American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

Government Regulated Price Hike Control Application

A Software Engineering Project Submitted
By

Semester: Summer 22-23		**Section: E**	**Group Number: 03**	
SN	Student Name	Student ID	Contribution (CO1+CO2)	Individual Marks
1	MD. NAHID HASAN	21-45018-2	20%	
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3	MD. AL FAIAZ RAHMAN FAHIM	21-45080-2	20%	
4	MD. SHAHRIAR SHAON	21-45024-2	20%	
5	MD. ABDUL MALEK RONY	20-43687-2	20%	
6	SIAM IBNE EDRISH	17-35169-2	20%	

The project will be Evaluated for the following Course Outcomes

CO1: *Analyze* the impact of software engineering models over various context of software development to assess societal, health, safety, legal and cultural issues.	Total Marks	
Project Background Analysis and feasibility (needs, goal, benefits, etc.)	[5 Marks]	
Analysis the impact of societal, health, safety, legal and cultural issues	[5Marks]	
Review of existing Studies and Relevant Example	[5Marks]	
CO2: *Explain* appropriate software engineering model, project management roles and their skills in the context of professional engineering practice and solutions to complex engineering problems in a software development environment.	Total Marks	
Appropriate Process Model Selection and Argumentation with Evidence	[5Marks]	
Evidence of Argumentation regarding process model selection	[5Marks]	
Submission, Defense, Completeness, Spelling, grammar and Organization of the Project report	[5Marks]	

Description of Student's Contribution in the Project work

Student Name: MD. NAHID HASAN
Student ID: 21-45018-2
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Contribution in the Project:

- Contribution Description 1
- Contribution Description 2

_____
Signature of the Student

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Contribution in the Project:

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Contribution in Percentage (%):20%
Contribution in the Project:

- Contribution Description 1
- Contribution Description 2

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Signature of the Student

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Contribution in the Project:

- Contribution Description 1
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Student Name: MD. ABDUL MALEK RONY Student ID: 20-43687-2 Contribution in Percentage (%):20% Contribution in the Project: ▪ Contribution Description 1 ▪ Contribution Description 2 _____ Signature of the Student
Student Name: SIAM IBNE IDRISH Student ID: 17-35169-2 Contribution in Percentage (%):20% Contribution in the Project: ▪ Contribution Description 1 ▪ Contribution Description 2 _____ Signature of the Student

1. PROJECT PROPOSAL
Government Regulated Price Hike Control Application

1.1 Background to the Problem

Bangladesh is a country of prosperity where agriculture is the backbone of its Economy. So, it is safe to assume that there should not be any hassle for anything in the market, especially food related products. Surprisingly, the market does not support this statement as we face severe price hike problem in our daily life. The government provides statistical data about our own growing food staffs which does not reflect in the market and some inside people work which results in the price hike.

One of the main problems of price hike in our country is syndicates. The essentials are stocked, which raises market demand, after which the price is raised, and the essentials are made available. That is why the price keeps changing as per their wish, not under the surveillance of government. It is a huge problem for consumers as they cannot predict their marketing target to buy foods and people of lower, middle class are the main sufferers with the students who are trying to study and make living. Bangladesh being a under development country, those people play a vital role in running the economy of this country. So, we must think the involvement of government surveillance is crucial to this

problem else the country economy will fall as majority of people will fail to lead their daily lives.

1.2 Solution to the Problem

Our project objective is to propose a technology-based solution to minimize price hike problems in the market. The proposed approach introduces a government-regulated app system that aims to monitor and control the prices of essential commodities in the market.

We are aiming to make a web-based application to deal with this problem. We know that our country has secured the signal tower throughout most of the area and soon rural areas will be covered. That is why we chose this application to be web based so anybody with the access of internet can use this product. The application will provide real time updated prices of the product commissioned by the government which results Consumers who want to buy anything he/she needs, can have a gist idea of how much would it cost, or he/she can decide that what is the priority to buy for the day as per earning. Government can also take measures to how the market is evolving- what is it need. So, they can analyze the market to observe any anomalies like syndicates are involved or not and can catch the threat easily. The application will be very light and does not require vastly invested money. As the application will be web based so all it would require software and servers which is already being used by the government, only to have access to the government database. So, it is feasible to meet business needs also.

This application was planned to keep in mind the idea about ensuring affordability of essential goods and to solve the challenges related to price hike. We made sure that there is a collaboration between consumers and government so that the sellers cannot explicitly do anything which would result in bad circumstances. Here are those:

1. Real time Monitoring:
Our application would use information about sellers, shops, retailers, and the marketplaces to analyze, and provide us with the whole picture of how things are getting managed from everywhere. It also helps to point out if there is any sudden increase of price or anything that hampers the equilibrium of balance.

2. Price Diversion Analysis:
Based on the analyzed data it could help us to fix prices depending on the geographical position, condition and other factors-this would help government to predict the potential price hike and resist the other occurrences**.** The government will have the license/trade number of all shops, so it will be easy for them to track them for any purpose also consumers will have to use their National ID number to make any report or complaints about shops.

3. Visualization:
This application visualizes the data of how the market is at. All trends, changes and price hotspots information gathered to help the policy makers imbue better strategies to overcome price hike. Consumers can see the Manufacture date (Mfg.) and Expire dates

(Exp.) to have through information about its health safety issue which would enable them to pick their items as well as making sure its heathy. This also enables the consumers to perceive their marketing decisions better, with the user-friendly interface they can also compare the product price and other facilities to have proper idea.

4. Collaboration:
Our main goal is to make an alliance between government and consumers. Through this application consumers can report if they face any difficulty while buying any product and the government can investigate the matter more thoroughly. The authority can inspect better. This application will enable a huge impact on the whole population as they will learn the culture of using internet for their day-to-day needs. Government also can have people opinion about their next plan regarding price or any suggestion they can get to upgrade their evaluation of this system. It provides a centralized platform for sharing information, coordinating efforts, and generating comprehensive reports on price trends, regulatory compliance, and consumer complaints.

This solution has the potential to produce fair pricing while protecting consumer interest with the empowerment of social economic stability.

The target group of users of our solution is lower-class, middle-class and students as these are most of our population. Through this application, they will have a wholistic idea about how should be their daily marketing. They will know what is more important to them rather than wasting money buying unnecessarily.

The Application makes a significant contribution to the development of scientific results by integrating advanced data analysis techniques, predictive modeling, and policy recommendations. It enhances our understanding of price dynamics and provides valuable insights to policymakers, economists, and researchers, ultimately leading to more effective price regulation and stabilization measures.

We studied some articles and thesis to build our understanding of the idea and to make the solution as practical as possible. Here is some related works:

Study 1:

IMPLEMENTATION OF E-GOVERNANCE IN THE AGRICULTURAL SECTOR OF BANGLADESH by Hafizul Islam [Link]

The study focuses more on the overall challenges faced by the agricultural sector and the potential role of E-Governance in addressing those challenges. It specifically addresses the exploitation of farmers and suggests a specific technology-based solution where our application proposal highlights the issue of price hikes but does not drive into broader agricultural sector problems, only propose specific solutions.

Study 2:

FOOD PRICE HIKE IN BANGLADESH: A SUPPLY SIDE APPROACH TO ITS DETERMINANTS AND SOLUTIONS by Mohammad Mizanur Rahman [Link]

The study provides a comprehensive analysis of various factors contributing to food inflation and proposes specific solutions to address the issue. It considers production, import dependency, intermediaries, and market access for farmers.

Study 3:

IMPACT OF FOOD PRICE RISE ON SCHOOL ENROLLMENT AND DROPOUT IN THE POOR AND VULNERABLE HOUSEHOLDS IN SELECTED AREAS OF BANGLADESH by Selim Raihan [Link]

The study is old but it provides a detailed analysis of the impact of food price hikes on education, dropout rates, and household expenses. It offers specific data on the percentage of households affected, their coping strategies, and the financial implications of withdrawing children from school.

Due to our problem being in the section "Category A", it was assumed that there would not be sufficient studies related to specific our problem but we searched for information and found that there is no such framework or software built internationally or individually to control price hike.

2. SOFTWARE DEVELOPMENT LIFE CYCLE

2.1 Process Model

We think that the **Agile Method** would be very useful for us to use in this project. As we know Agile is well suited for Dynamic and flexible scenarios where real-life problems require change in every step because of its indefinite possible situations this might produce. Also, there is place for collaboration and simultaneous improvement which supports the pressure of building a price hike problem.

We will use **SCRUM method** of the **AGILE Method** we previously stated.

As we analyzed the Nature of the problem, we observed some major points which helped us to decide why we selected Agile method as our process of working. Here are the brief descriptions:

1. Real-time Monitoring and Updates: The proposed application needs to provide real-time updated prices to consumers, which requires frequent data monitoring and updates.

2. User-Centric Interface: The application needs to be user-friendly and prior to the needs of lower-class, middle-class, and student users, who are the target audience.

3. Collaboration with Government and Consumers: The application requires collaboration between the government and consumers to report issues and gather feedback, so a flexible development approach is very much needed.

4. Dynamic Market Conditions: The market and pricing conditions are always changing, so the software needs to be adaptable and responsive to these changes.

5. Continuous Improvement: The application needs to continuously evolve and improve based on user feedback and changing requirements.

The reasons why we selected Agile Development (Scrum):

1. Iterative and Incremental Development: Scrum, as an Agile framework, follows an iterative and incremental development approach which allows for continuous improvement and frequent releases of the software. This goes well with the need for real-time updates and user-centricity.

2. Flexibility for Changing Requirements: Agile methodologies, including Scrum, are well-known for adapting changes in requirements during development. As the application deals with dynamic market conditions, the ability to adapt to changing needs is crucial.

3. Collaboration and Communication: Scrum promotes collaboration and open communication between all stakeholders, including the development team, government officials, and consumers. This will ensure effective collaboration and quick feedback loops.

4. Transparency and Visibility: Scrum provides transparency and visibility into the development process through regular meetings and progress tracking. This will help stakeholders stay informed and involved throughout the project.

5. Continuous Testing and Integration: Scrum encourages continuous testing and integration, ensuring that the application always remains stable and functional. This is essential for an application providing real-time price updates.

6. Empowering Development Team: Scrum empowers the development team to make decisions and self-organize, leading to higher motivation and productivity.

The evidence of supporting Scrum method:

1. Scrum's iterative and incremental approach aligns with the need for real-time updates in the application to provide consumers with the latest prices.

2. The collaboration aspect of Scrum enables effective communication between government officials and consumers, allowing for prompt reporting of issues and better problem resolution.

3. Scrum's flexibility to accommodate changing requirements is crucial for adapting the application to dynamic market conditions and evolving user needs.

4. The continuous improvement aspect of Scrum ensures that the application can be refined based on user feedback, resulting in a more effective solution over time.

5. Scrum's emphasis on transparency and visibility will keep all stakeholders informed and engaged in the development process, leading to better decision-making and a higher chance of project success.

In conclusion, based on the nature of the software, the need for collaboration, responsiveness, and continuous improvement, the Agile development model, specifically Scrum, is the best choice for developing the proposed web-based application to minimize price hike problems in the market. The evidence presented supports the selection of Scrum as a suitable approach to deliver an effective and valuable solution to the problem.

2.2 Project Role Identification and Responsibilities

1. Scrum Master:
Role: The Scrum Master is responsible for facilitating the Agile development process and ensuring that the Scrum framework is followed effectively.

Responsibilities:
- Leading and guiding the Scrum team in implementing Scrum practices and principles.
- Facilitating Scrum ceremonies, such as sprint planning, daily stand-ups, sprint review, and sprint retrospective.
- Removing impediments and obstacles that hinder the team's progress.
- Ensuring that the team follows to Scrum roles, artifacts, and rules.
- Coaching the team on continuous improvement and self-organization.
- Collaborating with the product owner and the team to ensure a smooth and productive development process.

2. Product Owner:
Role: The Product Owner represents the stakeholders and is responsible for maximizing the value of the product developed by the Scrum team.

Responsibilities:
- Defining and prioritizing the product backlog based on user needs and business value.
- Communicating product vision and requirements to the Scrum team.
- Making decisions on the release plan and the content of each sprint.
- Accepting or rejecting work results based on the acceptance criteria.
- Collaborating with stakeholders to gather feedback and refine the product backlog.
- Ensuring that the team understands the product vision and goals.

3. Scrum Team:
Role: The Scrum Team is a self-organizing, cross-functional group responsible for developing the product.

Responsibilities:

- Collaboratively working on sprint backlog items to deliver potentially shippable product increments.
- Participating in sprint planning to estimate the effort required for each user story.
- Holding daily stand-ups to synchronize and communicate progress and impediments.
- Conducting sprint reviews to showcase completed work to stakeholders.
- Engaging in sprint retrospectives to identify areas for improvement and discuss what went well.
- Ensuring the quality of the product and meeting the Definition of Done.

4. Customer (Stakeholders):
Role: The Customer represents the end-users or consumers of the product.

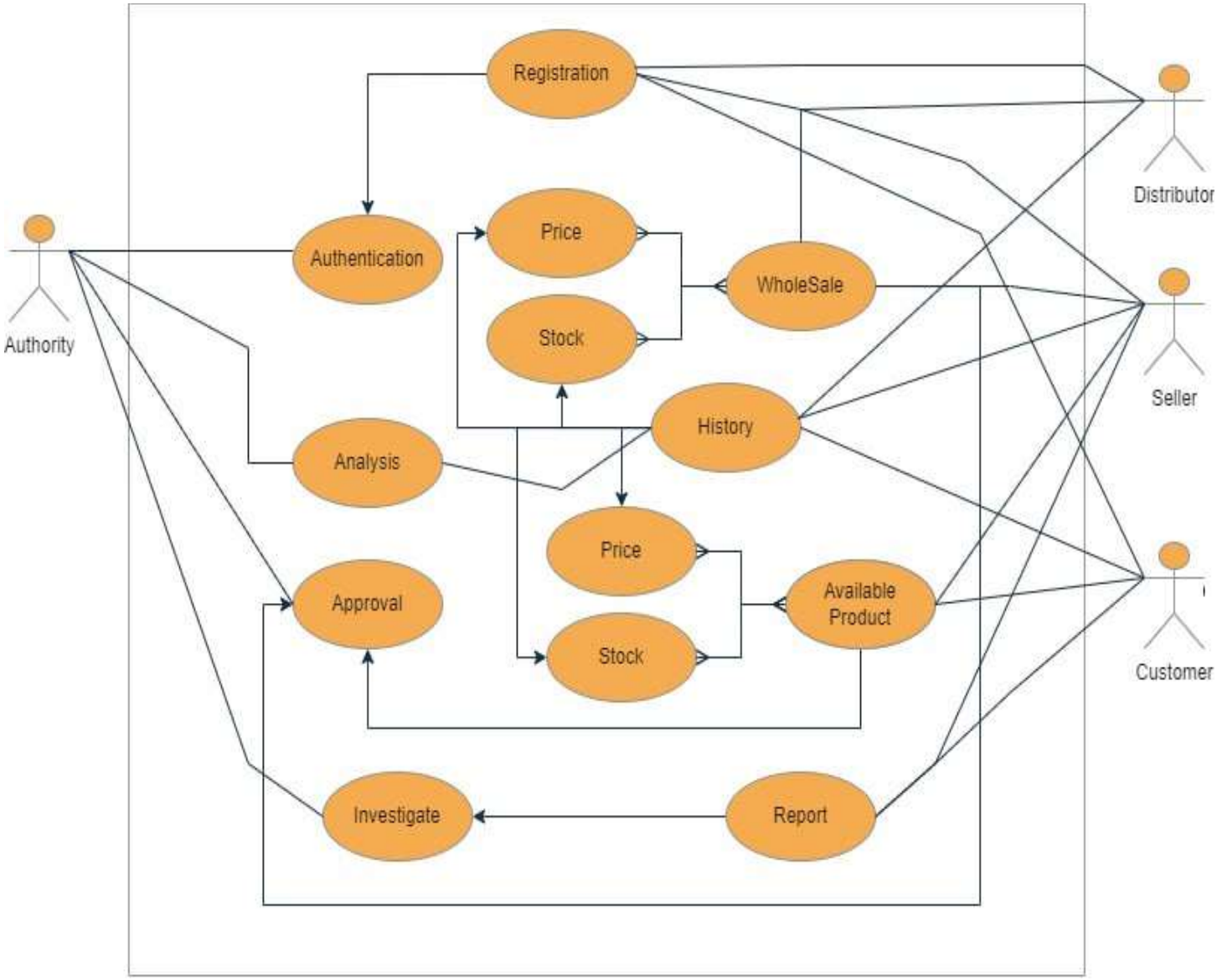
Responsibilities:
- Providing input and feedback to the Product Owner on product features and priorities.
- Reviewing and accepting the completed work during sprint reviews.
- Collaborating with the Scrum Team to ensure the product meets user expectations.
- Sharing insights and user feedback with the Product Owner to drive product improvements.
- Engaging in regular communication with the Product Owner and Scrum Team to understand progress and timelines.

5. Management:
Role: Management represents the organization or project sponsors and provides support for the Scrum Team.

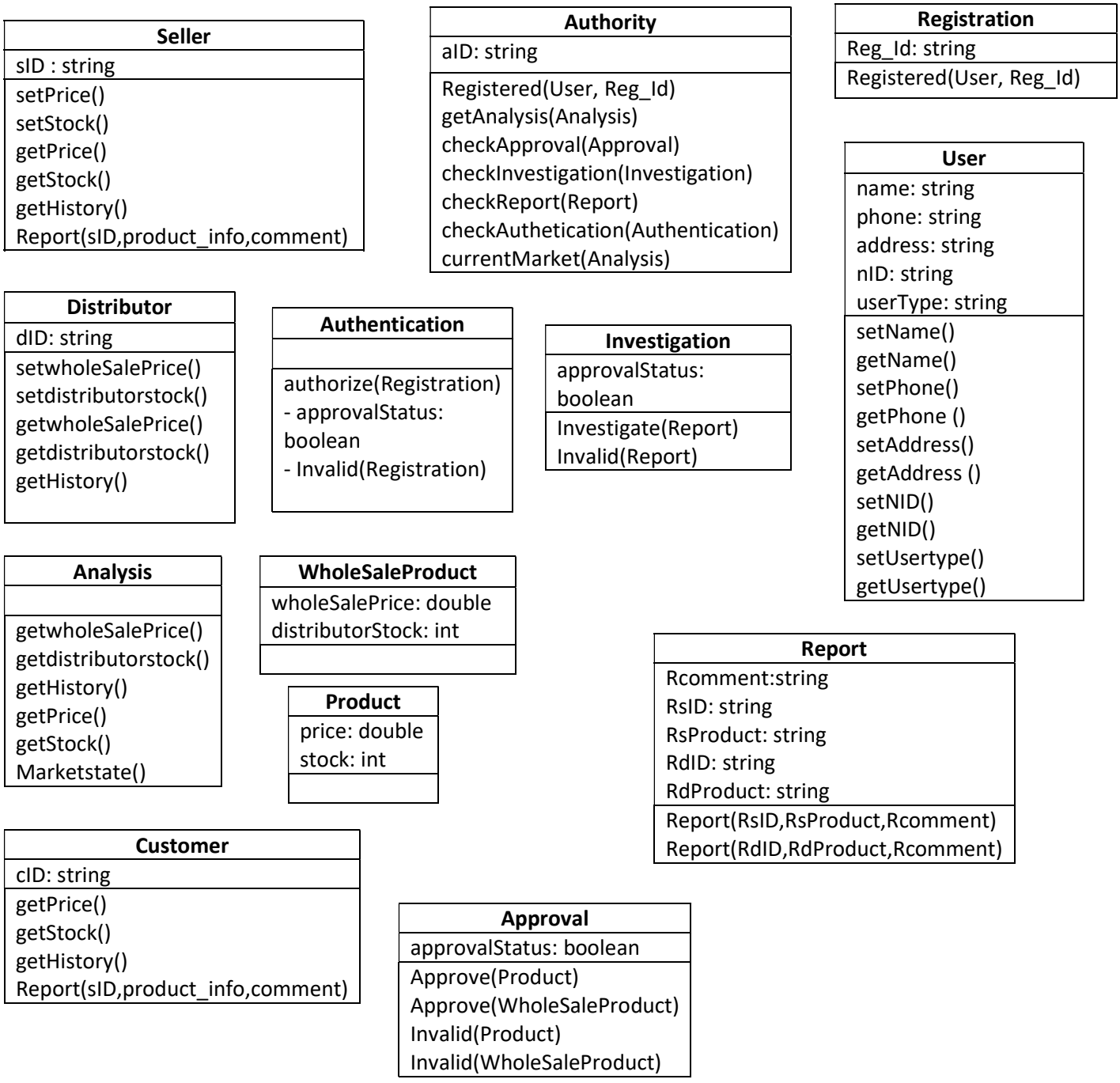
Responsibilities:
- Supporting the adoption of Agile practices and the Scrum framework within the organization.
- Removing organizational impediments and ensuring necessary resources are available to the Scrum Team.
- Setting project objectives, budget, and timelines in collaboration with the Product Owner and Scrum Master.
- Participating in sprint reviews and providing feedback on completed work.
- Collaborating with the Scrum Team and stakeholders to align project goals with business objectives.
- Supporting the continuous improvement efforts of the Scrum Team.

Each role in Scrum plays a vital part in the success of the project. The Scrum Master, Product Owner, and Scrum Team work together collaboratively, while the Customer and Management provide valuable input and support to ensure the project meets its objectives and delivers value to the end-users.

Use Case Diagram:



Class Diagram:



Sequence Diagram:

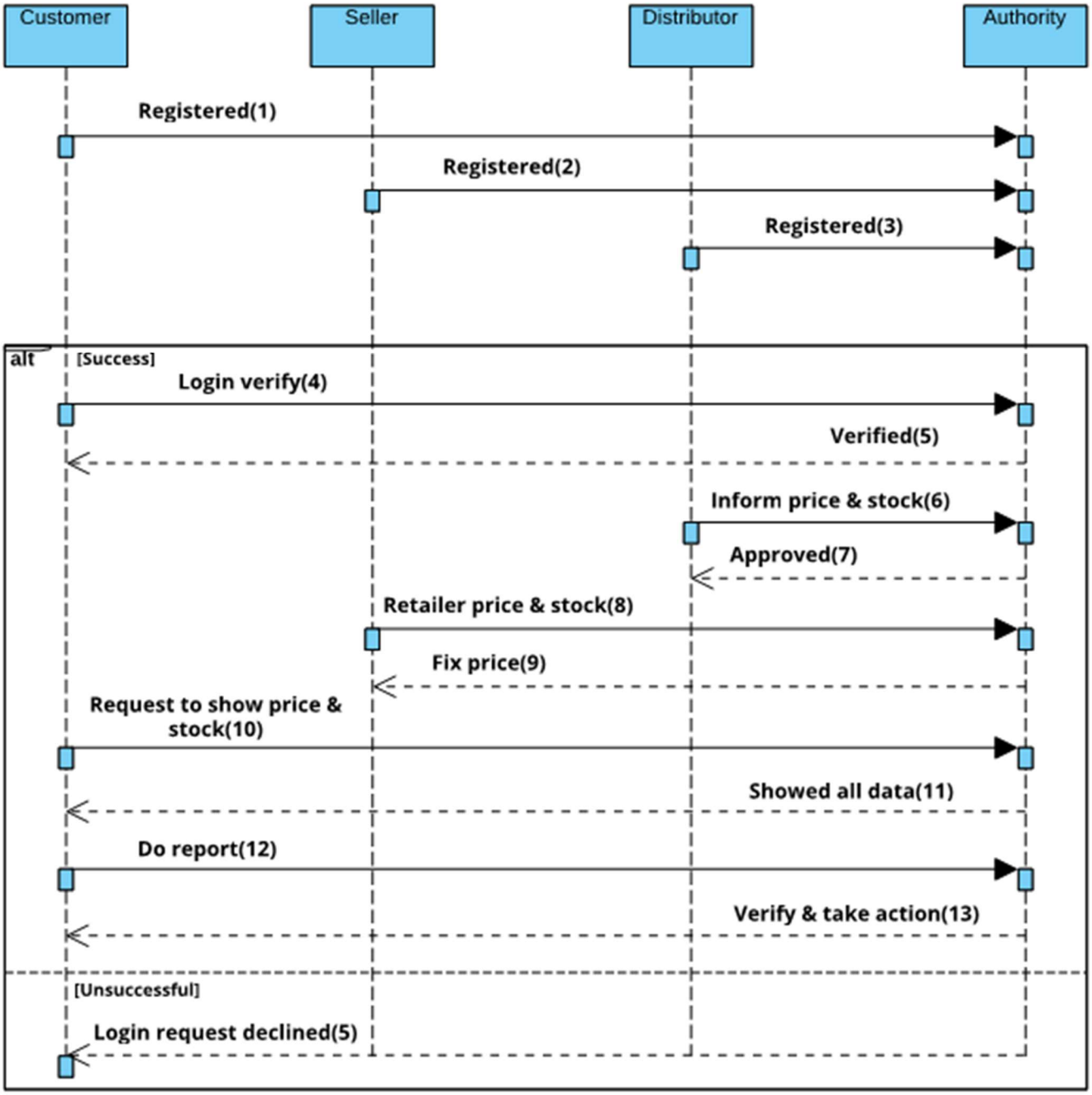


Figure : Sequence Diagram (Government Regulated Price Hike Control Application)

Activity Diagram:

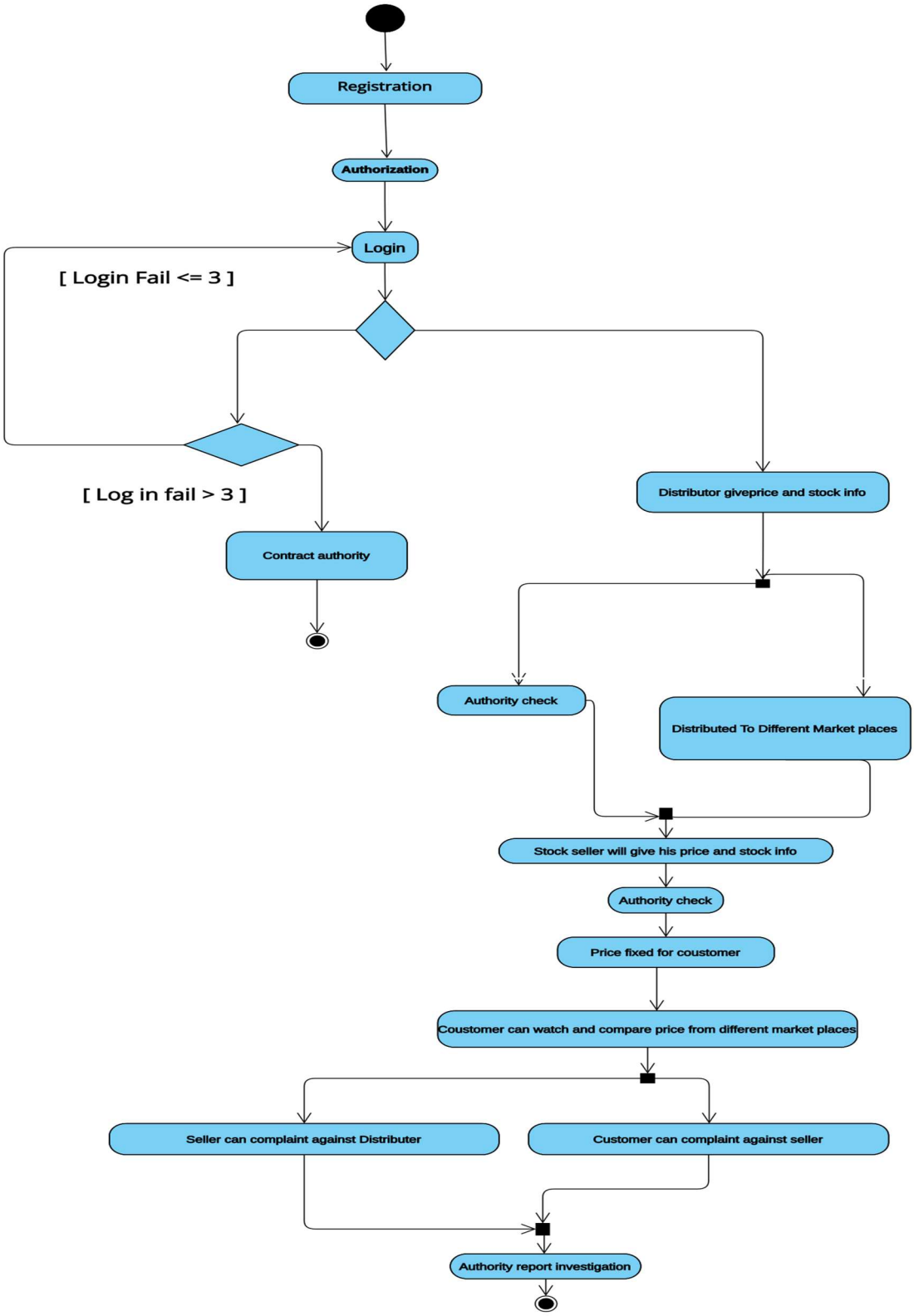


Figure : Activity Diagram (Government Regulated Price Hike Control Application)

Application Design

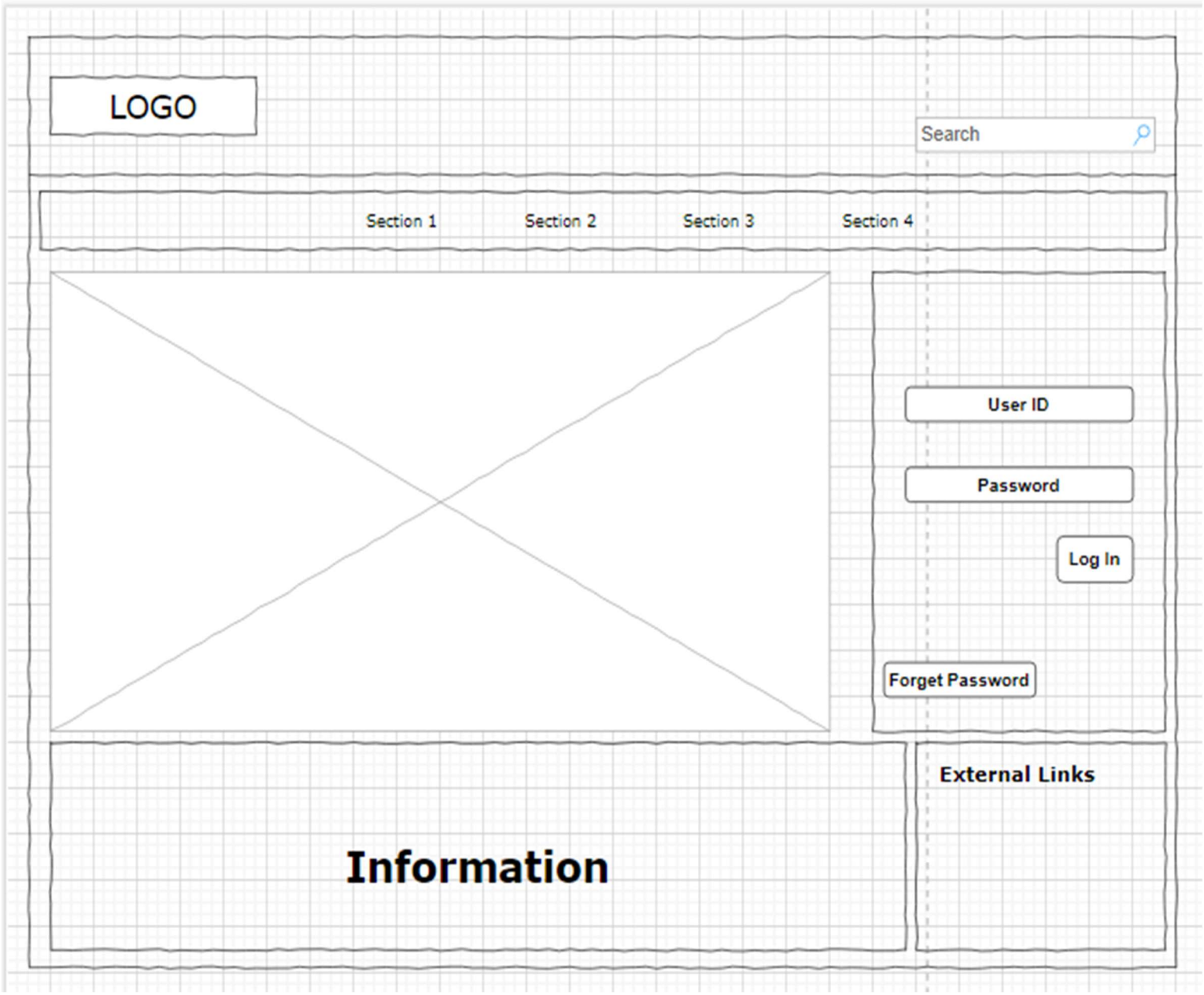


Fig 1: User Log in Page

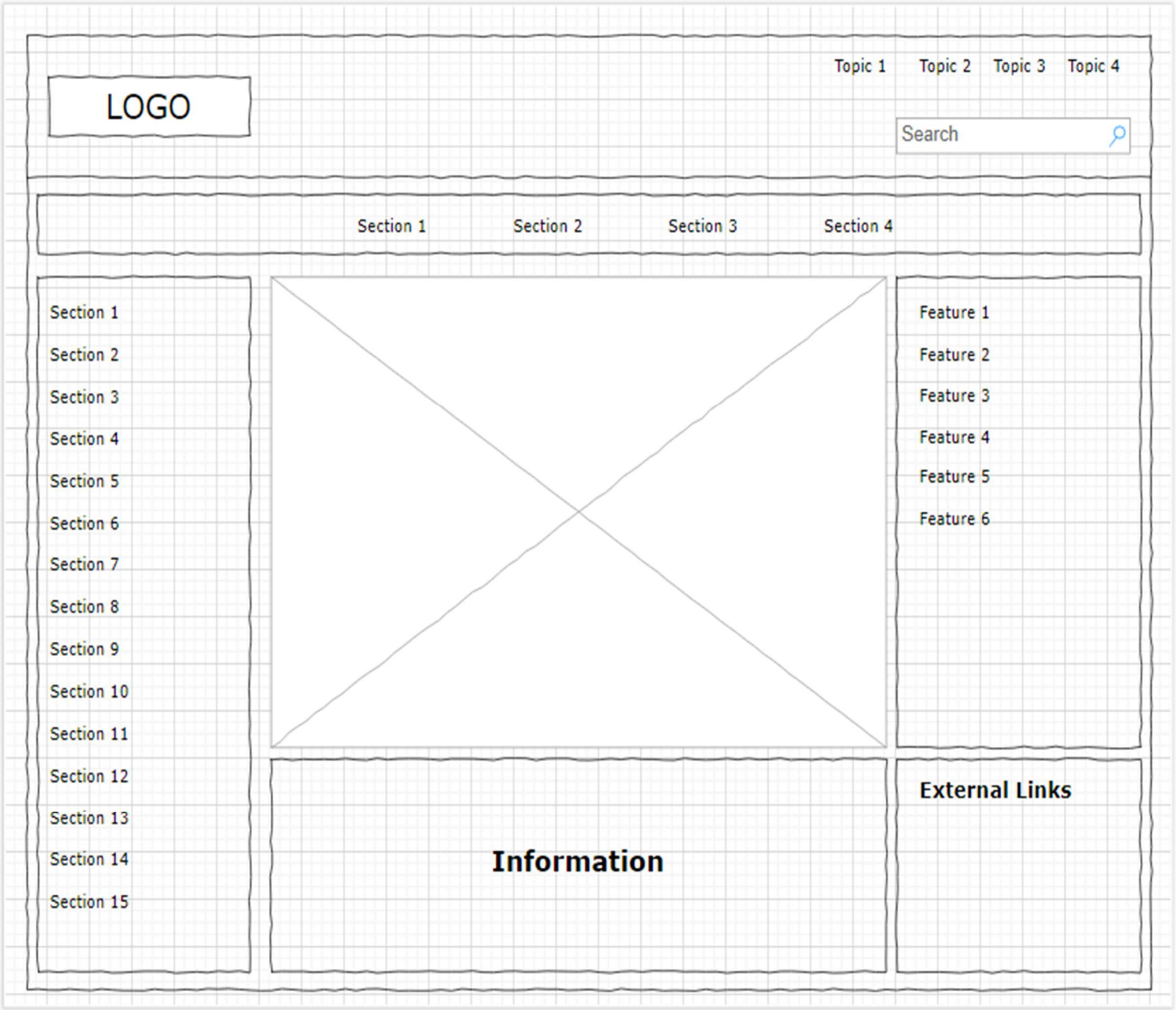


Fig 2: User Home Page

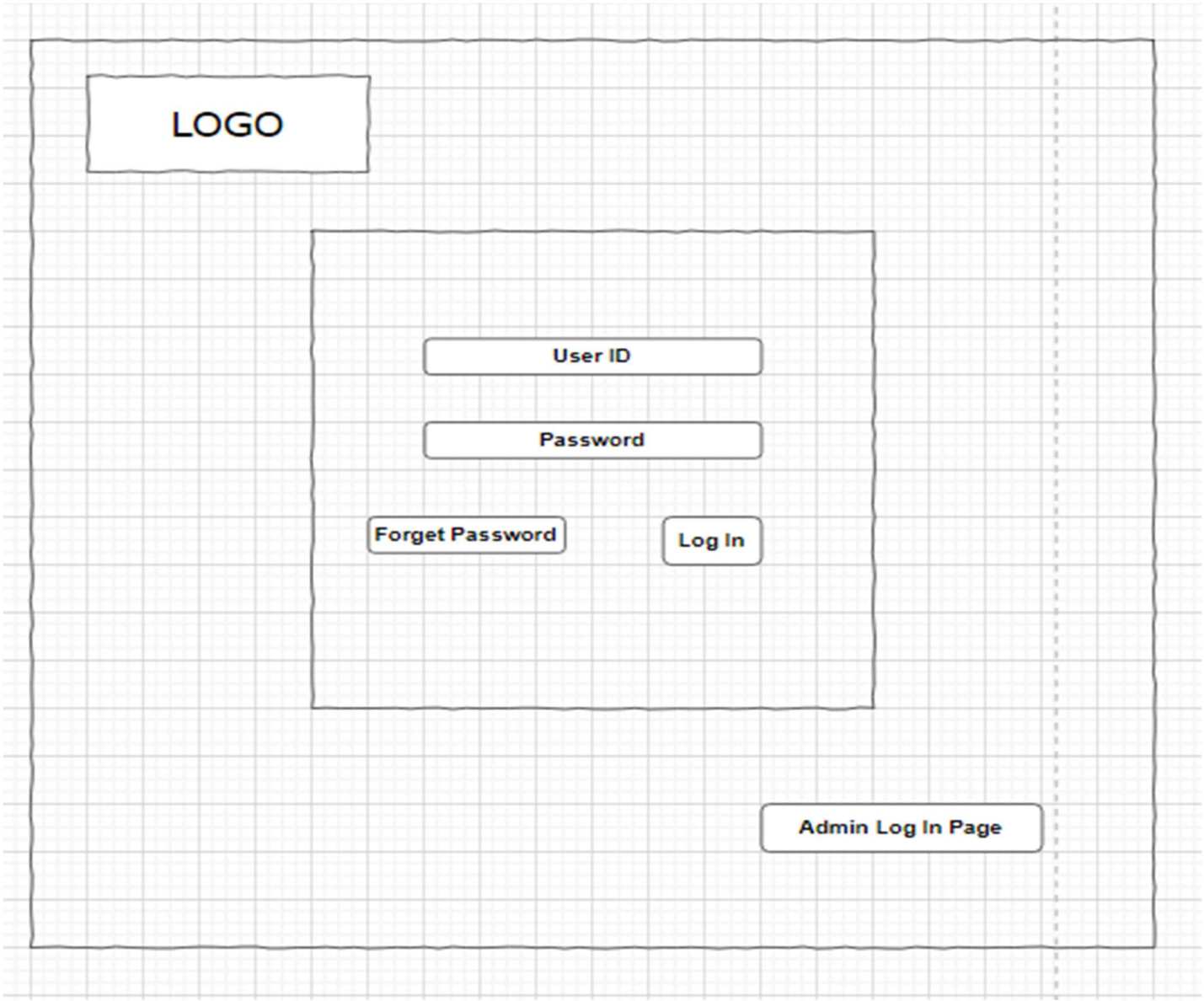


Fig 3: Admin Log in Page

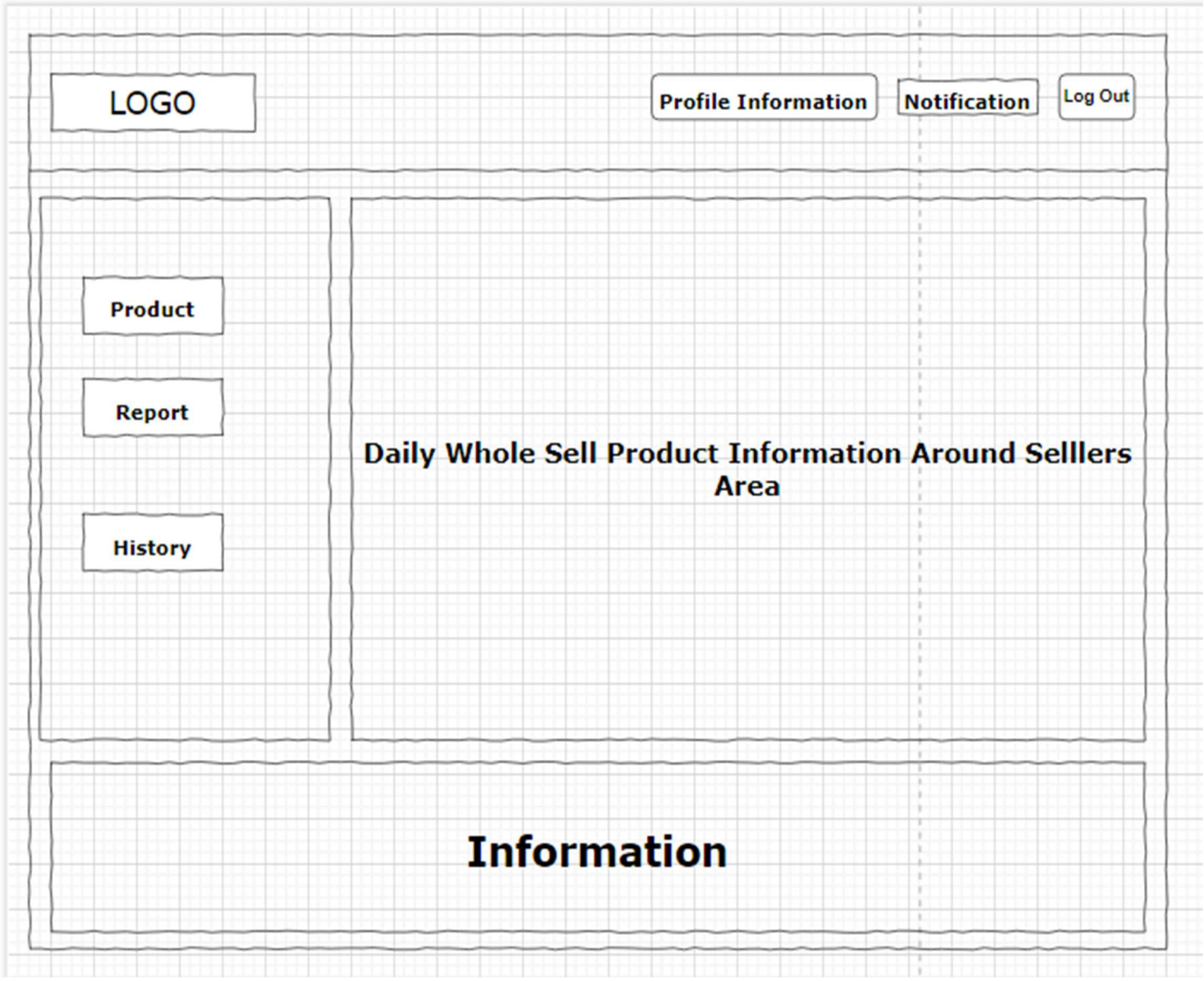


Fig 4: Seller Home Page

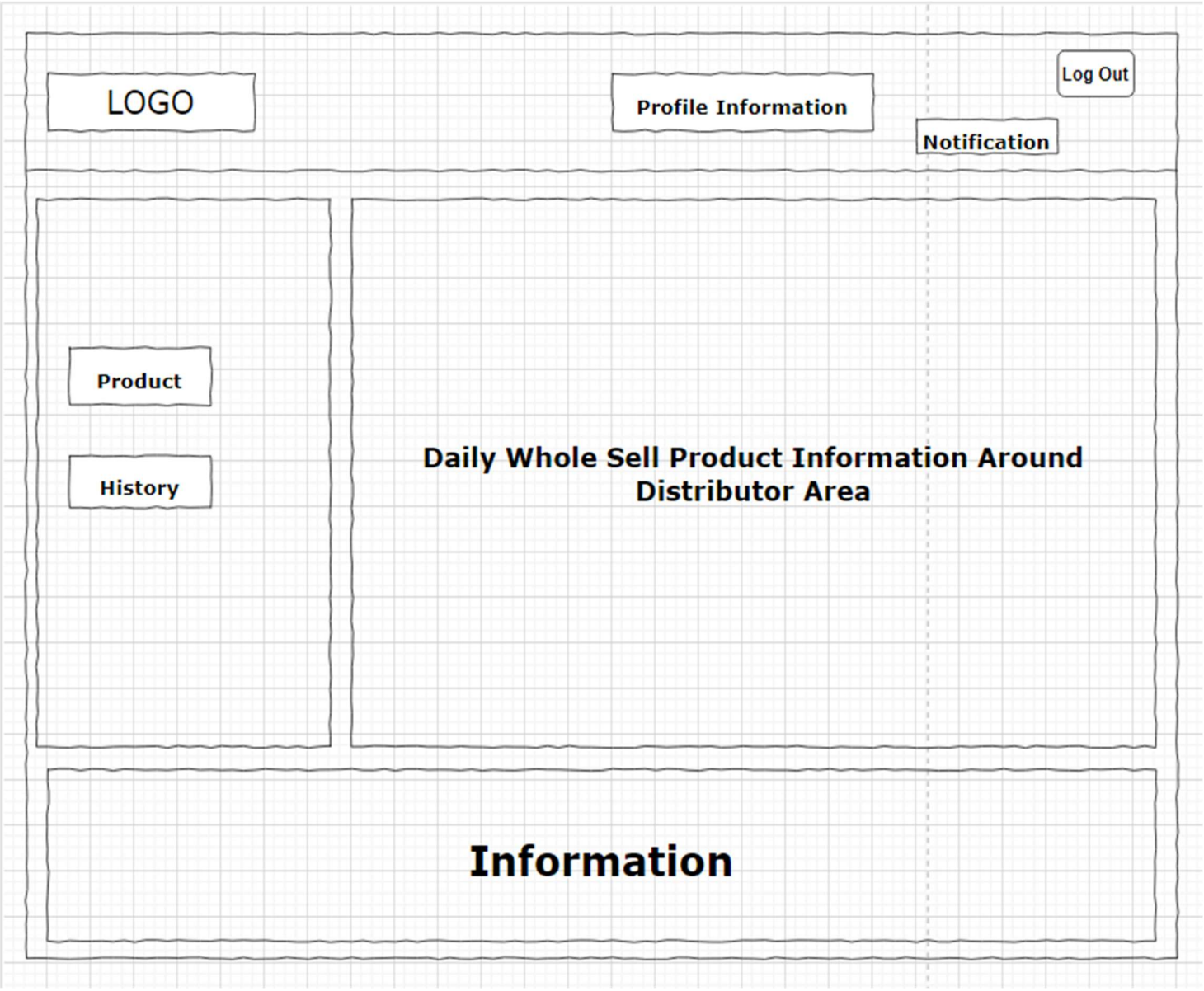


Fig 5: Distributor Home Page

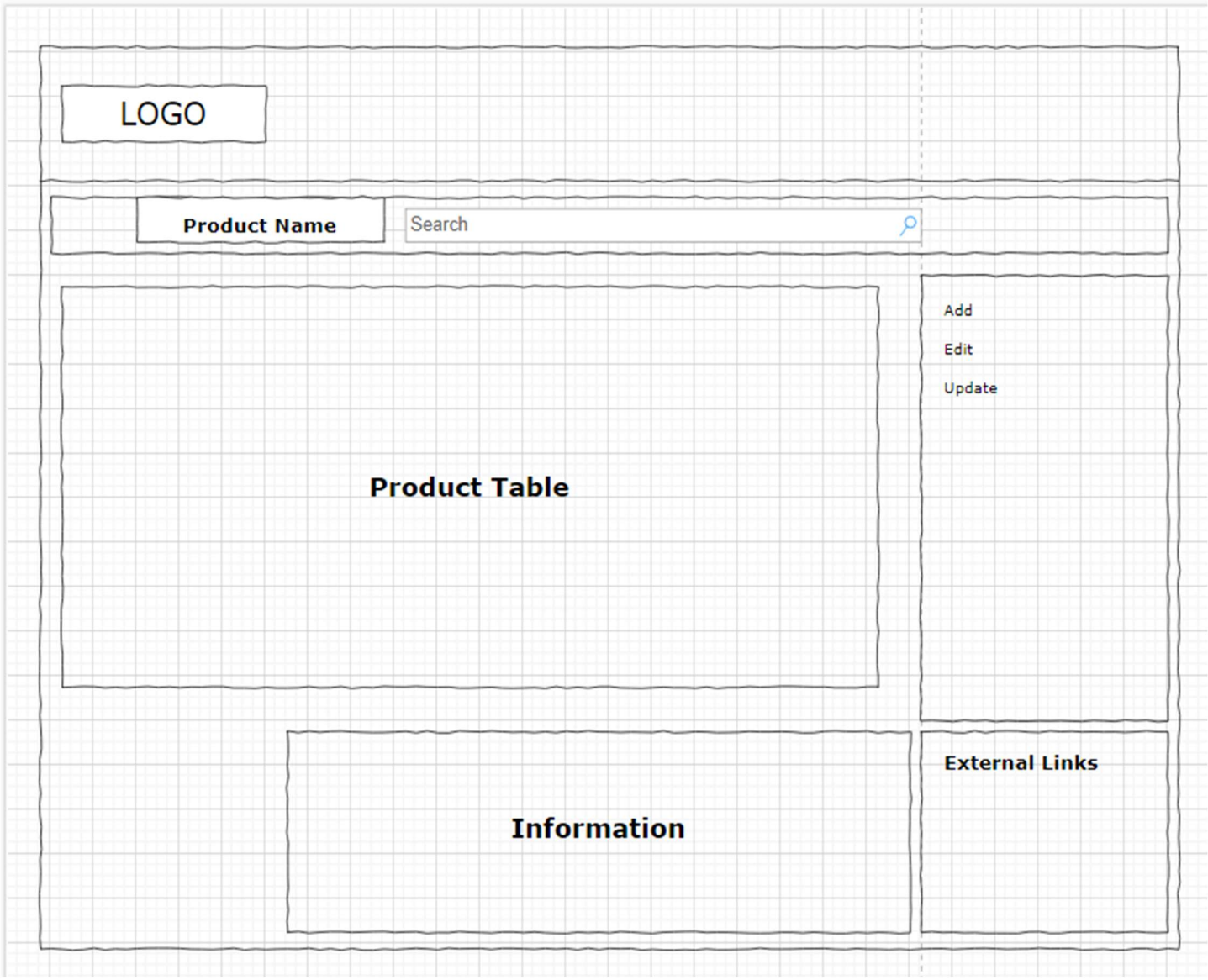


Fig 6: Distributor & Seller Product Page

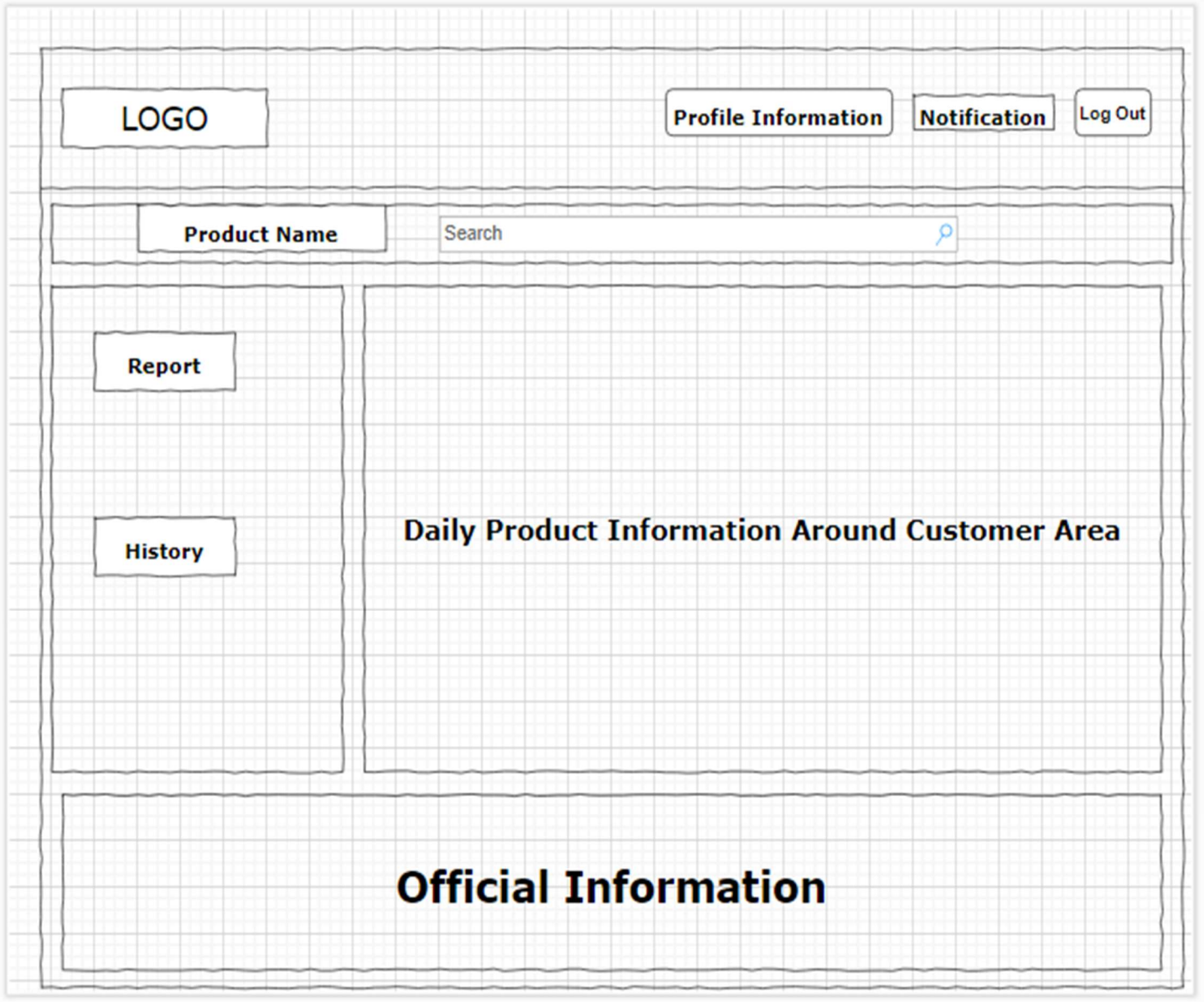


Fig 7: Customer Home Page

Test Cases

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-01			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Login Session			Test Executed Date:	
Test Title: Verify login with Valid Username and Password				
Description: Test Website Login Page				
Precondition(If any) : User must have valid username and password				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go To Website Enter Username Enter Password Click submit	Username: FFFF Password: 321	User should log in into the application		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-02			Test Designed Date:	
Test Priority(Low, Medium, High): Medium			Test Executed By:	
Module Name: Sign Up			Test Executed Date:	
Test Title: Sign up process validation				
Description: Test Website Sign up Page				
Precondition(If any) : Must have a NID and phone number				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go To Website Enter credentials Click register	Username: FFFF Userphone:01**** Password: 321 Address:XYZ NID:013**** UserType:XYZ	User should be registered into the application		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-03			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Distributor set price			Test Executed Date:	
Test Title: Set Wholesale Price				
Description: Test if the Distributor receives and implements the price hike information correctly				
Precondition(If any) : Distributor must be logged in				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to products Add products Set price Check & confirm	WPrname: Potato set: 10$	Whole sale price should be added to the database		

Project Name: Government Regulated Price Hike Application	Test Designed By:
Test case ID: CI-04	Test Designed Date:
Test Priority(Low, Medium, High): High	Test Executed By:
Module Name: Seller set price	Test Executed Date:
Test Title: Set Price	
Description: Test if the Seller receives and implements the price hike information correctly	
Precondition(If any) : Seller must be logged in	

Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to products Add products Set price Check & confirm	Prname: Potato set: 15$	Sale price should be added to the database		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-05			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Distributor set stock			Test Executed Date:	
Test Title: Set Wholesale stock				
Description: Test if the Distributor receives and implements the stock information correctly				
Precondition(If any) : Distributor must be logged in				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to products Add products Set stock Check & confirm	WPrname: Potato setstock: 1 Ton	Whole stock should be added to the database		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-06			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Seller set stock			Test Executed Date:	
Test Title: Set stock				
Description: Test if the Seller receives and implements the stock information correctly				
Precondition(If any) : Seller must be logged in				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to products Add products Set stock Check & confirm	Prname: Potato setstock: 100 kg	Sale stock should be added to the database		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-07			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Distributor update stock			Test Executed Date:	
Test Title: update Wholesale stock				
Description: Test if the Distributor receives and update the stock information correctly				
Precondition(If any) : Distributor must be logged in				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to products Add products update stock Check & confirm	WPrname: Potato update stock: 1.5 Ton	Whole stock should be updated to the database		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-08			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Seller update stock			Test Executed Date:	
Test Title: update stock				
Description: Test if the Seller receives and update the stock information correctly				
Precondition(If any) : Seller must be logged in				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to products Add products update stock Check & confirm	Prname: Potato update stock: 150 kg	Sale stock should be updated to the database		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-09			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Distributor update price			Test Executed Date:	
Test Title: update Wholesale Price				
Description: Test if the Distributor receives and update the information correctly				
Precondition(If any) : Distributor must be logged in				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to products Add products update price Check & confirm	WPrname: Potato update : 12$	Whole sale price should be updated to the database		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-10			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Seller update price			Test Executed Date:	
Test Title: update Price				
Description: Test if the Seller receives and update the price information correctly				
Precondition(If any) : Seller must be logged in				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to products Add products update price Check & confirm	Prname: Potato update : 20$	Sale price should be updated to the database		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-11			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Customer report			Test Executed Date:	
Test Title: report against seller				
Description: Test if the Customer can report about any specific seller				
Precondition(If any) : Customer must be logged in				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to feedback & report Add comment Check & Submit	TextBox: The price of potato was showing 25$ but the seller was asking 50$. Do you think this fair?	Report should be submitted to the database		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-12			Test Designed Date:	
Test Priority (Low, Medium, High): High			Test Executed By:	
Module Name: Seller report			Test Executed Date:	
Test Title: report against distributor				
Description: Test if the Seller can report about any specific distributor				
Precondition (If any) : Seller must be logged in				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Go to feedback & report. Add comment Check & Submit	Textbox: The price of potato was low quality and price overrated.	Report should be submitted to the database		

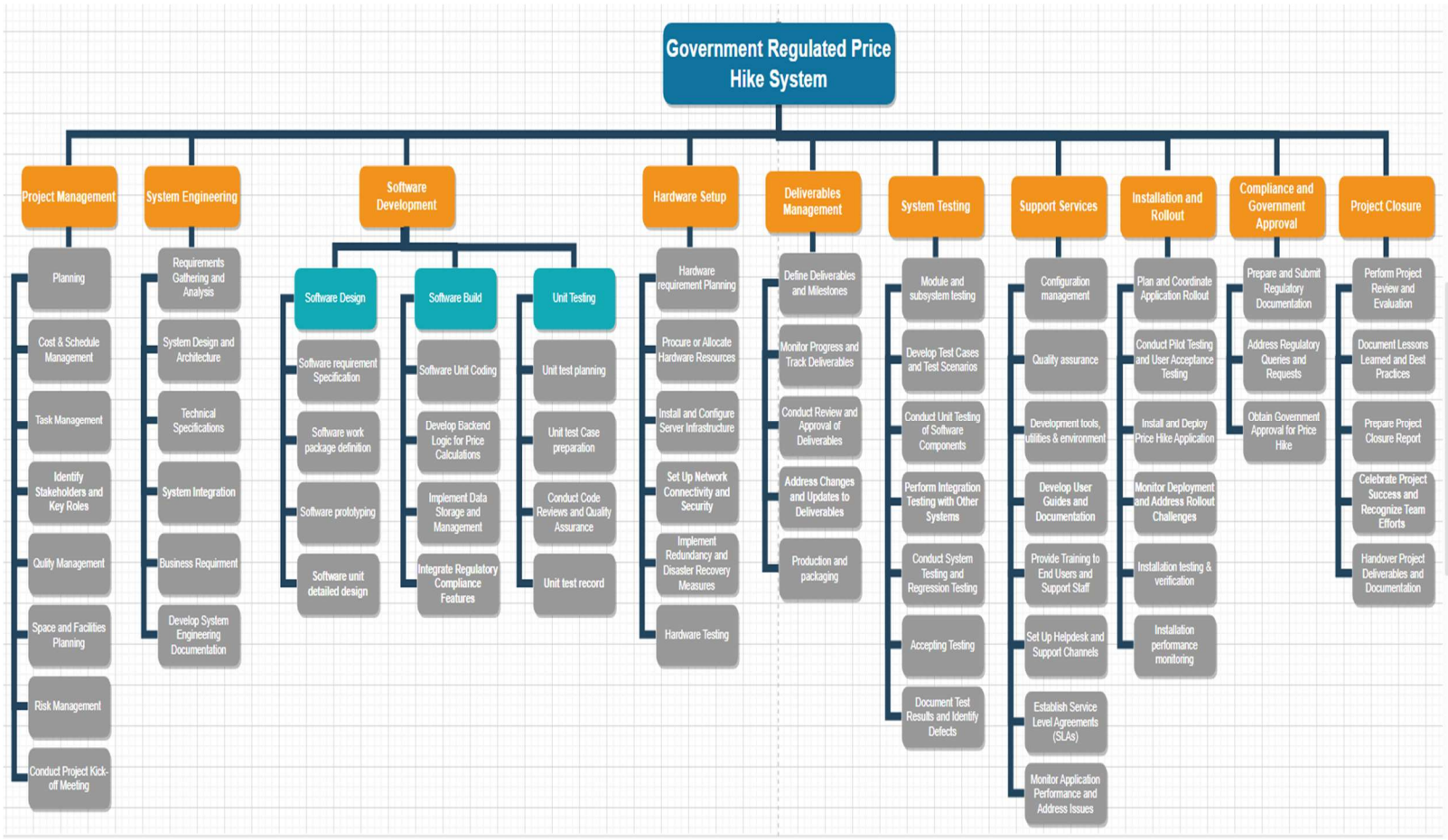
Project Name: Government Regulated Price Hike Application	Test Designed By:
Test case ID: CI-13	Test Designed Date:
Test Priority(Low, Medium, High): High	Test Executed By:
Module Name: Security - Access Control	Test Executed Date:
Test Title: Verify Access Control for System Actors	
Description: This test validates that the system enforces appropriate access controls for different system actors (Authority, Distributor, Seller, and Customer).	
Precondition(If any) : Users are registered with their respective roles (Authority, Distributor, Seller, Customer).	

Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Log in with each type of user account (Authority, Distributor, Seller, and Customer). Attempt to access functionalities outside the user's role. Attempt to modify price hike regulations (for unauthorized users).	Valid user accounts for each system actor.	Each system actor can access only the functionalities allowed for their role, and unauthorized access is restricted.		

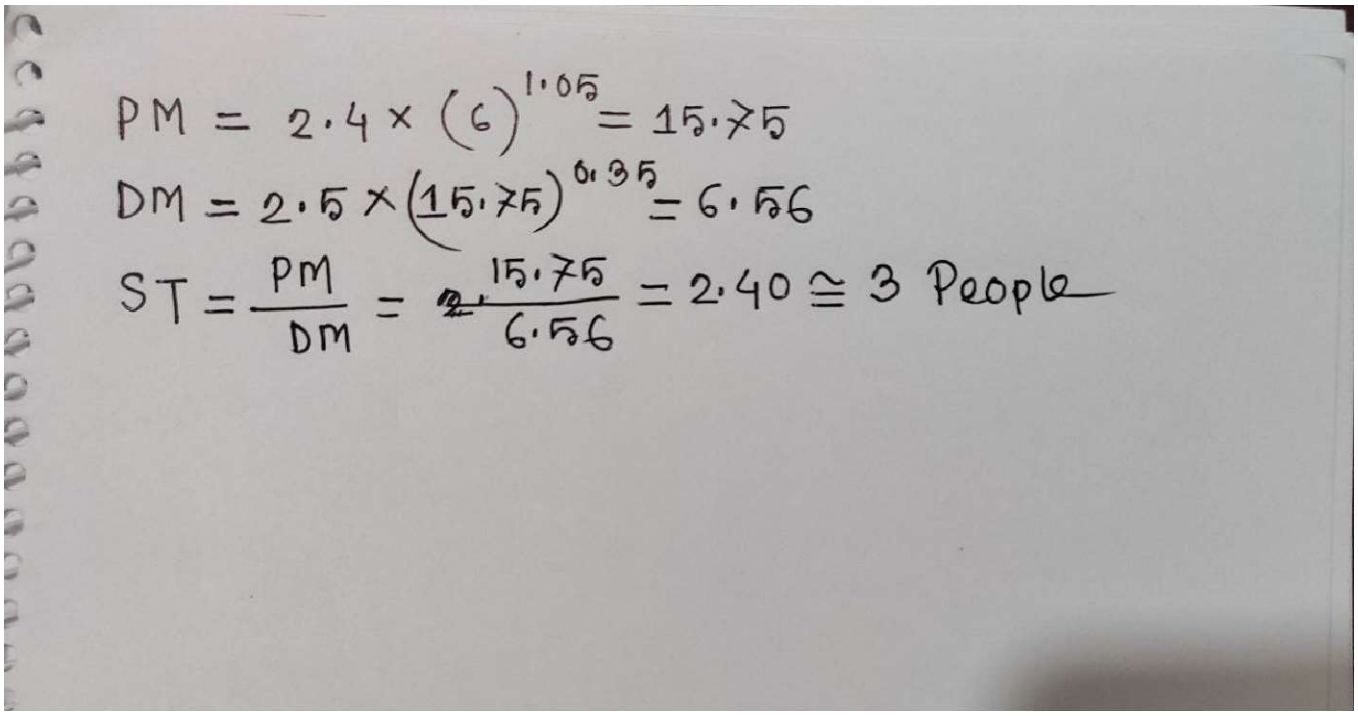
Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-14			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Distributor - Receive Price Hike Information			Test Executed Date:	
Test Title: Verify Distributor Receives Price Hike Information				
Description: This test checks whether the Distributor properly receives the price hike information from the Authority.				
Precondition(If any) : The price hike regulations are set by the Authority.				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Log in to the Distributor's system. Check for incoming price hike information from the Authority.	Price hike information sent by the Authority.	The Distributor successfully receives the price hike information from the Authority without any errors..		

Project Name: Government Regulated Price Hike Application			Test Designed By:	
Test case ID: CI-15			Test Designed Date:	
Test Priority(Low, Medium, High): High			Test Executed By:	
Module Name: Authority - Price Hike Validation			Test Executed Date:	
Test Title: Verify Authority's Ability to Set Valid Price Hike				
Description: This test ensures that the Authority can set valid price hike regulations within acceptable limits.				
Precondition(If any) : The Authority is logged in to the system.				
Test Steps	Test Data	Expected Result	Actual results	Status (Pass/Fail)
Log in to the system as the Authority. Navigate to the "Price Hike Regulations" section. Attempt to set a price hike percentage greater than the defined limit. Attempt to set a price hike percentage for non-existent products. Save the price hike regulations.	Product list affected by the price hike. Invalid percentage increase.	The system prevents the Authority from setting invalid price hike regulations and displays appropriate error messages.		

Work Breakdown Structure



Project Estimation:

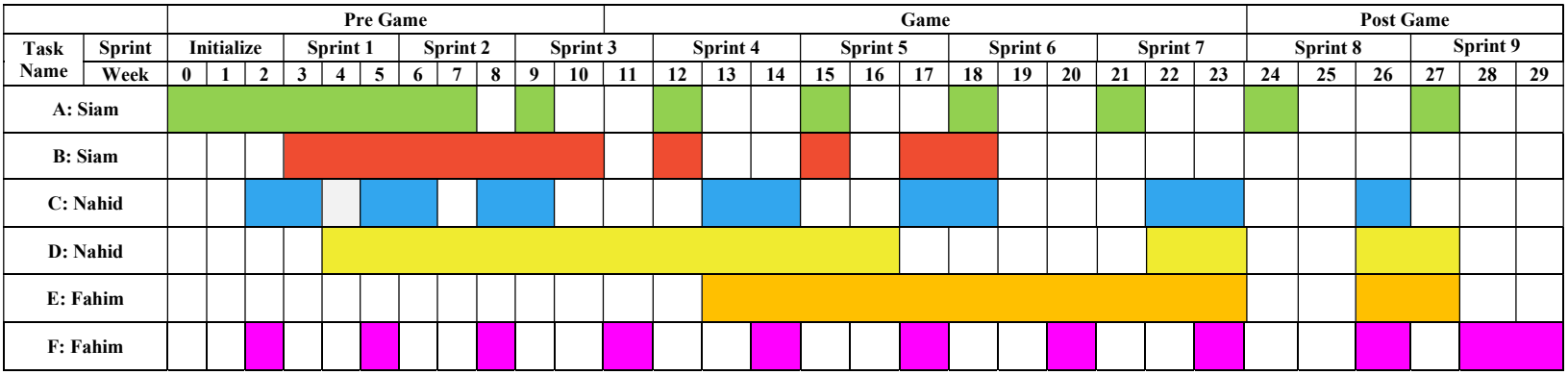


PM = 2.4*(6)$^{1.05}$ = 15.75

DM = 2.5*(15.75)$^{0.35}$ = 6.56

$$\mathbf{ST = \frac{PM}{DM} = \frac{15.75}{6.56} = 2.40 = 3\ People}$$

Timeline Chart



Activity Key:

A: Overall Requirements Gathering
B: Develop Environment and Infrastructure
C: Overall Design
D: Developer 1
E: Developer 2
F: Tester, Reviewer and Deployment

Work Breakdown Structure Timeline Chart

Task	Pre Game											Game														Post Game					
Sprint	Initialize			Sprint 1			Sprint 2			Sprint 3		Sprint 4				Sprint 5			Sprint 6			Sprint 7			Sprint 8			Sprint 9		
Week	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Planning																														
Cost and Schedule Management																														
Task and Quality Management																														
Identify stakeholders and Key Roles																														
Risk Management																														
Space and facility planning																														
Conduct project kickoff meeting																														
Requirement Gathering																														
Technical specification																														
Software Requirement Specification																														
Software Unit Coding																														
Unit test planning																														
Software Work Package Definition																														
Develop Backend Logic for Price calculation																														
Unit test case preparation																														
Software Prototyping																														
Implement Data Storage and management																														
Conduct Code Reviews and assurance																														
Software Unit detailed Design																														
Integrate Regulatory Compliance Facilities																														
Unit Test Records																														
Hardware Requirement Planning, Allocate																														
Install and Configure Server																														
Set up Connectivity and Security																														
Disaster Recovery measures																														
Hardware testing																														
Module and sub system testing																														
Develop test cases and Test scenarios																														
Conduct Unit Testing and Software comp.																														
Perform Integration with other systems																														
System Integration																														
System Testing																														
Business Requirements																														
Develop System Engr. Documentation																														
Define Deliverables and Milestones																														
Configuration Management																														
Monitor progress and Track Deliverables																														
Quality Assurance																														
Conduct Review and approval of delivery																														
Development tools, utilities, environments																														
Address Changes and updates to deliver																														
Accepting Testing																														
Document Test Results and identify defects																														
Develop User guides and Documentation																														
Provide training to End users, staffs																														
Production and Packaging																														
Setup Help desk and support channels																														
Established service level agreement																														
Plan and Coordinate App roll out																														
Conduct Pilot testing																														
Conduct User acceptance Testing																														
Install and Deploy the Application																														
Monitor deployment challenges																														
Installation Testing and Verification																														
Installation Performance monitoring																														
Prepare and submit Documentation																														
Address Regulatory quarries and requests																														
Obtain Government Approval																														
Project Review and Evaluation																														
Document lesson learns, best practices																														
Prepare project Closure report																														
Celebrate project success and team efforts																														
Handover Project deliverable and documentation																														

EVA Calculation

Task	Planned Effort	Actual Effort
1	15	15.8
2	17	13
3	4	6
4	22	19.3
5	12	17
6	11	19
7	13	9.6
8	10	16
9	20	24
10	23	18
11	8	
12	15	
13	19	
14	14	
15	7	

Given Total Task = 66, Effort Estimated= 315 Person Day

BAC = 315, ACWP = 157.7, BCWS = 210, BCWP = 147

SPI = BCWP/ BCWS = 147 / 210 = 0.7

SV = BCWP – BCWS = 147 – 210 = - 63 person- day

CPI = BCWP/ ACWP = 147 / 157.7 = 0.93

CV = BCWP- ACWP= 147 – 157.7 = -10.7 or -11 person-day

% Schedule for completion = BCWS/ BAC= 210 / 315 = 66.66%

[% of work scheduled should have been done at this time]

% complete = BCWP/ BAC = 147 / 315 = 46.66%

[% of work completed at this time]

BUILDING RISK TABLE

Risk Description	Impact	Probability	Category
Regulatory Compliance Issues	2	70%	PR
System Downtime	2	60%	DE, TE
User Resistance/Training	3	80%	CU
Data Loss	2	50%	TE
Inadequate Scalability	2	60%	DE, TE
Data Breach/Security Compromise	1	40%	PR, DE
Unforeseen Technological Changes	3	50%	TE
Insider Threats	2	30%	ST
Lack of Penetration Testing	3	70%	PR, DE
Technical Compatibility Issues	3	60%	DE
Integration Challenges	2	70%	DE, TE, ST
Inaccurate Price Calculations	2	80%	TE
Performance Degradation	3	50%	TE
Lack of Documentation	3	40%	PR
Economic/Political Changes	1	40%	BU
Changing Customer Needs	2	50%	CU
Vendor/Supplier Reliability	3	70%	PR, TE, ST
Skill Shortages	2	60%	ST
Budget Overruns	2	80%	BU

Impact values:

1 - Catastrophic
2 - Critical
3 - Marginal
4 - Negligible