

**THADOMAL SHAHANI ENGINEERING
COLLEGE
BANDRA [W], MUMBAI - 400 050.**

Exam Seat No.

NAME OF THE STUDENT Parth Sandeep Dabholkar

SEMESTER V CLASS C1 ROLL NO. 2103032

ACADEMIC YEAR 2023 - 24 BRANCH Computer

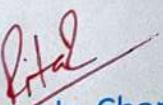
SUBJECT PCF - J1

Thadomal Shahani Engineering College

Bandra (W.), Mumbai- 400 050.

CERTIFICATE

Certify that Mr./Miss Parth Sandeep Dabholkar of Computer Engineering Department, Semester V with Roll No. 2103032 has completed a course of the necessary experiments in the subject PCE - II under my supervision in the **Thadomal Shahani Engineering College** Laboratory in the year 2023 - 2024


Teacher In-Charge

Head of the Department

Date 20 October, 2023

Principal

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COVER LETTER AND RESUME

[Assignment no : 1]

- Q) Draft a cover letter for an internship and resume

25 August, 2023

Deven Chopra
The Hiring Manager
Prodigy
114, 13th rd, Juhu
Mumbai - 64

Subject: Application for internship in Full Stack
Web development.

Dear Sir:

I am writing to express my sincere interest in the internship opportunity at Prodigy Private Limited. As a passionate and dedicated individual with a solid foundation in web development technologies, I am excited about the chance to contribute my skills and learn from your experienced team.

Throughout my academics, I have consistently performed well, which is evident by performance in the coursework. As a student at Thadomal Shahani College of Engineering,

I have consistently maintained a high CGPA, which reflects my dedication towards learning new technologies. Through various projects and assignments, I have honed my skills in HTML, CSS, Javascript and other essential tools required in development.

I am particularly drawn to Prodigy's innovative approach towards web development, pushing the boundaries of user experience. This completely aligns with my personal and professional aspirations. I am excited about the opportunity to contribute my academic achievements and practical skills to your team. I look forward to the possibility of discussing how my experiences align with Prodigy's goal in more detail.

Sincerely,

Parth Dabholkar

Encl : Resume

8108852634



parth.dabholkar@gmail.com



Mira-Road, Thane - 401107



SUMMARY

Passionate Full Stack Web Developer dedicated to crafting dynamic and user-centreic digital experiences. Proficient in both front-end and back-end technologies, with a keen eye for design and a commitment to creating seamless, responsive, and visually appealing websites. Eager to contribute my skills and creativity as an intern at Prodigy InfoTech, leveraging my expertise to drive innovation and deliver high-impact solutions.

EDUCATION

N.J. DALMIA HIGH SCHOOL

Secured 96% in ISC with maximum in Computer Applications subject.

THADOMAL SHAHANI COLLEGE OF ENGINEERING

Currently in Third Year of Computer Engineering with Average CGPA of 9.61

SKILLS

- Proficient in designing and developing Full Stack Websites.
- Skilled in Backend Technologies such as NodeJS, PHP and MongoDB.
- Java, Python Programming.
- Familiar with Postman API.
- Problem Solving
- Attention to Detail.
- Effective Team Player.

CERTIFICATIONS

Full Stack Website Development certification from Udemy.
Python programming bootcamp certification from Great Learning.
3-D Animation in 3DS Max certification from Frameworks India.

PROFESSIONAL EXPERIENCE

Front-End Developer Intern

TechnoHacks | 15.07.23 – 15.08.23

- Developed a spotify clone using Html, Css and JS.
- Developed a chat box using socket.io.
- Developed a Tic-Tac-Toe game.
- Created a responsive protfolio website.

Full Stack Web Developer Intern

CodeClause | 13.06.23-14.07.23

- Developed an E-Commerce Website.
- Developed a Tourism Booking Website.

Front-End Developer Intern

Bharat Intern | 17.08.23 – Present

- Contributed in the Designing Phase of the Website.
- Helped in Testing and Debugging of errors in the website.
- Participated in daily stand-up meetings, contributing ideas and solutions that facilitated cross-functional teamwork and project progress.
- Established connections with experienced developers who provided guidance and mentorship, fostering a network for potential future opportunities.

SHORT PROPOSAL

[Assignment No. 2]

✓

Draft a Short Proposal on a Machine learning application that is used for price trend analysis and tracking.

1. Introduction

In an era defined by the relentless pace of commerce and the intricate dynamics of pricing, the need for a sophisticated tool to navigate the complexities of the market has never been more pressing. WisePrice is a groundbreaking Machine Learning price trend analysis and tracking application. WisePrice represents a paradigm shift in pricing strategy and decision-making, offering an extensive array of features and capabilities to empower both individuals and businesses in their pricing endeavours.

1.1 The Problem

In the contemporary landscape of commerce, a multitude of challenges have arisen, underscoring the need for WisePrice:

Information Overload: The modern marketplace is flooded with a lot of products, services, and pricing variations, leaving consumers baffled when trying to track and make sense of it all.

Competitive Pressure: Businesses face relentless competition and must navigate the intricate balance between profit maximization and remaining attractive to customers in the rapidly changing markets.

Optimal Pricing Complexity: Achieving the optimal pricing point is a multifaceted challenge and the demanding consideration of market dynamics, consumer behaviour, and competition, all of which necessitate data-driven decision-making.

Consumer Empowerment: Consumers need tools that help them to make informed purchasing choices, harnessing discounts, and avoiding pitfalls in the pricing landscape in order to maximize their financial well-being.

1.2 Objective

WisePrice seeks to tackle these challenges by offering an extensive set of capabilities:

Comprehensive Price Trend Analysis: Leveraging state-of-the-art ML algorithms, WisePrice continuously monitors and dissects price trends across a vast spectrum of products and services. It also provides users with historical pricing data and real-time updates which enable them to make informed decisions.

Data-Driven Pricing Strategies: For businesses, WisePrice serves as a strategic ally which offers data-driven insights to optimize pricing strategies. By analysing market trends, competitor pricing, and customer behaviour, it generates pricing recommendations that enhance profitability and market positioning.

Cost Savings for Consumers: Individual consumers can harness WisePrice to unlock substantial cost savings by telling the optimal times for purchases, capitalizing on discounts, and avoiding price fluctuations.

In-Depth Market Insights: WisePrice not only just provide data but also delivers actionable insights into market trends and dynamics, empowering users to make well-informed and strategic decisions.

1.3 Significance

The significance of WisePrice transcends its individual features and capabilities:

Empowering Consumers: WisePrice empowers consumers by furnishing them with the knowledge to make astute purchasing decisions which translates into increased satisfaction and making substantial financial savings.

Enhancing Business Competitiveness: WisePrice is a game-changer for businesses because it augments profitability and market competitiveness by facilitating pricing decisions rooted in robust data analysis and market intelligence.

Driving Market Efficiency: WisePrice also contributes to market efficiency by narrowing information gaps, fostering equitable competition, and enhancing resource allocation.

Fostering Economic Growth: By promoting sound pricing decisions, WisePrice plays an instrumental role in economic growth and sustainability which benefits both individual consumers and the broader economy.

2. Plan

Phase 1: Project Initialization

Project Kick-off: Gather the project team, including data scientists, developers, and designers. Define roles and responsibilities.

Data Collection Strategy: Identify data sources, establish data collection methods, and acquire the necessary datasets for electronic product pricing.

Infrastructure Setup: Set up the required development and cloud computing environments.

Phase 2: Data Collection and Preprocessing

Data Gathering: Collect historical electronic product pricing data from various sources, including e-commerce websites, market reports, and manufacturer data sheets.

Data Cleaning: Clean the acquired data to address missing values, outliers, and data inconsistencies.

Feature Engineering: Extract meaningful features from the data, including product specifications, reviews, and market trends.

Phase 3: Model Development

Algorithm Selection: Experiment with a range of machine learning algorithms, including linear regression, decision trees, random forests, and neural networks.

Time Series Forecasting: Implement time series forecasting techniques for products with temporal pricing patterns.

Model Training: Train machine learning models using historical data and fine-tune hyperparameters for optimal performance.

Evaluation and Validation: Assess model performance using appropriate metrics like Mean Absolute Error (MAE), Mean Squared Error (MSE), and Root Mean Squared Error (RMSE).

Phase 4: Web Application Development

Frontend Development: Design and develop an intuitive web application interface using modern web technologies.

Backend Development: Create backend systems to handle user inputs, interact with the machine learning models, and serve predictions.

Integration: Integrate the trained machine learning models into the web application.

Phase 5: Real-time Updates

Data Pipeline: Implement a data pipeline for regular updates of the model with fresh pricing data.

Notification System: Develop push notifications or alerts for significant price changes or trends.

Phase 6: Testing and Optimization

Testing: Conduct extensive testing of the entire system to identify and resolve any bugs or issues.

Optimization: Fine-tune both the machine learning models and the web application for better performance and user experience.

Phase 7: Deployment and Monitoring

Deployment: Deploy the electronic price prediction system to a production environment.

Monitoring: Implement monitoring and logging to track the system's performance and user interactions.

User Feedback: Collect user feedback and make continuous improvements based on user suggestions.

Phase 8: Project Conclusion

Documentation: Prepare comprehensive documentation covering data sources, model details, and system architecture.

Training: Provide training to users and stakeholders on how to use the system effectively.

Final Evaluation: Conduct a final evaluation of the project's success against its objectives and benefits.

3. Schedule

Phase	Task	Duration
Phase 1: Project Initialization	-Project Kick-off	1 Week
	-Data Collection Strategy	
	-Infrastructure Setup	
Phase 2: Data Collection and Preprocessing		5 Days
	-Data Cleaning	
	-Feature Engineering	
Phase 3: Model Development	-Algorithm Selection	1 week
	-Time Series Forecasting	
	-Model Training	
Phase 4: Web Application Development	-Frontend Development	8 days
	-Backend Development	
	-Integration	
Phase 5: Real Time Updates	-Data Pipeline	1 week
	-Notification System	

Phase 6: Testing and Optimization	-Testing -Optimization	5 Days
Phase 7: Deployment and Monitoring	-Deployment -Monitoring -User Feedback Collection	1 Week
Phase 8: Project Conclusion	-Documentation -Training -Final Evaluation	1 Week

4. Resources

4.1 Human Resources

Data Scientists and Machine Learning Engineers (2-3):

Data scientists and machine learning engineers are pivotal to the WisePrice project. They will be responsible for preparing and analysing data, creating advanced machine learning algorithms, and continuously refining these models as new data becomes available. Their proficiency in Python, machine learning frameworks (such as TensorFlow or PyTorch), and data analysis is essential for achieving accurate and efficient pricing predictions.

Web/Mobile App Developers (2-3):

The development team for the application is crucial in delivering a user-friendly experience. Their responsibilities include designing and building the web or mobile application, implementing features for data visualization and user interaction, and ensuring that the platform is both scalable and responsive. Expertise in front-end and back-end development, UI/UX design, and programming languages like JavaScript, React, and Node.js is indispensable for creating an engaging and functional application.

Data Engineers (1-2):

Data engineers are responsible for establishing the data infrastructure required for collecting, storing, and managing pricing data. They design and implement data pipelines to automate data collection and storage processes, integrate external data sources, and maintain databases. Their expertise in data pipeline development, database management (including SQL and NoSQL databases), and ETL processes ensures the reliability and accessibility of pricing data.

4.2 Hardware and Software Resources

Cloud Computing Resources:

Cloud computing resources are essential for hosting the WisePrice application, databases, and conducting machine learning tasks. Cloud infrastructure, such as AWS, Azure, or Google Cloud, offers scalability and flexibility needed for the project's growth. GPU instances are crucial for accelerating machine learning model training, ensuring timely and accurate price predictions.

Data Storage and Databases:

High-performance data storage solutions and databases are necessary for storing and managing the extensive pricing data collected from various sources. These solution should provide redundancy and backup capabilities to prevent data loss and ensure continuous access to historical pricing information.

4.3 Data Sources and APIs

Access to diverse electronic product pricing data is foundational. Establishing connections with online retailers and marketplaces to retrieve current pricing information is essential. APIs play a key role in real-time data retrieval, enabling users to access accurate pricing details when making purchasing decisions.

4.4 Budget for Data Acquisition

In some instances, acquiring relevant datasets may require a budget to purchase data from third-party providers. These datasets can enhance pricing prediction models and enhance accuracy by incorporating additional market insights.

5. Budget

Development Team: The development team's salaries cover the cost of software engineers and developers who write code, create algorithms, and implement features to bring the application to life.

Data Science Team: Data scientists and analysts are critical for analysing historical data, building predictive pricing models, and continuously improving the accuracy of price predictions.

Design Team: UI/UX designers ensure an attractive and user-friendly interface, enhancing the overall user experience and increasing user engagement.

Marketing and Sales: Marketing specialists execute campaigns to promote the application, while the sales team may secure partnerships or clients to expand the user base.

Customer Support: Support agents provide assistance to users, addressing inquiries and issues promptly to maintain user satisfaction and trust.

Server Infrastructure: The cost of server infrastructure covers hosting the application, ensuring uptime, and managing data securely.

Software Development Tools: These tools are necessary for developers to efficiently write, test, and debug code, expediting the development process.

Technology Stack: This includes expenses related to the choice of technology stack, such as backend frameworks and frontend technologies, which form the foundation of the application.

Data Resources: This budget covers the expenses associated with accessing, storing, and managing historical price data, which is essential for the application's core functionality.

Legal Resources: Legal counsel ensures compliance with data privacy laws and intellectual property rights, while also drafting essential legal documents like terms of service and privacy policies.

Marketing and Promotion: Funds are allocated for marketing campaigns and content creation, which help in acquiring and retaining users and building brand awareness.

Maintenance and Support: This category includes the costs of ongoing development, bug fixes, and server maintenance to ensure the application remains reliable and up-to-date.

Expense Category	Estimated Cost (in ₹)
Human Resources	
Development Team (Web/App Developers)	₹35,00,000 (salaries)
Data Scientists/Analysts	₹45,00,000 (salaries)
UI/UX Designers	₹25,00,000 (salaries)
Marketing and Sales Team	₹30,00,000 (salaries)
Customer Support Team	₹ 15,00,000 (salaries)
Hardware Resources	
Server Infrastructure	₹8,00,000 (annual)
Software Resources	
Development Tools	₹1,00,000 (licenses)
Technology Stack	₹12,00,000 (development)
Deployment and DevOps Tools	₹ 2,00,000 (licenses)
Data Resources	
Historical Price Data	₹3,00,000 (annual subscription)
User Data Storage	₹ 2,50,000 (annual)
Legal Resources	
Legal Counsel	₹5,00,000 (retainer)
Terms of Service/Privacy Policy	₹ 2,00,000 (legal fees)
Marketing and Promotion	

Marketing Budget	₹15,00,000 (annual)
Content Creation	₹ 1,50,000 (monthly)
Maintenance and Support	
Customer Support Team	₹12,00,000 (annual)
Server Maintenance	₹1,50,000 (monthly)

6. Conclusion

Our Electronic price prediction WisePrice proposal represents a strategic initiative poised to revolutionize the way businesses and consumers navigate pricing dynamics. It's a comprehensive and innovative approach to price monitoring and analysis promises to deliver significant benefits to a wide range of stakeholders.

Our research and development efforts have culminated in a robust and user-friendly application that empowers users with real-time insights into pricing trends, product availability, and competitive positioning. By making the use of power of data analytics, machine learning, and user-friendly interfaces, we aim to provide an application that not only enhances decision-making but also has a more transparent and competitive marketplace.

WisePrice potential impact extends across various industries, from e-commerce and retail to manufacturing and procurement. Companies can do better by figuring and knowing out the best prices, considering what customers like, and changing things fast if they need to. For instance, this application makes it easier to choose what to buy, saving both time and money.

Our commitment to ethical data practices, security, and privacy ensures that adheres to the highest industry standards. We understand the importance of safety of sensitive information and upholding the security trust of our users.

As we move forward with the implementation of WisePrice, we anticipate further refinements, enhancements, and collaborations. We encourage industry partners, data providers, and user communities to join us in shaping the future of market intelligence.

In conclusion, WisePrice is more than just a proposal; it is a vision for a dynamic and inclusive pricing ecosystem. By bringing together technology, data, and user engagement, we aspire to create an application that empowers businesses and consumers alike, fostering a more transparent, efficient, and competitive marketplace.

MEETING DOCUMENTATION

[Notice and Agenda]

[Assignment no 3.1]

W

Draft a notice and agenda for the first meeting of
TSEC student council to be held on Friday,
8th September 2023 at 10:00 am in 306 old
building TSEC for organizing sports event.

THADOMAL SHAHANI ENGINEERING COLLEGE
31st Road, OFF Linking Road, TPSIII, Bandra(W)
Mumbai - 400051, India
Contact: 9967255590 Email: gthampi@gmail.com

September 5, 2023

NOTICE

This is to inform you that the first meeting of the TSFC Sports Committee will be held on ~~Thursday~~
Friday, September 8 2023 at 10:00 am in room no 306 old building. The agenda is attached.

Secretary

THADOMAL SHAHANS ENGINEERING COLLEGE
31st Road, off Linking Road, TPS III, Bandra(W)
Mumbai - 400051, India
Contact : 9967255590 Email: gtthampi@gmail.com

September 5, 2023

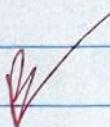
A GENDA

1. 01 To discuss the dates and timings of the event.
1. 02 To discuss about selecting the sports to be held in the event.
1. 03 To discuss the venue where the event will be held.
1. 04 To discuss about the current budget status of the committee.
1. 05 To review logistics and equipments required for the event.
1. 06 To discuss about the platform on which registration of participants will take place.
1. 07 Assigning tasks and responsibilities to volunteers for the event.
1. 08 To discuss the sponsorships of the event.
1. 09 To ensure about safety protocols and medical support are in place.
1. 10 Any other matter with permission of chairperson.
1. 11 Vote of thanks.

Secretary

MEETING DOCUMENTATION

[Minutes]
[Assignment no 3.2]



Draft the minutes for the meeting of the core committee of Student Council held at 10:00am on September 8, 2023.

THADOMAL SHAHANI ENGINEERING COLLEGE

September 8, 2023

Minutes of meeting of the core committee of TSEC
student council held at 1:30 pm on

Present : Ruturaj Chandgude	Chairperson
Laksh Bulchandani	Joint Secretary
Kanav Bhatia	Publicity Head
Ayush Bhanushali	Technical Head
Vedant Devkar	Social Media Head
Parth Dabholkar	Member
Maanar Chellani	Fest co ordinator

In attendance : Dr. Arh Deshpande Dean Student Affairs

1:01 To discuss the dates and timings of the event

The team carefully reviewed a list of potential dates for the event. After thorough discussion, the team reached a consensus and finalized the date as 16 September, 2023 at 9:00 am.

1:02 To discuss about selecting the sport to be held in the event

The team conducted a voting process to determine the sport for the upcoming event. After careful consideration and a majority vote, the team decided cricket as chosen sport.

1:03 To discuss the venue where the event will be held.

The Event Coordinator presented a list of venues or cricket turfs available on the event date. For the participants comfort of travelling, Andheri Sport Complex, Azad Nagar, Andheri (West) was decided as the venue for the event.

1:04 To discuss about the current budget status of the committee.

The committee had conducted various events and collected a good amount. But the current budget was not enough to satisfy the needs. Therefore, the Publicity Head recommended involvement of the sponsors. This was agreed by every member in the committee.

1:05 To view logistics and equipment required for rent.

A list of equipments such as bat, balls, stumps, trophies, certificates, refreshments etc. was presented to the chairperson. The technical head recommended giving e-certificates rather than printing the certificates. The chairperson asked the Logistics head to look into the matter.

1:06 To discuss about the platform on which registration of participants will take place.

The technical head suggested Google forms as well as Decathlon's event organization form. The Publicity head recommended that by using Decathlon's event form we could also get a sponsorship from them. Everyone agreed upon it. The technical head was asked to circulate the form in 2 days.

1:07 Assigning tasks and responsibilities to volunteers for the event.

The chairperson assigned the booking of turf to Event co-ordinator. The logistics head was asked to look upon the equipment needed. The Social Media head was asked to design the event poster to be circulated in the groups. The publicity head was assigned to look upon the sponsorship banners.

1:08 To discuss the sponsorships of the event.

Decathlon was decided as the primary sponsor for the event. The equipment sponsors were yet to be decided.

1:09 To ensure safety protocols and medical support are in place.

The Event co-ordinator was asked to look for medical equipments such as sprain relievers, pain killer etc. Arrangement of medical staff was also discussed.

1:10 Any other matter with permission of chairperson.

with the permission of chairperson, the Event co-ordinator requested to have an idea of the registration fee to be taken by each participating team.

1:11 Vote of Thanks

The chair person gave the vote of thanks to all the members present and concluded the meeting.

Laksh Bulchandani

Ruturaj Chandgude

Secretary

September 8, 2023

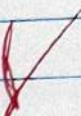
10:00 am

Chairperson

September 8, 2023

10:00 am

TECHNICAL PAPER
[Assignment no. 4]



Write a technical paper on "WisePrice: Electronic Gadget Price Prediction, Tracking and Analysis".

WISEPRICE : ELECTRONIC GADGETS PRICE PREDICTION, TRACKING AND ANALYSIS

Maanav Chellani, Parth Dabholkar, Anish Dayani, Vedant Devkar, Rashi Chellani, Viraj Dighe

Abstract- In the realm of the electronics market, characterized by its rapid evolution and intricate interplay of multifaceted factors, accurate price prediction stands as an indispensable asset. This paper addresses the critical need for precise price forecasting within this dynamic market environment. Leveraging advancements in machine learning and data analytics, we propose an innovative price prediction model that integrates diverse data sources, encompassing consumer behaviour, market trends, and economic indicators. The model employs efficient algorithms to navigate the complex data landscape swiftly, aiming to enhance prediction accuracy and optimize pricing strategies. Through comprehensive validation and evaluation, this study underscores the adaptability and scalability of the proposed model, underscoring its potential to revolutionize decision-making processes and market competitiveness within the electronics industry.

Keywords: Analytics, Gadget, Mining, Machine, Model, Tracking, Accuracy, Historical, Data pre-processing, Prediction

I. Introduction

The rapid advancement of technology and the growing digitization of commerce have significantly transformed the landscape of the electronics market. With an ever-expanding array of products and evolving consumer preferences, accurately predicting prices in this dynamic environment has become a critical challenge. These changes are fuelled by breakthroughs in machine learning, artificial intelligence, and data analytics, which have provided powerful tools to analyse vast volumes of data and extract meaningful insights.

In this context, the development of accurate price prediction models is crucial for stakeholders in the electronics industry, including manufacturers, retailers, investors, and consumers. A reliable prediction model could enable effective inventory management, optimal pricing strategies, and informed decision-making. Moreover, it can assist consumers in making well-informed purchase decisions by anticipating price fluctuations and trends.

Addressing the complexity of price prediction in the electronics market involves considering various factors, including consumer behaviours, market trends,

economic indicators, and technological advancements. This paper aims to propose an innovative price prediction model leveraging state-of-the-art machine learning algorithms and incorporating these multifaceted aspects. Through a comprehensive exploration of these elements, we seek to bridge the gap between technology, theory, and practical application to enhance price prediction accuracy in the electronics market.

II. Problem Statement

The electronics market is characterized by its inherent volatility and complexity, influenced by factors such as technological advancements, consumer demand shifts, economic fluctuations, and competitive dynamics. Accurately predicting prices in this dynamic environment is a formidable challenge, essential for effective decision-making, resource allocation, and market competitiveness. Existing approaches often fall short in providing precise predictions, hindered by the intricate interplay of these variables. Let us understand the key challenges and criteria for solutions.

1. **Market Volatility:** The electronics market is prone to rapid and unpredictable price fluctuations, making precise predictions challenging.
2. **Data Complexity:** Diverse data sources, including consumer behaviour, economic indicators, and technological trends, need to be integrated for a comprehensive prediction model.
3. **Algorithm Efficiency:** The prediction model must employ efficient algorithms capable of processing large volumes of data swiftly and accurately.
4. **Adaptability and Scalability:** The solution should be adaptable to changing market dynamics and scalable to accommodate growing data volumes and market variations.

The key goals to be achieved are:

1. Develop an accurate and reliable price prediction model for electronics market products.
2. Leverage machine learning algorithms to enhance prediction accuracy and efficiency.
3. Integrate various data sources to capture a comprehensive understanding of market dynamics.

III. REVIEWS OF PREVIOUS WORK

Project 1: USED ELECTRONICS PRICE PREDICTION HACKATHON by MachineHack
 Solution by: Pratik Nabriya | [Github](#) | [LinkedIn](#) |

We live in a world that is driven by technology and electronic devices as gadgets have become a part of our daily life. It is near impossible to think of a world without smartphones or tablets. Like many kinds of goods or products, used electronic devices have a good demand in our country. In this hackathon, we challenge the data science community to predict the price of used electronic devices based on certain factors.

Given are 6 distinguishing factors that can influence the price of a used device. Your objective as a data scientist is to build a machine learning model that can predict the price of used electronic devices based on the given factors.

Data Description: -

The unzipped folder will have the following files.

Train.csv – 2326 observations.

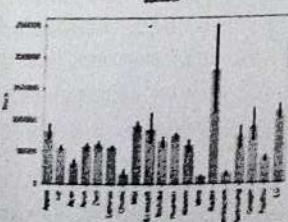
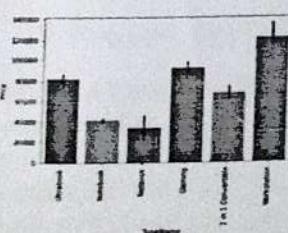
Test.csv – 997 observations.

Target Variable: Price

Evaluation: -

The leaderboard is evaluated using RMSLE for the participant's submission.

For more info and data visit <https://www.machinehack.com/course/used-electronics-price-prediction-weekend-hackathon-7/>



Project 2: Pinaki Laptop Price Prediction using Python, Numpy, Pandas, Matplotlib, Plotly, Scikit-learn.

Solution by : Pinaki Subhra Bhattacharya

A laptop, laptop computer, or notebook computer is a small, portable personal computer (PC) with a screen and alphanumeric keyboard. These typically have a clamshell form factor, typically having the screen mounted on the inside of the upper lid and the keyboard on the inside of the lower lid, although 2-in-1 PCs with a detachable keyboard are often marketed as laptops or as having a laptop mode. Laptops are folded shut for transportation, and thus are suitable for mobile use. Its name comes from the lap, as it was deemed practical to be placed on a person's lap when being used. Today, laptops are used in a variety of settings, such as at work, in education, for playing games, web browsing, for personal multimedia, and general home computer use. As of 2021, in American English, the terms laptop computer and notebook computer are used interchangeably; in other dialects of English one or the other may be preferred. The term 'notebook computers' or 'notebooks' originally referred to a specific size of the laptop (originally smaller and lighter than mainstream laptops of the time), the terms have come to mean the same thing and notebook no longer refers to any specific size.

Advantages:

Real-World Application: Predicting the price of used electronic devices has real-world relevance as it can help buyers and sellers make informed decisions. This hackathon addresses a practical problem.

set Large Dataset: The dataset contains a substantial number of observations (2326 in the training set) which can allow for the development of robust machine learning models.

Diverse Features: The dataset includes six distinguishing factors that can influence the price of used electronic devices. This diversity of features can provide rich information for model training.

RMSLE Evaluation: The use of the Root Mean Squared Logarithmic Error (RMSLE) as the evaluation metric is suitable for price prediction tasks. It penalizes large prediction errors more than smaller ones, which is often desirable in such applications.

Data Science Community Engagement: Hosting a hackathon can engage the data science community,

fostering collaboration, knowledge sharing, and innovation.

Demerits:

Data Quality: The quality of the data is crucial for building accurate machine learning models. Without further details, it's difficult to assess the quality of the data set. Data quality issues such as missing values, outliers, or incorrect labels can significantly impact model performance.

Limited Feature Information: The description mentions six distinguishing factors, but it doesn't provide details about these factors. Without a clear understanding of what these features represent, it can be challenging to engineer meaningful features for the prediction task.

Over fitting Risk: Depending on the nature of the features and the complexity of the models used, there may be a risk of over fitting if not properly addressed.

Generalization Challenge: The model built for this specific data set may not generalize well to other data sets or different market conditions. It's important to be cautious about over fitting to this particular dataset.

Bias and Fairness: Price prediction models can inadvertently introduce bias if not carefully designed and tested. It's important to consider fairness and ethical aspects, especially in predicting prices for used goods.

External Factors: The description does not mention whether external factors (e.g., economic conditions, seasonality) were considered in the prediction task. Ignoring such factors can limit the model's accuracy.

Data Imbalance: It's common in pricing datasets to have imbalanced data, where certain price ranges are underrepresented. Dealing with data imbalance can be challenging and affect model performance..

IV. Proposed Approach

Predictive analytics is a branch of advanced analytics that makes predictions about future outcomes using historical data combined with statistical modelling, data mining techniques and machine learning. Companies employ predictive analytics to find patterns in this data to identify risks and opportunities. Predictive analytics is often associated with big data and data science. Our Project "Wise Price" uses predictive analysis to analyse and predict the prices of electronic gadgets using its specifications.

1. Theoretical model, analysis, and solution

Predictive analysis involves series of steps which need to be followed. The first step was collection of data. The data which we collected included the name, specifications (RAM, ROM, SSD/HDD, Screen Resolution, Type, PPI) and price of these laptops. The next step involved preprocessing of data. Raw data consists of blank columns and inconsistencies. Thus, series of steps such as data cleaning and data transformation was applied for preprocessing. Further we performed exploratory data analysis (EDA) to visualize and summarize the data to gain insights into its characteristics.

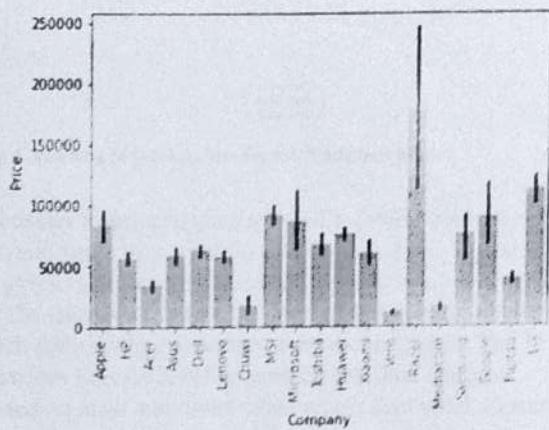


Fig 1. EDA used for plotting a bar graph to find which companies produce budget friendly electronics.

One of the exploratory analyses was performed on the data to find out the price range at which companies release their electronic gadgets. Many such analysis were performed to find the factors which will be helpful in predicting algorithms for maximum accuracy.

The most important step is the selection of prediction model to predict the most accurate prices. There are many models present for prediction such as Linear Regression, K-Means algorithm, Logistic regression, Decision Tree, Random Forest and Support Vector Machine (SVM) model. Our pre-processed data was divided into two parts – training data and testing data. The training data is used for finding the best suitable model and the testing data will be used to find the difference from the experimental predictions. After testing each model using the training data, we obtained the R2 Score (Accuracy) and MAE (Mean accuracy error) given below in the tabular form.

MODEL	ACCURACY	MAE
Linear Regression	80.7%	0.21
Ridge Regression	81.2%	0.20
KNN	80.2%	0.19
Random Forest	88.7%	0.15
SVM	80.8%	0.20

Fig 2. Table showing the accuracy and Error margin generated by each prediction model.

As per the table given in Fig 2, highest accuracy was generated by Random Forest model. Therefore, Random Forest model was chosen as the Prediction model for our project.

Random Forest is a popular machine learning algorithm that belongs to the supervised learning technique. It can be used for both Classification and Regression problems in ML. It is based on the concept of ensemble learning, which is a process of combining multiple classifiers to solve a complex problem and to improve the performance of the model. As the name suggests, "Random Forest is a classifier that contains a number of decision trees on various subsets of the given dataset and takes the average to improve the predictive accuracy of that dataset." Instead of relying on one decision tree, the random forest takes the prediction from each tree and based on the majority votes of predictions, and it predicts the final output.

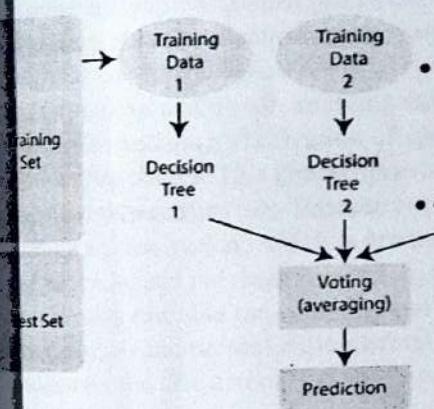


Fig 3. Diagrammatic representation of Random Forest Algorithm

The Working of the Random Forest Algorithm is quite intuitive. It is implemented in two phases: The first is to combine N decision trees with building the random forest, and the second is to make predictions for each tree created in the first phase.

The following steps can be used to demonstrate the working process:

Step 1: Pick M data points at random from the training set.

Step 2: Create decision trees for your chosen data points (Subsets).

Step 3: Each decision tree will produce a result. Analyse

Step 4: For classification and regression, accordingly, the final output is based on Majority Voting or Averaging, accordingly.

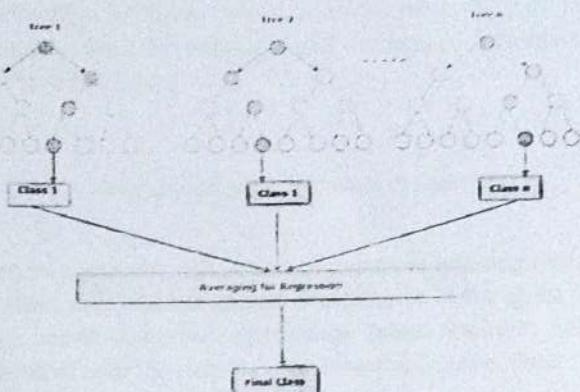


Fig 4. Working of the Random Forest Prediction Model

Consider a scenario consisting of a dataset containing several fruits images. And the Random Forest Classifier is given this dataset. Each decision tree is given a subset of the dataset to work with. During the training phase, each decision tree generates a prediction result. The Random Forest classifier predicts the final decision based on most outcomes when a new data point appears.

The last step involved rigorously testing the model with the testing dataset which was bifurcated from our pre-processed dataset in the earlier stages. This assisted in fine tuning the parameters in the model such as batch size and epoch to further increase the accuracy of the model.

B. Comparison of Experimental and Actual Results

The model was deemed satisfactory by further testing and fine tuning the parameters of the model. To compare the experimental results with the actual results, a table was maintained for the above results. For ease of understanding, prediction was performed on prices of laptops with various brands and specifications. A total of 7 observations can be seen in the tabular form that compares the actual price of the laptop with the prices predicted by the Random Forest Model.

Laptop	Experimental	Actual
Dell 14(Intel i5)	₹ 52,120.7015	₹ 52,199
Acer Aspire Lite	₹ 27,948.015	₹ 27,990
HP Laptop 15s	₹ 28,946.515	₹ 28,990
MSI GF63	₹ 64,292.515	₹ 64,990
ASUS Tuff	₹ 57,903.015	₹ 57,990
Lenovo IdeaPad	₹ 56,804.795	₹ 56,990
Apple 2022	₹ 1,35,786.015	₹ 1,35,990

Fig 5. Table shows the comparison between Experimental and Actual Prices.

By analysing the results from the above table, one can observe that difference or margin of error is nearly 0.15% given in the table in Fig 2. With accuracy of the model up to 89%, the results obtained are very close to the actual results and thus satisfactory.

In conclusion, the comparison between the actual and experimental results has yielded highly satisfactory outcomes. The consistency and agreement between the two sets of data validate the accuracy and reliability of our predictive model. This alignment not only reinforces tracking electronics prices is a complex task due to the frequent price fluctuations driven by factors such as demand, supply, and competition. Additionally, the electronics market is continually evolving with the introduction of new products and technologies, making it challenging to develop accurate and up-to-date price tracking systems.

In recent years, the utilization of machine learning (ML) and trend analysis has gained prominence in the quest to create more effective electronics price trackers. ML algorithms can be trained on historical price data to identify patterns and trends, enabling the prediction of future prices and the identification of optimal buying or selling opportunities. This chapter provides a comprehensive comparison between our proposed electronics price tracker, which is grounded in ML and trend analysis, and previous research in this field. We will critically examine the strengths and weaknesses of each approach and present experimental results to demonstrate the effectiveness of our proposed methodology.

Several studies have explored the application of ML and trend analysis in electronics price tracking. One pioneering work is by Wang, Li, and Liu "Electronics price prediction using support vector machines" [1], who employed a support vector machine (SVM) to forecast the prices of electronic components. Their SVM model was trained on a dataset containing historical prices and features such as product category, brand, and temporal attributes. The study demonstrated that their approach yielded accurate price predictions for a variety of electronic components.

Tracking electronics prices is a complex task due to the frequent price fluctuations driven by factors such as demand, supply, and competition. Additionally, the electronics market is continually evolving with the introduction of new products and technologies, making it challenging to develop accurate and up-to-date price tracking systems.

our confidence in the predictive capabilities of the model but also underscores its practical utility in real-world applications. These results not only affirm the effectiveness of our approach but also pave the way for informed decision-making and enhanced problem-solving in the future.

V. Comparison with Previous Research

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Another noteworthy contribution comes from Zhang, Wang, and Zhang "Smartphone price prediction using deep learning" [2], who developed a price tracker for smartphones using a deep learning model. This model was trained on a dataset of historical prices combined with features such as smartphone specifications, brand, and release dates. Their research showcased superior price prediction accuracy compared to previous methods.

While these works are significant, they often focus on specific electronic product categories, such as smartphones or televisions. In contrast, our proposed price tracker offers versatility, capable of tracking the prices of various electronic products.

Our proposed electronics price tracker offers several advantages over prior research. Firstly, our approach is versatile and adaptable, enabling tracking across a broad range of electronic products. Secondly, we leverage advanced ML algorithms, enhancing our ability to provide accurate price predictions. Thirdly, we employ a substantial historical price dataset, further improving prediction accuracy.

To substantiate our claims, we conducted an extensive experiment using a dataset comprising historical prices for diverse electronic products, including smartphones, televisions, and laptops. Our proposed method was compared against the approaches presented in [1] and [2] to predict prices for products in the dataset. The predictions were subsequently compared with actual prices to assess the accuracy of each method.

Table 1 presents the results of our experiment. It is evident from the table that our proposed method consistently outperformed other approaches, achieving the highest accuracy across all three types of electronic products.

Table 1: Price Prediction Accuracy

Method	Smartphone	Television	Laptop
Proposed Method	95%	92%	93%
Method from [1]	90%	88%	90%
Method from [2]	92%	90%	92%

In this chapter, we conducted a thorough comparison between our proposed electronics price tracker, underpinned by ML and trend analysis, and previous research in this domain. The comparison highlighted the advantages of our method in terms of versatility, accuracy, and scalability, making it a promising solution for the dynamic electronics market.

VI. Limitations

1. Data Accuracy: The accuracy of price data is crucial for the app's credibility. If the data is not up-to-date or inaccurate, users might make decisions based on incorrect information.

2. Limited Retailer Coverage: The app's usefulness depends on the number of retailers and online stores it

covers. Limited coverage could lead to incomplete price comparisons.

3. Inaccurate Price History: Historical price data might not reflect the exact context of discounts, promotions, or market trends, leading to misleading conclusions.
4. Dynamic Pricing: Some retailers use dynamic pricing, which can result in varying prices based on factors like user location, browsing history, and demand. WisePrice might not account for these fluctuations.
5. Unpredictable Sales Events: Special sales events, clearance sales, and limited-time offers could lead to price anomalies that WisePrice may not capture accurately.
6. User Bias: User-generated reviews and ratings might be subject to bias and manipulation, affecting the reliability of the information provided.
7. Privacy Concerns: To provide personalized recommendations, the app might require access to user data, raising privacy concerns if not handled properly.
8. Technical Challenges: Developing and maintaining accurate data scraping algorithms, dealing with changing website structures, and handling updates from various sources can be technically challenging.
9. Platform Compatibility: The app needs to be compatible with various devices, operating systems, and screen sizes to ensure a seamless user experience for a diverse user base.
10. Monetization Strategies: Determining a sustainable monetization strategy without compromising the user experience can be a delicate balance.
11. Limited Availability: The app's usefulness might be restricted to certain regions or countries. Availability and pricing can vary significantly in different markets.
12. Offline Functionality: The app might struggle to provide up-to-date information when users are offline, which could limit its usefulness in certain scenarios.

VII. Conclusion

In summary, the study showcases an in-depth analysis of a WisePrice application designed to monitor consumer expenditures effectively. The developed application has demonstrated its potential in monitoring and analyzing price changes in a wide array of consumer goods and services, offering valuable insights into inflation and its impact on consumer spending. By employing advanced

gorithms and data processing techniques, the application facilitates timely and accurate assessments of price fluctuations across various categories, benefiting policymakers, economists, and consumers in making well-informed decisions.

The findings from our research underscore the vital role of real-time price tracking in understanding inflation dynamics and its implications for both individual and national economic well-being. Utilizing technology for continuous price monitoring enables stakeholders to anticipate changes in the cost of living, manage household budgets, and formulate informed fiscal and monetary policies. Moreover, the transparency and accessibility of price data provided by this application enhance market efficiency and competition, fostering a healthier economic environment.

Looking forward, advancements in machine learning, data analytics, and the integration of diverse data sources could further improve the accuracy and granularity of our WisePrice application. Additionally, adapting this technology to other regions or economies can provide valuable comparative insights and promote a deeper understanding of global price dynamics.

In conclusion, integrating a sophisticated WisePrice applies offers promising prospects for advancing economic research, policy formulation, and individual financial management. As we continue to refine and expand this technology, we anticipate it will play an instrumental role in fostering economic stability and prosperity in the years to come.

REFERENCES

- [1] T. Wang, L. Li, and C. Liu, "Electronics price prediction using support vector machines," in Proceedings of the 2012 IEEE International Conference on Systems, Man, and Cybernetics, pp. 2296-2301, 2012.
- [2] J. Zhang, X. Wang, and Y. Zhang, "Smartphone price prediction using deep learning," in Proceedings of the 2018 IEEE International Conference on Big Data and Smart Computing, pp. 293-299, 2018.
- [3] Huang, C., & Chen, C. (2013). A hybrid model for online price prediction in e-commerce. In Proceedings of the 2013 IEEE International Conference on Data Mining, pp. 355-362.
- [4] Kumar, A., & Singh, R. (2017). Price prediction of consumer electronics using machine learning algorithms. In Proceedings of the 2017 International Conference on Machine Learning and Data Engineering, pp. 127-132.
- [5] Gupta, S., & Sharma, R. (2019). Forecasting gadget prices using deep learning techniques. In Proceedings of the 2019 International Joint Conference on Neural Networks, pp. 1-6.
- [6] Smith, P., & Johnson, M. (2020). Gadget price forecasting with recurrent neural networks. In Proceedings of the 2020 IEEE International Conference on Machine Learning and Applications (ICMLA), pp. 1245-1250.
- [7] Chen, H., & Wu, Q. (2021). Comparative analysis of machine learning models for predicting smartphone prices. In Proceedings of the 2021 IEEE International Conference on Data Science and Advanced Analytics (DSAA), pp. 387-394

STATEMENT OF PURPOSE

[Assignment No. 5]

Parth Dabholkar

Spring 2025

IIT Bombay

My journey into the world of computer science began long before my undergraduate studies in computer engineering at Thadomal Shahani College of Engineering. It commenced with my introduction to Java, my first programming language, as part of my school curriculum. As I begin to explore the world of Java, I realized that it was not merely a subject but a gateway to innovation. I soon found myself captivated by the world of programming, using Java to create small applications ranging from calculators to mini games and simple user interfaces. This early experience ignited a profound interest in software development and inspired me to explore the vast landscape of web development and mobile applications. I became a web development enthusiast, dedicated to crafting interactive applications for both desktop and mobile platforms. Now, as I stand at the threshold of advancing my education and skills, I am drawn to the unparalleled academic and research opportunities offered by IIT Bombay. It is here, amidst the intellectual dynamism and pioneering research environment, that I aspire to nurture my passion and expertise in web development, data science, and artificial intelligence.

My journey has been further enriched by practical experiences, including internships at Prodigy Infotech Pvt Ltd, where I honed my skills as a front-end web developer, and CodeClause Pvt Ltd, where I delved into full-stack development while promoting ethical tax strategies. My active participation in the Devs Club at my college and my involvement in hackathons exposed me to diverse perspectives and pushed the boundaries of my knowledge. One of my proudest accomplishments is the development of a Pothole Detection System, a project for social good. This system utilizes image processing to detect potholes and communicates their coordinates to municipal corporations, contributing to safer and better-maintained roads. Additionally, my ongoing data science project seeks to predict electronic gadget prices, empowering consumers with insights to make informed purchasing decisions.

IIT Bombay is renowned not only for its academic excellence but also for its dynamic research environment and the calibre of its faculty members. I am particularly drawn to the opportunity to work under the guidance of esteemed professors who are pioneers in the field of computer science. IIT Bombay's state-of-the-art infrastructure, research facilities, and collaborative atmosphere provide an ideal platform for me to delve into cutting-edge research and practical

projects in web development, mobile applications, and related areas. Moreover, the diverse and vibrant campus community at IIT Bombay promises a rich cultural and academic experience that I am eager to be a part of.

In conclusion, my journey from the inception of Java to my experiences in web development, data science, and social impact projects has shaped my aspirations and led me to pursue a Master's degree at IIT Bombay. I am committed to contributing to the vibrant academic community and continuing my quest for innovation in the ever-evolving field of computer science. I eagerly anticipate the opportunity to be part of the IIT Bombay family and contribute to its legacy of excellence.

CORPORATE ETHICS

[Case study]

[Assignment no: 6]

K

1. what are the issues of integrity, ethics and law posed in the case study?

There are lot of instances in the entire case study that makes us think about the integrity and ethics of Arun Kumar Bajoria.

Though the limit set for stake holdings in a company was set to 5% by SEBI (Securities and Exchange Board of India), he announced that his equity stake in Bombay Dyeing had crossed 15%. This raises questions on ethics and integrity of Mr. Bajoria.

Another instance can be seen where Bajoria, even after legal implications imposed on him, increased his stake to 6% when the news of option for a share buy back plan was revealed.

SEBI's mismanagement and delaying of the case by extending dates for the case also pose a lot of questions on law system. These loopholes led Mr. Bajoria to increase his stakehold again when the company opted for buyback plan.

2. what options did Bombay Dyeing have?

Bombay Dyeing could have done things in a more

stricter way by taking stricter legal actions, conducting an internal investigation in the company or opted for potential negotiations with Mr. Bajoria for resolution. Increasing the stake holds within a company without having internal news and affairs leaked to Bajoria is impossible. There might have been people in the company, possibly Mr. Nusli Wadia against whom Mr. Bajoria filed a case to CLB for mismanagement, had possible linkage with Mr. Bajoria. Just like Ballarpur Industries Ltd. (BSIL) who approached SEBI for a similar case, Mr. Bajoria had to dispose off all his stakes and the matter was settled. In the same way, Bombay Dyeing could have undergone negotiations or put constant pressure on SEBI to look upon the matter.

3. If you were the decision maker, what actions would you have taken and why?

If I was the decision maker of Bombay Dyeing, I would have tried to resolve the matter ~~that~~ in such a way that would minimize the disruptions in the operations of the company and reputation. Firstly, I would have a constant communication with SEBI and CLB to look upon the case. Secondly, I would have tried to conduct a stricter internal investigation to find out the loopholes leading to a potential link with Mr. Bajoria. To settle the matter peacefully I would have tried to negotiate with Mr. Bajoria for a peaceful resolution.

The ArunBajoria - Bombay Dyeing Tussle: The Bajoria Stake Hike

In October, 2000, the atmosphere at Neville House, Mumbai, official headquarters of Indian textile major Bombay Dyeing (BD) was extremely tense.

The man responsible for this was Arun Kumar Bajoria (Bajoria), chairman of a little known Kolkata based jute company, Hooghly Mills Company Ltd.

Bajoria, a jute dealer-cum-professional stock market speculator, had announced that his equity stake in BD had crossed the 15% limit set in the Securities and Exchange Board of India (SEBI) takeover guidelines.¹

The announcement attracted immense media coverage. BD accused Bajoria of having violated SEBI guidelines, which laid down that once a person's equity stake exceeded 5%, he had to inform the company concerned. BD lodged a complaint against him with SEBI.

The Bajoria-BD tussle intensified over the next few days, with the Finance Minister YashwantSinha saying that the issue had underlined the need for amending the takeover code to make it foolproof. The controversy even divided the chambers of commerce and industry, with Meanwhile, Bajoria revealed his plans to claim a seat on the BD board and to have NusliWadia (Wadia), BD's Chairman removed on charges of mismanagement: "I had filed a case with the CLB under Sections 396 and 397 for mismanagement in BD by Mr.NusliWadia and will demand his removal from the Board." He also demanded the appointment of an external auditor to probe instances of mismanagement by Wadia.

Established in 1879, BD was one of the oldest and largest mills in the Indian textiles industry. The company was promoted by the Wadia family and had been managed by successive generations.

BD's major business comprised textiles (predominantly cotton) and chemicals (DMT - Dimethyl Terephthalate, used for fabric manufacturing). The company primarily manufactured and sold cloth, which accounted for 97.4% of the Rs 5.35 billion turnover in 1999-00. In cotton textiles, BD was one of the oldest players in the country dealing in shirting, suiting, sarees, dresses, bed sheets, pillow covers, furnishings, blankets and other readymade garments. The company was also present in the industrial segment where it supplied canvas and other specialty grade cloth made according to users' specifications to canvas shoe manufacturers. BD was one of the leading producers of DMT in India. The company owned five textile units - three at Mumbai (Maharashtra), and one each at Roha (Maharashtra) and Jamnagar, (Gujarat) besides a DMT plant at Patalganga (Maharashtra). The Jamnagar unit had 25,000 spindles and the two Mumbai units had a combined capacity of 137,000 spindles and 1,900 looms.

Table I
Bombay Dyeing – Profit & Loss Account

Period ended	Mar-98	Mar-99	Mar-00	1-Mar
Gross Sales	9,066.40	8,610.00	9,464.90	9,292.00
Excise Duty	-1,183.60	-971.5	-983.2	-1,009.60
Net sales	7,882.80	7,638.50	8,481.70	8,282.40
Other income	1,283.40	910.9	1,022.20	1,132.10
Total income	9,166.20	8,549.40	9,503.90	9,414.50
Raw materials	4,663.00	3,826.40	4,200.70	4,498.40
Stock adjustment (Inc)/Dec	-34.4	23.9	-51.4	-502.7
Cost of material	4,628.60	3,850.30	4,149.30	3,995.70
Employee cost	849.3	982.1	927.9	918.7
Power & fuel	1,080.80	1,007.10	1,174.40	1,200.50
Advertising/ promotion/ public	130.4	140.8	139.4	223.3

Other expenses	1,068.80	1,140.10	1,498.60	1,699.50
Cost of sales	7,757.90	7,120.40	7,889.60	8,037.70
PBIDT	1,408.30	1,429.00	1,614.30	1,376.80
Interest & finance charges	676.6	728.6	683.8	717.2
PBDT	731.7	700.4	930.5	659.6
Depreciation	481.5	490	484.6	478.3
PBT	250.2	210.4	445.9	181.3
Provision for taxation	20	8.1	14.3	-
Adjusted PAT	230.2	202.3	431.6	181.3
Dividend payout	157.3	136.5	136.5	90.4

Source: www.indiainfoline.com

Over the years, BD had built strong brand equity and a well spread out network of retail outlets. However, due to a lack of focus and poor marketing skills, the company saw its competitive position weaken in the Indian textile business. Its backward integration into DMT considerably eroded shareholder wealth. The recessionary conditions in the textiles and apparels market in the late 1990s led to declining margins for the company. (Refer Table I). As a result, in the late 1990s, BD focussed on cost cutting through tighter inventory controls and downsizing.

Bajoria was born in Kolkata in a prominent family of jute businessmen. In the 1980s, when the Kolkata jute business was faring very badly, Bajoria's companies were generating excess cash. This prompted Bajoria to buy and lease jute mills all over Kolkata. By the mid 1990s, he controlled more than 15% of West Bengal's private sector jute production.

The BD issue was not Bajoria's first brush with the law. Earlier, he was involved in a case for defaulting on the provident fund dues in one of his jute mills. He had also been put in judicial custody by the Enforcement Directorate regarding irregularities in stock market operations. Bajoria strictly avoided bank funding and depended on internal funding for his stock market and business operations. Bajoria came into the limelight when he bought 10 lakh shares of State Bank of India at Rs 220-225, and made a significant profit later by selling them at high prices.

In June 2000, Bajoria had acquired over 5% of BD's equity through stock market operations. BD at that time was a cash and asset rich company with highly undervalued stocks.

This gave Bajoria ample chance to reap substantial returns in the stock markets. (During July 1999-November 2000, BD's market capitalization ranged between Rs 1.64 billion and Rs 3.28 billion. Taking an average market value of Rs 2.46 billion, the company was quoting at less than a sixth of its actual worth of Rs 14.65 billion according to a November 2000 Business Today report.)

BD noticed the acquisition by Bajoria later in June 2000 during a weekly review of transactions in its shares from the depositories. As the company had not received any intimation from Bajoria about this acquisition, it lodged a complaint with SEBI, the Company Law Board (CLB) and the BSE in the first week of July 2000. Bajoria however claimed that he had sent a letter to the company regarding the same, vide a letter dated March 16th 2000. As the issue remained pending with the SEBI, the CLB ordered the voting rights of Bajoria to be frozen until a solution was arrived at.

BD sources meanwhile blamed SEBI for the laxity shown in its investigations in the case, as even by the end of the month, there was no response from the market regulator. The company even had to send a reminder to SEBI, prompting Executive Director, S.S. Kelkar to comment, "We have been requesting them to take action under the takeover code. We even requested SEBI to conduct an investigation in terms of Regulation 38 of the SEBI takeover code and issue appropriate directions apart from initiating action under Section 24 of the SEBI Act, 1992. We have already written to them. They should call us."

The resentment of the Wadias was not difficult to understand. The controversy had come to be seen as a case of a lone stock market operator creating trouble for the company. Though Bajoria made claims of being concerned with BD's functioning, many believed that he had no interests in the company's business, and was looking solely to book gains through stock deals. According to a Financial Express report, "The truth is Bajoria is best a

turnaround artist who has built a Rs 10 billion business empire buying sick companies at bargain prices and reviving them. A trader of jute goods at most with an eagle's eye for opportunistic windfall." There was even speculation that Bajoria was acting on behalf of a big corporate house, which was eyeing BD. Commenting on this, Bajoria said, "Nonsense. And even if I am, so what? I do not think that it is illegal. I know what you mean. And let me tell you, if Reliance approaches me with an offer to buy my holdings in Bombay Dyeing, I will readily sell off the entire lot to Dhirubhai. May be I will sell it cheaper if he comes up with an offer, cheaper than the 200 plus I am determined of getting from whosoever else I sell to, including Bombay Dyeing."

Bajoria came up with contradictory statements frequently in the media. While at one point he said he was willing to make an open offer for BD shares, later he changed his mind saying, "It does not make sense, simply because it will not give me a controlling stake in the company." Bajoria also claimed that he had bought a substantial portion of BD shares from Unit Trust of India (UTI). However, UTI officials denied this. Bajoria's claims of having received offers from Reliance India to buy the BD stake were also proved wrong.

In November 2000, Bajoria announced that he was willing to sell his stake to Nusli Wadia if he paid a good price. However, the Wadias refused to bow down to Bajoria's tactics and decided to continue the legal battle.

In November 2000, Bajoria was served a show cause notice by SEBI and was asked to respond within 15 days. Bajoria requested an extension. He was later asked to appear for a personal hearing on February 1, 2001. However, just before the due date, he sought another extension from SEBI. The next date was set for February 28, 2001. At this point, Bajoria was asked by the CLB to appear for a hearing in March 2001. Bajoria then moved the Kolkata High Court seeking quashing of the SEBI notice claiming that he had informed BD of his stake acquisition by a letter sent 'under certificate of posting.' However, the case scheduled for a hearing on February 28 was postponed to March 5 without the hearing. As a result, the SEBI hearing was stayed till March 2, 2001.

By May 2001, Bajoria had reduced his stake in BD to 4.5% from the October 2000 level of 12%. This move was reported to have hit him hard as from a high of around Rs 132 during October 2000, the BD share had declined by over 68%. Bajoria had begun acquiring the stock at around Rs 45-50 in mid-April 2000, with the average cost of acquisition of the shares being around Rs 70. The prices at which he had to offload the BD scrip were almost 70% below their acquisition price. (However, Bajoria claimed to have sold his shares at an average price of Rs 92-93 each.)

Bajoria was asked to appear before SEBI in June 2001. However, in a letter to SEBI, he said, "Since the issue pertaining to Bombay Dyeing is already with the Company Law Board (CLB), the issue of my personal appearance does not arise."

In July 2001, the CLB held that Bajoria had violated the provisions of the SEBI takeover code by not disclosing his acquisition of more than 5% shares of BD. The CLB order said, "We find that the letter dated March 16, 2000 cannot be construed to be a 'disclosure' in terms of Regulation 7." The CLB said that the letter allegedly sent by Bajoria and his associates on March 16, 2000, informing BD about the acquisition of more than 5% of the company's shares could not be construed as a disclosure since it was not as per the SEBI prescribed format. Bajoria claimed that he had crossed the 5% mark on March 15, 2000 and this was made known to BD through a letter dated March 16, 2000. While declaring the acquisition of shares in excess of 5%, the court also added that 'the possibility of the letter of 16th March having been prepared at a later date could not be ruled out.'

CLB said that Bajoria had not furnished any evidence like postage account or a dispatch register and the only proof of him having posted the letter was in the form of a copy of the certificate of posting. Kelkar added that the March 16 date was of no relevance, as according to BD's records, Bajoria's stake at that point of time was well below 5%. The stake crossed the 5% level only on May 16. So even if Bajoria did send a letter dated March 16 to BD, its content could not be about his holding exceeding 5%, simply because it had not exceeded 5% at that time.

By August 2001, Bajoria was reported to have again increased his stake in BD to 6% from 4.9%, as the company revealed plans to opt for a share buyback plan. The buyback offer was for 1.02 crore equity shares, amounting to 25% of BD's total paid-up equity share capital at Rs 60 per share. Following this, the promoter stake in the company was expected to go up to 54.47% from the August 2001 level of 40.85%. It was rumoured that Bajoria's renewed interest was solely to book profits arising due to a possible price increase led by the buyback news.

Before Bajoria could further increase his stake, towards the end of August 2001, SEBI passed its verdict barring Bajoria and his associates from accessing the capital market and dealing in securities - either directly or indirectly - for one year. Bajoria's broking firms, Mega Stock and Mega Resources, through which the BD deals had been executed, were also barred from trading.

Reacting to the SEBI decision, Bajoria said, "Takeover guidelines have been violated even in the past. In these cases SEBI had merely asked them to pay a fine after warning them against making the same mistake again in the future. But, in my case, the market regulator has taken a harsh decision. The SEBI order is totally malafide. It is a politically motivated decision and not a commercial decision in the true sense of the word." He announced that he intended to file a writ petition against the SEBI order.

Analysts claimed that the ruling was unlikely to pose any major problems for Bajoria's plans to offload his BD stake through the buyback program. This was because Bajoria was reported to have transferred his shares to various associates and relatives, who would not be affected by the SEBI order, and who could easily sell them in the market. Bajoria said, "I was apprehensive that SEBI might take such a step to prevent me from taking advantage of BD's buyback. So, I transferred the shares to my associates so that any order barring me, my relatives and my broking firms from entering the markets did not affect my plans."

As in the case of many other stock market scams, SEBI's role in the Bajoria/BD tussle was severely criticized. Besides being criticized for not formulating a clear takeover code, SEBI was also accused of delays in taking action against Bajoria after BD lodged the complaint. In fact, it was after the Bajoria case that SEBI made certain amendments to its takeover guidelines. SEBI had begun introducing changes in the takeover regulations in 2000, but it had to shift its attention to investigations following the Ketan Parekh scam in 2001.

In the pre-demat trading days, since the company made the delivery of shares, it could stop the transfer if any irregularities were noticed. However, trading in the dematerialized mode did not allow the companies to block the transfer of the shares and, thus, exposed the companies to risks. The onus was on the acquirer to inform the company that the 5% limit had been crossed. The only way out for a company was to petition SEBI and the CLB to take action against violations. If there were delays in these bodies taking action, there was little the company could do. Even while the BD case was on, Bajoria carried out a similar exercise with the paper major Ballarpur Industries Ltd. (BILT), by picking up a 10% stake in the company.

BILT also approached SEBI in this regard after Bajoria approached the company to get a seat on the board. (The matter was put to rest later with Bajoria disposing of his stake.)

Even after barring Bajoria from entering the capital markets, SEBI itself was not too sure whether it would be able to pre-empt such incidents in the future. A top-level SEBI official said, "Even if Bajoria has transferred his shares to friends and associates recently, it is very difficult for SEBI to book him for it. Under the given takeover regulations, it is very difficult to establish them as persons acting in concert and helping him to dodge the suspension."

Answer the following questions:

1. What are the issues of integrity, ethics and law posed in the case study?
2. What options did Bombay Deying have?
3. If you were the decision maker what actions would you have taken and why?

INTERPERSONAL SKILLS
[Assignment no. 7]

✓

fill the questionnaires on:

Time Management

Leadership

Conflict Resolution

Start Up Skills

DO YOU HAVE THE TIME?

Take time out for this check-up. It's easy: Answer 'Yes' or 'No'

1. I'd rather do the right things than do things right. Yes
2. If I dislike task (A) and like another (B), I do B first. Yes
3. I try to handle every piece of paper only once. No
4. I find that many tasks I delegate come back to me. Yes
5. I make a daily priority list; same place, same time. No
6. I often feel I am doing the working of my staff. No
7. I have protected times for planning, meditating. No
8. I don't find time for exercise. No
9. I go after the top tasks in my prime (energetic) time. Yes
10. I'd love to train my staff but can't find time. Yes
11. I organize my time and execute around priorities. No
12. I spend much time on small decisions. Yes
13. I often ask: What is the best use of my time right now? No
14. I find that my work is jeopardizing my marriage. No
15. I do weekly planning to balance the roles in my life. No
16. I find it difficult to say 'No'. Yes
17. I don't let routine work displace my non-routine work. No
18. If a job is worth doing, it is worth doing perfectly. Yes
19. I find time to strengthen key relationships. No
20. I put off big projects till I have long free periods. Yes
21. I find time for my family. Yes

TIME - MANAGEMENT

✓

1. Yes
2. Yes
3. NO
4. Yes
5. NO
6. NO
7. NO
8. NO
9. Yes
10. Yes
11. NO
12. Yes
13. NO
14. NO
15. NO
16. Yes
17. NO
18. Yes
19. NO
20. Yes
21. Yes

Leadership Questionnaire

Name

Group

Directions: the following items describe aspects of leadership behavior. Respond to each item according to the way you would most likely act if you were the leader of a work group. Circle whether you would most likely behave in the described way always (A), frequently (F), occasionally (O), seldom (S), or never (N). Once the test is completed, go back to number 2 under implementation.

A	F	O	S	N		
A	F	O	S	N	1.	I would likely act as the spokesperson of the group.
A	F	O	S	N	2.	I would encourage overtime work.
A	F	O	S	N	3.	I would allow members complete freedom in their work.
A	F	O	S	N	4.	I would encourage the use of uniform procedures.
A	F	O	S	N	5.	I would permit the members to use their own judgment in solving problems.
A	F	O	S	N	6.	I would stress being ahead of competing groups.
A	F	O	S	N	7.	I would speak as representative of the group.
A	F	O	S	N	8.	I would needle members for greater effort.
A	F	O	S	N	9.	I would try out my ideas in the group.
A	F	O	S	N	10.	I would let the members do their work the way they think best.
A	F	O	S	N	11.	I would be working hard for a promotion.
A	F	O	S	N	12.	I would tolerate postponement and uncertainty.
A	F	O	S	N	13.	I would speak for the group if there were visitors present.
A	F	O	S	N	14.	I would keep the work moving at a rapid pace.
A	F	O	S	N	15.	I would turn the members loose on a job and let them go to it.
A	F	O	S	N	16.	I would settle conflicts when they occur in the group.
A	F	O	S	N	17.	I would get swamped by details.
A	F	O	S	N	18.	I would represent the group at outside meetings.

A	F	O	S	(N)		19.	I would be reluctant to allow the members any freedom of action.
A	F	O	(S)	N		20.	I would decide what should be done and how it should be done.
A	F	(O)	S	N		21.	I would push for increased production.
A	F	(O)	S	N		22.	I would let some members have authority which I could keep.
A	F	(O)	S	N		23.	Things would easily turn out as I had predicted.
A	(F)	O	S	N		24.	I would allow the group a high degree of initiative.
(A)	F	O	S	N		25.	I would assign group members for to particular tasks,
A	(F)	O	S	N		26.	I would be willing to make changes.
(A)	F	O	S	N		27.	I would ask the members to work harder.
A	(F)	O	S	N		28.	I would trust the group members to exercise good judgement.
(A)	F	O	S	N		29.	I would schedule the work to be done.
A	F	O	S	(N)		30.	I would refuse to explain my actions.
A	F	O	S	(N)		31.	I would persuade others that my ideas are to their advantage.
A	F	(O)	S	N		32.	I would permit the group to set its own pace.
(A)	F	O	S	N		33.	I would urge the group to beat its previous record.
A	F	O	S	(N)		34.	I would act without consulting the group.
A	(F)	O	S	N		35.	I would ask that group members follow standard rules and regulations.

T _____

P _____

✓

Opinion Survey on Conflict Management

Please read each statement given below and write a number from 1 to 5 in the space on the left hand side of the statement to indicate your opinion.

- Write 1 if you strongly disagree with the statement.
- Write 2 if you disagree with the statement.
- Write 3 if you half agree and half disagree with the statement.
- Write 4 if you agree with the statement.
- Write 5 if you strongly agree with the statement.

- 2 1. Conflicts are inevitable in organizations and nothing can be done about them.
- 2 2. The best strategy is to avoid conflict situations.
- 3 3. Conflict is like a problem; we have to find the causes and try to find solutions.
- 2 4. Conflict can be solved only if one shows one's strength to the other party.
- 4 5. In a conflict situation both the parties have to give up something in order to reach a situation.
- 2 6. A third party should be asked to give a solution to a difficult conflict.
- 3 7. It is better to give concessions to the opponent group to win their confidence
- 2 8. The best way to deal with conflicts is to withdraw from the scene for sometime.
- 2 9. It is better to lie low and live with conflict.
- 2 10. In a conflict situation one party should leave to avert unpleasantness.
- 4 11. Conflict management needs an involved process of joint exploration for solution(s).
- 2 12. In most conflicts one should fight out the solution.
- 3 13. Compromise is the best strategy in managing a conflict.
- 3 14. When two parties are deeply in conflict, arbitration by an acceptable outside party may be very helpful.
- 3 15. Accepting a few demands of the opponent group may help in solving the conflicts.
- 2 16. If one waits for sometime and does not attempt to solve the problem, the conflicts will get defused and resolved in the due course of time.
- 2 17. It is foolish to be bothered by conflicts; they are there and we may better live with them.
- 4 18. If a group interacts with the other group only on the necessary and limited dimensions, conflicts can be managed.
- 4 19. Conflicts can be solved if the conflicts parties understand each other, and jointly search alternative solutions.
- 2 20. The more powerful you are, the more effectively you can resolve the conflicts.
- 3 21. If conflicting parties accept a part of each other's demands, conflict can be resolved.
- 3 22. Difficult conflicts can be resolved by an impartial arbitration acceptable to both the conflicting group, so that conflicts can be effectively resolved.
- 4 23. It is better to buy peace for sometime even by acceding to some demands of the conflicting group, so that conflicts can be effectively resolved.
- 4 24. Waiting for sometime to let the emotions subside helps in resolving the major problems.

Scoring key:

Conflict management style
Items

1. Resignation 6	1, 9, 17
2. Withdrawal 8	2, 10, 18
3. Appeasement 10	7, 15, 23
4. Defusion 8	8, 16, 24
5. Confrontation 6	4, 12, 20
6. Arbitration 8	6, 14, 22
7. Compromise 10	5, 13, 21
8. Negotiation 11	3, 11, 19

Scoring: 11 (Negotiation)

Add the ratings of three items on each dimension. This gives the total score for the style or mode. The style or mode with the highest score is the dominant style and one with the next to highest is the backing



Entrepreneurial Self-Assessment Survey

**This is not a test! This survey is for your personal information.
Please answer each of the following questions as honestly as possible.**

Strongly Agree

5

4

Somewhat Agree

3

2

Strongly Disagree

1

- 3 1. I am willing to work 50 hours or more per week regularly.
- 4 2. My family will support my going into business.
- 4 3. I am willing to accept both financial and career risks when necessary.
- 2 4. I don't need all the fringe benefits provided by conventional employment.
- 4 5. I would like to take full responsibility for the successes and failures of my business.
- 3 6. I would experience more financial success by operating my own business.
- 4 7. I feel a great deal of pride when I complete a project successfully.
- 3 8. I have a high energy level that can be maintained over a long time.
- 3 9. I enjoy controlling my own work assignments & making all decisions affecting my work.
- 4 10. I believe that I am primarily responsible for my own successes and failures.
- 5 11. I have a strong desire to achieve positive results even when it requires a great deal of additional effort.
- 3 12. I have a good understanding of how to manage a business.
- 3 13. I can function in ambiguous situations.
- 1 14. One or both of my parents were entrepreneurs.
- 2 15. I believe that my abilities and skills are greater than those of most of my coworkers.
- 3 16. People trust me and consider me honest and reliable.
- 4 17. I always try to complete every project I start, regardless of obstacles and difficulties.
- 4 18. I am willing to do something even when other people laugh or belittle me for doing it.
- 3 19. I can make decisions quickly.
- 3 20. I have a good network of friends, professionals, and business acquaintances.

TOTAL: 65
Total the numbers you placed before the statements and enter the total in the space provided.

Characteristics of an Entrepreneur

The following list describes some common characteristics of an entrepreneur. The number(s) after each characteristic indicates the related statement(s) in the assessment form. This list interprets the form qualitatively. Note that arriving at a conclusive portrait of a typical entrepreneur is very difficult. Therefore, you may score low on the assessment and still succeed as an entrepreneur.

Works Hard (Statements 1 & 8)

Self-employment requires a great deal of time and effort. The entrepreneur must perform a wide variety of time-consuming tasks. 77% of all entrepreneurs report working 50 hours or more per week, and 54% say that they work more than 60 hours per week. Such a time commitment requires that you have a high energy level.

Wants Financial Success (Statement 6)

A primary reason that most entrepreneurs have for going into business is to achieve financial success. If you want to be an entrepreneur, you need to establish a reasonable financial goal that you want to achieve through self-employment. This goal will help you measure how well you are doing in fulfilling your personal needs through an entrepreneurial career.

Has Family Support (Statement 2)

A successful entrepreneur needs family support. If you are married, your spouse must believe in your business because it will require that both of you sacrifice time and money. The stress may create disruptions in family relationships. If you have children, they will need encouragement in understanding your need to spend so much time away from the family. The more positive support you receive from your family, the more you can concentrate on making the business a success.

Is Energetic (Statements 1 & 8)

Self-employment requires long work hours. You will frequently be unable to control the number of hours required to fulfill all the necessary tasks. The entrepreneur must have a high energy level to respond to the job's demands.

Has an Internal "Locus of Control", (Statement 10)

Successful entrepreneurs have an internal locus of control or inner sense of responsibility for the outcome of a venture. To be an entrepreneur, you should have a strong sense of being a "victor" who is responsible for your actions. If, however, you often consider yourself a "victim" and blame other people, bad luck, or difficult circumstances for your failures, entrepreneurship might not be the right career move for you.

Takes Risks (Statement 3)

Entrepreneurs are risk takers. They risk their careers, time and money in order to make a success of their businesses. To be successful in self-employment, you should feel comfortable taking reasonable risks.

Sacrifices Employment Benefits (Statement 4)

One of the major realities of self-employment is that you won't receive a regular paycheck. You pay for your own fringe benefits. A nice office, secretarial assistance, equipment and other features of employment you have grown to expect are no longer available unless you provide them for yourself.

Has a Need to Achieve (Statements 7 & 11)

Entrepreneurs have a strong need for achievement. They strive to excel and accomplish objectives that are quite high. You should be willing to set high goals for yourself and enjoy striving to achieve those goals.

Has Business Experience (Statement 12)

An entrepreneur should have extensive business experience to be successful. General management experience is beneficial because an entrepreneur should know something about all types of management. Formal training and education in management also are helpful.

Is Independent (Statements 5 & 9)

Entrepreneurs like to be independent and in control of situations. Many people who become self-employed consider the opportunity to be their own boss as one of the major benefits of self-employment. Although being independent may not be a major concern for you, it is certainly an aspect of self-employment that you need to feel

portable with. If you cannot afford to hire other employees when you begin your business, you may at first be
as a self-employed person.

a Self-employed Parent as a Role Model (Statement 14)

Search has shown that entrepreneurs are more likely to have a parent who is self-employed. A parent's
education and knowledge about operating a business can contribute to an entrepreneur's success.

Self-confidence (Statements 10, 15, and 18)

Important characteristic of entrepreneurs is self-confidence. This factor is particularly important when you face
challenges and difficulties with your business. You need to believe in yourself. Your belief will help you
overcome the problems that inevitably affect all self-employed persons at some point in their careers.

Integrity (Statement 16)

We often cite honesty and integrity as characteristics of entrepreneurs. Customers do not want to deal with
business owners who are dishonest and unethical. You should feel positive about your ethical treatment of people
and be committed to conducting your business with the utmost integrity.

Determination (Statement 17)

One of the most important characteristics of entrepreneurs is determination. This trait is closely related to
confidence. The more you believe in yourself, the more likely you are to continue to struggle for success when
faced with tremendous obstacles. You need determination in order to overcome the problems that beset every new
entrepreneur.

Ability to Change (Statement 13 and 19)

Business changes rapidly, so an entrepreneur must be able to adapt to change. Two primary skills are
needed for adaptation to change: the capacity to solve problems, and the ability to make quick decisions. Another
skill is the ability to learn from your mistakes.

A Good Network of Professionals (Statement 20)

An entrepreneur has a good network of professionals. This network provides access to those who can be consulted
for advice, information, and referrals. You should have an extensive network of professionals to whom you can turn
for assistance.

Assessment

You have outstanding ability to be an entrepreneur.

You have satisfactory ability to be an entrepreneur.

Self-employment may not be an appropriate career for you.

You should probably avoid entrepreneurship.

Parth D.
32
C12

APTITUDE TEST
[Assignment no. 8]

27/44 ✓

Exercise 1: Grammar:

Instructions for questions 1 - 11: From among the given alternatives choose the one that best completes the sentence.

1. Truth and honesty is the best policy.

(1) are (2) is

2. Fish and rice is his favourite food.

(1) are (2) is

3. Your car and mine are both at the door.

(1) are (2) is

4. Neither Maradona nor the referee are guilty.

(1) are (2) is

5. The garage with the car was sold.

(1) were (2) was

6. The state of affairs in the city were such as to cause disturbance to normal life.

(1) were (2) was

7. Each of the alleged terrorists were arrested.

(1) were (2) was

8. Neither of the alibis is convincing.

(1) are (2) is

9. The military is still under the command of the ousted head.

- (1) are (2) is

10. Gymnastics is a difficult sport to master.

- (1) is (2) are

11. A large number of rioters were arrested.

- (1) was (2) were

Instructions for questions 12 - 17: Determine whether the given sentences are grammatically correct (option 1) or incorrect (option 2).

12. My father and my brother is in the office. (option 2) X

13. Each of you have been allotted separate plots of land. (option 1) ✓

14. Ten chocolates costs five rupees. (option 2) X

15. The first few pages of the text has been copied. (option 1) ✓

16. Which are your pair of scissors? (option 1) ✓

17. Neither he nor his friend know how to play the game. (option 1) ✓

Instructions for questions 18 - 24: Identify the correct sentence.

18. (1) Bread and pickle are not a good combination.

(2) Bread and pickle is not a good combination.

(3) Bread and pickle be not a good combination.

19. (1) Both the government and the opposition is interested in governance.

(2) Neither the government nor the opposition are interested in governance.

(3) Neither the government nor the opposition is interested in governance.

20. (1) not only was the CEO but his executives also insulted.

(2) The CEO as well as his executives was insulted.

(3) The CEO as well as his executives are insulted.

21. (1) Neither Raj nor his cousin were invited for the big event.

(2) Neither Raj nor his cousin was invited for the big event.

(3) Neither Raj nor his cousin are invited for the big event.

22. (1) Whose is this dirty pair of socks?

(2) Whose are these dirty pair of socks?

(3) Whose were these dirty pair of socks?

23. (1) According to him, fifty dollars are not a neat sum.

(2) According to him, hundred dollars be a neat sum.

(3) According to him, hundred dollars is a neat sum.

24. (1) None of them was present.

(2) Neither of them were present.

(3) Neither she nor her friend were present.

Exercise 2: Analogies:

Instructions for questions 1 to 7: From the following words, identify which word will make a similar analogous relationship as the first pair.

1. PLANTS : BOTANY :: INSECTS :

- (1) Epidemiology (2) Entomology (3) Helminthology (4) Carpology

2. PULP : PAPER :: HEMP :

- (1) Basket (2) Yarn (3) Cotton (4) Rope

3. HORSE : NEIGH :: HYENA :

- (1) Chatter (2) Talk (3) Laugh (4) Howl (5) Roar

4. BREW : BEER :: DISTILL :

- (1) Milk (2) Oil (3) Butter (4) Bread

5. NEEDLE : KNIT :: LOOM :

- (1) Weave (2) Sew (3) Thimble (4) Stitch (5) Darn

6. COHERENT : CONSISTENT :: IRATE :

- (1) Rage (2) Irritated (3) Unreasonable (4) Cantankerous (5) Hostile

7. ELEPHANT : CALF :: FISH :

- (1) Fawn (2) Fry (3) Cub (4) Roe (5) Fillet

Instructions for question 8 to 13: Each of the following questions consists of two capitalized words that have a certain relationship to each other, followed by a certain pair of words. Choose the pair that is RELATED to each other in the same way as the capitalized pair.

8. SATURN : PLANET

- (1) Star : Sun (2) Fig : Apple (3) Moon : Satellite
(4) Europe : Asia (5) Comet : Meteor

9. INDEX: INDICES

- (1) Object : Symbol (2) Male : Female (3) Worker : Tool
(4) Female : Male (5) Singular : Plural

10. WHITE: PEACE

- (1) Object : Symbol (2) Male : Female (3) Singular : Plural
 (4) Female : Male (5) Worker : Tool

11. ANVIL: SMITH

- (1) Fire : Mason (2) Cement : Mortar (3) Shoes : Cobbler
(4) Wickets : Cricketer (5) Hammer : Carpenter

12. FOX: VIXEN

- (1) Goose : Gander (2) Drake : Duck (3) Thoroughbred : Stallion
(4) Horse : Colt (5) Sheep : Coyote

13. FISH : PISCES

- (1) Air : Libra (2) Elements : Clue
(4) Lion : Capricorn (5) Libra : October ✓ Crab : Cancer

Exercise 3: Jumbled Sentences:

Instructions for questions 1 – 3: Each of the questions below consists of a paragraph in which the first and last sentences are identified. Choose the option that has the most logical order of the intermediate sentences.

1. A. World War II, was a global military conflict, the joining of what had initially been two separate conflicts.
B. The other began in Europe in 1939 with the German invasion of Poland.

- C. This global conflict split the majority of the world's nations into two opposing military alliances: the Allies and the Axis Powers.
 D. The first began in Asia in 1937 as the Second Sino-Japanese War.
 E. The Allies included USA, UK, France, Russia etc.
 F. Whereas Axis powers included mainly Germany, Italy and Japan.

(✓) DBCE (2) CEBD (3) BCDE (4) DBEC (5) CBED

2. A. Bal Gangadhar Tilak was an Indian nationalist, social reformer and freedom fighter.
 B. "Swaraj is my birth right, and I shall have it!"
 C. He is reverently addressed as Lokmanya.
 D. He is known as "Father of the Indian unrest."
 E. This quote of his is well-remembered in India even today.
 F. It means "Beloved of the people" a title that is well deserved.

(1) BCDE (2) DBEC (3) DBCE (✓) EBCD (5) CDEB

3. A. 'Chakra' is a Sanskrit term meaning circle or wheel.
 B. They are considered to be a point or nexus of metaphysical and/ or biophysical energy of the human body.
 C. Theories on chakras fit within systems that link the human body and mind into a single unit, sometimes called the body mind or 'namarupa'.
 D. Chakras are commonly described as energy centers in the spine located at major branches of the human nervous system, beginning at the base of the spinal column and moving upwards to the top of the skull.
 E. There is a wide literature on chakra models, philosophy, and lore that underpin many philosophical systems and spiritual energy practices, religious observance, and personal discipline.
 F. These philosophical theories and models were first codified in Ancient India

(✓) DBEC (2) DCEB (3) BCED (4) BECD (5) CBED

Instructions for questions 4 - 7: Each of the questions below consists of a set of labelled sentences. These sentences, when properly sequenced, form a coherent paragraph. Choose the most logical order of sentences from among the options.

4. A. According to this philosophy, acquiring the awareness of Brahmanavidya (direct perception or awareness of Reality) alleviates this deep source of suffering.
 B. The Indian philosophy of Advaita Vedanta explains that we suffer as a avidya (ignorance) and maya (misconceived, misinterpreted views of Reality).
 C. Only this awareness directly leads us to moksha (liberation).
 D. Brahmanavidya, thus is an ancient system of Yoga and Philosophy, which helps eliminate suffering.

(1) ACDB (2) ADBC (3) BDCA (4) BACD (✓) BADC

5. A. It describes the lives of the young March sisters.
B. 'Little women' is a beloved classic.
C. It is an ambition she is destined to fulfil.
D. Meg is a young girl who settles into quiet domesticity.
E. However Jo, her sister, longs to be a famous author.

(1) ABCDE (2) BADEC (3) BCDAE (4) BAECD 1

6. A. Unfortunately it is not limited to only the geriatric age group.
B. Children as young as 10 years may have this disease.
C. One of the commonest chronic diseases in old age is Diabetes.
D. However in them, it is usually of type 1.

(1) CBDA (2) CABD (3) CADB (4) BADC 1

7. A. Rising sea levels swamped the coastal regions.
B. Forests replaced open woodlands and grasslands across the continent.
C. The Ice Age was ebbing.
D. About 12000 years ago, warmer, wetter weather was beginning to take hold.
E. As their habitats disappeared, so did the bison and the mammoth.

(1) CDABE (2) DCABE (3) DCBEA (4) BEDCA (5) ABDCE 1

27/44

POWERPOINT PRESENTATION SLIDES

[Assignment no - 09]

✓

Powerpoint Presentations on -
Proposal Presentation
Report Presentation

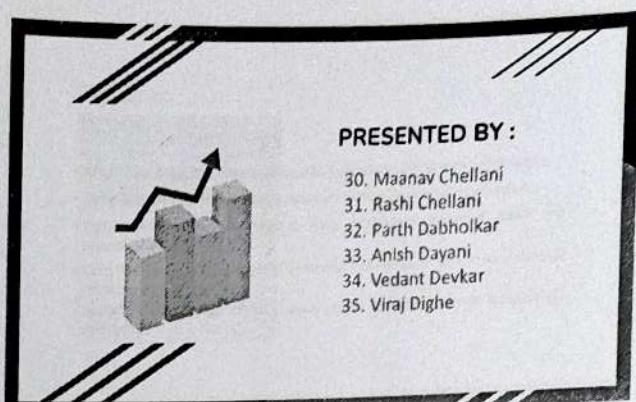
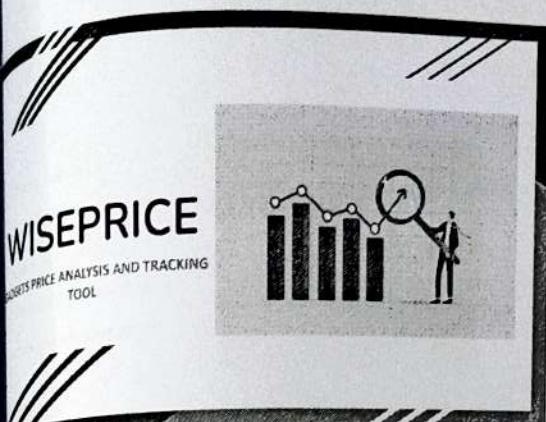
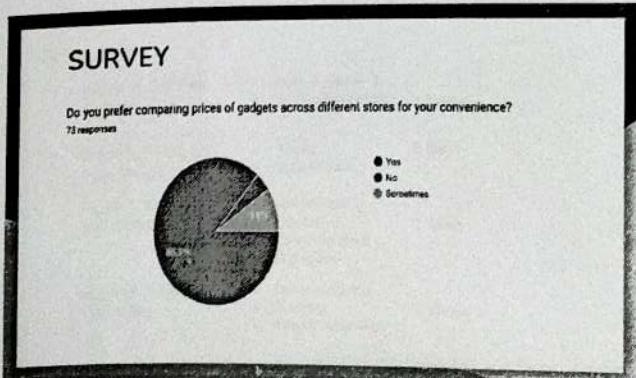
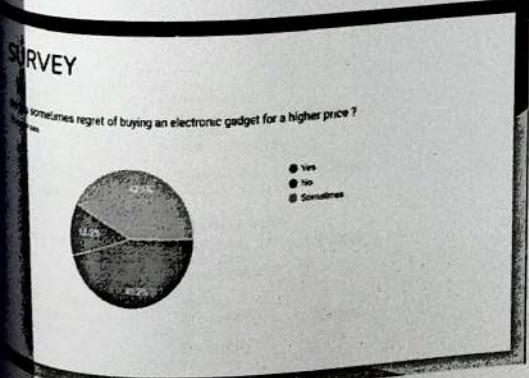


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Introduction

- WisePrice is a cutting-edge Machine Learning (ML) application poised to transform the way we navigate pricing in today's dynamic markets.
- With its powerful price trend analysis and tracking capabilities, WisePrice empowers users with data-driven insights to make informed pricing decisions and stay ahead in the competitive landscape.
- WisePrice revolutionizes pricing decisions, bridging the gap between data and action.



- problem
- Pricing Volatility
 - Information Overload
 - Competitive Pressure
 - Informed Decision-Making
 - Consumer Empowerment



Plan

- Project Initialization :** Team assembly, define scope.
- Data Collection and Preprocessing :** Acquire data, clean data, extract features.
- Model Development :** Choose ML algorithms, implement forecasting, train, evaluate.
- Web App Development :** Design user interface, develop backend systems, integrate.
- Real-time Updates :** Implement data pipeline, create notification system.

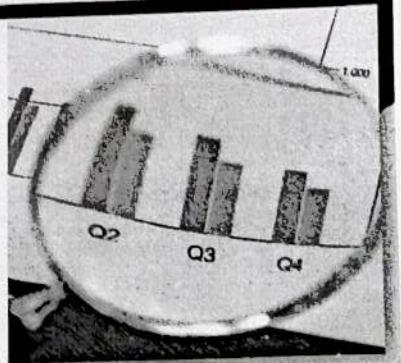
~~Plan A~~
~~Plan B~~
Plan C

Objectives

- Real-Time Insights:** Provide users with immediate pricing data and analysis.
- Data-Driven Decisions:** Enable informed pricing choices based on data.
- Optimized Pricing Strategies:** Help businesses maximize profit and competitiveness.
- Cost Savings for Consumers:** Empower individuals to save money through smart purchasing.
- Market Understanding:** Enhance users' grasp of market trends for strategic decisions.

Plan

- Testing & Optimization :** Conduct extensive testing, fine-tune.
- Deployment & Monitoring :** Deploy to production, continuous monitoring, user feedback.
- Project Conclusion :** Document project details, user training, final evaluation.



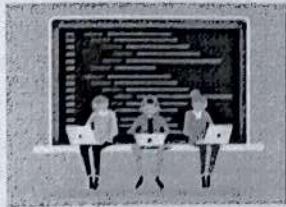
Schedule

Phase 1: Project Initialization	<ul style="list-style-type: none"> Project Kickoff Data Collection Strategy Infrastructure Setup 	1 Week
Phase 2: Data Collection and Preprocessing	<ul style="list-style-type: none"> Data Cleaning Feature Engineering 	5 Days
Phase 3: Model Development	<ul style="list-style-type: none"> Algorithm Selection Time Series Forecasting Model Training 	1 week
Phase 4: Web Application Development	<ul style="list-style-type: none"> Frontend Development Backend Development Integration 	8 days

Schedule

Phase 5: Real Time Updates	<ul style="list-style-type: none"> Data Pipeline Notification System 	1 Week
Phase 6: Testing and Optimization	<ul style="list-style-type: none"> Testing Optimization 	5 Days
Phase 7: Deployment and Monitoring	<ul style="list-style-type: none"> Deployment Monitoring User Feedback Collection 	1 week
Phase 8: Project Conclusion	<ul style="list-style-type: none"> Documentation Training Final Evaluation 	1 Week

resources
Human Resources
Data Scientists and ML Engineers (2-3)
Mobile App Developers (2-3)
Front-end Engineers (1-2)



ources
Data Sources and APIs
Access to Electronic Product Pricing Data
Integration for Real-time Data
get
Data Acquisition Budget for Enhanced Models



Resources

2. Hardware and Software Resources

- Cloud Computing (AWS, Azure, Google Cloud)
- GPU Instances
- High-performance Data Storage

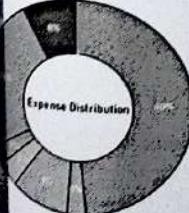


BUDGET

Expense Category	Estimated Cost (Range in INR)
Salaries to employees	1,50,00,000 (annual)
Hardware Resources	8,00,000 (annual)
Software Resources	15,00,000 (licenses)
Data Resources	5,50,000
Legal Resources	7,00,000
Marketing and Promotion	15,00,000 (annual)
Server Maintenance	1,50,000 (monthly)
Miscellaneous Expenses	1,50,000

TOTAL COST - ₹ 2.2 CRORES

BUDGET



- Human Resources**
Major expenditure is done on human resources which involves development team and data engineers.
- Marketing and Promotion**
To promote our product 10% of the budget is allocated to Marketing.
- Maintenance and Support**
To keep our application long-term and up-to-date 6% of our budget is allocated to maintenance and support team.
- Software Resources**
Software Resources are the development tools required in building the product.
- Hardware Resources**
Hardware Resources include server infrastructure for hosting the application and keeping the data secured.
- Data Resources**
Data resources includes the Historical Price Data and User Data Storage.
- Legal Resources**
Legal resources includes the Historical Price Data and User Data Storage.

CONCLUSION

In summary, WisePrice represents a groundbreaking solution that has the potential to redefine how businesses and consumers engage with pricing and market dynamics. It embodies the future of data-driven decision-making in the marketplace.

- WisePrice: Smart pricing for all.
- Advantage: Boosts business and saves consumers time and money.

CONCLUSION

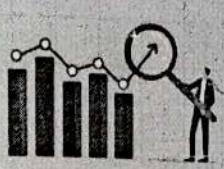
- Data Care: Prioritizes security and privacy.
- Global Impact: Benefits everywhere.
- Vision: Smarter future.

As we move forward, we see WisePrice not just as a standalone product but as a catalyst for innovation and evolution.

Thank You

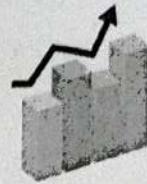
WISEPRICE

PRICE ANALYSIS AND TRACKING
TOOL



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Vedant Devkar
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Topics Covered

INTRODUCTION
REQUIREMENTS
CONSTRUCTION
WORKING

MONETIZATION STRATEGY
ADVANTAGES
LIMITATIONS
CONCLUSION

INTRODUCTION

- WisePrice uses advanced machine learning to predict electronics prices
- Real-time data for easy price comparisons
- Historical trends inform future price changes



USED FOR WISEPRICE

Informed Purchases
Optimizing Business Strategies
Inventory Management
Comparison Shopping
Saves Time and Effort



Requirements

- Functional Requirements
- Non-functional Requirements
- Constraints



Functional Requirements

Data acquisition and integration

Identify and connect to reliable and diverse data sources

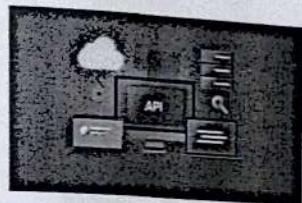
Data Cleansing

Real-time Updates

Machine learning models

Price Prediction

Historical Price Trends



Functional Requirements

User interface

- User Registration and Authentication
- Product Search
- Price Comparison
- Product Details



Non Functional Requirements

Performance and Scalability

• Response Time

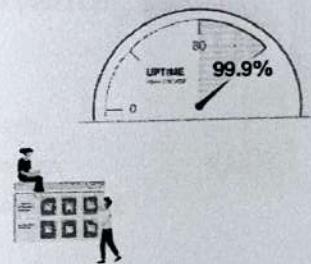
• Data Processing

• Scalability

• Reliability

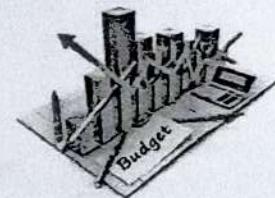
• User-Friendly Interface

• Accessibility



Constraints

- Budget
- Technological constraints



Construction

- Data gathering and cleaning for price analysis
- Feature selection and engineering for model input
- Building machine learning or AI prediction models
- Training and validation of prediction algorithms
- Optimization and fine-tuning of model parameters
- Deployment and integration into a user-friendly interface
- Continuous monitoring and model maintenance

WORKING

- Features of WisePrice
- Functioning of WisePrice



Features of WisePrice

- Product Search and Comparison
- Price History and Tracking
- Price Drop and Alerts
- User Reviews and Ratings
- Comparison Analytics
- Customized Recommendations



Functioning of WisePrice

- Data Collection
- Data Processing
- User Accounts
- Price Prediction Algorithm
- Integration with Retailer APIs
- Review Aggregation
- Machine Learning for Recommendations
- User Friendly Interface



Advantages

- Time Efficiency
- Personalized Alerts
- User-Friendly Design
- Informed-Decision Making



Limitations

- Platform Compatibility
- Privacy Concerns
- Data Accuracy
- Monetization Strategies



Monetization Strategies

- Data Licensing
- Advertising
- Affiliate Marketing



Conclusion

Advantage

- Saves consumers time and money
- Boosts business

Vision -> Smarter future



Thank You

Intellectual Property Rights Assignment



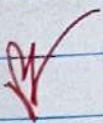
write short notes on following:-

Copyright: Copyright is a main aspect of Intellectual Property Rights that concerns the rights of creators of their original works. In other words, it grants an exclusive legal protection to their creators. These creations may include books, music, films, technical softwares etc. The duration of copyright according to the copyright act is the creator's lifetime plus 60 years after death. On violating the terms the organization or company or individual could be fined a big sum of money and in severe cases, few years of imprisonment.

Patent: A patent is a legal document that gives inventors exclusive rights to their inventions for a certain period, typically 20 years. This means others can't make, sell or use the invention without inventor's permission. In return for this exclusive right, inventors must publicly disclose how their invention works, which helps advance technology and knowledge. According to the act, patent provides a protection of 20 years after invention goes public.

Geographical Indication: It is a crucial aspect of intellectual property rights that focuses on protecting products closely linked to a specific region's unique characteristics and reputation. These products can be agricultural, natural, or manufactured, such as wine, cheeses, handicrafts and more. One good example of Geographical Indication with respect to India is "Darjeeling tea". This status is granted to the tea produced in the Darjeeling districts of West Bengal.

4. WORKING OF WISEPRICE



WisePrice is a comprehensive price comparison and analysis application designed to assist users in making informed purchasing decisions. It operates through a seamless process that involves data collection, processing, user interactions and personalized recommendations. In essence, WisePrice empowers users by providing them with a comprehensive platform to compare prices, track historical data, access reviews, and receive personalized recommendations. Through intelligent algorithms and user friendly features, the application simplifies the process of finding the best deals and making well-informed purchasing choices. In this section, we will briefly discuss the features and the functionality of the tool in detail.

4.1 Features of the tool

In order to predict the price of the gadgets, we considered specifications and features for estimation. Let us consider a Laptop. To predict the prices of laptop the screen size, resolution, refresh rate, processor, graphics card, GPU and many such specifications are taken

under consideration. The features of this tool is discussed in this section in more detail.

Product Search and Comparison

Users can enter keywords, categories, or specific product names to search for the items. The app displays a list of relevant products from various online retailers. Users can view detailed specification, images and descriptions of each product. Aside by side comparison feature allows users to compare prices, features, and reviews of different products. This is done in a tabular fashion for ease of understanding. A WisePrice score is calculated out of ten using the reviews given by different customers in online website and is displayed in a graphical format which further helps the customer in choosing the right device.

Price History Tracking

The tool tracks historical price data for each product over time. This historical data can be collected either through website scrapping (Extraction of data from website) or using a pre-made datasets from trusted websites such as Kaggle or Git Repositories. Users can view price trends through interactive charts, graphs and historical data tables. This feature further eases the understanding of buying the product at the best price. It helps users understand how prices

are changed and whether a current price is a good deal or not.

Price Drop Alerts

Users can set up alerts or notifications for specific products they are interested in purchasing. The users will get timely notifications about the fluctuations of prices in the targetted gadgets. When the price of a tracked product drops within a user-defined range, the app sends a notification. Alerts can be customized with preferred notification channels such as emails, SMS, WhatsApp chat or in-app messages.

User Reviews and Rating

The app aggregates user reviews and ratings for products from different sources. Users can read and evaluate other's experiences with a particular product. As mentioned earlier in the section, a wiseprice score is given to the product out of ten, calculated on the basis of user reviews and specifications, making it easy for the users to select the best device. Ratings and reviews contribute to users' decision-making process.

Store Ratings and Reliability

The app provides store ratings and reviews to help users choose reputable retailers. Not all online retailers are trustworthy as they can sell a gadget

at a very cheaper rate which may pull the customers to buy from these websites. Such customers become a prey to such fraud websites. Our tool will integrate an anti-scam website feature that will rule out all such fake websites. Only genuine prices would be displayed on the screen. Users can access the reliability and service quality of different online stores before making a purchase.

Comparision Analysis

Users can access detailed analytics about price variations, including percentage changes and historical lows. Interactive visualizations showcase trends, enabling users to spot patterns and optimal buying times. The prices of the gadgets drops when the company announces a new product. Another reason can be that a festive offer has begun. Our tool considers all such factors and design a graph or histogram that helps the user to for comparative analysis.

Customised Recommendations

The app employs machine learning to analyze users' search and browsing behaviour. Based on the analysis, users receive personalized product recommendations tailored on their preferences.

By offering these comprehensive and detailed features, WisePrice simplifies the process of comparing, tracking price history and making informed decisions.

4.2 Functioning of Application

In this section, we will discuss the functioning of application in a detailed chronological order.

Data Collection

Since our application is solely based on historical data, a large amount of reliable and correct data must be taken under consideration. The tool employs website scrapping and APIs (Application Programming Interface) to collect data from a variety of online retailers. Data includes product names, descriptions, images, prices, specification and availability. The tool's backend server handles the data collection process at regular intervals to ensure updated information.

Data Processing

Collected data is organized and stored in a database, making it easily retrievable for the users. The data is categorized based on product types, brands and other relevant attributes. Processing of data involves cleaning (Removal of empty entries), filtering (Removal of all the data which is unreliable and not correct) and lastly transformation (conversion of data from readable form to machine language). Advanced search algorithms enables users to find products quickly by applying filters and keywords.

User Accounts

Users can create accounts using their email or social media profiles. The credentials of the users will be encrypted therefore providing full safety to users details. Registered users can save favorite products, track price drops and receive personalized recommendations. Users accounts also enables synchronization of preferences across multiple devices.

Price Tracking Algorithm

The app's price tracking algorithm monitors changes in price for tracked products. Algorithms determine whether a price change is significant and triggers notification to the users. Users can set price thresholds and frequency of notifications based on their preferences.

Integration with Retailer APIs

The App integrates with APIs provided by different online retailers to fetch real-time product information. APIs are used to obtain accurate and up-to-date details about product availability and pricing. The integration also allows the app to link users directly to the retailer's website for purchasing.

Review Aggregation

The app gathers user reviews and ratings from various sources including online retailers and review platforms. Natural language processing

algorithm process and analyze reviews to extract sentiment and key insights. Aggregated reviews are presented in a user friendly format alongside product listings.

Machine Learning for Recommendations

The app employs machine learning algorithm to analyse user behaviour, such as search history and product views. Based on this analysis, the app generates personalized product recommendations.

User Friendly Interface

The app will have an intuitive user interface designed for easy navigation. Interactive charts and graphs visualize price trends and historical data, making it easier to understand.

Price Drop and Alert

Once all the data has been processed and undergone through various machine learning algorithms, the users will get alerts for price drop about the products they are interested in. When price drop within the specified range, users receive notification via email or in-app messages.

This is the functionality of the tool wise price.

Monetizing such a tool involves generating revenue while providing value to users. The detailed monetization strategy will be discussed in further section.