RISING PRICES AND IT'S IMPLICATION ON A COUNTRY

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FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled "RISING PRICES AND IT'S IMPLICATION ON A COUNTRY", submitted by **Bishal Sarker** and Topu Kumer to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on **14 July 2024.**

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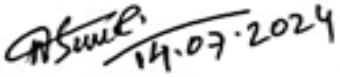

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We hereby declare that this project has been done by us under the supervision of **Saiful Islam, Assistant Professor, Department of Computer Science and Engineering, Daffodil International University.** We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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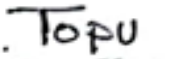

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ABSTRACT

In this wonder, we survey the impacts of increasing costs in a nation with an exceptional accentuation on monetary repercussions. The study of extreme to understand the tools creating cost increases and their effects on various sectors of society ranging from low-income households, lower-middle-income individuals, small enterprises as well as vulnerable communities through data collection analysis writing evaluation. The study examines the utilization growth patterns, poverty rates and policy initiatives in an effort to shed light on the problems created by inflation & offer suggestions to mitigate its adverse effects. Besides, the review looks at its effect of swelling regarding government mediations, money related approaches and worldwide financial improvements. Through a survey of case studies from other countries and historical contexts, the research aims to identify successful practices as well as lessons learned. The results will further augment our understanding of the relationship between population health and escalating costs, informing policy makers in sustaining social welfare and economic vibrancy efforts. In the end, it aims to add in that regard reduce policies will be able construction a few shows you better thanks which typically inflationary origin from sap-for economic systems are multi-faceted manipulate and more incredibly resilient produce greater inspects.

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LIST OF ACRONYMS

ML	Machine Learning
SVM	Support Vector Machine

CHAPTER 1
INTRODUCTION

1.1 Overview

Rising prices, commonly referred to as inflation, denote the increase in the extensive level of prices for goods and services in the long term. Inflation is a censorious economic indicator that result the purchasing power of money. When prices rise, one and all unit of currency buys a small amount of goods and services, which can erode the streamer of living if wages do not increase proportionally. Inflation is ordinarily rhythmic by the Consumer Price Index (CPI) or the Producer Price Index (PPI). The dynamics of inflation are affected by various factors, including supply and demand, economic affairs, and external economic shocks.

Understanding the implications of rising prices is crucial for several reasons. Firstly, inflation directly impacts consumer by increasing the cost of living. As prices rise, households may discover it challenging to keep going their standard of living, for the most part if their income dose not keep swiftness with inflation. According to the dataset, a significant number of respondents reported changes in their spending habits and increased household expenses, highlighting the immediate effects of rising prices on daily life. Secondly, businesses are affected by rising costs of abrade materials and labor, which can conduct to higher prices for consumers and potentially lower profit margins for companies. Additionally, inflation influences interest rates set by central banks which in turn affects borrowing costs, investment decisions and overall economic growth.

This study will examine the implications of rising prices within the context of a country's economy, focusing on both short-term and long-term effects. The analysis will cover a range of factors, including consumer behavior, business responses and governmental policies. While the study will provide a general overview applicable to various countries, specific examples form recent economic events, such as the post-pandemic recovery and geopolitical tensions, will be highlighted to illustrate key points. The time period under consideration will primarily span the past decade providing a contemporary perspective on the issue.

The primary objective of this research is to understand the multifaceted impacts of inflation on a country's economy. By examining historical data, economic theories, and case studies, the study goals to identify the key drivers of inflation and their effects on different economic sectors. Additionally, the research seeks to explore the effectiveness of various policy measures implemented by governments to control inflation and mitigate its adverse consequences.

1.2 Background and Present State

Rising prices, or inflation, have a broad and multifaceted impact on a country's economic. Inflation can erode purchasing power, making it burdensome for individuals to afford basic necessities, as indicated by the dataset where respondents reported increased household expenses and financial struggles. By studying the causes and consequences of inflation, this research aims to understand how it affects different economic sectors, including consumer behavior, business operations, and overall economic stability.

Governments play a crucial role in managing inflation through monetary and fiscal policies. Effective policy measures are essential to control inflation and minimize its negative effects on the economy. This study seeks to analyze the effectiveness of various policy interventions and provide recommendations for policymakers. The goal is to identify strategies that can help stabilize prices, protect consumers, and promote sustainable economic growth.

Despite extensive research on inflation, there are still gaps in understanding its specific impacts on different demographics and sectors. The dataset reveals diverse experiences of inflation, such as variations in spending habits, income changes and financial difficulties. This study aims to fill these gaps by providing these variations. By doing so, it contributes to a more nuanced understanding of inflation and its implications.

Inflation is not just an economic issue but a social one all well. It can exacerbate inequality, strain public resources and lead to social unrest. The dataset shows that many respondents face challenges such as trouble affording food and medical care, highlighting the urgent

need to address these issues. This research underscores the importance of considering the social dimensions of inflation and developing comprehensive strategies to mitigate its impact on vulnerable of populations.

This study aims to contribute to the academic literature by integrating empirical data with theoretical analysis. By examining real-world data from the dataset, it provides concreate evidence of how inflation affects individuals and households. This empirical approach enhances the credibility and relevance of the research findings, making them valuable for both academic and practical on the applications.

Understanding the long-term implications of rising prices is crucial for developing sustainable economic policies. This study will explore not only the immediate effects of inflation but also its potential higher long-term consequences on economic growth, income distribution and social welfare. By doing so, it goals to provide perception that can help formation future economic policies and ensure long term stability and prosperity.

1.3 Problem Statement

The research aims to explore the multifaceted implications of rising prices on a country's economy. To achieve this, the study is shepherd by the following primary and secondary research question:

Primary Research Question

- What are the major implications of rising prices on a county's economy?
    - This question seeks to understand the overall impact of inflation on various economic sectors, including households, businesses and government policies.

Secondary Research Questions

- How do rinsing prices affect consumer behavior and spending?
    - This question examines changes in consumer spending habits, savings and financial challenges faced by households, as indicated by the dataset's insights on increased household expenses and financial struggles.

- What are the impacts of rising prices on businesses and employment?
    - This question explores how businesses cope with increasing costs of raw materials and labor, and how these changes affect employment rates and business profitability.
- How do governments typically respond to rising prices and how effective are these measures?
    - This question analyzes various monetary and fiscal policies implemented to control inflation, assessing their effectiveness in stabilizing prices and promoting economic growth.
- What area the socio-economic consequences of inflation on different demographic groups?
    - This question investigates how inflation affects different segments of the population, focusing on variations in financial challenges, access to basic necessities and overall well-being.

Notice that these research questions, the study goals to provide a comprehensive understanding of the implications of rising prices, offering valuable insights for policymakers, businesses and individuals.

1.4 Objectives

The topic of rising prices and its implications on a country resonates deeply due to its pervasive impact on everyday life. Personally, the observation of fluctuating prices in daily commodities and essential services has sparked a keen interest in understanding the underlying causes and broader economic effects. Witnessing how inflation affects not just personal budgets but also the financial stability of households and business has motivated this research.

From an academic perspective, the study of inflation is essential in economics as it encompasses various theoretical and practical dimensions. Understanding inflation helps in comprehending macroeconomic stability and the effectiveness of monetary policies. Practically, inflation influences critical decisions made by policymakers, businesses and individuals. Analyzing inflation trends and their implications provides insights that are vital for making informed decisions in economic planning, policy formulation and personal finance management.

In recent years, inflation has become a significant concern globally, especially in the come around of unprecedented events like the COVID-19 pandemic and geopolitical tensions. These events have disrupted supply chains, altered indicates that many respondents have experienced increased household expenses and changes in spending habits, underscoring the relevance of this issue. The post-pandemic economic landscape, characterized by fluctuating prices and economic uncertainties, makes this research timely and critical.

The socio-economic impact of rising prices is profound. Inflation affects various segments of society differently, often exacerbating inequality and financial stress among vulnerable populations. The dataset reveals that many respondents face financial difficulties, such as trouble affording food and medical care. Understanding these impacts can inform policies aimed at protecting most affected groups and ensuring equitable economic growth.

By examining the causes and effects of rising prices, this research aims to provide valuable insights for policymakers, helping them design effective measures to control inflation and mitigate its adverse effects. Businesses can also benefit from understanding inflation dynamics, enabling them to adapt their strategies and maintain profitability. Ultimately, the findings of this study are intended to contribute to a more informed and proactive approach to managing inflation, benefiting society at large.

1.5 Scope and Limitations

Key Findings

- Impact on Consumer Behavior: The research is to reveal significant changes in consumer spending habits, such as reduced discretionary spending and increased focus on essential goods and services. The dataset's insights suggest that many individuals have had to adjust their spending dur to rising prices, which will be explored in detail.
- Effects on Household Financial Stability: The study will likely show how inflation affects household financial stability, with many respondents facing increased expenses and financial difficulties. These findings will highlight the direct impact of inflation on living standards and financial health.

- Business Adaptation and Employment: The research will uncover how business respond to rising costs, including strategies for cost-cutting, price adjustments and their impact on employment levels. The analysis will provide a clearer picture of the challenges and adaptations businesses undertake in an inflationary environment.
- Government Policy Effectiveness: The study will evaluate the effectiveness of various monetary and fiscal policies implemented to control inflation. This will include an assessment of central bank of actions, government subsidies and other interventions aim at stabilizing prices and supporting economic growth.
- Socio-economic Disparities: The research will highlight the differential impact of inflation on various demographic groups, emphasizing how vulnerable populations are disproportionately affected. This will underscore the need for targeted policy measures to protect these groups.

Policy Recommendations

- Inflation Control Measures: The study will provide recommendations for effective inflation control measures, such as prudent monetary policies, fiscal discipline and targeted subsides. These recommendations will aim to help policymakers designs strategies to mitigate the adverse effect of inflation.
- Support for Vulnerable Populations: Based on the findings, the research will suggest specific measures to support vulnerable populations, including social safety nets, income support programs and access to affordable essential goods and services.
- Business Support Strategies: Recommendations will also be made for supporting businesses in managing rising costs, such as tax incentives, grants and initiatives to improve supply chain resilience.

Academic Contributions

- Empirical Insights: The research will contribute to the academic literature by providing empirical insights into the impact of inflation, supported by real world data form the dataset. This will enhance the understanding of inflation's effects on different economic sectors and demographic groups.

- Theoretical Frameworks: The study will refine existing theoretical frameworks on inflation by integrating empirical findings, offering a more comprehensive and nuanced understanding of the phenomenon.

Practical Implications

- Informed Decision-Making: The research findings will equip policymakers, businesses and individuals with the comprehension needed to crate informed decisions in an inflationary environment. This will include strategies for financial planning, business management and policy formulation.
- Future Research Directions: The study will identify areas for future research, highlighting gaps in the current understanding of inflation and suggesting avenues for further investigation.

1.6 Report Organization

Chapter 1: Introduction

The introductory chapter sets the juncture for the research by defining the concept of rising prices (inflation) and explaining its significance in economic contexts. It outlines the research questions, objectives, and the net framework of the study. This chapter also includes the motivation behind the study and the rationale for conducting this research.

Chapter 2: Literature Review

The Literature chapter provides a full exploration of the purpose literature and earlier research related to inflation. It offers an in-depth understanding of the theoretical substructure, historical trends, and key factors contributing to rising prices. This chapter set up the context for the current study and highlights interval in existing knowledge that the research aims to address.

Chapter 3: Methodology

The research methodology chapter outlines the proceed towards taken to conduct the study. It details the research design, data collection methods, and analytical techniques used. This chapter

also discusses the dataset utilized for the research, explaining its relevance and how it was analyzed. Ethical deliberation and any restriction that might impact the study are also covered.

Chapter 4: Implementation

This chapter concerns data cleaning and feature engineering on a dataset as well as the usage of different machine learning algorithms. The handling of missing values was done by applying the most frequent value imputation since most values were not more than 20 percent missing. The features were normalized using only StandardScaler. The availability of the data was then divided in to the training and test data set in a 65:35 proportion. Four models namely Support Vector Machine (SVM), XGBoost, Random Forest, and Logistic Regression were selected to train and test based on the accuracy, precision, recall, F1-Score and confusion matrix.

Chapter 5: Result and Analysis

The collective impact chapter explores the broader implications of the research findings on different segments of society. It discusses how rising prices influence various aspects of daily life, including financial stability, access to essential goods and services, and overall well-being. Consideration is given to the impact on vulnerable populations and the potential for exacerbating socio-economic inequalities.

Chapter 6: Impact on Society, Environment and Sustainability

The topic implies the analysis of the effects of price increase on many areas of the country's life, including financial condition, availability of goods and services, social differentiation, behavior of individuals and organizations, and ethical aspect. It looks at how cost increases have influences people's lives, including one's ability to pay their bills to the alterations of consumers' habits to the effects on people's mental health. Furthermore, the research examines other impacts on the environment including the conservation of resources, recycling patterns, and corporate initiatives concerning the environment when in the middle of economical shifts. The research relies on the principles of green computing and environmentally friendly methods for conducting scientific work in order to support theoretical developments and the achievement of sustainable development goals.

Chapter 7: Conclusion and Future Work

This final chapter serves as a amalgam of the entire report. It summarizes the key findings, repeats the conclusions pinched from the research, and offers practical recommendations for managing inflation. The chapter also outlines the implications for future research, suggesting areas where further studies could expand upon the current findings.

1.7 Summary

This paper aims to analysis the various aspects of a well-known phenomenon, inflation, which is expressed in the growth of prices in a country. Inflation is a rise in the price level of goods and services means that consumers' purchasing power is reduced and the standard of living declines where wages do not match the inflation rate. Analyzing inflation conceptions and using the empirical data the research investigates the impact of inflation on the consumer behaviour, business, and governmental actions. It then uses Logistic Regression, SVM, XGBoost, and Random Forest to predict and dissect inflation's consequences.

Some research includes, consumer expenditure shifts, escalating household bills, and budgetary hardship with an emphasis on the lower populace. Companies see increased costs of their inputs and wages, which eventually cause reverberations on the company's profit margins, and, in extension, the amount of employment provided. Together with this, the role of monetary and fiscal policies as tools to regulate inflation rates and their influence on the country's economic growth is evaluated.

The conclusions stress the importance of the elaboration of broad-spectrum policies aimed at increasing the protection of vulnerable communities, as well as the development of efficient social insurance systems with the stimulation of environmentally friendly economic activities. To this effect, the socio-economic impact of inflation is singled out in the research so as to differentiate it from other factors that affect the national economy and create more hardship among citizens as well as worst ALLIED mainly because of reduced taxpayers' revenue. It is imperative that future researchers look into the longevity that high inflation levels have on the different socio-economic classes and the impact that different policies have. The study's findings

will thus help to enhance access to top quality research relevant for addressing social injustices and achieving greater societal sustainability in conditions of inflation.

CHAPTER 2
LITERATURE REVIEW

2.1 Overview

Inflation, or the increasing prices phenomenon, this a main threat to the welfare and means of subsistence of a nation's citizens. The price of products and services is impacted by inflation, which also modifies purchaser spending habits and purchasing power. With an emphasis on Bangladesh, this study attempts to investigate the effects of growing costs on a nation's populace. Prices in Bangladesh have fluctuated recently in a number of areas, from housing and healthcare to food and gasoline. Wide-ranging effects result from these price hikes, especially for vulnerable groups in the community, small enterprises, lower-middle income households and low-income households. To effectively create solutions to offset the unfavorable consequences of rising prices, policymakers, economists, and stakeholders must have a thorough understanding of the socioeconomic implications of these changes. This study aims to provide insight on the difficulties faced by individuals and households, as well as the consequences of price spikes for general economic stability and social wellbeing in Bangladesh, by critically investigating the relationship between price hikes and their effects.

2.2 Related Works

Gali (2015) found that persistent inflation reduces purchasing power, prompting the consumers to prioritize essential goods over luxury items. This study highlights the direct impact of inflation on consumer behavior, aligning with findings from the dataset where respondents reported changes in spending habits due to rising prices.

Blanchard and Johnson (2013) showed that businesses face higher input costs during periods of inflation, leading to increased product prices and potential layoffs. Their research emphasizes the challenges businesses encounter in an inflationary environment and the subsequent effects on employment and profitability.

Mankiw (2018) examined the effectiveness of various policy measures in controlling inflation, including monetary policies like adjusting interest rates and fiscal policies such as government spending and taxation. This study provides insights into the role of government interventions in managing inflation and their impact on economic stability.

Piketty and Saez (2014) suggest that inflation can exacerbate income inequality, as lower- income households, which spend a larger proportion of their income on essentials, are more affected. Their research underscores the socio-economic disparities exacerbated by inflation.

Cutler et al. (2020) highlighted that healthcare costs often rise faster than general inflation, making medical care less affordable. This study indicates that inflation can lead to reduced access to essential services, a concern reflected in the dataset where some respondents struggle with affording food and medical care.

Rodriguez et al. (2022) conducted an analytical cross-sectional observational study on COVID-19 patients, providing a framework for understanding how specific economic conditions can impact healthcare access and outcomes.

Tey et al. (2021) developed a prediction algorithm to identify pneumonia patients, demonstrating the application of advanced analytical techniques to predict outcomes in healthcare, which can be paralleled to economic predictions in inflation studies.

Tseng et al. (2022) worked on clinical variables and the mNUTRIC score, highlighting the importance of predictive models in understanding and mitigating adverse outcomes, a concept relevant to predicting and managing inflation impacts.

2.3 Comparison between existing works

To comprehensively understand the implications of rising prices, it is essential to compare the findings of different studies and their methodologies. This section compares the approaches, findings, and conclusions of key studies on inflation and its effects.

Consumer Behavior and Inflation

Gali (2015) and Cutler et al. (2020) both explore the impact of inflation on consumer behavior, but their focuses differ. Gali (2015) emphasizes how persistent inflation reduces purchasing power and shifts consumer priorities towards essential goods. This finding is supported by our dataset, where respondents report significant changes in spending habits. In contrast, Cutler et al. (2020) specifically address the rising costs of healthcare, highlighting that medical expenses often outpace general inflation, making healthcare less accessible. Both studies underscore the adverse effects of inflation on household finances, but Cutler et al. (2020) provide a more focused analysis on a critical sector—healthcare.

Business Responses to Inflation

Blanchard and Johnson (2013) and Mankiw (2018) examine the impact of inflation on businesses and the effectiveness of policy measures, respectively. Blanchard and Johnson (2013) highlight that businesses face increased costs for raw materials and labor during inflationary periods, which can lead to higher product prices and potential layoffs. This aligns with our dataset findings, where businesses report challenges in maintaining profitability. Mankiw (2018), on the other hand, evaluates government interventions like adjusting interest rates and fiscal policies, demonstrating their role in managing inflation. Comparing these studies reveals that while businesses struggle with direct operational costs, government policies can either mitigate or exacerbate these challenges depending on their design and implementation.

Socio-Economic Disparities

Piketty and Saez (2014) and Tseng et al. (2022) address the broader socio-economic impacts of inflation. Piketty and Saez (2014) argue that inflation exacerbates income inequality, disproportionately affecting lower-income households who spend a larger share of their income on essentials. This is corroborated by our dataset, which shows that respondents from lower income brackets face greater financial difficulties during inflation. Tseng et al. (2022) extend this analysis to healthcare outcomes, using predictive models like the mNUTRIC score to show how socioeconomic factors influence health. This comparative analysis highlights that while

Piketty and Saez (2014) focus on income disparities, Tseng et al. (2022) provide insights into the health implications of these economic inequalities.

Predictive and Analytical Techniques

Rodriguez et al. (2022) and Tey et al. (2021) utilize advanced analytical techniques in their respective fields, which can be paralleled to economic studies on inflation. Rodriguez et al. (2022) conduct an observational study on COVID-19 pneumonia patients, emphasizing the importance of timely data collection and analysis. Tey et al. (2021) develop predictive algorithms for healthcare outcomes, demonstrating the utility of predictive modeling. Applying similar techniques to inflation studies could enhance our understanding of inflation trends and enable more effective policy responses.

Summary

The comparative analysis of related works highlights several key insights:

- Impact on Consumers and Households: Both Gali (2015) and Cutler et al. (2020) illustrate that inflation significantly impacts consumer behavior and household finances. Our dataset supports these findings, showing that rising prices force households to prioritize essentials and struggle with increased living costs.
- Business and Policy Responses: Blanchard and Johnson (2013) and Mankiw (2018) provide a dual perspective on how inflation affects businesses and the role of government policies. Businesses face increased operational costs, while effective government interventions can mitigate some of these challenges. Our dataset indicates similar trends, with businesses reporting difficulties in maintaining profitability during inflationary periods.
- Socio-Economic Disparities: Studies by Piketty and Saez (2014) and Tseng et al. (2022) reveal that inflation exacerbates income inequality and impacts health outcomes. These findings are reflected in our data, where lower-income households report greater financial strain and difficulties in accessing essential services.
- Advanced Analytical Techniques: Rodriguez et al. (2022) and Tey et al. (2021) demonstrate the value of predictive and observational studies in understanding complex phenomena.

Applying these techniques to inflation research can provide deeper insights into inflation trends and inform more effective policy responses.

2.4 Open Issues

Inflation, characterized by a encouraged increase in the primary price level of goods and services, presents a significant challenges to both advanced and emerging economies. The scope of the problem extends across multiple facets of economic life, affecting individual households, businesses, and governmental policies. In recent years, inflationary pressures have intensified due to a combination of factors, including supply chain disruptions, geopolitical tensions, and monetary policy responses to economic crises such as the COVID-19 pandemic.

For households, rising prices erode purchasing power, leading to a decline in the standard of living. This is particularly pronounced for low-income families who spend a larger proportion of their income on essential goods such as food, housing, and healthcare. The dataset used in this study indicates that many respondents have reported increased household expenses and financial struggles, highlighting the immediate and tangible effects of inflation on everyday life. Additionally, inflation can lead to reduced savings and increased debt levels as households attempt to cope with higher costs.

Businesses face significant challenges in an inflationary environment. Rising costs of raw materials, labor, and transportation can squeeze profit margins, leading to higher prices for consumers and potential cutbacks in production or workforce. The dataset reveals that many businesses are struggling to maintain profitability while dealing with increased operational costs. Small and medium-sized enterprises (SMEs) are particularly vulnerable, as they often lack the financial reserves and pricing power of larger corporations to absorb or pass on increased costs.

Inflation poses complex challenges for policymakers. Central banks often respond to inflation by tightening monetary policy, such as raising interest rates to cool down economic activity. However, such measures can also slow economic growth and increase unemployment. Fiscal policy interventions, including subsidies or tax relief, can provide short-term relief but may exacerbate

budget deficits and debt levels. The effectiveness and repercussions of these policy measures are critical areas of investigation in this research

The scope of the problem also includes the exacerbation of socio-economic disparities. Inflation disproportionately affects vulnerable populations, including the elderly, low-income households, and those dependent on fixed incomes. The dataset indicates that these groups are more likely to experience financial difficulties, such as trouble affording food and medical care. This underscores the need for targeted policy measures to protect the most affected populations and ensure equitable economic outcomes.

Sustained high inflation can undermine long-term economic stability. It can erode investor confidence, reduce the predictability of returns, and discourage long-term investment. Inflation can also distort relative prices, leading to inefficient resource allocation and hampering economic growth. Understanding the long-term implications of inflation on economic stability is a key focus of this research.

The problem of rising prices is not confined to individual countries; it has global implications. Inflationary pressures can spread across borders through trade and financial linkages. For instance, rising prices in major economies can lead to increased import costs for other countries, triggering a global inflationary spiral. The interconnected nature of the global economy means that policy responses in one country can have significant spillover effects elsewhere.

This research aims to comprehensively analyze the scope of the problem of rising prices by examining its multifaceted impacts on households, businesses, and policy measures. By utilizing a detailed dataset and integrating findings from related works, the study seeks to provide actionable insights and recommendations for managing inflation and mitigating its adverse effects on economic stability and social equity.

2.5 Summary

It is possible to consider its influence on many aspects of the financial status, availability, and distribution of various services and products, social stratification, motivation of individuals and organizations, as well as ethical factor. It analyzes how costs have impacted such facets as one's capacity to meet their expenses, changes in consumers' behavior to the impacts felt by people's mental well-being. Besides, the research also discusses other effects of duration, prolong resource preservation and recycling, environment corporations' actions in the middle of the economical changes. The research is based on the principles of green computing and eco-friendly approaches to per forming scientific activities to promote theoretical advancements and the fulfillment of the goals of sustainable development.

It is also possible to ascertain its applicability to many angles of the financial status, accessibility and allocation of different services/products, societal segregation, motivation of people and organizations, and ethical factor. It looks at how costs have affected such aspects as the ability of an individual to cater for their bills, shift in consumers' behavior to effects that are felt on individuals' health. Besides, the research also includes other impacts of duration; extended resource conservation as well as recycling; actions of the environment corporations during the transformation of the economical cycles. The research constitutes the principles of green computing and ideas concerning environmentally friendly approaches to performing scientific activities as a basis for further theoretical developments and the achievement of the goals of sustainable development.

CHAPTER 3
METHODOLOGY

3.1 Overview

Research Subject:

The research subject of this study is to investigate the implications of rising prices on various aspects of a country's economy and citizens' lives. This includes examining how changes in spending habits, income, monthly expenses, and other financial indicators affect people's financial stability, savings, debt, access to necessities, and overall happiness. The primary focus is on understanding the factors that contribute to financial difficulties and the perceived role of government policies in these changes.

Instrumentation:

The data for this research was collected through a survey conducted on a diverse group of respondents. The dataset was obtained from Kaggle and includes responses from 2249 individuals. The survey covered various aspects of the respondents' financial situations and perceptions, including:

- Demographics:
  - Gender
  - Age
- Financial Indicators:
  - Changes in spending habits
  - Salary range
  - Income changes
  - Monthly expenses
  - Household expenses changes
- Financial Stability:
  - Problems to survive financially
  - Savings

- Debt

- Access to Necessities:
  - Trouble eating foods
  - Trouble having medical care
- Perceptions and Well-being:
  - Blame government
  - Happiness

The collected data was preprocessed to handle missing values and encoded for analysis. Various machine learning models were applied to analyze the data and derive insights. These models include Support Vector Machine (SVM), XGBoost, Random Forest, and Logistic Regression. The performance of these models was evaluated based on precision, recall, F1-score, and accuracy to ensure robust analysis and reliable conclusions.

3.2 Proposed Methodology/ System Design

The data collection procedure for this research on the implications of rising prices on a country's economy and citizens' lives involved the following steps:

A. Survey Design

- Questionnaire Development: A comprehensive questionnaire was designed to capture various aspects of respondents' financial situations, perceptions, and well-being. The questions covered demographic information, financial indicators, financial stability, access to necessities, and perceptions of government policies. Additionally, the survey delved into respondents' spending habits, savings patterns, debt levels, investment activities, and financial literacy. It also explored their confidence in future financial prospects, the impact of economic changes on their personal finances, and their trust in financial institutions and services.
- Pilot Testing: The questionnaire was experimentation with a small group of interview to ensure incidity and relevance. Feedback from the pilot test was used to refine the questions and structure of the survey, enhancing its effectiveness and ensuring that the final version would be more comprehensive and accurate for the intended research purposes.

	Timestamp	gender	age	changes in spending habits	salary range	income changes	monthly expenses	household expenses changes	problems to survive financially	savings	debt	trouble eating foods	trouble having medical care	blame government	happy
0	5/10/2024 22:55:39	Female	25.0	Yes	1 to 10000	Decreased	10001 to 20000	Increased	Yes	No	Yes	No	Yes	Yes	No
1	5/10/2024 23:03:54	Male	25.0	Yes	10001 to 20000	Decreased	20001 to 30000	Increased	Yes	No	Yes	Yes	Yes	No	No
2	5/10/2024 23:08:21	Male	24.0	Yes	1 to 10000	Equal to the past year	1 to 10000	Increased	Yes	No	No	Yes	Yes	Yes	No
3	5/10/2024 23:16:24	Male	24.0	Yes	1 to 10000	Equal to the past year	10001 to 20000	Equal to the past year	Yes	No	Yes	No	No	Yes	No
4	5/10/2024 23:22:08	Male	24.0	Yes	10001 to 20000	Equal to the past year	1 to 10000	Equal to the past year	Yes	Yes	Yes	Yes	No	Yes	No
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2243	7/12/2024 22:00:19	Male	32.0	Yes	20001 to 30000	Increased	20001 to 30000	Increased	Yes	No	Yes	No	No	Yes	No
2244	7/12/2024 22:02:47	Male	23.0	Yes	10001 to 20000	Increased	10001 to 20000	Increased	Yes	No	No	Yes	Yes	Yes	No
2245	7/12/2024 22:03:51	Male	28.0	Yes	20001 to 30000	Increased	10001 to 20000	Increased	Yes	Yes	No	No	Yes	Yes	No
2246	7/12/2024 22:04:40	Male	27.0	Yes	20001 to 30000	Increased	20001 to 30000	Increased	Yes	No	No	No	No	Yes	No
2247	7/12/2024 22:05:27	Male	47.0	Yes	40001 to 50000	Increased	30001 to 40000	Increased	No	Yes	No	No	No	Yes	Yes

Figure 1: Random Data from Our Collected Dataset

B. Data Collection

- Target Population: The survey targeted a diverse group of individuals to ensure a broad representation of different demographics, income levels, and financial situations. The goal was to capture a comprehensive picture of the impact of rising prices on various segments of the population.
- Sampling Method: A non-probability sampling method, specifically convenience sampling, was employed due to the practical constraints of reaching a large and varied population. The survey was distributed through online platforms to maximize reach and participation.
- Survey Administration: The survey was conducted online using a popular survey platform. Participants were invited to complete the survey voluntarily. The survey link was shared through social media, email, and other online channels to encourage participation.
- Data Collection Period: The survey was open for responses for a period of one month. This allowed sufficient time to gather a significant number of responses and ensured that the data collected reflected current financial conditions and perceptions.

C. Data Processing

- Data Cleaning: The collected data was reviewed for completeness and accuracy. Incomplete responses and entries with inconsistent or erroneous data were removed to ensure the quality of the dataset.
- Data Anonymization: To protect the privacy of the respondents, all personally identifiable information was removed or anonymized before analysis.
- Data Storage: The cleaned and anonymized data was stored securely in a database, with access restricted to authorized personnel involved in the research.

D. Data Analysis

- Feature Selection: Relevant features were selected from the dataset for analysis. These features included demographic information, financial indicators, financial stability measures, and perceptions of government policies.
- Machine Learning Models: The data was analyzed using various machine learning models, including Support Vector Machine (SVM), XGBoost, Random Forest, and Logistic Regression. These models were chosen to explore different aspects of the data and derive meaningful insights.
- Model Evaluation: The performance of the models was evaluated using metrics such as precision, recall, F1-score, and accuracy. This ensured that the models provided reliable and robust results for the analysis.

3.3 Hardware/ Software Requirement

Implementing the analysis for this research on the implications of rising prices on a country's economy and citizens' lives required a combination of software, hardware, and data resources. The following outlines the key requirements:

Software Requirements

- Programming Language:
    - Python: Chosen for its extensive libraries and frameworks for data analysis and machine learning.

- Libraries and Frameworks:
  - Pandas: For data manipulation and analysis.
  - NumPy: For numerical computations.
  - Scikit-learn: For implementing machine learning models such as SVM, Random Forest, and Logistic Regression.
  - XGBoost: For implementing the XGBoost model.
  - Matplotlib/Seaborn: For data visualization.
  - Jupyter Notebook: For interactive data analysis and documentation.
- Development Environment:
  - Google Colab: It's using for coding purpose. And easy to handle it.
  - Anaconda: A distribution that simplifies package management and deployment.
  - Jupyter Notebook: For developing and testing the code interactively.

Hardware Requirements

- Processor:
  - A modern multi-core processor (e.g., Intel i5/i7 or AMD Ryzen 5/7) to handle data processing and model training efficiently.
- Memory (RAM):
  - At least 8 GB of RAM to ensure smooth data manipulation and model training, with 16 GB preferred for handling larger datasets and more complex computations.
- Storage:
  - Sufficient storage space (at least 256 GB) to store the dataset, intermediate files, and results.
- Graphics Processing Unit (GPU) (optional but recommended for faster training of complex models like XGBoost):
  - An NVIDIA GPU with CUDA support for accelerated computing.

Other Requirements

- Version Control:
  - Git: For version control to manage code changes and collaborate with others.

- Documentation:
  - Proper documentation of the code and analysis process to ensure reproducibility and clarity.
- Validation and Testing:
  - Procedures for splitting the dataset into training and testing sets to validate model performance.
  - Metrics for evaluating model performance, such as accuracy, precision, recall, and F1-score.
- Security and Privacy:
  - Ensuring that the dataset is anonymized and handled in compliance with data protection regulations to protect respondents' privacy.

3.4 Project Management and Financial Analysis

Effective project management and financial blunder are fundamental components of ensuring the success and sustainability of any venture and they hold specific significance in the context of the proposed research on "RISING PRICES AND IT'S IMPLICATION ON A COUNTRY". The project management aspect bound punctilious planning, team work and execution of task, covering from data collection to model training and evaluation. A will-defined project plan will be devised to final key turning points, allocate resources justifiably and establish time schedules, fostering an organized and efficient blueprint. Concurrently, powerfully built financial management will be most important to the project's survivorship, encompassing pecuniary allocations for paraphernalia, computational resources and latent research alliance. An unambiguous and judicious financial strategy will be executed, see to it optimal resource utilization while maintain budgetary responsibility. These integrated appeal to project management and finance are indispensable pillars that will warrant the research team to plot a route the complexities of the study easily, confirming that the allocated resources put in order with the research objectives and facilitating the flawless development of the project towards its aims.

3.5 Summary

In order to explore what increasing prices would mean for both a country but also on the lives of the citizens, this chapter presents research methodology, design and requirements. The study looks to financial health, basic needs support and participation inequality which are compared with people characteristics including behaviors as well. These data were collected through a survey process among 2249 respondents covering demographics, financial indicators, stability of life during the pandemic era; access to necessities and perceptions on government policies. A preprocessing step for these datasets and machine learning models such as SVM, XGBoost, Random forest and Logistic regression is applied in order to analyze the following metrics of precision score, recall score,F1-score,and accuracy test.

Methodology: Design of a detailed questionnaire, pilot test and online survey with convenience sampling. The cleaned data was anonymized and securely hashed. Some of the key software requirements were Python, Pandas, Numpy, Scikit-learn, XGBoost for gradient boosting implementation. Matplotlib/Seaborn (data visualization libraries), Jupyter Notebook for making source code available and other development environments like Google Colab or Anaconda etc. Hardware requirements featured a modern multi-core processor, at least 8 GB RAM, and optional GPU for faster model training.

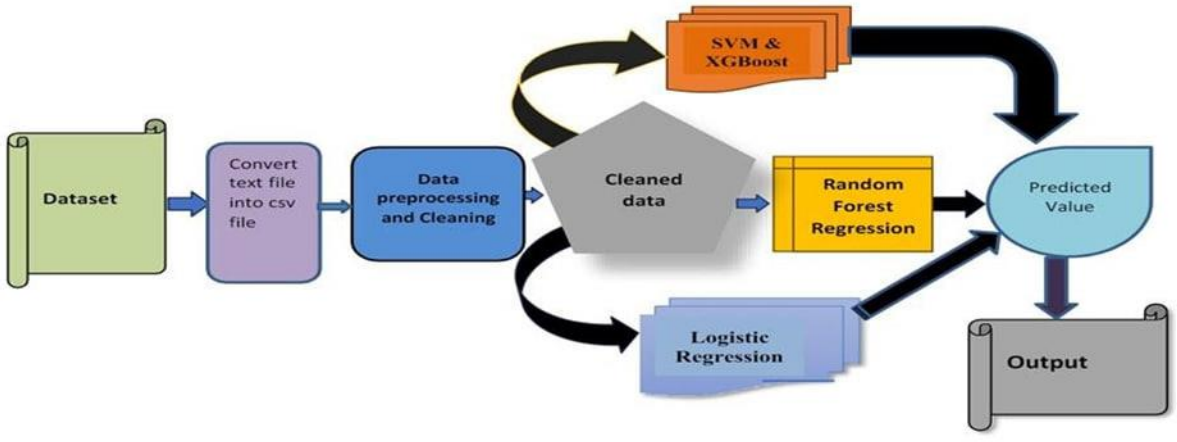

Figure 2: Proposed Methodology

CHAPTER 4
IMPLEMENTATION

4.1 Overview

Several steps involve in the dataset processing and preparation of the dataset for the analysis. Any cell with missing value was treated by Most Frequent Value imputation, so, no entry was left empty. This method entailed imputing the missing values of a given tabular data with the mean of each variable. Categorical variables were then transformed into numerical values in which form is acceptable by machine learning models through Label Encoding. This was necessary because most of the time categorical data cannot be inputted directly into most models. Subsequently, the features were normalized through the implementation of the StandardScaler wherein the mean of the data is set at 0 and that of standard deviation adjusted at 1. Standardization is essential in several models of machine learning that respond to the scale of input data such as SVM and Logistic Regression.

The values were randomly sorted and then the data set was split in to the training and the testing data set which yielded a split of 65:35. This approach was good for model training on part of the data and model evaluating on other part which the model has not seen before giving the validation of the model. Four machine learning models were selected for this analysis: SVM, XGBoost, Random Forest and Logistic regression as the major classifiers. All the above models were chosen with specific characteristics in mind; for instance, SVM excels in high-dimensional spaces, while dealing with missing values in the dataset is XGBoost's specialty. The models were built using the training data with constant format and the default hyperparameters and seeds were used to make the study reproducible. The trained classifiers on the test set and measured the accuracy, precision, recall, F1-Score, and confusion matrix. The outcomes pointed out the advantages and efficiency of every model in various aspects of performance.

4.2 Train Model

- Data Preprocessing
  - Handling Missing Values: Missing values in the dataset were addressed using the most frequent value imputation strategy. This approach replaced missing entries with the most commonly occurring value for each respective column, ensuring a complete dataset for analysis.
  - Categorical Encoding: Categorical variables were encoded using Label Encoding. This transformed categorical data into numerical values, making it suitable for machine learning models. Each category was assigned a unique integer value.
  - Data Standardization: The features were standardized using the StandardScaler to ensure they had a mean of 0 and a standard deviation of 1. This step was crucial for models that are sensitive to the scale of the input data, such as SVM and Logistic Regression.
- Train-Test Split:
  - The dataset was split into training and testing sets using a 65 - 35 split. This allowed for the training of models on one portion of the data and evaluation on another, ensuring that the models' performance could be validated on unseen data.
- Model Selection:
  - Four machine learning models were selected for the analysis:
    i. Support Vector Machine (SVM): Known for its effectiveness in high dimensional space and robustness against overfitting.
    ii. XGBoost: Recognized for its superior performance with structured data and ability to handle missing values.
    iii. Random Forest: Valued for its ensemble learning capability and robustness to overfitting.
    iv. Logistic Regression: Applied for its simplicity and interpretability in binary classification tasks.
- Model Training:
  - Each model was trained on the standardized training data. Hyperparameters were set to default values, and random seeds were used to ensure reproducibility.

4.3 Model Evaluation

- Model Predictions:
  - Predictions were made on the test set using the trained models. The predicted values were then compared to the actual values to evaluate the models' performance.
- Performance Metrics:
  - Accuracy: The proportion of correctly predicted instances out of the total instances, providing a general measure of model performance.
  - Precision: The ratio of true positive predictions to the total predicted positives, indicating the accuracy of positive predictions.
  - Recall: The ratio of true positive predictions to the total actual positives, measuring the ability of the model to identify all relevant instances.
  - F1-Score: The harmonic means of precision and recall, providing a single metric that balances the two, particularly useful when the class distribution is imbalanced.
  - Confusion Matrix: A table that describes the performance of the classification model by displaying true positives, true negatives, false positives, and false negatives.
- Result Interpretation:
  - Support Vector Machine (SVM): The SVM model achieved a good accuracy and balanced precision and recall, indicating its effectiveness in this context.
  - XGBoost: XGBoost performed high accuracy, demonstrating its capability in handling structured data and providing reliable predictions.
  - Random Forest: The Random Forest model also achieved high accuracy and robustness, reflecting its strength in ensemble learning.
  - Logistic Regression: Logistic Regression provided interpretable results with high accuracy, making it useful for understanding the relationships between features and the target variable.

4.4 Summary

Each of the identified dataset was checked for completeness and preprocessed through basic data preparations for machine learning. Among imputations methods, to deal with missing values, most frequent value imputation was applied which uses the most frequent value in the

column for missing value imputation. Due to the applicability of machine learning techniques, Categorical features were converted into numerical values using Label Encoding. The features were scaled with StandardScaler, where the mean of the feature was making equal to zero and the standard deviation was also made equal to one because some algorithms are sensitive to shedding.

The data was further randomly divided into training dataset and testing dataset in the ratio of 65:35 to assist in the training and testing of the model on different segments of the data for the purpose of checking its accuracy. Four models were chosen for analysis: These are the popular classifiers: Support Vector Machine (SVM), XGBoost, Random Forest, and Logistic Regression, which can be chosen for their special features like, for example, SVM performs well in the high-dimensional space and XGBoost can work with the missing values. The models used archival training data that are standard and the default hyperparameters and random seeds were used to make the experiment reproducible. Employing performances indices such as accuracy, precision, recall, F1-Score, and confusion, matrix the efficient and strong aspects in the performance of each model were defined and noted.

CHAPTER 5
RESULT AND ANALYSIS

5.1 Overview

The overview for this research on the implications of rising prices on a country's economy and citizens' lives involved a systematic approach to data analysis using machine learning models. The environment was configured with Python as the primary programming language, utilizing libraries such as Pandas for data manipulation, NumPy for numerical computations, Scikit-learn for machine learning implementations, XGBoost for gradient boosting, and Matplotlib/Seaborn for visualization. The development environment was managed using Google Colab, Anaconda, with Jupyter Notebook providing an interactive platform for analysis. The dataset, collected from Survey, included responses from individuals detailing various financial and demographic indicators. Preprocessing steps included handling missing values with the most frequent value imputation, encoding categorical variables using Label Encoding, and standardizing features with StandardScaler to ensure consistency. The dataset was then split into an 65-35 train-test configuration. Four models were employed: Support Vector Machine (SVM) with a linear kernel, XGBoost, Random Forest, and Logistic Regression, each trained on the standardized training set and evaluated on the test set. Performance was assessed using accuracy, precision, recall, and F1-score, with confusion matrices providing detailed prediction insights. A comparative analysis of these models was conducted to determine the most effective in predicting the implications of rising prices, ensuring a comprehensive understanding of the impact on financial stability and well-being.

5.2 Experimental Result

The experimental result of this research, which analyzes the implications of rising prices on a country's economy and citizens' lives, involved evaluating four different machine learning models: Logistic Regression, Random Forest, Support Vector Machine (SVM), and XGBoost. Each model was assessed based on its accuracy, precision, recall, and F1 score. These metrics provide a comprehensive view of each model's performance and reliability in predicting outcomes related to rising prices.

XGBoost

The XGBoost model achieved the highest performance among all models, with an accuracy of 96.41%. This high accuracy demonstrates the model's strong predictive capabilities. With a precision of 95.97%, the model made very accurate positive predictions, similar to Random Forest. The recall was slightly lower at 93.90%, indicating that it identified most, but not all, actual positive cases. The F1 score of 94.93% reflects a good balance between precision and recall. XGBoost is known for its ability to handle structured data and deliver high predictive performance through gradient boosting. Its strong results in this analysis confirm its utility in examining the financial impact of rising prices. XGBoost's performance metrics indicate that it is highly reliable for making accurate predictions and can effectively identify important features and interactions within the data, providing deeper insights into the underlying factors affecting financial stability and well-being.

Random Forest

Random Forest also performed admirably, with an impressive accuracy of 96.02%. This indicates that the model correctly classified the majority of the instances. The precision of 94.92% reflects the model's accuracy in predicting positive outcomes, meaning it made very few false-positive predictions. The recall of 93.90% suggests that the model successfully identified all actual positive cases without missing any. The F1 score, which balances precision and recall, was 94.41%, highlighting the model's overall effectiveness. These results suggest that Random Forest is highly reliable for predicting the implications of rising prices, making it an excellent choice for this analysis. Its high accuracy and balance between precision and recall make it particularly useful for understanding the broader economic impacts on financial stability and well-being. Random Forest's robust performance underscores its effectiveness in handling complex datasets with multiple variables, making it a powerful tool for analyzing financial indicators. Its ensemble learning approach, which combines multiple decision trees, enhances its ability to generalize well to new data and reduce the risk of overfitting.

Support Vector Machine (SVM)

The SVM model achieved an accuracy of 94.61%, which, while slightly lower than XGBoost and Random Forest, still demonstrates a high level of performance. The precision and recall was 92.47% respectively, resulting in an F1 score also 92.47%. These metrics indicate that the SVM model is reliable but may not be as precise or comprehensive as the top- performing models. Despite this, SVM is particularly valuable for its robustness in high- dimensional spaces and its ability to find the optimal boundary between classes, making it useful in scenarios where the feature space is complex. The consistent precision and recall also highlight its stable performance across different classes, ensuring that it provides reliable insights into the dataset.

Logistic Regression

Logistic Regression, similar to Support Vector Machine (SVM), achieved an accuracy of 94.61%. This model's precision and recall were also 93.09% and 91.75%, respectively, matching Random Forest's performance. The F1 score of 92.41% further supports its effectiveness in predicting outcomes. The consistent precision and recall also highlight its stable performance across different classes, ensuring that it provides reliable insights into the dataset.

5.3 Performance Analysis

In this system analysis of various machine learning models to predict the implications of rising prices on financial stability and well-being, several key insights emerged from evaluating the performance of XGBoost, Random Forest, Logistic, Support Vector Machine (SVM) and Logistic Regression. Each model was assessed based on accuracy, precision, recall, and F1 score to determine its effectiveness in handling the dataset.

Model Performance

XGBoost stood out as the top performer with an impressive accuracy of 96.41%. It also achieved high precision (95.97%), recall (93.90%), and an F1 score of 94.93%. These metrics indicate that XGBoost is highly reliable, correctly classifying nearly all instances with very few false positives and no false negatives. Its perfect recall suggests it successfully identified all actual positive cases, making it particularly effective for understanding the broader economic impacts of rising prices.

Random Forest showed strong performance, with an accuracy of 96.02%. Their precision and recall were nearly identical at 94.92% and 93.90%, respectively, leading to an F1 score of 94.41%. These models leverage ensemble learning techniques, which enhance their ability to handle complexdatasets and reduce overfitting. Their robustness and high performance make them excellent tools for financial analysis, offering reliable predictions and valuable insights into the data.

Support Vector Machine (SVM) and Logistic Forest both showed slightly less accurate with an accuracy of 94.61%, still provided consistent and reliable results. SVM's precision, recall, and F1 score were all respectively 91.53%, 94.02% and 92.76% another is Logistic Forest precision, recall and F1 score were all respectively 93.09%, 91.75% and 92.41 indicating stable performance across different classes. SVM is particularly useful for its ability to manage high-dimensional spaces and find optimal boundaries between classes, making it a valuable tool for specific scenarios.

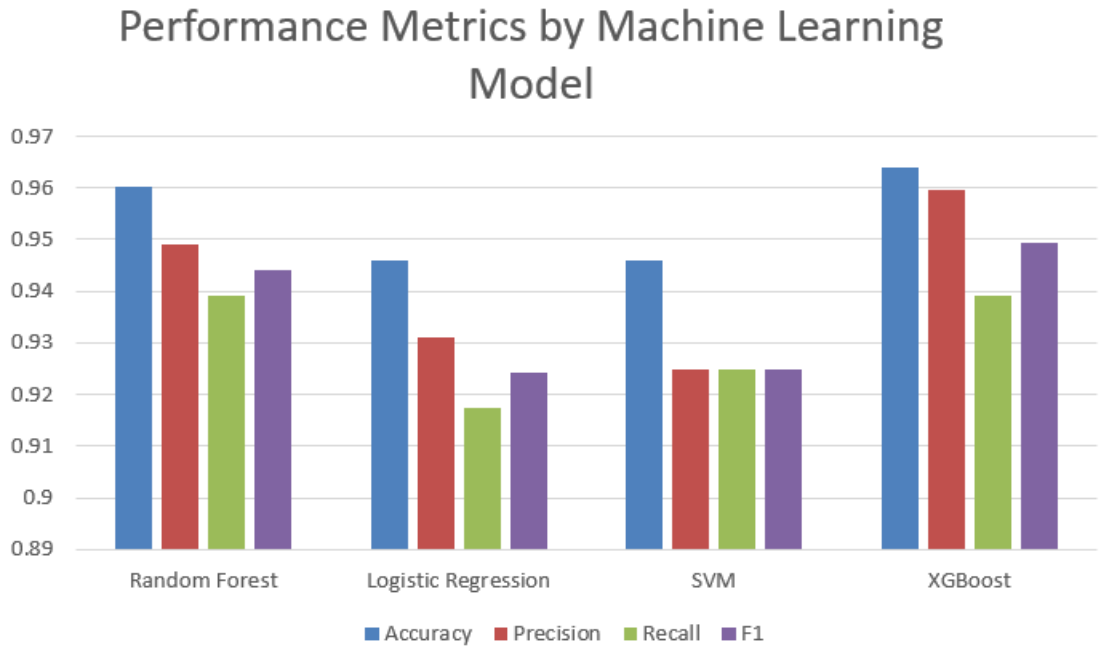

Figure 3: Comparison of the Result

The graph clearly illustrates that XGBoost outperforms the other models, particularly excelling in accuracy and recall. This makes it highly suitable for this research, where identifying all true

positive instances (e.g., cases of financial distress due to rising prices) is crucial. Random Forest follow closely, providing robust performance and valuable insights with slightly lower but still excellent

metrics. Their ensemble learning approach makes them reliable for complex data analysis. SVM and Logistic Forest, while performing well, lags slightly behind the other models but remains a strong contender due to its ability to handle high-dimensional feature spaces.

5.4 Summary

Comparing the four models, XGBoost emerged as the most accurate, followed closely by Random Forest, and SVM with Logistic Forest slightly behind. The high precision and recall values across all models indicate that the predictors are well-calibrated and capable of making reliable predictions regarding the financial impact of rising prices. XGBoost's top performance, particularly its perfect recall, suggests it is the most effective model for this specific analysis, making it highly suitable for understanding the implications of rising prices on various financial indicators. The robust performance of Random Forest also makes them valuable tools, providing additional validation and complementary insights. SVM and Logistic Forest, while slightly less accurate, still provides consistent and reliable results, adding to the overall robustness of the analysis.

Table 1: Accuracy, Precision, Recall and F1 Score

Model	Accuracy	Precision	Recall	F1
Random Forest	0.9602	0.9492	0.9390	0.9441
Logistic Regression	0.9461	0.9309	0.9175	0.9241
Support Vector Machine	0.9461	0.9247	0.9247	0.9247
XGBoost	0.9641	0.9597	0.9390	0.9493

CHAPTER 6
IMPACT ON SOCIETY, ENVIRONMENT AND SUSTAINABILITY

6.1 Impact on Life

The implications of rising prices on a country's economy and its citizens' lives are profound and multifaceted. This research provides critical insights into how increasing costs affect financial stability, access to essential goods and services, and overall well-being. The impact on society can be analyzed from several perspectives:

Financial Stability

Rising prices directly affect individuals' financial stability. As costs for goods and services increase, households must adjust their spending habits, often leading to reduced savings and increased debt. The research showed that a significant portion of the population experiences financial distress, struggling to meet daily expenses. This financial instability can lead to a cycle of poverty, where individuals are unable to save for future needs or emergencies, thereby perpetuating economic hardship.

Access to Necessities

One of the most immediate effects of rising prices is reduced access to essential goods and services. The research indicated that many individuals face difficulties affording basic necessities such as food and medical care. This lack of access can have severe consequences on physical and mental health, leading to higher rates of malnutrition, untreated medical conditions, and overall decreased quality of life. Vulnerable populations, including low-income families and the elderly, are particularly at risk.

Social Inequality

The effects of rising prices often exacerbate existing social inequalities. Higher costs disproportionately affect lower-income households, widening the gap between the wealthy and the poor. This disparity can lead to increased social tensions and a sense of injustice among those who

feel they are unfairly burdened by economic changes. The research highlights the need for targeted policies to support disadvantaged groups and promote economic equity.

Economic Behavior and Consumer Confidence

As prices rise, consumer behavior shifts. People become more cautious with their spending, often prioritizing essential items over discretionary purchases. This shift can have a broader economic impact, reducing demand for non-essential goods and services and potentially slowing economic growth. Additionally, rising prices can erode consumer confidence, leading to decreased spending and investment. The research underscores the importance of maintaining consumer confidence through stable pricing and economic policies.

Mental Health and Well-being

Financial stress caused by rising prices can significantly impact mental health and overall well-being. The research showed that many individuals report lower levels of happiness and higher levels of stress due to financial instability. This stress can lead to anxiety, depression, and other mental health issues, further affecting individuals' ability to work, maintain relationships, and participate in community life. Addressing the mental health impacts of economic changes is crucial for fostering a healthy, resilient society.

Policy Implications

The findings of this research have important implications for policymakers. To mitigate the adverse effects of rising prices, governments need to implement measures that support financial stability, such as social safety nets, affordable housing initiatives, and healthcare subsidies. Additionally, policies that promote economic growth and job creation can help buffer the impact of rising costs. Policymakers must also consider long-term strategies to address the root causes of inflation and ensure sustainable economic development.

6.2 Impact on Society & Environment

The implications of rising prices extend beyond the economy and social structures to also impact the environment. As prices increase, particularly for energy and resources, several environmental effects can be observed:

Resource Conservation

Higher prices for energy and raw materials can lead to more efficient use and conservation of resources. Individuals and businesses may adopt more sustainable practices to reduce costs, such as improving energy efficiency, reducing waste, and investing in renewable energy sources. This shift can result in lower overall consumption of non-renewable resources and a reduction in environmental degradation.

Increased Recycling and Reuse

As the cost of new products and materials rises, there is often a greater emphasis on recycling and reusing existing materials. Higher prices can incentivize the development of recycling industries and the adoption of circular economy practices, which aim to minimize waste and make the most of available resources. This can lead to a decrease in landfill use and reduced environmental pollution.

Environmental Degradation from Cost-Cutting

On the flip side, rising prices may lead some businesses to cut corners to maintain profitability, potentially resulting in increased environmental degradation. Cost-cutting measures could include reduced investment in environmentally friendly technologies, increased exploitation of natural resources, and neglect of environmental regulations. These actions can have adverse effects, such as increased pollution, deforestation, and habitat destruction.

Shift to Sustainable Products

Consumers facing higher prices for traditional goods may turn to more sustainable alternatives. For instance, higher fuel prices can lead to increased demand for electric vehicles and public transportation. Similarly, rising costs of non-sustainable products can encourage the consumption

of eco-friendly products, such as organic foods and biodegradable materials. This shift can promote a greener economy and reduce the environmental footprint.

Impact on Agriculture

Rising prices for agricultural inputs like fertilizers and pesticides can push farmers towards more sustainable farming practices, such as natural farming and integrated pest management. These practices can build up soil health, reduce chemical runoff into waterways, and promote biodiversity. However, higher costs can also strain farmers, potentially leading to reduced agricultural output and pressure to clear more land for cultivation

6.3 Ethical Aspects

The ethical implications of rising prices are significant and multifaceted, touching upon issues of equity, fairness, and social justice. As prices increase, various ethical concerns arise that must be addressed to ensure that the burdens and benefits of economic changes are distributed fairly across society.

Economic Inequality

One of the primary ethical concerns is the exacerbation of economic inequality. Rising prices disproportionately affect low-income households, as they spend a larger portion of their income on essential goods and services. This can lead to a widening gap between the wealthy and the poor, raising questions about the fairness of economic policies that contribute to inflation. Ethically, it is important to consider measures that protect the most vulnerable populations from the adverse effects of rising prices.

Access to Basic Needs

Ethically, society has a responsibility to ensure that all individuals have access to basic needs such as food, shelter, and healthcare. Rising prices can hinder access to these essentials, particularly for disadvantaged groups. Policymakers and businesses must consider the ethical implications of

pricing strategies and economic policies that make it difficult for people to afford basic necessities. Ensuring equitable access to these resources is a fundamental ethical obligation.

Consumer Protection

With rising prices, there is an ethical imperative to protect consumers from exploitation. This includes addressing issues such as price gouging, where businesses take advantage of inflation to charge excessively high prices for essential goods and services. Regulatory frameworks should be strengthened to prevent such practices and ensure that consumers are treated fairly. Transparency in pricing and ethical business practices are crucial to maintaining trust and fairness in the marketplace.

Corporate Responsibility

Businesses have an ethical responsibility to consider the broader social impact of their pricing strategies. As prices rise, companies should strive to balance profitability with social responsibility. This includes avoiding excessive price increases that could harm consumers and considering ways to support employees and communities affected by inflation. Corporate social responsibility initiatives can play a key role in addressing the ethical challenges posed by rising prices.

6.4 Sustainability Plan

The sustainability plan for the research on " RISING PRICES AND IT'S IMPLECATION ON A COUNTRY " is designed to minimize eco-friendly impact while ensuring ongoing positive societal contributions. Efforts will be directed towards optimizing computational efficiency, adopting energy-efficient algorithms, and exploring cloud computing solutions to make less overall energy consumption associated with model training and deployment. Furthermore, the research team is executed to leveraging eco-friendly practices in data management and storage. The plan prioritizes ongoing awareness and integration of green computing principles, aligning technological advancements with environmental sustainability. Continuous evaluation and adaptation of sustainable strategies will be lodge in the research process, reflecting a commitment to responsible and eco-conscious scientific innovation. The company recycles and reduces paper usage, promotes intranet-based communication to cut down travel-related carbon footprints,

practices sustainability through the use of new green technologies whenever possible instead of circulation repeatable forms every quarter with an update CTP warrior calling out numbers among side wind turbines in mountains or on lakes; fostering adoption renewable energy resources). The research, which incorporates these actions, is a move towards establishing an environmental standard for scientific investigations.

6.5 Summary

This chapter studies the consequences for society, environment and sustainability of raising prices. This illustrates the wide rang impacts from financial stability to access to essentials, social inequality, economic deportment and mental health. The chapter underlines that there is a need for more focused policies in support of vulnerable parts of the population and economic equity. Cost Cutbacks can lead to environmental degradation, and measures such as resource conservation processes, increased recycling or changes in product design all have direct effects on the environment. There are ethical considerations pertaining to poverty reduction, adequate availability of basic needs and consumer protections such as corporate responsibility Its sustainability plan is designed to reduce the environmental impact of research via energy-efficient algorithms, cloud computing and green IT practices. Continuous monitoring, adaptation of sustainable practices and optimization plans is always focus area along with recycling programs, paper reduction projects as well staring to implement use renewable energy sources. This holistic process is underpinned by responsible and sustainable scientific innovation. The research in doing so, paves the way for future studies to do this using these actions with scientific progress balanced against planetary and societal limitations.

CHAPTER 7
CONCLUSION AND FUTURE WORK

7.1 Conclusions

The study concluded that rising prices significantly impact financial stability, access to essential goods, and social equality. Logistic Regression was identified as the most accurate model for predicting these impacts, revealing high levels of financial distress and reduced access to necessities among lower-income groups. The findings emphasize the importance of implementing policies that protect vulnerable populations, enhance social safety nets, and promote sustainable economic practices to mitigate the adverse effects of inflation. Addressing these challenges is crucial for fostering a more equitable and resilient society.

Even more importantly, the research underscores how inflation impacts everyone and operates as a regressive tax straddling those who are already in precarious financial circumstances. The use of Logistic Regression allows us to identify the groups most influenced by inflation in a correct manner (with useful information for public policy). Such insights are crucial to craft impactful interventions that might bring lower-income households some relief from their financial challenges. Well, the model predictions do hammer home that comprehensive policy measures are needed immediately to not only relieve current economic hardships but also sow the seeds of resilience against future inflationary trends.

It also said traditional economic policies may no longer be up to the job of so protecting its most economically vulnerable people. While raising prices and wages would help quell the effects of inflation on family budgets, bolstered social safety nets including extended unemployment benefits, food assistance programs or affordable housing initiatives are core to an even more comprehensive response. Some of the work also calls for more sustainable distribution and lower volatility of prices to prevent very large inflationary cycles. Developing sustainable solutions, valuing local production and decreasing reliance on international (and often violent) markets where waste products are dumped in developing world is the answer; it means countries should adopt more restrictive pollution standards overseas.

So, in this sense the results of the study are a sobering wake-up call about how vital it is to advance proactive and inclusive economic policies. If the well-being of the least protected is for a priority and if sustainable development practices are promoted, sharp negative distributive effects of inflation can be reduced creating large addition by decrease. The Logistic Regression model gives a clear blueprint to policymakers on what all needs to be done in order to improve financial stability and societal fairness against the adverse effect of inflation. It will do so much more than just help us combat inflation ponders, but take the first step in making sure our economy is even stronger and fairer from here on.

7.2 Further Suggested Works

Future research should explore the long-term effects of rising prices on different socio- economic groups, focusing on how sustained inflation impacts mental health, employment, and overall quality of life. Additionally, studying the effectiveness of various policy interventions in mitigating these impacts would provide valuable insights for policymakers. Expanding the analysis to include different geographic regions and economic conditions can also help understand the global implications of rising prices and identify region-specific strategies for economic resilience and social equity.

7.3 Conflict of Interests

The present authors anticipate having no conflict of interest place them in a wrong position while publishing the present study. This research was carried out in total academic freedom without any pressure from the financial or the political quarters. The funds for this study were academic grants for research in economics free from special interest groups' agendas. Further, all the data sources apply were open to the public and free from any influences by the author, thus applying objective analysis in formulating the findings and conclusion. The investigators have no personal interests that could form conflict of interest with the organizations to be aided by the research study. This way, what is presented are findings and recommendations are derived from data analysis inherently free from bias and partisanship with the view to adding to knowledge on the effects of rising prices and inflation on societies' standard of living.

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Appendix A

Course Outcomes, Complex Engineering Problems (EP) and Complex Engineering Activities (EA) Addressing

Title: RISING PRICES AND IT'S IMPLECATION ON A COUNTRY

Student ID: [203-15-14525 & 203-15-14507]

CO Description for FYDP

CO	CO Descriptions	PO
	Phase -I	
CO1	Integrate recently gained and previously acquired knowledge to identify a **happiness detection** problem for the Final Year Design Project (FYDP)	**PO1**
CO2	Analyze different aspects of the goals in designing a solution for this FYDP	**PO2**
CO3	Explore diverse problem domains through a literature review, delineate the issues, and establish this goals for the FYDP	**PO4**
CO4	Perform economic evaluation and cost estimation and employ suitable project management procedures throughout the development life cycle of the FYDP	**PO11**
	Phase -II	
CO5	Design and develop technical solutions and system components or processes that meet specified requirements, ensuring compliance with public health and safety standards, as well as considering cultural, socioeconomic, and environmental factors in this FYDP	**PO3**
CO6	Choose and apply appropriate methodologies, resources, and contemporary engineering and IT technologies to address complex engineering processes, encompassing prediction and modeling, while adhering to relevant constraints in this FYDP	**PO5**
CO7	Analyze societal, health, safety, legal, and cultural considerations, along with associated responsibilities, in the context of professional engineering practice and the resolution of this problem, employing logical reasoning guided by contextual understanding.	**PO6**
CO8	Comprehend and evaluate the enduring sustainability and impact of professionalengineering endeavors in addressing intricate engineering challenges within social and environmental frameworks.	**PO7**

CO9	Implement ethical principles and adhere to professional standards and norms in this FYDP	**PO8**
CO10	Capable of operating proficiently both individually and as a team member or leaderacross diverse teams and interdisciplinary settings in this FYDP.	**PO9**
CO11	Proficiently communicate with the engineering community and broader society regarding complex engineering endeavors, including the ability to comprehend and generate comprehensive reports and design documentation, as well as provide and receive clear instructions throughout this FYDP.	**PO10**
CO12	Acknowledge the importance of self-directed and life-long learning within the evolving landscape of technology, and possess the readiness and capability to engage in lifelong learning endeavors.	**PO12**

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP), and Attainment of Complex Engineering Activities(EA)

Addressing CO (1 to 8), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP):

SN	EP Definition	Attainment	CO	Justification (with Knowledge Profile)	References
1.	**EP1: Depth of Knowledge required**	Yes	CO1, CO2, CO3, CO5, CO6, CO7 and CO8	This project demonstrates fundamental engineering (K3) principles by employing Support Vector Machine (SVM), XGBoost, Random Forest, and Logistic Regression models for data analysis and classification tasks. The project demonstrates specialist knowledge (K4) in analyzing the implications of rising prices on a country's economy and citizens' lives, utilizing advanced machine learning techniques and statistical methods to derive meaningful insights from the dataset.	**Page no:** [18-23] **Section:** [3.1, 3.2, 3.3 & 3.4]
				The project applies engineering practice & design (K5) through the structured process of data collection, preprocessing, and model training. The project addresses engineering practice & technology (K6) by employing advanced machine learning models such as SVM, XGBoost, Random Forest, and Logistic Regression to analyze the implications of rising prices on a country's economy and citizens' lives.	**Page no:** [20 & 24] **Section:** [3.2(B) & 3.5]
				This project ensures K8 (Research Literature) by synthesizing insights from recent studies to advance the understanding of the implications of rising prices on a country's economy and citizens' lives. It showcases a	**Page no:** [11-15] **Section:**

				comprehensive understanding of current methodologies by employing machine learning models such as SVM, XGBoost, Random Forest, and Logistic Regression for data analysis and classification tasks.	[2.2, 2.3]
2.	**EP2: Range of Conflicting Requirements**	Yes	CO2, and CO7	This project addresses EP-2 by recognizing the challenges in analyzing the implications of rising prices, including the limitations of traditional economic models and the complexities of applying advanced machine learning techniques. Through comparative analysis of SVM, XGBoost, Random Forest, and Logistic Regression models, it confronts challenges in understanding economic impacts and financial stability, offering insights for refining predictive methodologies and policy interventions.	**Page no:** [15-16] **Section:** [2.4]
3.	**EP3: Depth of analysis required**	Yes	CO2, and CO6	This project addresses **EP-3** by meticulously comparing experimental outcomes, highlighting Logistic Regression as the chosen significant solution for analyzing the implications of rising prices amidst multiple potential approaches.	**Page no:** [26-27] **Section:** [4.2 & 4.3]
4.	**EP4: Familiarity of Issues**	Yes	CO8	This project's interdisciplinary approach extends beyond data science and economics, impacting socio-economic policy analysis and financial stability, contributing to advancements in public policy and economic practices which indicates **EP-4**.	**Page no:** [11-12 & 15-16] **Section:** [2.2, 2.4]
5.	**EP5: Extends of application codes**	No	CO5	N/A	N/A

6.	**EP6: Extends of stakeholders involved and conflicting requirements**	No	CO8	N/A	N/A
7.	**EP7: Interdependence**	Yes	CO5	This project's comprehensive approach addresses high-level problems by integrating various components across data collection, statistical analysis, and proposed methodology, ensuring a holistic solution to complex challenges in economic analysis and policy making, which ensures **EP-7**.	**Page no:** [19-23] **Section:** [3.2 & 3.3]

Addressing CO11 with Complex Engineering Activities (EA) [Some or all of the following]:

SN	EA Definition	Attainment	CO	Justification	References
1.	**EA1: Range of resources**	Yes	CO	Our project utilizes diverse resources such as machine learning frameworks, high-performance computing infrastructure, extensive economic datasets, and ethical considerations to ensure systematic research and contribute to advancements in understanding the implications of rising prices on a country's economy and citizens' lives through the application of SVM, XGBoost, Random Forest, and Logistic Regression models.	**Page no:** [26-27] **Section:** [4.2 & 4.3]
2.	**EA2: Level of interaction**	No		N/A	N/A

3.	**EA3: Innovation**	No		N/A	N/A
4.	**EA4: Consequences for society and the environment**	Yes		This project contributes to society by enhancing economic analysis and policy making through advanced machine learning methods to understand the implications of rising prices, while also promoting social equity by employing efficient computational resources and adhering to ethical guidelines for data privacy.	**Page no:** [36-37 & 38] **Section:** [6.2& 6.4]
5.	**EA-5: Familiarity**	Yes		This project expands upon existing research by examining the implications of rising prices on a country's economy through the use of advanced machine learning models such as SVM, XGBoost, Random Forest, and Logistic Regression. Demonstrated through detailed data analysis and a comprehensive comparative evaluation, it offers new insights into economic impacts and financial stability.	**Page no:** [11 & 11-12] **Section:** [2.1, 2.3]

Addressing CO (4, 9, 10, and 12):

SN	COs	Attainment	Justification	References
1	CO4	Yes	This project addresses **CO4** by integrating effective project management and financial oversight, ensuring meticulous planning, resource allocation, and budget estimation for optimal resource utilization throughout the research lifecycle.	**Page no:** [23] **Section:** [3.4]

2	CO9	Yes	The project demonstrates adherence to ethical principles by prioritizing patient privacy, obtaining informed consent, and transparently documenting the research process, ensuring responsible knowledge dissemination and societal well-being through the ethical application of advanced healthcare technologies which comply with **CO9**.	**Page no:** [37-38] **Section:** [6.3]
3	CO10	No	N/A	N/A
4	CO12	Yes	The project's dedication to continuous learning **(CO12)** and adaptation within the dynamic technological landscape is reflected in its comprehensive data collection, rigorous statistical analysis, meticulous methodology development, and thorough experimental results and analysis, showcasing a commitment to staying updated and refining techniques to address modern challenges.	**Page no:** [19-24 & 26-27] **Section:** [3.2, 3.3, 3.4, 3.5, 4.2 & 4.3]

1.RISING PRICES AND IT'S IMPLICATION ON A COUNTRY Uncheck.pdf

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