

# Donor Resource Allocation and Monitoring for Social Good

Halimah Oladosu, Olubayo Adekanmbi, Wuraola Oyewusi, Tunmise Johnson,  
Olalekan Akinsande, Rising Odegua

Data Science Nigeria



THE 16<sup>th</sup> CONFERENCE ON WEB AND  
INTERNET ECONOMICS



## Abstract

This paper presents a new approach to donation allocation and monitoring. That is, we seek to solve the problem of properly allocating donated funds to the poor and needy, with the end goal of lifting them out of poverty after a specific period of time, and making the system transparent enough that it can be monitored by donors themselves. To identify poor individuals, we propose a community led and crowdsourcing approach using crowdsourcing platforms with integrated payment systems. This solves the problem of identifying poor households and also provides enough data for our tracking system. Our multi-sided platform will pair service providers with poor individuals. The needs of individuals are identified through auction with non-monetary shares, and beneficiaries are picked randomly from the top bidders based on available resources. This gives each individual a fair chance of being selected. Our platform performs the matching and provides tools for reporting and tracking the state of individuals and the service provided over time. This gives control to donors to easily monitor their donations and also helps optimally allocate donations to poor people.

## Introduction

Resource allocation is an important problem in economics that has been studied extensively over time. It is especially important in a system that is ravaged in inequality, poverty, and has been proven time and again to be non-accountable. It is no surprise that resource allocation and utilization were identified as the missing link in Nigeria's quest for sustainable development [3]. Currently, with a population estimate of over 200m, Nigeria is the poverty capital of the world with over 70% of her citizens living on less than 1 dollar a day [5]. Therefore, daily essentials like food and housing are difficult and others like employment and healthcare have become a luxury for the citizens.

Numerous bodies and individuals wanting to help have and keep making donations to NGOs and government-initiated programs, but a majority of these programs are not transparent enough in their spending's, and do not properly allocate donated funds to the right individuals.

## Methodology

To solve this problem of donation allocation, we propose a multi-sided platform that connects three entities. The donor, reputable organizations/service providers, and poor individuals.

- Poor Individuals are registered and vetted members of the public that need support to cater for themselves.
- Service providers are local organizations that can provide services.
- Donors are benevolent individuals who want to give for a specific cause.

The figure below shows the interaction between all entities and our proposed donor allocation system.

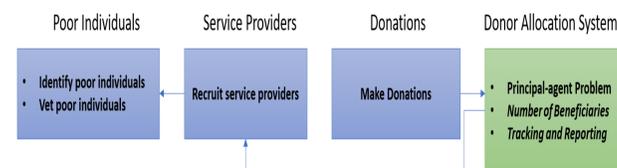


Fig. 1. Proposed methodology

Below we briefly explain some of the major challenges to our donation allocation approach, and our approach to solving them.

### 2.1 Identification of Poor Individuals

To solve the problem of identifying poor people, we will use a community led approach as implemented in Cambodia [4], combined with a crowd-sourcing approach using our in-house tool called DataCrowd [2]. DataCrowd is an efficient data collection app developed by Data Science Nigeria [1]. It can be used to collect information leveraging independent data collectors across Nigeria. Using these local agents, we can identify and vet poor people in rural communities using outlined poverty indicators.

### 2.2 Recruitment of Service Providers

A call for participation will be made to the general public, specifically targeting reputable organizations in the various local governments of Nigeria. These organizations will be vetted by our team of experts and must have a proven track record of good service delivery, accountability and community building.

### 2.3 Making Donations

Donations can be made from anywhere in the world using our application. This application will be mobile friendly and secure, and also will include custom options for selecting specific areas that donations should be used for. This gives the donor power and control over their donations.

### 2.4 Allocation of Donation

Allocating donations and pairing poor individuals to organizations is the heart of our system. There are numerous problems that arise here in regards to allocating these donations optimally. We list some of the important ones and our approach to solving them.

#### 2.4.1 Principal-agent Problem

The Principal-agent problem arises when poor individuals and organizations selected into the program miss-report their needs either knowingly or unknowingly. This can lead to the depletion of donor resources. To solve this problem, we introduce an auction system for both individuals and organizations. These entities (individuals and organizations) are assigned non-monetary shares/points and are made to bid for specific services relevant to them (Health, Education, Training, Food, etc). We believe this will constrain entities to only go for what they really want.

#### 2.4.2 Number of Beneficiaries

Programs like ours are generally going to record a high number of applications given the high rate of poverty in Nigeria. In order to give every identified and vetted individual a chance, we will compare the result of our auction process above, to the available resources we can provide. This outcome will yield a list of individuals with the highest need for available services. Then we will perform a random selection from this pool of needs. Randomness here gives everyone an equal chance of being accepted into the program.

### 2.4.3 Tracking and Reporting

All registered service providers/organizations will have access to a reporting dashboard specifically tailored to their categories, where they must give timely reports of service provided. Payments are only disbursed after service is rendered and due verification has been carried out. Also, audits will be performed from time to time in order to track and weed out ineffective and fraudulent organizations/ individuals. Donors, on the other hand, will also have access to track their donations and monitor how it is being used in real-time. This will include receipts, invoices, pictures, videos that can verify expenses.

## Conclusion

Accountable resource allocation is an age long challenge especially in low resourced economic systems where it is difficult for donors to reach the people who need help the most. In this publication, we proposed a community-led and crowdsourcing approach as a tool for efficient resource allocation for social good.

## References

- [1] DSN. 2020. Data Science Nigeria. Retrieved April 31, 2020 from <https://www.datasciencenigeria.org/>
- [2] DataCrowd (DSN). 2019. Crowdsourcing approach to data collection. Retrieved May 7, 2020 from <https://play.google.com/store/apps/details?id=com.datacrowd.mobile&hl=en>
- [3] Abraham Osa Ehiorobo. 2018. Efficient Resource Allocation and Utilization: The Missing Link in Nigeria's Quest for Sustainable Development. *Economics and Business* 32, 1 (Jan. 2018), 264–275. <https://content.sciendo.com/downloadpdf/journals/eb/32/1/article-p264.xml>
- [4] Cambodian Ministry of Planning. 2016. Support to the identification of poor households programme (IDPoor). Retrieved May 2, 2020 from <https://www.giz.de/en/worldwide/17300.html>
- [5] Worldbank. 2019. Poverty Equity Data Portal. Retrieved April 31, 2020 from <http://povertydata.worldbank.org/poverty/country/NGA>