

ABSTRACT

Financial inclusion (FI) is the availability and equality of opportunities for *individuals, households and businesses* to access financial products and services that are both affordable and appropriate at an appropriate time. FI is identified as a key indicator of inclusive growth in governance and the schemes align with 6 out of the 17 goals of the United Nations Sustainable Development Goals (UNSDG) and main objectives of the International Labour Organization (ILO) as instruments for promoting economic growth and sustainable development. Over the years, financial schemes for facilitating financial facilities to low-income earners in Eswatini have not been capturing pre-processing of the FI datasets using computational systems. This degenerates the quality of the FI datasets and consequently hinders the attainment of better FI dataset classification for financial governance. This project aims at developing a machine learning engineering (MLE) based FI system that is capable of re-engineering the financial products and services in order to build a sustainable society and inclusive economy in the Kingdom of Eswatini. In this poster, we present descriptive analysis of the FI indicators based on the data collected in four communities in Eswatini. Inferences and recommendations are presented.

PROJECT OBJECTIVES

- ❖ Develop an intelligent data analytic framework to guide financial inclusion in order to improve access to financial products and services for the poor and low-income earners in Eswatini.
- ❖ Review critical factors (e.g social, political, environmental etc), based on empirical evidence, that could influence financial inclusion.
- ❖ Assess the involvement of the poor, less privileged, and marginalized communities in banking and financial services.
- ❖ Develop an application software using Machine Learning Engineering algorithms that will improve the quality and intelligent classification of the FI dataset in the Kingdom of Eswatini.
- ❖ Use the developed application software in decision making in balancing financial access and distribution in Eswatini among households and Micro, Small, and Medium Enterprises (MSMEs).

KEY DELIVERABLES

COMMUNITY LEVEL

- Develop and deliver a framework for FI for Eswatini to guides financial inclusiveness in Eswatini for the poor and low-income earners.
- Establish and presents critical factors such as social, political and environmental factors that influence financial inclusiveness in the Kingdom of Eswatini.

NATIONAL LEVEL

Launch the first version of machine learning based FI dataset classifier software in the Kingdom of Eswatini. The software assists Center for Financial Inclusion (CFI) Eswatini with facilitation, monitoring, evaluation and planning using the empirical evidence generated.

PROJECT METHODOLOGY

Table 1: The Distribution of the Excluded Population by Region

Region	Constituency	Population(N)	Required sample (n)	No. of interviews conducted	Focus Group Interviews
Hhohho	Timphisini	1311	362	90	1
Lubombo	Hlane	1183		90	1
Manzini	Mangcongco	1386		91	1
Shiselweni	Shiselweni1	2190		91	1
Total		6070		362	4

Access Strand – population distribution by type of financial services (Formal, Non-formal, and Excluded) and products access

DATA COLLECTION

DATA CLEANING & PREPROCESSING

- ❖ Spelling and syntax errors fixed
- ❖ Dataset Standardized
- ❖ Fixed missing values
- ❖ Duplicate data removed
- ❖ Data encoding etc

FI SYSTEM MODELING & TRAINING

Employed Logistic Regression and Support Vector Machine for modelling

FI SYSTEM DEVELOPMENT, IMPLEMENTATION & EVALUATION

Software design; User interface design; System integration; User documentation; usability testing

HIGHLIGHTS OF OUR FINDINGS

- ❖ 42% of people interviewed are unemployed.
- ❖ The peoples (Self-employees & Formal employees) source of income is mostly on monthly salary.
- ❖ 67.9% of the people do not own insurance policy probably because they do not have business venture, vehicles or properties to insure.
- ❖ Majority do not own bank account but wholly make use of mobile money/MoMo account for daily business transaction and money transfer.

RECOMMENDATIONS

- ❖ More employment should be created to reduce the unemployment rate in the rural communities and contribute to economic growth.
- ❖ Provision of more credit facilities at low interest rate for MSME (Micro, Small, and Medium Enterprise) to thrive.
- ❖ Banks should be advised to minimize charges per transaction in order to encourage people to own bank accounts.
- ❖ Use of mobile money/MoMo is high because charges are relatively small compared to the bank charges per transaction.
- ❖ Re-engineering financial products to meet individual needs for inclusive economic growth.

RESULTS (Stage 1 of the Project)

DESCRIPTIVE ANALYSIS OF THE FI INDICATORS

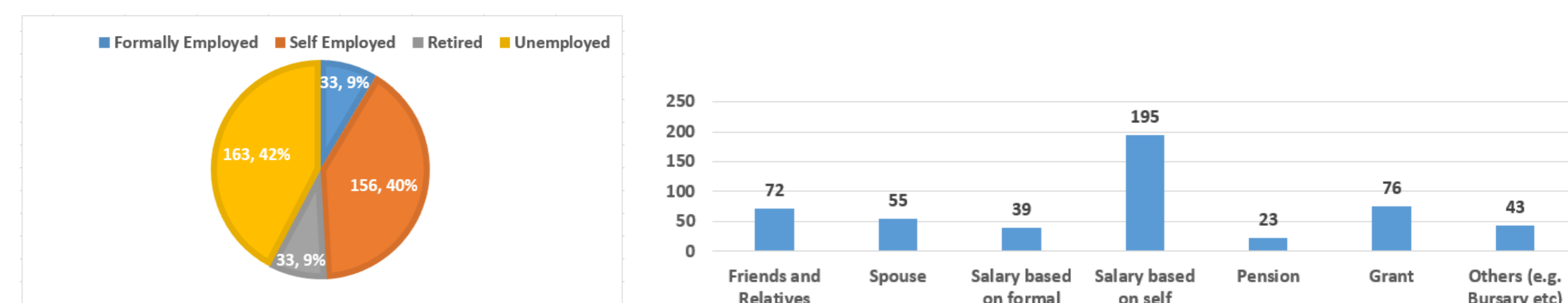


FIG. 2: SOURCE OF INCOME. Bar chart showing: Friends and Relatives (72), Spouse (55), Salary based on formal employment (39), Salary based on self employment (195), Pension (23), Grant (76), Others (e.g. Bursary etc) (43).

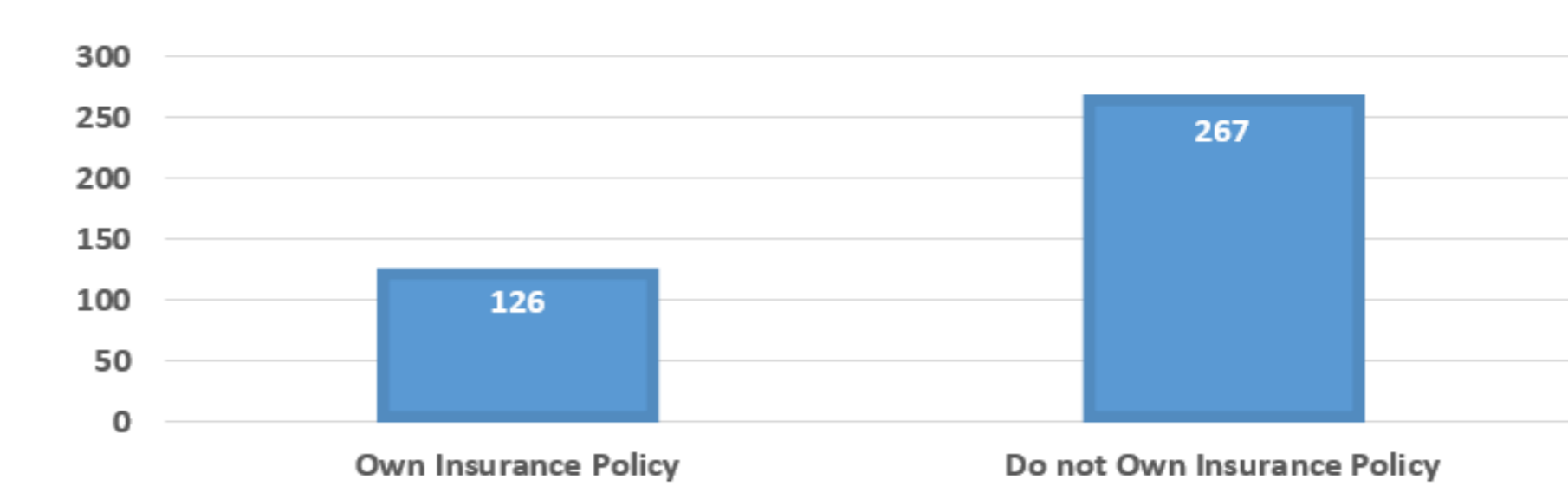


FIG. 4: TYPE OF INSURANCE POLICY OWNED. Bar chart showing: Funeral Cover (91), Life Cover (6), Business Insurance (0), Agricultural Insurance (0), Vehicle Insurance (0), Property Insurance (0).

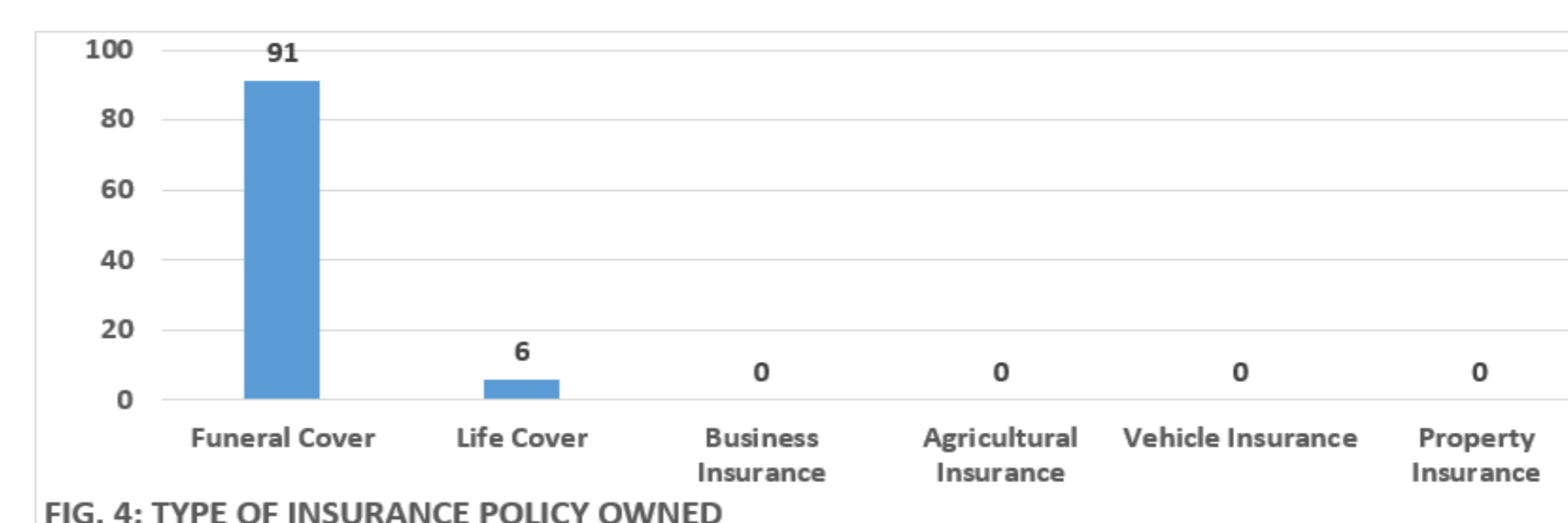


FIG. 6: OWNERSHIP OF MOBILE MONEY. Pie chart showing: Own Mobile Money (362, 100%), Do not own mobile money (0, 0%).

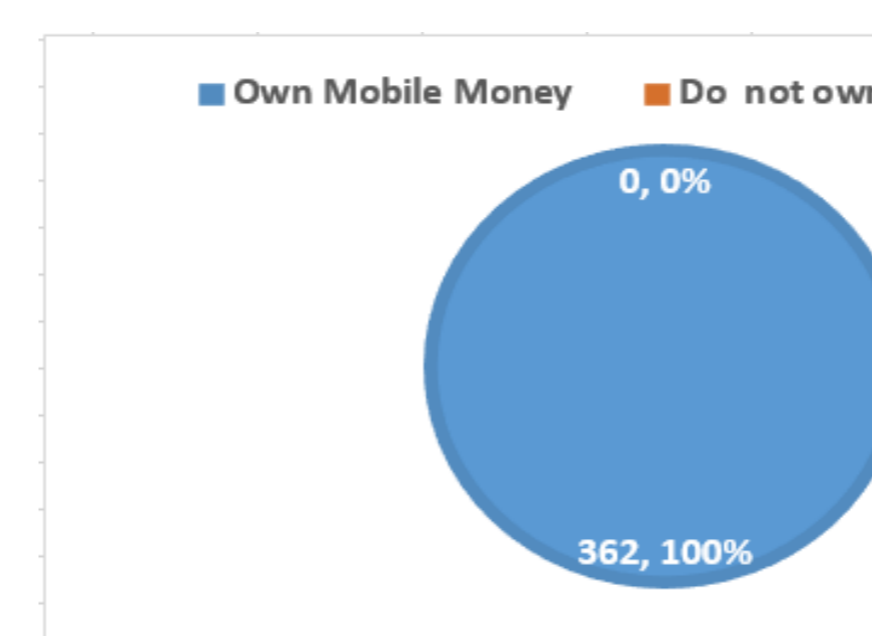


FIG. 8: TYPES OF MOBILE MONEY ACCOUNT. Pie chart showing: Personal Account (326, 98%), Business Account (5, 2%).

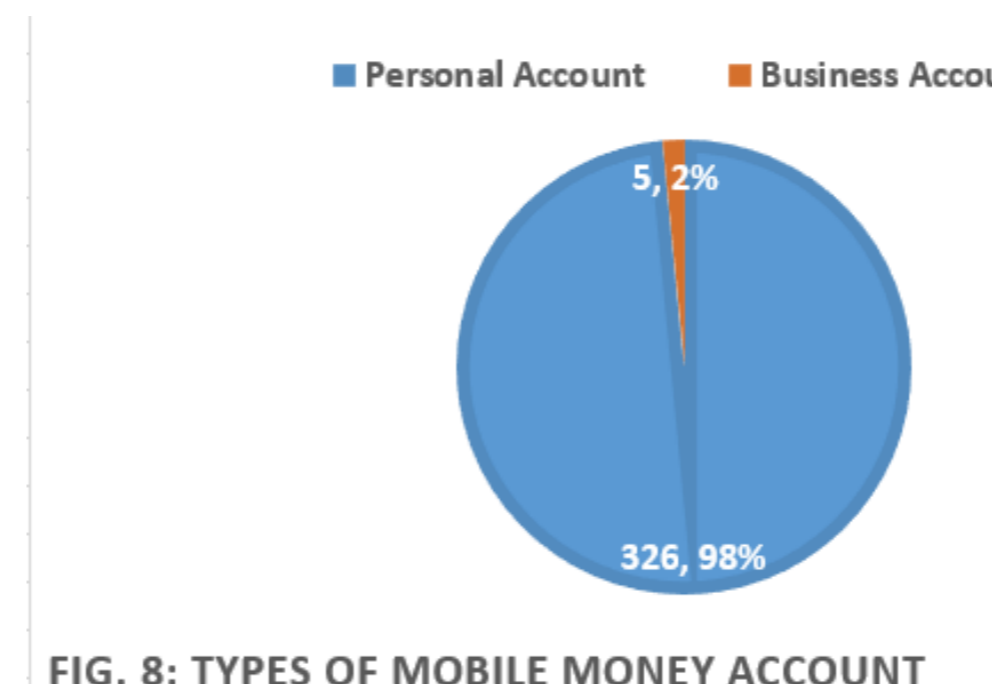


FIG. 8: TYPES OF MOBILE MONEY ACCOUNT

FIG. 9: MODE OF SENDING/RECEIVING MONEY