



## **American College of Technology (ACT)**

**Department of Computer Science**

Postgraduate project proposal

### **Title:**

**Ethiopian Stock Market Simulation Platform:  
Your Gateway to Capital Market Readiness and Success**

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## 1. Introduction

The Ethiopian Capital Market Authority (ECMA) is establishing a formal securities exchange to foster economic growth and provide a platform for raising capital in Ethiopia. The success of this initiative depends heavily on the preparedness and understanding of potential investors, brokers, regulators, and the general public about stock market dynamics. Ethiopia's financial market is still in its early stages, and there is a significant lack of experience among these market participants. Without a good understanding of how a stock market works, stakeholders may struggle to manage the complexities of securities trading, market analysis, and regulatory compliance.

This proposal aims to develop an interactive simulation platform that mimics the functions of a real stock exchange. The platform will provide a practical learning environment where users can simulate trading activities, understand market behavior, and test regulatory policies in a risk-free setting. This approach helps bridge the knowledge gap and enhances market readiness.

## 2. Statement of the Problem

Ethiopia's new financial market faces challenges in developing skilled and knowledgeable participants. Due to a lack of practical experience, investors, brokers, and regulators may not be well-prepared to handle real-life situations related to trading, market analysis, and regulatory oversight. The absence of a structured educational tool makes it difficult for stakeholders to understand key market operations and comply with regulatory standards.

There is a need for an interactive simulation tool that provides practical experience in stock market trading, market analysis, and regulatory compliance, following the guidelines set by the ECMA.

### 3. Objectives

#### General Objective:

To develop an easy-to-use stock market simulation platform that prepares Ethiopian investors, brokers, and regulators for the upcoming Ethiopian stock market.

#### Specific Objectives:

1. To design a platform where users can register as different roles (e.g., Traders, Brokers, Market Makers, Regulators, and Investors) and simulate stock market activities.
2. To build a trading engine that supports various order types (e.g., market orders, limit orders, stop orders) and handles real-time order matching and execution.
3. To create a regulatory module that allows ECMA to monitor simulated market activities, ensure compliance, and test policy impacts.
4. To add data services and analytics tools that provide real-time and historical market data to help users analyze trends and make informed decisions.
5. To implement a Profit and Dividend Calculation and Distribution Module that automates the calculation of capital gains and dividends for stocks held by users and distributes dividends in cash or additional shares based on company declarations and user entitlements.

### 4. Methodology

The development of the Ethiopian Stock Market Simulation Platform will follow an agile software development approach, allowing for iterative development, continuous feedback, and flexibility. The process will be broken down into the following phases:

### **Phase 1: Requirement Analysis and Design**

- Gather detailed requirements from stakeholders, including ECMA, potential investors, and brokers. This will involve referring to various ECMA resources, directives, and manuals available on their official website to ensure compliance with all regulatory frameworks.
- Design the platform architecture, user interface, and core modules (trading engine, regulatory compliance, data analytics) based on the gathered requirements.

### **Phase 2: Development**

- Develop core modules for user management, the trading engine, and portfolio management to handle different user roles and trading functionalities.
- Develop Profit and Dividend Calculation Module: This module will be integrated with the trading engine to calculate capital gains and losses when users sell stocks. It will also calculate dividends based on stock holdings and distribute them as per company announcements.
- Create a simulated clearing and settlement system that ensuring the accurate transfer of securities from sellers to buyers and managing cash settlements.

### **Phase 3: Testing and Quality Assurance**

- Perform unit testing, integration testing, and user acceptance testing (UAT) to ensure the platform is functional and reliable.
- Create test scenarios for different market conditions to ensure the platform can handle various situations based on the directives.

### **Phase 4: Deployment and Training**

- Deploy the platform on a cloud server to ensure easy access and scalability.
- Conduct training sessions for users to familiarize them with the platform.

## 5. Scope and Limitations

### Scope:

The platform will focus on simulating key stock market functions, such as trading, order matching, price discovery, regulatory compliance, profit and dividend calculations and distributions and data services. It will serve different user roles like traders, brokers, market makers, and regulators. The platform will not handle real financial transactions but will provide a safe environment for learning and practice.

### Limitations:

- The platform is designed for learning and simulation and may not cover all the details of a real stock market due to the broad and complex rules in the directives.
- The Risk Management Tools and Educational and Training Features may not be fully developed in the initial version due to time constraints but will be considered for future updates.
- Due to the complexity of compliance and market surveillance, some advanced features related to compliance and regulatory testing and other complex feature may be simplified or excluded in this version of the platform.
- Regular updates will be needed to keep up with changes in ECMA regulations and market dynamics.

## 6. Significance of the Project

This project is crucial for Ethiopia's capital market development as it provides a practical learning tool for future market participants. By simulating real market conditions, the platform will help users gain confidence, understand trading mechanisms, develop regulatory compliance skills, and prepare for the real Ethiopian stock exchange. It will also serve as a useful tool for ECMA to test regulatory policies in a controlled environment.

## 7. Work Plan

The project will be completed in approximately 4 months, with each phase taking the following duration:

- **Phase 1 (Requirement Analysis and Design):** 2 weeks
- **Phase 2 (Development):** 2 months
- **Phase 3 (Testing and Quality Assurance):** 3 weeks
- **Phase 4 (Deployment and Training):** 3 weeks

Given the project's complexity and the fact that this platform is new in our country, if the planned timeline is not sufficient, some features may be scaled back or deferred to focus on delivering the core functionalities within the timeframe. This approach ensures that key objectives are met while allowing for future enhancements.

## 8. Reference

Ethiopian Capital Market Authority (ECMA). ECMA Website. Retrieved from <https://ecma.gov.et/>

## Glossary

ECMA: Ethiopian Capital Market Authority

UAT: User Acceptance Testing