatic matching between beneficiaries and foundations via the platform. Our project aims to offer operational transparency by combining the static corporate data provided by Açık Açık with dynamic campaign data.

2.2.2 Disaster-Period Platforms and the Trust Paradox

After the 6 February 2023 Kahramanmaraş earthquakes, the donation processes carried out through organizations such as AHBAP and the Turkish Red Crescent are examined in the literature under the concept of the “Trust Paradox”. According to TÜSEV reports, while the rate of individual giving in society is increasing, the decrease in trust in institutions leads donors to seek “direct aid without intermediaries” [1].

Post-disaster reports show that manual processes (Excel sheets, WhatsApp groups) are insufficient for managing high-volume donations, and audit mechanisms (sharing invoices, inventory tracking) are not systematic. Our project aims to build trust not through a single person or institution, but through an “immutable and traceable data flow” approach that is conceptually close to blockchain logic.

2.3 Academic Approaches to Transparency and Accountability

In the behavioral economics literature, it has often been shown that the most important factor affecting donor behavior is “perceived transparency”..

2.3.1 Operational Transparency Theory

The “Operational Transparency” theory developed by Buell and Norton argues that users value and trust a service more when they can see the effort and process behind it [11].

In the donation context, this theory suggests that donors should see not only that their money has been “transferred”, but also the stages “entered the warehouse”, “converted into a package”, “dispatched”, and “delivered”. While most existing platforms focus on “Outcome Transparency” (how much was raised?), the Transparent Donation Platform we are developing focuses on “Process Transparency” (how was it spent?).

2.3.2 Identifiable Victim Effect and Data Privacy

Slovic’s work on the “Identifiable Victim Effect” shows that people are more inclined to help a single person whose story and identity are known than to respond to statistical information (e.g., “1,000 people are hungry”) [12].
This provides the scientific basis for why our platform is built on a “Campaign/Person-Based” structure rather than a “Donation Pool” system. However, this approach carries the risk of conflicting with personal data privacy. At this point, the k-anonymity principle proposed by Sweeney comes into play [13]. Our project uses algorithms that mathematically hide the identity of the beneficiary and anonymize the data while sharing their story, thus balancing donor motivation with data privacy.

2.4 Artificial Intelligence and Human–Computer Interaction

Traditional web interfaces (GUIs) can create an access barrier, especially for users with low digital literacy or disaster victims in crisis situations.

2.4.1 Conversational User Interfaces (Conversational UI)

Adamopoulou and Moussiades state that chatbots are effective in simplifying complex information architectures and reducing user anxiety [14].

In the philanthropy sector, organizations such as Charity: Water have used rule-based bots to answer donor questions and achieved increased engagement rates. However, there is no comprehensive study in the literature where "Intent Recognition" technology is adapted to the religious and cultural dimensions of donations (Zakat, Fitr alms, Sadaqah). General-purpose Language Models (LLMs – e.g., GPT) may direct a user who says "I want to give my zakat" to a campaign that is not compliant with the jurisprudential rules of zakat (nisab threshold, eligible recipients). Our project aims to offer an original contribution to the literature by using Domain-Specific Prompt Engineering techniques to minimize this risk.

2.5 Conclusion and Gap Analysis in the Literature

As a result of the literature review, it has been determined that existing systems and academic studies fail to converge on the following three points:

1. Lack of Integration: Platforms either focus solely on collecting donations (GoFundMe) or only publish corporate data (Açık Açık). There is a lack of an integrated system architecture that both collects funds, documents expenditures, and manages this process with artificial intelligence.

2. Local Compliance: International transparency standards do not fully align with Türkiye's KVKK and Collection of Aid legislation. A digital architecture is needed that fully complies with local laws, includes verification processes (DERBİS/MERSİS), and integrates with local payment systems (e.g., Iyzico).

3. Evidence Requirement: Although "Operational Transparency" is theoretically advocated, there is no "Accountability Algorithm" in practice that makes uploading invoices/photos mandatory after a campaign is completed and reduces the foundation's score if they are not uploaded.

This project proposes a secure, transparent, and intelligent donation ecosystem model by filling these gaps identified in the literature.

3. METHODOLOGY AND SOLUTION TECHNIQUES

In this section, the technical methods followed in the development of the Transparent Donation Platform, the software architecture used, the database design, and AI integration strategies are detailed. The project has been designed in line with modern software engineering principles, with a focus on scalability, data security, and user experience.

3.1 General System Architecture

The platform is built on a hybrid model of Multi-Tier Architecture and Microservices Approach in order to meet sustainability and performance requirements. This structure optimizes server load while allowing modules (AI service, Payment service, etc.) to operate independently from one another.

The system architecture consists of five main layers:

1. Client Layer: A mobile-friendly and dynamic web interface where end-users (donors, foundations, beneficiaries) interact.

2. API Gateway: The entry point that handles all requests coming from clients, performs load balancing, and acts as a web application firewall (WAF) to protect the system against DDoS attacks.

3. Application Layer: The main layer where business logic is executed. Authentication, campaign management, and transparency score calculations are processed in this layer.

4. Data Layer: A hybrid storage area where relational data (users, campaigns) and unstructured data (invoice images, PDF reports) are stored.

5. External Services: The layer where secure API integrations with payment systems (Iyzico/PayTR), SMS/e-mail notification services, and external identity verification providers are managed.

3.2 Technologies and Tools Used

The technical infrastructure of the project consists of up-to-date technologies selected by considering the breadth of the developer ecosystem, performance metrics, and security standards.

• **Frontend:** To optimize user experience and ensure SEO compatibility, the React-based Next.js framework has been chosen [15]. Thanks to Next.js's Server-Side Rendering (SSR) capability, campaign pages load quickly and achieve good visibility in search engines.

• **Backend**: To handle API requests that require high concurrency, the Node.js runtime—known for its event-driven structure—and the Express.js library have been used. This setup prevents the system from locking up when thousands of users donate simultaneously.

• **AI Service:** For Natural Language Processing tasks, an asynchronous microservice independent from the main backend has been developed using the Python language and FastAPI. Python has been preferred due to its rich AI libraries (PyTorch, Transformers).

3.3 Database Design

Data consistency and relational integrity are critical for the security of financial transactions. For this reason, PostgreSQL—a relational database management system that fully supports ACID (Atomicity, Consistency, Isolation, Durability) standards—has been used [16].

The database schema is built on six normalized core modules:

1. Users: Identity information, roles (Admin, Foundation, Donor), and security keys.

2. Organizations: Official records of foundations/associations (Tax ID, DERBİS number), contact information, and approval status.

3. Campaigns: Campaign title, target amount, collected amount, category, and status information.

4. Donations: Transaction time, amount, payment method, and anonymity preferences.

5. Evidences: Metadata and verification status of documents (invoices, photos) uploaded after a campaign is completed.

6. Applications: Requests of beneficiaries and status tracking of these requests.

To improve the performance of frequently accessed data (e.g., popular campaigns on the homepage, user session tokens), Redis caching technology has been integrated into the system.

3.4 AI and Natural Language Processing (NLP) Integration

The AI module, which enhances the platform's interaction capability, aims to understand users' natural language expressions and direct them to the most appropriate campaign or foundation. This module is based on the open-source Llama 3.1 (8B parameters) model and has been optimized with project-specific data [17].

3.4.1 Intent Classification

User-entered text (e.g., “I want to give my fitr alms to medical students”) is converted into a vector space representation and analyzed by the NLP engine. The system is configured to distinguish the following core intents:

• **Donation Type Detection:** Determining whether the user’s intent is Zakat, Fitr alms, Sadaqah, Qurbani, or General Donation.
• **Category Matching:** Identifying categories such as Education, Health, or Food based on keywords in the text (e.g., “student”, “medicine”, “food parcel”).

• **Information Queries:** Answering questions about foundation reliability, campaign duration, or tax exemption status.

3.4.2 Prompt Engineering

To prevent the AI model from “hallucinating” (producing incorrect or fabricated information), systematic Prompt Engineering techniques have been applied. The

model's responses are restricted solely to verified and active campaign data in the database (Retrieval-Augmented Generation – RAG principle).

3.5 Security and KVKK Compliance

The project is based on international OWASP Top 10 security standards and local KVKK legal requirements for the protection of sensitive data [18].

• **Data Encryption**: "Special Categories of Personal Data" such as Turkish ID Number, phone number, and full address are stored using AES-256 encryption (encryption at rest). Even database administrators cannot access this data in plain form.

• **Authentication**: User sessions are managed with JSON Web Tokens (JWT), which provide a stateless and scalable structure without requiring server-side session storage.

• **Anonymization**: While sharing beneficiaries' stories in campaigns, data that can reveal their identity is automatically masked (k-anonymity principle).

3.6 System Flow and Transparency Cycle

The operational flow of the Transparent Donation Platform is built on a four-stage cycle that not only covers the collection of donations but also the proof of spending. This cycle is governed by algorithmic rules that enable the system to self-audit..

1. Verification and Accreditation:
Foundations or associations that want to join the system must first upload their DERBİS or MERSİS records, tax certificates, and authorization documents. Following legal and administrative reviews in the admin panel, organizations that meet the criteria receive a "Verified Account" badge. This process serves as the first security layer that prevents fraudulent campaigns.

2. Smart Matching and Intent Analysis:
The system analyzes not only the user's keywords but also their underlying donation intent. The NLP engine processes an expression such as "I want to give my zakat to a student studying in Istanbul" and extracts parameters like Donation Type (Zakat), Location (Istanbul), and Category (Education). The algorithm prioritizes campaigns that best match these parameters and have the highest transparency score, and then presents them to the user.

3. Secure Transaction and Digital Receipt:
The donation process is carried out through 3D Secure infrastructure and SSL encryption protocols. Once the transaction is successfully completed, the system automatically generates an immutable Digital Donation Receipt. This receipt is stored for the donor's legal records and is also recorded in the foundation's account as a "pending expenditure".

4. Evidence Upload and Dynamic Transparency Score:
In this final stage—the most original component of the project—the arrival of the donation at its final target is verified. When the campaign period ends, the

foundation is obliged to upload spending evidence (invoice, delivery report, on-site photos, etc.) to the system within a specified timeframe (e.g., 15 days).

Transparency Score Algorithm:
Each foundation has a dynamic score between 0 and 100 that determines its visibility and reliability on the platform. This score is automatically calculated according to the following criteria:

- **Timely Reporting (+Score**): Uploading evidence before the specified deadline increases the score.
- **Document Validity (+Score):** Approval of uploaded documents by admins or the community increases the score.
- **Delay Penalty (–Score):** If the evidence upload period is exceeded, a score deduction is applied for each day of delay.
- **Missing Documentation (–Score):** Inconsistencies between the campaign's target amount and the documented spending amount lead to a score decrease.

Result: Foundations whose transparency score falls below a certain threshold are automatically prevented by the system from launching new campaigns.

4. PROJECT MANAGEMENT

The development process of the Transparent Donation Platform has been structured as a 15-week period in accordance with the academic calendar and Agile (Scrum) management principles.

The project is carried out through 6 core Job Packages (JPs) that are manageable, measurable, and output-oriented. AI integration and deployment processes will be implemented during the 2nd term.

4.1 Management: Job Packages (JP), Task Distribution, and Durations

Mid-term evaluation (Interim Report) and end-of-term submissions (Final Project Report) are scheduled as natural components of the development cycle.

- **JP1: Planning, Requirements Analysis, and Design (Weeks 1–3):** This includes preparing the project scope document, designing the system architecture (UML, ERD diagrams), and completing UI/UX wireframe drawings.

- **JP2: Backend Infrastructure and Database Setup (Weeks 4–6):** Covers the setup of the Node.js server architecture, creation of the PostgreSQL database schema, and development of basic API endpoints (Auth, User CRUD).

- **JP3: Interim Report Writing and Submission (Week 7):** Documentation of the technical progress achieved in the first 6 weeks, reporting of the system architecture and database designs, and submission to the advisor.
This week focuses on documentation rather than coding.

• **JP4: Frontend Development and Module Integration (Weeks 8–11):** Includes coding the user interfaces with Next.js, building foundation & donor dashboards, and integrating the payment system (Iyzico/PayTR).

• **JP5: System Integration and Testing Processes (Weeks 12–14):** Covers combining the frontend and backend layers, performing unit tests and integration tests, and validating the transparency score algorithm.

• **JP6: Final Project Report and Presentation Preparation (Week 15):** Includes compiling all work completed throughout the term, organizing source code, and preparing the jury presentation.

(Note: Detailed timeline and responsible personnel for these work packages are presented in Appendix-1: Work-Time Schedule Table.)

Job Packet No	Main task	Sub-task	Responsible	W 1	W 2	W 3	W 4	W 5	W 6	W 7	W 8	W 9	W 10	W 11	W 12	W 13	W 14	W 15
JP1	Planning & Analysis	Req. analysis	Whole Team	■	■	■												
JP1	Planning & Analysis	System architecture design	Whole Team	■	■	■												
JP1	Planning & Analysis	Database ERD design	Whole Team	■	■	■												
JP1	Planning & Analysis	UI/UX wireframe creation	Whole Team	■	■	■												
JP2	Backend Infrastructure & Database	Node.js & Express server setup	Muhammed Furkan Akdağ				■	■	■	■								
JP2	Backend Infrastructure & Database	PostgreSQL database setup	Muhammed Furkan Akdağ				■	■	■	■								
JP2	Backend Infrastructure & Database	JWT authentication structure	Muhammed Furkan Akdağ				■	■	■	■								

JP2	Backend Infrastructure & Database	API Gateway configuration	Muhammed Furkan Akdağ				■	■	■	■								
JP2	Reporting	Mid-term report preparation	Whole Team				■	■	■	■								
JP3	Frontend Development & UI	Next.js project setup	Ömer Faruk Dişlitaş								■	■	■					
JP3	Frontend Development & UI	Responsive design implementation	Ömer Faruk Dişlitaş								■	■	■					
JP3	Frontend Development & UI	Foundation & Donor dashboards	Ömer Faruk Dişlitaş								■	■	■					
JP3	Frontend Development & UI	Campaign listing pages	Ömer Faruk Dişlitaş								■	■	■					
JP4	System Integration & Payment	Frontend-Backend API integration	M.F. Akdağ & Ö.F. Dişlitaş											■	■			
JP4	System Integration & Payment	Iyzico/PayTR payment integration (Sandbox)	M.F. Akdağ & Ö.F. Dişlitaş											■	■			
JP4	System Integration & Payment	Transparency score algorithm coding	M.F. Akdağ & Ö.F. Dişlitaş											■	■			
JP5	Testing & DevOps	Unit testing (Jest)	Emir Kaan Öğşarim													■		

JP5	Testing & DevOps	CI/CD pipeline setup	Emir Kaan Öğşarim													■		
JP5	Testing & DevOps	Dockerization	Emir Kaan Öğşarim													■		
JP5	Testing & DevOps	Security testing (OWASP checks)	Emir Kaan Öğşarim													■		
JP6	Reporting & Presentation	Final documentation completion	Whole Team														■	■
JP6	Reporting & Presentation	Jury presentation preparation	Whole Team														■	■

4.2 Risk Management

Possible causes of risk on our project's 1st term might occur listed down below and plan B of these situations

Table 1: Risk Management Chart

The potential risks, their likelihood and impact levels, and corresponding B plans have been analyzed and structured as follows.

JP No	Risk Description	Likelihood	Impact	Mitigation Measures (Plan B)
2	**Personal Data Protection (KVKK)& Data Security Violation:** Security vulnerabilities emerging in the database design.	Medium	Critical	The "Privacy by Design" principle will be applied, database encryption (AES-256) will be implemented from the start, and regular code reviews will be conducted.
3	**Documentation Deficiency:** Technical details may not be sufficiently reflected in the mid-term report.	Low	Medium	Data recorded in regularly maintained "DevLog" (Developer Logs) will be directly transferred into the report.

JP No	Risk Description	Likelihood	ımpact	Mitigation Measures (Plan B)
4	**Payment System Integration Issue:** Possible technical failures in 3rd-party APIs.	Low	High	Extensive testing will be performed in the sandbox environment, and a manual approval mechanism will be designed for failure cases.
5	**Extended Testing Duration:** Unexpected bugs **delaying the delivery.**bug'ların (hataların) teslimatı geciktirmesi.	Medium	High	Priority will be given to testing critical functionalities; non-critical (cosmetic) issues may be deferred to the second term (MVP approach).hatalar 2. döneme ertelenebilecektir (MVP yaklaşımı).

5. IMPACT

5.1 Economic, Commercial, and Social Outputs

The Transparent Donation Platform is more than a technical software project; it is a digital transformation tool that enhances the capacity of non-governmental organizations.

• **Economic Output:** The project carries the potential of becoming a SaaS (Software as a Service) product by reducing the “cost of trust” within the donation ecosystem, thereby increasing NGOs’ fundraising capacity. It also contributes to protecting national wealth by preventing fraud and resource misuse.

• **Technological Output:** The developed “Transparency Score Algorithm” and “Donation-Oriented Intent Detection Model” will serve as original contributions in the literature.

• **Academic Output:** The “Transparency Score Algorithm” and the “Evidence-Based Donation Model” will contribute to the literature as technical solution proposals addressing the trust problem.

5.2 Social Impacts

The social impacts of the project are evaluated under three main areas:

1. **Public Trust:** Through transparent data flow, donors' trust in charitable organizations will be re-established not on "declarations" but on "evidence."

2. **Sustainability:** With digitalized processes (e-receipts, online reporting), paper consumption and carbon footprint will be reduced, supporting environmental sustainability.

3. **Awareness:** The transparency-oriented structure of the platform will encourage other NGOs to adopt accountability, leading to an increase in standards across the sector.

6. FLOWCHART DIAGRAMS

Flowchart diagrams are provided in a compressed file in addition to this file. We hereby inform you.

7. BIBLIOGRAPHY

[1] TÜSEV, "Türkiye'de Bireysel Bağışçılık ve Hayırseverlik Raporu 2021," Türkiye Üçüncü Sektör Vakfı, İstanbul, 2022.
[2] Bianet, "Ahbap doğruladı | Kızılay Ahbap'a depremzedeler için çadır satmış," Bianet Bağımsız İletişim Ağı, 26 Şubat 2023.
[3] Transparency International, "Türkiye: Corruption risks and anti-corruption measures for post-earthquake recovery," Knowledge Hub, 2023.
[4] R. W. Mejia et al., "Operational Transparency on Crowdfunding Platforms: Effect on Donations for Emergency Response," *Production and Operations Management*, 2019.
[5] T.C. Resmi Gazete, "6698 Sayılı Kişisel Verilerin Korunması Kanunu," Ankara, 7 Nisan 2016.
[6] E. Mollick, "The dynamics of crowdfunding: An exploratory study," *Journal of Business Venturing*, vol. 29, no. 1, pp. 1-16, 2014.
[7] B. Solomon, "GoFundMe CEO: Fraud is less than 0.1% of campaigns," *Forbes*, 2018.
[8] G. D. Saxton and L. Wang, "The social network effect: The determinants of giving through social media," *Nonprofit and Voluntary Sector Quarterly*, vol. 43, no. 5, 2014.
[9] J. Haushofer and J. Shapiro, "The short-term impact of unconditional cash transfers to the poor: Experimental evidence from Kenya," *The Quarterly Journal of Economics*, vol. 131, no. 4, 2016.
[10] Ö. Gönenç, "Türkiye'de STK'ların mali şeffaflığı ve Açık Açık platformu," *Üçüncü*

Sektör Sosyal Ekonomi Dergisi, vol. 53, no. 2, 2018.
[11] R. W. Buell and M. I. Norton, "The labor illusion: How operational transparency increases perceived value," *Management Science*, 2011.
[12] P. Slovic, "If I look at the mass I will never act: Psychic numbing and genocide," *Judgment and Decision Making*, vol. 2, no. 2, 2007.
[13] L. Sweeney, "k-anonymity: A model for protecting privacy," *International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems*, vol. 10, no. 5, 2002.
[14] E. Adamopoulou and L. Moussiades, "Chatbots: History, technology, and applications," *Machine Learning with Applications*, vol. 2, 2020.
[15] Next.js Org, "Next.js Documentation: Server-Side Rendering," Vercel, 2024. [Çevrimiçi]. Erişim: https://nextjs.org/docs
[16] PostgreSQL Global Development Group, "PostgreSQL 15.0 Documentation," 2023. [Çevrimiçi]. Erişim: https://www.postgresql.org/docs/
[17] Meta AI, "Llama 3: Open Foundation and Fine-Tuned Chat Models," 2024. [Çevrimiçi]. Erişim: https://ai.meta.com/llama/
[18] OWASP, "OWASP Top 10:2021," Open Web Application Security Project, 2021. [Çevrimiçi]. Erişim: https://owasp.org/www-project-top-ten/