

Automation of Offline Business

A major project report submitted in partial fulfillment of the
requirement for the award of degree of

Bachelor of Technology

in

Computer Science & Engineering / Information Technology

Submitted by

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**Department of Computer Science & Engineering
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CERTIFICATE

This is to certify that the work which is being presented in the project report titled “Automation of Offline Business” in partial fulfilment of the requirements for the award of the degree of B.Tech in Computer Science And Engineering and submitted to the Department of Computer Science And Engineering, Jaypee University of Information Technology, Wagnaghat is an authentic record of work carried out by “Yashvardhan Sharma, 201341 and Pratyush Sharma 201458” during the period from August 2023 to May 2024 under the supervision of Mr. Faisal Firdous, Department of Computer Science and Engineering, Jaypee University of Information Technology, Wagnaghat.

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Pratyush Sharma, 201458

The above statement made is correct to the best of my knowledge.

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Assistant Professor

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CANDIDATE'S DECLARATION

I hereby declare that the work presented in this report entitled '**Automation Of Offline Business**' in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Computer Science & Engineering / Information Technology** submitted in the Department of Computer Science & Engineering and Information Technology, Jaypee University of Information Technology, Waknaghat is an authentic record of my own work carried out over a period from August 2023 to May 2024 under the supervision of **Mr. Faisal Firdous** (Assistant Professor, Department of Computer Science & Engineering and Information Technology) and **Mr. Ramesh Narwal** (Assistant Professor, Department of Computer Science & Engineering and Information Technology)

The matter embodied in the report has not been submitted for the award of any other degree or diploma.

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LIST OF ABBREVIATIONS

DB	Database
JS	Java Script
ERD	Entity Relation Diagram
DRD	Decision Requirement Diagram
Contd.	continued

ABSTRACT

This major project report explores the transformative journey of automating an offline electrical store through the development and implementation of an e-commerce website. This project utilizes digital technologies to simplify business operations, improve customer experiences, and eventually achieve operational excellence. In the first phase, there will be an extensive analysis of market trends and locating automated options in electric market operations. Building upon this research, a comprehensive project proposal, including the aims, boundaries, anticipated results, among other issues, is developed. This project report encapsulates the development and implementation of an e-commerce platform for an offline electrical store, aimed at enhancing market reach, operational efficiency, and customer engagement through digital transformation. Leveraging cutting-edge technologies such as JavaScript, Node.js, Python, and modern tools like Sanity.io and Stripe, the project introduces a scalable, secure, and user-centric online shopping environment.

A critical component of the platform is its backend, developed using Node.js and which supports complex data management tasks and real-time data processing, essential for dynamic inventory management and transaction handling. Python scripts were utilized to automate various backend processes, enhancing the efficiency of operations such as order processing and data analytics. The inclusion of Sanity.io as a content management system revolutionized how content is handled, updated, and published, enabling real-time updates and multi-platform content syndication without compromising performance or security. The payment processing integration with Stripe ensured that transactions are secure, adhering to the highest standards of data protection and user privacy.

Rigorous testing and quality assurance are carried out as the development of a fault tolerant and error proof ecommerce solution proceeds. This is then followed by an integration that brings it together with the existing offline business procedures for a smooth transition. The report highlights the importance of

marketing, as well as user trainings and other post-launch activities in order to promote a seamless take-off.

Throughout the report, case studies and examples illustrate the real-world implications of automation in the electrical retail sector. The findings from this project not only contribute to the academic understanding of business automation but also offer practical insights for entrepreneurs looking to digitize and optimize their offline businesses. This project serves as a valuable resource for businesses contemplating digital transformation, providing a roadmap for the integration of e-commerce solutions within the context of an electrical store. Ultimately, the project successfully implemented an e-commerce solution that not only transformed the traditional business model of the electrical store but also positioned it to thrive in a digital-first retail environment. This report details each step of the project from conception through implementation, highlighting the challenges overcome and the strategic decisions that led to its success. The outcome is a scalable, efficient, and customer-friendly platform that stands as a testament to the power of digital innovation in transforming traditional business operations.

The lessons we've learned from this project adds an interesting chapter to the ongoing story about how traditional businesses can grow and stay competitive by embracing new technologies. This project shows us that the secret to future success lies not just in using the latest tools but in blending them thoughtfully with what we've always known works well. As we look back on this journey, it's clear that thriving in today's business world means being open to change, learning from each step, and combining the old and the new in a way that makes sense for everyone involved. It's about building bridges between the past and future, creating a path that others can follow.

CHAPTER – 1: INTRODUCTION

1.1 INTRODUCTION

The electrical accessories industry is moving into the digital era, and this project is a crucial step in that direction. We're capitalizing on the e-commerce wave to make buying electrical accessories easier and more efficient. Our goal is to give customers the freedom to shop anytime, streamline inventory management, and improve customer interaction through a dedicated online platform. This project is not just about a website; it's about growing the business, reaching more customers, and staying competitive in today's digital world.

Businesses need automation and new technologies more than ever before, at a time when everything changes fast. This paper's main project is concerned about the intricate process involved in transforming the traditional offline electric store into a modernized e-commerce site. This undertaking attempts to purposefully marry old school bricks-and-mortar with current day digital approaches to facilitate productivity increases and improved client satisfaction.

In the old business of electrical retail built on brick-and-mortar retailers, we are seeing a paradigm shift towards e-commerce. It is through taking up the environment as being dynamic that has brought about this process of transformation. E-commerce is used as a means of shaping an existing electrical store's way of operating. This project's first phases involve specific market studies to establish what unique requirements people have regarding electricity. These insights are what guides the project's proposed roadmap for automation, outlining goals, expected results, and overall scope of digital transformation. The important consideration in the project is technology, involving an analysis of appropriate tools and platforms that fit perfectly into the peculiar needs of the electrical retail industry. Subsequently the design and development phase target an interactive and attractive e-commerce website that is functional but visually appealing. Extreme tests and robust quality control mechanisms become key to

ensuring credibility as the project progresses. Thereafter, a detailed process of integrating the platform with the conventional offline processes is carried out to allow peaceful co-existence between the modern digital age and the traditional world. Post-launch activities, including marketing strategies and user training, are integral components of the project, ensuring not only a successful rollout but sustained engagement with the target audience. Throughout this endeavor, the project remains anchored in the understanding that true innovation lies not in the abandonment of tradition but in its seamless evolution.

By documenting this journey, the project aims to contribute valuable insights to businesses contemplating digital transformation. Lessons learned from the intersection of traditional business models with modern technological advancements promise to redefine the narrative of sustainability and growth in an era where adaptability is synonymous with success. The electrical accessories industry is moving into the digital era, and this project is a crucial step in that direction. We're capitalizing on the e-commerce wave to make buying electrical accessories easier and more efficient. Our goal is to give customers the freedom to shop anytime, streamline inventory management, and improve customer interaction through a dedicated online platform. This project is not just about a website; it's about growing the business, reaching more customers, and staying competitive in today's digital world.

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1.2 Problem Statement

Offline businesses have long been the cornerstone of commerce, offering physical touchpoints for customer engagement and purchase transactions. However, the limitations inherent in manual operations are becoming more apparent as customers' expectations evolve, and digital transformation reshapes consumer behavior. Automation, achieved through the integration of cutting-edge technologies and streamlined processes, holds the promise of elevating offline businesses to new heights of success.

The traditional offline electrical accessories business involves challenges such as limited geographic reach, constrained operating hours, and restricted customer engagement. The absence of an online presence hampers the business's potential to tap into a global customer base and capitalize on the growing trend of online shopping. Additionally, manual inventory management, order processing, and customer interactions introduce inefficiencies and potential errors. Offline businesses have long served as the bedrock of commerce, providing physical touchpoints for customer engagement and facilitating transactions in the tangible world. However, as consumer expectations continue to evolve and digital transformation reshapes purchasing behavior, the shortcomings of manual operations are becoming increasingly apparent. In response, many businesses are turning to automation, leveraging cutting-edge technologies and streamlined processes to unlock new levels of efficiency and success. The traditional offline electrical accessories business faces a myriad of challenges in the current landscape. Limited geographic reach and constrained operating hours restrict the business's ability to connect with customers beyond its immediate vicinity, constraining growth potential. Moreover, the absence of an online presence poses a significant barrier to tapping into a global customer base and capitalizing on the burgeoning trend of online shopping. Without an e-commerce platform, the business misses out on opportunities to expand its reach and diversify revenue streams. Manual inventory management, order processing, and customer interactions further compound the challenges faced by offline businesses. These manual processes are not only labor-intensive but also prone to errors and inefficiencies. Without automated systems in place, businesses struggle to keep pace with the demands of modern consumers, leading to suboptimal customer experiences and lost revenue opportunities.

By embracing automation, offline businesses can overcome these challenges and unlock new avenues for growth. Automated inventory management systems enable real-time tracking of stock levels, ensuring optimal inventory levels and

minimizing stockouts. Automated order processing streamlines the fulfillment process, reducing lead times and improving customer satisfaction. Additionally, automated customer engagement tools, such as chatbots and personalized email campaigns, enhance the overall shopping experience, driving customer loyalty and repeat business. The integration of cutting-edge technologies, such as artificial intelligence and machine learning, further enhances the capabilities of offline businesses. Predictive analytics algorithms can anticipate customer preferences and market trends, enabling businesses to make data-driven decisions and stay ahead of the competition. IoT-enabled devices offer real-time insights into operational performance, enabling proactive maintenance and optimization of resources.

In essence, automation represents a transformative opportunity for offline businesses to adapt to the demands of the digital age and thrive in an increasingly competitive market landscape. By embracing automation, businesses can unlock new levels of efficiency, agility, and customer satisfaction, positioning themselves for sustained success in the years to come.

1.3 Objectives

Expanding Market Reach

The implementation of an e-commerce platform is poised to be a transformative force, shattering geographical barriers and unlocking a vast market potential for the traditional electrical store. By transcending regional confines and even crossing international borders, the business aims to extend its reach across diverse regions, countries, and time zones. This strategic expansion not only broadens the customer base but also positions the business on a global stage, fostering opportunities for sustained growth and market dominance. The implementation of an e-commerce platform heralds a monumental shift for the traditional electrical store, propelling it into a new era of unprecedented growth and market penetration. By transcending geographical limitations, the business is poised to harness the boundless potential of online commerce, effectively dismantling

barriers to entry and reaching customers on a global scale. This strategic pivot not only expands the store's customer base exponentially but also positions it as a formidable contender in the fiercely competitive global marketplace. Through strategic partnerships, localized marketing efforts, and streamlined logistics, the business aims to seamlessly navigate diverse regions, cultures, and time zones, ensuring a personalized and accessible shopping experience for customers worldwide. Moreover, the digital storefront provides an agile platform for innovation and adaptation, enabling the store to swiftly respond to evolving consumer trends and preferences. By embracing e-commerce, the traditional electrical store not only secures its relevance in the digital age but also lays the foundation for sustained growth, market dominance, and enduring success in the ever-evolving retail landscape.

Enhancing Customer Accessibility and Convenience

The integration of an e-commerce platform goes beyond mere geographical expansion, offering a dynamic shift in customer accessibility. The website's 24/7 availability empowers customers to explore and purchase products at their utmost convenience, irrespective of time zones or business hours. This uninterrupted access not only caters to the diverse lifestyles of modern consumers but also maximizes engagement opportunities, ensuring that the business remains at the forefront of customers' preferences.

Automated Inventory Management

One of the pivotal advancements facilitated by the e-commerce transition is the integration of automated inventory management tools. This sophisticated system aims to revolutionize stock tracking by automating processes, thereby minimizing errors, and optimizing stock levels. The resultant improvement in operational efficiency not only reduces the risk of stockouts or overstock situations but also enhances overall business agility in responding to market demands and trends.

Minimizing Errors and Maximizing Customer Satisfaction

The e-commerce platform is engineered to revolutionize the order processing workflow, ensuring swift and accurate fulfillment of customer orders. By minimizing errors and delays associated with manual processing, the system aims to elevate the customer experience. However, efficient order processing goes beyond the logistics enhancement as it creates the environment within which customers can develop the confidence of being served better, trust, become loyal to the business, as well as satisfied.

Marketing and Promotion

In the era of online networking, selling requires marketing and promotion at its core. The proposed program aims at using latest digital marketing techniques in product promotion among consumers from different parts of the world. The company aims at using the strength of social media, search engine optimization, and targeted advertisement on internet to create an effective online presence in order to have its services feel right towards the right group of people across different parts of the digital world.

The embracement of E-Commerce does not mean technology but all together a strategic approach which will transform this electrical store into a modern era shop. The company will use worldwide focus, access openness, operational improvements, and digital marketing to make the business a responsive and consumer-based organization within the electric retail industry.

1.4 Significance and Motivation of the Project Work

The importance of this project is that it defines a new way to make a conventional electric shop look contemporary with digitization era. The conventional retail model has been struggling to cater for the rising digital demands in market by the digitally literate consumer population base. It is because of this that they feel it is necessary to not just survive but prosper in this technological terrain where technology plays the role of enablers and not disruptors.

Unlocking Global Opportunities

The main inspiration behind this project revolves around the desire to transcend a local market setting. The company is adopting e-commerce in a bid to overcome traditional boundaries of doing business so as to capture new target markets beyond local frontiers. It aims at placing the electrical shop on a world map by offering services to clients who surpass physical outlets.

Adapting to Changing Consumer Behavior

There are massive shifts in consumer behaviour towards e-shopping whereby it seems that the world has gone digital. It involves doing things differently to conform with the evolving trends such that even the modern-day customer prefers us. The business intends to provide a service to consumers who prioritise easy access with the aim of improving their shopping experience.

Operational Efficiency and Error Reduction

The adoption of an e-commerce platform is motivated by a commitment to operational excellence. The project envisions streamlined and automated processes that not only reduce the margin of error in inventory management and order processing but also optimize overall business efficiency. This commitment is driven by the understanding that efficiency is not just a cost-saving measure but a fundamental prerequisite for sustained growth and competitiveness.

Customer-Centric Approach

At the heart of the assignment's motivation is a deep commitment to improving client level in. The 24/7 availability of the e-commerce platform guarantees that clients can interact with the business at their comfort, fostering a patron-centric approach. Efficient order processing and stock automation assist reduce mistakes and delays, and improve consumer delight. The enterprise is trying to place the electric save no longer only as a provider but additionally as a issuer of seamless and fine client journeys.

Digital Marketing for Brand Visibility

In the digital age, visibility is paramount. The project comes from a strategic approach to digital marketing, which is recognized as a powerful tool for increasing brand visibility and engaging with diverse audiences. Through targeted marketing strategies, the business aims to carve out a distinctive online identity, ensuring that its offering matches the digitally savvy consumer.

Essentially, the significance of this work lies in its commitment to leading change rather than simply adapting to it. By leveraging the power of e-commerce, the business wants to put traditional electrical stores at the forefront of innovation, change and customer attention in today's dynamic retail environment.

1.5 Organization of Project Report

The project is organized into several chapters, starting with the Introduction in Chapter 1, which provides a brief overview of the topic and its relevance. This chapter also covers the problem statement, methodology, and objectives of the study. Chapter 2, titled Literature Survey, reviews the previous studies conducted in this field, with a focus on overview of E-Commerce, Trends in Offline Business Automation, and Neural networks. Chapter 3, the System Development, explains the project's user interface and design, including the pre-processing phase, the training phase, the testing protocols, coding and implementation and the testing phase. It also includes a thorough discussion of tSShe dataset, experimentation, and the results of the project. Chapter 4, in the Testing, the testing and quality assurance phase is pivotal in guaranteeing the seamless functionality and reliability of the developed e-commerce platform. Rigorous testing protocols are implemented to assess various facets.

Finally, all the sources, including research studies, datasets, algorithms, and others, are referenced in the last section of the project.

CHAPTER – 2: LITERATURE SURVEY

2.1 Overview of Relevant Literature

Muhtar Lutfi, Erdiyansyah, Erdiyansyah, Pricsylia Chintya Dewi Buntuang, Yoberth Kornelius The impact of social distancing policy on small and medium-sized enterprises (SMEs) in Indonesia // *Problems and Perspectives in Management*. - 2020. - 18(3). - C. 492 – 503

The COVID-19 pandemic had a devastating impact on small enterprises in Indonesia. The study found that 94.69% of businesses experienced a decline in sales, and 60% of respondents said they would be forced to close their business within six months if the COVID-19 restrictions remained in place. The most severely impacted businesses were those in the creative sector, followed by manufacturing and financial services. The study also found that a shortage of workers was a major challenge for businesses, with nearly 90% of micro-enterprises and 66% of SMEs reporting it as one of their main operation difficulties. The study recommends several policies to help small businesses recover from the pandemic, e.g.

- Improving access to markets
- Simplifying regulations
- Investing in digital infrastructure

This study also recommends us that the government should take steps to motivate small businesses and innovation.

Utomo, Priyo, and Timotius FCW SUTRISNO. "What Influences the Online Purchasing of Electrical Equipment Products?." *KnE Social Sciences* (2021): 143-156.

This study used a web questionnaire to collect records from 270 respondents who had purchased electric gadget on-line in Denpasar and Surabaya, Indonesia. The consequences of the observe showed that e-agree with, chance belief, and organization reputation all had a vast have an impact on buying choices. This way that consumers are more likely to purchase electrical equipment on-line from businesses that they accept as true with, that they perceive as being low danger, and that have a good recognition. The look at also found that advertising, convenience, and safety did no longer have an immediate impact on shopping selections. However, those factors did have an oblique have an effect on thru buy intention. This means that clients who are much more likely to be persuaded through promotions, who discover online shopping to be convenient, and who sense stable while purchasing on-line are also much more likely to have a effective purchase goal. The consequences of this observe suggest that organizations that promote electrical equipment online should consciousness on building trust with their customers, decreasing the perceived threat of on line purchasing, and improving their employer recognition. They should also keep in mind using promotions, providing a handy buying experience, and making sure that their website is secure to growth buy aim.

Daroch, Bindia, Gitika Nagrath, and Ashutosh Gupta. "A study on factors limiting online shopping behaviour of consumers." *Rajagiri Management Journal* 15.1 (2021): 39-52

This study investigates purchaser behaviour closer to on line buying and examines numerous elements that restriction purchasers' on-line shopping behaviour. The research changed into conducted Sthe use of a quantitative research approach, and a survey became conducted among users of on-line shopping web sites. The take a look at observed that the six foremost elements that restriction on line shopping behaviour are:

- Fear of bank transactions and lack of believe. Consumers are worried approximately the safety of their on-line transactions and fear of fraud.

- Traditional shopping is greater convenient than on-line purchasing: Some purchasers discover conventional shopping to be extra handy, as they can bodily take a look at merchandise and get immediate assistance from income workforce.
- Reputation and services furnished. Consumers are much more likely to store on-line from web sites they believe and that have a terrific popularity. They also fee the fine of customer support provided by means of on-line shops.
- Insecurity and insufficient product statistics. Consumers are hesitant to purchase merchandise on-line if they do now not have enough data approximately the product or in the event that they experience insecure about the products pleasant.
- Experience. Consumers who have had poor studies with on-line buying in the past are much less possibly to shop online in the destiny.
- Consumers are more likely to shop online if they consider the net store and trust that the retailer will provide them with a positive buying experience.

Pratiksinh S. Vaghela, "Online Shopping Intention: Review and Conceptual model", S. R. Luthra Institute of Management

This paper proposes a conceptual version to perceive elements affecting purchaser's online shopping goal for purchaser electronic products. The version is based totally on a evaluation of the applicable literature and draws upon the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Theory of Planned Behaviour (TPB). The proposed model includes 3 essential constructs:

- Perceived usefulness. The quantity to which a consumer believes that the use of an online keep may be useful for obtaining favoured customer digital products.
- Perceived ease of use. The volume to which a consumer believes that using an online shop may be easy to research and use.
- Attitude closer to online buying. The client's usual effective or poor evaluation of on line purchasing.

This model contains two moderating constructs,

Online shopping experience. The consumer's past experience with online shopping.

Product involvement. The level of interest and importance a consumer places on a specific consumer electronic product.

The look at discovered that perceived usefulness, perceived ease of use, and mindset toward on line buying all have a high-quality impact on online purchasing intention. Online buying enjoy and product involvement have been located to mild the relationship among perceived usefulness and on-line purchasing goal.

The findings of the observe endorse that online retailers need to focus on developing websites which might be both beneficial and easy to use. They ought to additionally try to develop high-quality attitudes closer to on line purchasing amongst potential clients. Finally, they have to keep in mind tailoring their advertising and marketing messages to consumers with exclusive stages of online purchasing enjoy and product involvement.

Dr. Rekha Lakhotia, "Consumer Behavior Towards Online Shopping of Electronic Goods", Associate Professor, IPS Academy, Indore

The cause of this takes a look at is to look at the elements that have an impact on client behaviour closer to online buying of digital items. The look at was performed in Indore City, India, and amassed facts from 380 respondents. The findings of the study imply that the most important factors influencing consumer behaviour in the direction of on-line purchasing of electronic items are product nice, price, convenience, and brand reputation. The look at additionally discovered that purchasers are more likely to purchase electronic goods on line if they have a high-quality on line purchasing revel in. The researchers suggest that on-line shops ought to attention on providing great products, competitive costs, and a convenient purchasing experience to attract and maintain clients.

Verhoef, Peter C., et al. "Digital transformation: A multidisciplinary reflection and research agenda." *Journal of business research* 122 (2021): 889-901

Digital transformation is a complex and multifaceted phenomenon that is impacting organizations and societies in profound methods. This paper presents a multidisciplinary reflection on digital transformation, drawing on insights from a number of fields, consisting of statistics structures, management, sociology, and economics. The paper identifies three key ranges of virtual transformation: digitization, digitalization, and digital transformation. Digitization is the procedure of converting analogy data into digital form. Digitalization is the usage of digital records to improve tactics and merchandise. Digital transformation is the essential exchange in how companies perform and create price in a virtual international. The paper also identifies numerous demanding situations and possibilities related to virtual transformation. Challenges consist of the need for brand spanking new capabilities and talents, the capability for disruption and displacement, and the moral implications of new technology. Opportunities include the ability for elevated efficiency, innovation, and customer pride. The paper concludes by means of calling for a multidisciplinary research agenda to deal with the challenges and possibilities of digital transformation. This research time table must recognition on a number of key areas, such as:

- The impact of digital transformation on corporations and societies
- The role of leadership and governance in virtual transformation
- The management of virtual transformation initiatives
- The ethical implications of digital transformation
- The development of recent competencies and competencies for virtual transformation.

This research schedule will assist to make sure that we're capable of harness the power of virtual transformation to create a richer and more equitable destiny for all.

Dr-Raja Sarkar "Online and Offline shopping in India: - A study of electronic goods purchase", Gandhi Engineering College

It explores the client behaviour in the direction of on-line shopping in India for electronic items. The take a look at observed that people pass for each on line and offline buying, but they're greater cushty with offline purchasing for digital items. They are nevertheless sceptical about the nice and safety of online purchasing. The essential motives for who prefer offline shopping are, the capacity to the touch and feel the product earlier than buying it and the ability to get instantaneous customer support

The study suggests that on-line retailers need to recognition on improving the exceptional in their products and services to benefit the accept as true with of Indian clients. They need to additionally offer extra customer service and make the net purchasing enjoy extra secure.

It also tells us that Indian clients are increasingly the use of on line looking for a number of merchandises, along with electronic items. However, clients are nevertheless greater comfortable with offline looking for digital items, because of worries approximately product pleasant, protection, and customer support. Online outlets want to improve the first-class of their products and services, provide greater customer service, and make the net purchasing enjoy greater steady to be able to benefit the trust of Indian consumers.

Adil Bashir, "Consumer behavior towards online shopping of electronics in Pakistan", winter 2013, MBA International Business Management, Seinäjoki University of Applied sciences

It is a study that was conducted to research the factors that affect clients' selection to purchase electronics on-line in Pakistan. The study located that the maximum vital elements influencing on line electronics purchases have been rate, convenience, and product range. Additionally, the study located that clients were more likely to buy electronics on line if they had a effective belief of the web store and if they had a fantastic enjoy with on-line buying within the past. The take a look at additionally found that consumers had been much more likely to buy

electronics online in the event that they had been acquainted with the product and in the event that they had get entry to to product reviews and ratings. Finally, the study observed that consumers had been more likely to buy electronics on-line in the event that they were capable of pay for their purchases the usage of a steady and handy approach.

Alqahtani, Abdullah Saleh, and Robert Goodwin. "E-commerce smartphone application." *International Journal of Advanced Computer Science and Applications* 3.8 (2012).

The paper discusses the improvement of an e-alternate smartphone software. The software is designed to be character-pleasant and efficient, and it includes several competencies which can be specifically tailor-made to the needs of cellular customers. The paper starts off evolved through discussing the want for an e-exchange cellular telephone software program. The authors argue that the big adoption of smartphones has created a state-of-the-art possibility for corporations to attain and interact with clients. They also word that the unique tendencies of smartphones, including their portability and generally-on connectivity, cause them to ideal systems for e-alternate programs. The paper then is going directly to give an explanation for the improvement of the e-change phone software. The authors talk the format of the software's character interface, its functionality, and its technical implementation. They additionally talk the demanding situations of developing a cellular software this is compatible with loads of gadgets and working structures. The paper concludes through using discussing the future of e-trade telephone packages. The authors argue that e-trade smartphone programs will keep growing in recognition as increasingly human beings use their smartphones to make purchases. They additionally communicate the functionality for e-commerce smartphone programs to revolutionize the way we keep.

This paper affords us with the information that

- E-trade telephone programs are a developing fashion because of the massive adoption of smartphones and their specific traits.

- The development of an e-exchange telephone software requires cautious attention of user interface, functionality, and technical implementation.
- E-commerce smartphone packages have the potential to revolutionize the way we store.

2.2 Key Gaps in the Literature

Muhtar Lutfi, Erdiyansyah, Erdiyansyah, Pricylyia Chintya Dewi Buntuang, Yoberth Kornelius The impact of social distancing policy on small and medium-sized enterprises (SMEs) in Indonesia // Problems and Perspectives in Management. - 2020. - 18(3). - C. 492 – 503

The study only collects data at a single point in time, one year after the outbreak of COVID-19, which does not allow the researchers to track the impact of the pandemic on businesses over time. Additionally, there is a limited focus on specific sectors; the study does not provide an in-depth analysis of the impact of COVID-19 on particular sectors of the economy. Such an analysis would be useful in identifying the sectors that have been most severely impacted and which may require the most targeted support from the government. Furthermore, the study does not consider the regional variations in the impact of COVID-19, which is a significant omission, as the pandemic has had a more severe impact on some areas of Indonesia than others. These gaps could be addressed in future research by collecting data from businesses on a regular basis, conducting a more in-depth analysis of the impact of COVID-19 on specific sectors, and considering regional differences in the pandemic's impact.

Utomo, Priyo, and Timotius FCW SUTRISNO. "What Influences the Online Purchasing of Electrical Equipment Products?." KnE Social Sciences (2021): 143-156.

The study examining online shopping behaviours for electrical equipment products is limited by several factors. Firstly, it lacks a robust theoretical

framework that could guide the research and provide a deeper understanding of the factors influencing consumer behaviours in this market segment. The scope of the study is also somewhat restricted, focusing only on consumers in Denpasar and Surabaya, Indonesia, which limits the generalizability of the findings to other regions and countries. Additionally, the use of cross-sectional data means that the study does not allow for the examination of causal relationships between variables. A significant emphasis is placed on perceived risk, overshadowing other crucial factors such as product quality, price, and delivery time, which are not adequately explored. The study also overlooks the potential moderating effects of factors such as customer demographics, shopping experience, and product type on the relationships between the variables. Furthermore, it offers limited practical implications for businesses, providing only general recommendations for building trust, reducing perceived risk, and enhancing company reputation. These limitations suggest several areas for improvement in future research to yield more comprehensive insights and practical guidance for the online retail of electrical equipment.

Daroch, Bindia, Gitika Nagrath, and Ashutosh Gupta. "A study on factors limiting online shopping behaviour of consumers." *Rajagiri Management Journal* 15.1 (2021): 39-52.

The study focusing on Indian consumers provides valuable insights into the factors restricting online shopping behaviors in India, yet it may not be generalizable to other countries with different cultural and economic contexts. Additionally, the study's reliance on a self-reported survey introduces potential biases, as respondents might not accurately report their reasons for not shopping online. Furthermore, the survey did not collect demographic data such as age, income, and education level, which could provide deeper insights into how these factors influence online shopping behaviors. The study also falls short in exploring emerging trends that are shaping online shopping, such as the rise of mobile shopping and social commerce. Moreover, while the study identifies factors that limit online shopping behavior, it lacks an in-depth analysis of the

underlying motivations and decision-making processes of consumers. This gap highlights the need for more comprehensive research to fully understand the dynamics of online shopping behavior in diverse settings.

Bulsara, Hemantkumar P., and Pratiksinh S. Vaghela. "Online shopping intention for consumer electronics products: a literature review and conceptual model." E-Commerce for Future & Trends 7.1 (2020): 24-32.

The study in question focuses exclusively on consumer electronic products, and it would be intriguing to determine if the proposed model holds validity across different product categories. Additionally, it overlooks the impact of cultural factors on online shopping intentions, an oversight given the significant variations in online shopping behavior across different cultures. Another limitation is that the data were not collected from a representative sample of consumers, which means the findings may not be generalizable to the broader population. Moreover, the study does not employ a longitudinal design, thereby failing to capture how online shopping intentions might change over time. Despite these limitations, the study makes a valuable contribution to the understanding of online shopping intentions. The proposed conceptual model provides a useful framework that can guide future research in this area.

Dr. Rekha Lakhotia, "Consumer Behavior Towards Online Shopping of Electronic Goods", Associate Professor, IPS Academy, Indore

The study was conducted in Indore City, India, which may not fully represent the diverse consumer behavior patterns across different regions and cultures. Expanding the research to include a broader sample size and geographic reach could provide a more comprehensive understanding of consumer behavior in online electronic goods shopping globally. The focus on electronic goods as a general category might also be too broad, as electronic products encompass a wide range of items with varying characteristics and purchase considerations. Future studies could delve into specific product categories such as smartphones, laptops, or home appliances to gain a deeper understanding of consumer behavior nuances

within these subcategories. Additionally, while the study primarily focuses on traditional online shopping channels and factors, incorporating emerging trends like social commerce, live streaming commerce, and augmented reality (AR) shopping experiences could assess their impact on consumer behavior in the online electronic goods market. The study identifies product quality, price, convenience, and brand reputation as key influencing factors, but a more in-depth analysis could explore the underlying reasons behind these factors, such as the specific quality attributes that consumers value or the psychological aspects of brand recognition, to provide more actionable insights for retailers. Moreover, the study frequently focuses on the pre-purchase stage of the consumer journey. Future research should extend to examine post-purchase behavior, including product returns, customer reviews, and repurchase intentions, to gain a holistic understanding of the entire online shopping experience for electronic goods.

Verhoef, Peter C., et al. "Digital transformation: A multidisciplinary reflection and research agenda." *Journal of business research* 122 (2021): 889-901.

This paper lacks empirical evidence to support its claims about the impact of digital transformation on organizations and societies and it has a limited focus on developing countries, which are likely to be disproportionately affected by digital transformation. This paper also neglects the role of power and politics in digital transformation, which can shape the outcomes of digital transformation projects. The paper does not give sufficient attention to the ethical implications of new technologies, such as artificial intelligence and big data and it lacks practical guidance for organizations on how to implement digital transformation successfully.

Sarkar, Raja, and Sabyasachi Das. "Online shopping vs offline shopping: A comparative study." *International Journal of Scientific Research in Science and Technology* 3.1 (2017): 424-431.

The have a look at does no longer offer a clear definition of what constitutes an "electronic properly." This makes it difficult to evaluate the findings of the look at to other research on on-line and offline searching for digital items. The examine does no longer accumulate information on client demographics. This means that it's miles difficult to decide whether the findings of the study are generalizable to the entire Indian populace. The have a look at does now not gather records on purchaser motivations for online and offline buying. This manner that it's miles difficult to understand why customers pick one purchasing channel over the opposite. The study does not accumulate facts on purchaser perceptions of on line and offline shopping. This means that it's far hard to understand how clients understand the first-class, safety, and customer service of online and offline outlets. These gaps advise that future research must cognizance on collecting greater precise information on purchaser behaviour to better apprehend the reasons why consumers choose on line or offline looking for digital goods.

Bashir, Adil. "Consumer Behavior towards online shopping of electronics in Pakistan." (2013).

These factors had been diagnosed as being much less crucial than the other elements influencing online electronics purchases in Pakistan. This shows that there may be an opportunity for on line shops to enhance their offerings in those regions to increase their sales. Specifically, online shops ought to improve their convenience by using imparting quicker transport times, extra bendy return rules, and less complicated-to-use websites. They could also enhance their product variety by using providing a much wider choice of electronics and by way of carrying more niche products. Additionally, on-line outlets ought to enhance their superb notion of on-line retailers with the aid of building accept as true with with customers and by means of imparting outstanding customer support. Finally, online outlets should improve their fantastic enjoy with on line shopping through making it simpler for customers to discover the products they're looking for, by way of providing exact product descriptions, and by way of offering secure and handy charge methods. By addressing those key gaps, on-line shops can increase their sales and enhance their client pleasure.

Alqahtani, Abdullah Saleh, and Robert Goodwin. "E-commerce smartphone application." *International Journal of Advanced Computer Science and Applications* 3.8 (2012).

Lack of empirical facts, The paper lacks empirical facts to guide its claims approximately the effectiveness of the e-commerce smartphone software. There is no data on what number of human beings use the application, how frequently they use it, or what their delight tiers are. Limited dialogue of protection and privacy, this paper does no longer effectively discuss the security and privacy issues related to e-commerce phone packages. There is no point out of how the utility protects user information from unauthorized get entry to or the way it complies with statistics privacy guidelines. No attention of pass-cultural variations, this paper does not remember the capability impact of pass-cultural differences on the layout and implementation of e-trade phone packages. There is no discussion of ways the software may be tailored to satisfy the desires of users in exclusive cultures.

These gaps are important due to the fact they limit our understanding of the effectiveness and generalizability of the e-commerce phone software. Future research ought to deal with those gaps through gathering statistics at the application's utilization and effectiveness, carrying out a greater thorough evaluation of its security and privateness capabilities, and investigating how it is able to be adapted to fulfill the wishes of users in distinctive cultures.

Chapter – 3: SYSTEM DEVELOPMENT

3.1 Requirements and Analysis

1. Business Requirements

Global Market Expansion. Enable the electric shop to reach customers beyond its bodily place, concentrated on global markets.

24/7 Availability. Implement a system that permits clients to access the platform at any time, fostering comfort and accelerated engagement.

Automated Inventory Management. Streamline inventory monitoring tactics to reduce errors, optimize inventory ranges, and beautify operational efficiency.

Efficient Order Processing. Develop a gadget that ensures swift and accurate order fulfilment, decreasing delays and mistakes in patron transactions.

Digital Marketing Integration. Implement digital marketing strategies to promote merchandise, decorate brand visibility, and entice a various client base.

2. Technical Requirements

E-trade Platform. Develop a consumer-friendly and scalable e-commerce internet site with features including product catalogues, purchasing carts, and secure checkout procedures.

Database Integration. Implement a robust database device to assist inventory control, order processing, and client information.

Security Measures: Ensure the implementation of stable payment gateways, facts encryption, and protection towards cybersecurity threats. Scalability, dsesigns the system to handle multiplied user hundreds and product catalogues as the

commercial enterprise expands. It ensures compatibility across diverse gadgets and browsers to enhance accessibility for a numerous consumer base.

3. Requirements of user

Intuitive User Interface helps to design an interface that is easy to navigate, ensuring a fantastic and seamless consumer revel in. Responsive Design helps to create a platform that adapts to exceptional gadgets, providing a consistent enjoy on computer systems, drugs, and cell telephones. It has a feature of order tracking which provides customers with the potential to song their orders in real-time, enhancing transparency and consider. Development of person education substances and assets to facilitate a smooth transition for each client and personnel.

4. Operational Requirements

Integration with Existing Processes ensures a clean integration of the e-trade platform with the existing offline business operations. Implementing gear for actual-time monitoring, analytics, and reporting to track person behaviour, sales overall performance, and website fitness. Integrating customer support functions, together with chatbots or helpdesk systems, to help customers during their online purchasing revel in. Establishing robust backup and recovery approaches to safeguard critical facts and make certain commercial enterprise continuity in the occasion of machine disasters.

5. Regulatory and Compliance Requirements

Data Privacy and Security: Adhere to statistics safety rules with the resource of implementing measures to stable purchaser information and transactions. Payment Card Industry Data Security Standard (PCI DSS): Comply with PCI DSS requirements for constant coping with of charge data. Accessibility Standards: Ensure the internet site meets accessibility standards to residence clients with disabilities. By addressing these necessities and carrying out thorough evaluation,

you can lay the muse for a a hit implementation of the e-commerce platform, ensuring that it aligns with enterprise objectives, customer desires, and industry requirements.

Software Resources Used

- FIGMA(UI/UX)
- Java Script
- Sanity.io

Hardware Resources Used

- Web Server
- Computer Equipment
- Network Infrastructure
- Storage Devices

3.2 Project Design and Architecture

The Entity-Relationship (ER) diagram for the automation of the offline electrical store through the development of an e-commerce platform serves as a visual representation of the database structure and relationships within the system. The diagram encapsulates key entities, their attributes, and the associations between them. Entities such as "Product," "Customer," and "Order" are interconnected through well-defined relationships, illustrating how data is organized and related in the database. Attributes of each entity, such as product details, customer information, and order specifics, are visually depicted, providing a clear overview of the database schema. Overall, the ER diagram acts as a concise and informative blueprint for the database design, facilitating a comprehensive understanding of how data flows and interacts within the e-commerce system. In the ER diagram for the e-commerce platform of the electrical store, entities like "Product," "Customer," and "Order" are intricately interconnected through various relationships. Attributes associated with each entity, such as product names,

customer details, and order specifications, are meticulously illustrated. The diagram captures the essence of the database design, showcasing how these entities relate to one another in a relational structure.

For instance, the relationship between "Product" and "Order" signifies how products are associated with specific customer orders. This linkage is vital for efficient order processing and inventory management. Similarly, the connection between "Customer" and "Order" emphasizes the correlation between customer profiles and their respective orders. Additionally, the ER diagram incorporates cardinality and participation constraints, delineating the nature and degree of associations between entities. This visual representation is instrumental for database administrators, developers, and stakeholders, offering a succinct and clear overview of the system's data architecture. It serves as a foundational reference point, guiding the implementation of the database schema for the successful development of the e-commerce platform.

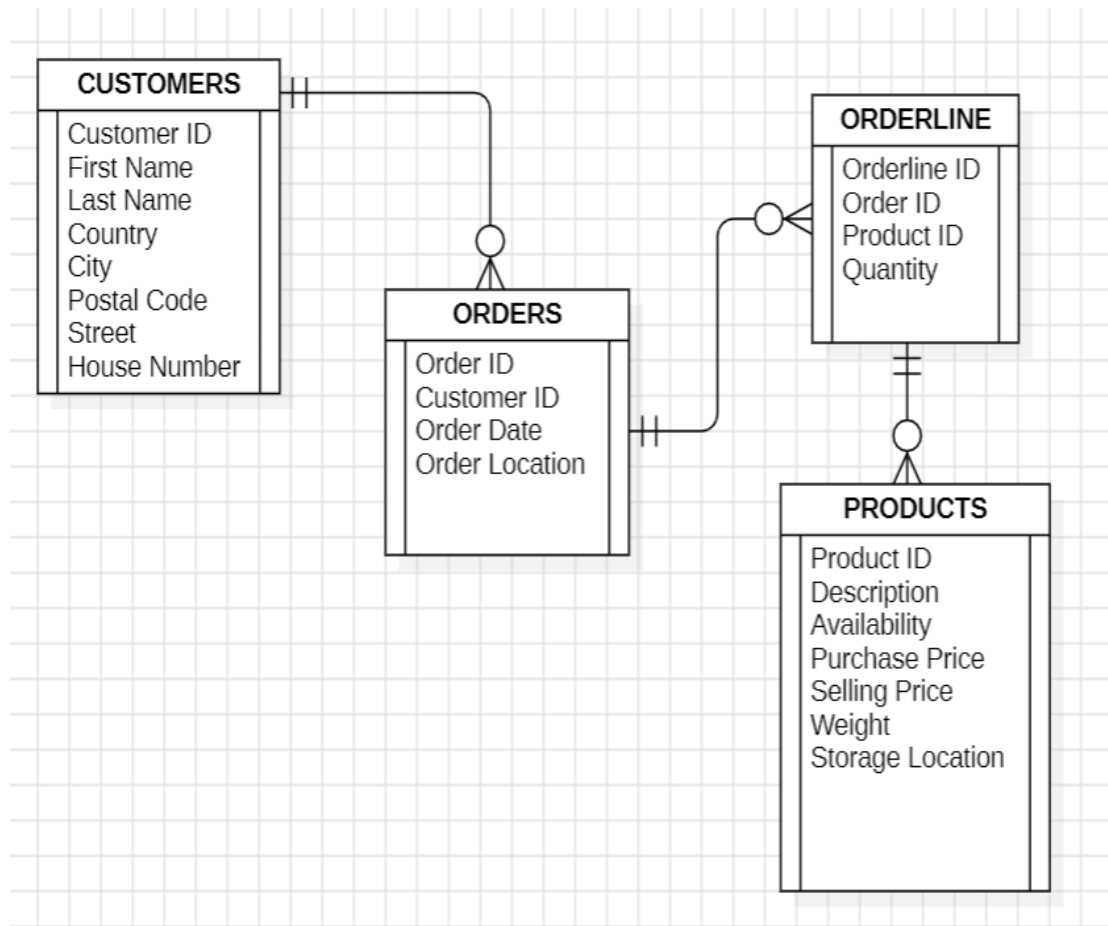


Figure 1: ER Diagram

The Data Flow Diagram (DFD) illustrates how statistics movements thru the system and is used in the automation mission of the offline electric keep by way of the usage of an e-commerce platform. It highlights the interactions and records transformations via outlining the strategies, information repositories, statistics assets, and data destinations. Key features in the device are represented by means of circles in this DFD, with strategies like "Order Processing," "Inventory Management," and "Customer Interaction" being examples. Data flows are represented by means of arrows, which display the motion of records among outside entities, records shops, and procedures. Stores of statistics, such "Product Database" and "Customer Database," are repositories wherein facts can be stored and acquired. External entities that spotlight interactions with the device are "Customer" and "Supplier," as an example, highlighting the facts drift between

the e-trade platform and external entities. The Data Flow Diagram (DFD) offers a clear and concise review of the facts dynamics of the system, making it an invaluable device for comprehending, planning, and executing the records waft inside the automated electric keep.

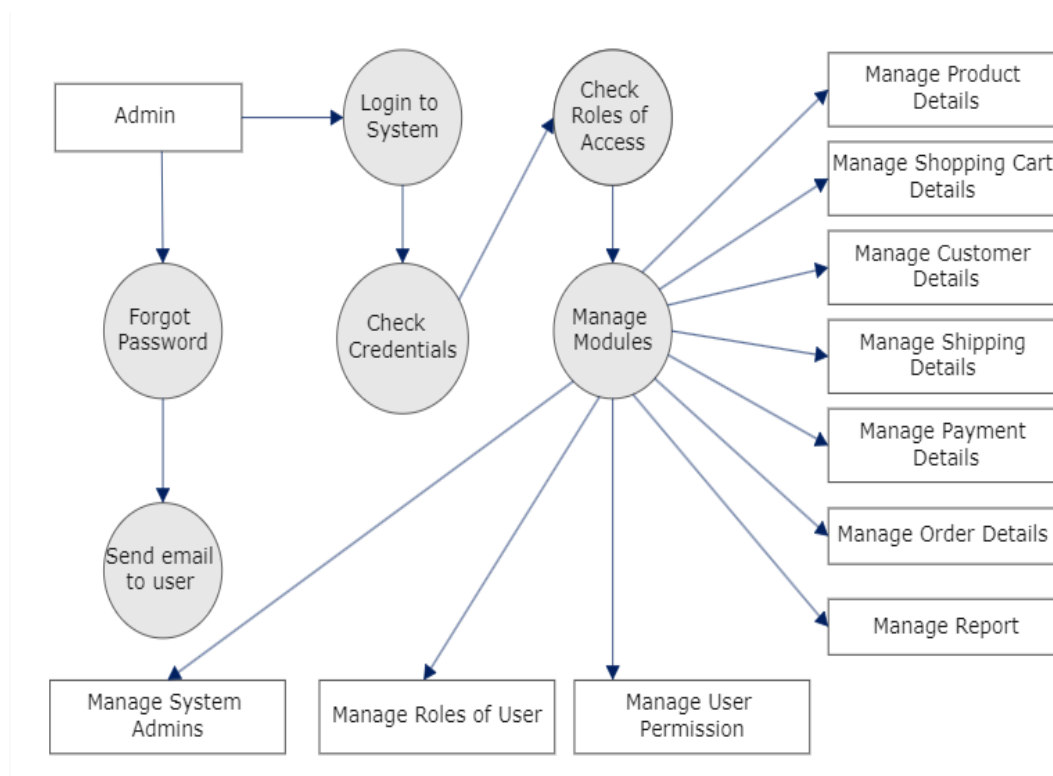


Figure 2: DFD

3.3 Data Preparation

To successfully combine an e-trade platform for the automation of an offline electrical commercial enterprise, records education is a vital stage. Data must be accrued, cleaned, and arranged to assure accuracy, consistency, and device integration readiness. For this venture, the following is a brief preparation on statistics training:

- **Identify Data Sources**

Identify the sources of information, together with product details, consumer data, and stock statistics, that are pertinent to the electric store. Determine whether or not databases or external sources, together with dealer databases or catalogues unique to a given industry, want to be merged.

- **Data Collection**

Compile detailed product information, such as names, prices, descriptions, and stock levels. Gather consumer information, such as names, contact details, and past purchases. **If** there are any external data sources involved, make sure the supplier information is accurate and comprehensive.

- **Data Cleaning**

Purge the data of any errors, inconsistencies, or duplicates. To maintain consistency, standardize forms for things like product descriptions and addresses. Verify data entries to get rid of errors and inconsistencies.

- **Data Integration**

Consolidate data from multiple sources into a single, e-commerce platform-compatible format. Create an understandable data field mapping between the new system and the databases that are currently in use. Puts policies in place to protect sensitive data, including transaction and customer information; - Adhere to applicable data protection laws and guidelines to maintain the confidence of your clients.

- **Data Migration Plan**

Create a plan for the efficient migration of data from the offline systems to the new e-commerce platform. Evaluate data migration procedures to find and fix any possible problems.

- **Data Backups**

To prevent data loss during the shift, put in place a strong data backup plan. Throughout the project, make regular backups of the current databases to guarantee data integrity.

- **Data Validation and Testing**

Make sure the integrated data works properly in the new system by thoroughly validating and testing it. During the testing stage, locate and fix any irregularities or disparities.

- **Data Governance**

Create data governance guidelines to guarantee data consistency and quality throughout time. Identify the organization's data management roles and responsibilities.

3.4 Implementation

The image displays a website front page layout for a winter sale. At the top, a grey banner features the text "best in market" and "Winter Sale SHOP" in large white letters, with a red "Shop Now" button. To the right is a large image of black headphones. Below this is a "Best Selling Products" section with the subtext "Speakers of many variations." It lists ten items: Extension (\$850), Geyser (\$35), Speaker (\$49), Watch (\$49), CCTV (\$75), Wiring (\$55), Heater (\$499), Air fryer (\$990), and Trimmer (\$550). At the bottom, a red banner features "20% off Shop Online" on the left, a large headphones image in the center, and "best in market Winter Sale" with a "Shop Now" button on the right. The footer includes "2023 Electro-part All rights reserved" and social media icons.

Figure 3: Front Page of the Website

ElectroPort

Crompton Geyser

★★★★☆ (20)

Details:
Enhanced durability, 5 star efficient

\$35

Quantity:

[Add to Cart](#) [Buy Now](#)

Powerful Heating Element
Durable Tank
Advanced 4-Level Safety
Smart Health Protection
LED Indicator
Rust & Shock Proof Body

You may also like

< Your Cart (9 items)

	Watch	\$49
<input type="text" value="2"/>		
	Wiring	\$5
<input type="text" value="2"/>		
	Air fryer	\$990
<input type="text" value="1"/>		
	Trimmer	\$550
Subtotal:		\$1853
PAY WITH STRIPE		

Figure 4: Adding items into the cart

< Your Cart (9 items)



Watch

\$49

Wiring

\$5

Air fryer

\$990

Trimmer

\$550

Subtotal:

\$1853

PAY WITH STRIPE

Figure 5: Items added in the cart

←  CHIRAG WALIA TEST MODE

Pay CHIRAG WALIA

₹1,325.00

Geyser Qty 1 ~	₹35.00
CCTV Qty 4 ~	₹300.00
	₹75.00 each
Air fryer Qty 1 ~	₹990.00
<hr/>	
Subtotal	₹1,325.00
Shipping Shipping Rates	Free
<hr/>	
Total due	₹1,325.00

Powered by  [Terms](#) [Privacy](#)

Figure 6: Payment page

Pay with card

Email

sharma.yash261@gmail.com

Card information

4242 4242 4242 4242

VISA

02 / 42

242



Cardholder name

yashvardhan

Country or region

India



Pay



Figure 7: Entering payment details

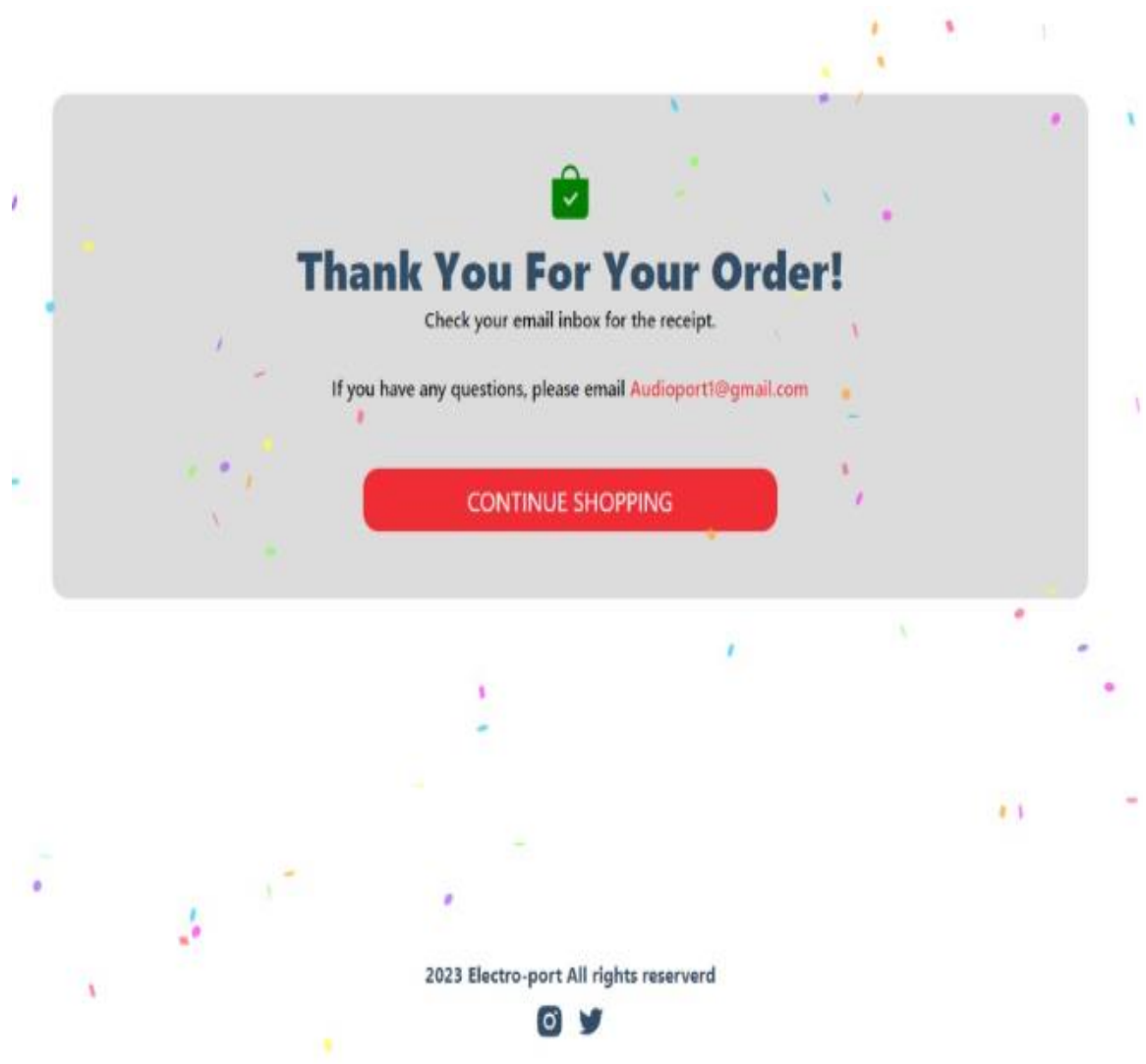


Figure 8: Order completion message

```
1 import {defineCliConfig} from 'sanity/cli'
2
3 export default defineCliConfig({
4   api: {
5     projectId: 'jhsbom09',
6     dataset: 'production'
7   }
8 })
9
```

Figure 9: Sanity configuration setup

```
1 export default {
2   name: 'product',
3   title: 'Product',
4   type: 'document',
5   fields: [
6     {
7       name: 'image',
8       title: 'Image',
9       type: 'array',
10      of: [{ type: 'image' }],
11      options: {
12        hotspot: true,
13      }
14    },
15    {
16      name: 'name',
17      title: 'Name',
18      type: 'string',
19    },
20    {
21      name: 'slug',
22      title: 'Slug',
23      type: 'slug',
24      options: {
25        source: 'name',
26        maxLength: 90,
27      }
28    },
29    {
30      name: 'price',
31      title: 'Price',
32      type: 'number',
33    },
34    {
35      name: 'details',
36      title: 'Details',
37      type: 'string',
38    }
39  ]
40 }
```

Figure 10: Sanity database schema


```
1 export default {
2   ⚠ name: 'banner',
3     title: 'Banner',
4     type: 'document',
5     fields: [
6       {
7         name: 'image',
8         title: 'Image',
9         type: 'image',
10        options: {
11          hotspot: true,
12        },
13      },
14      {
15        name: 'buttonText',
16        title: 'ButtonText',
17        type: 'string',
18      },
19      {
20        name: 'product',
21        title: 'Product',
22        type: 'string',
23      },
24      {
25        name: 'desc',
26        title: 'Desc',
27        type: 'string',
28      },
29      {
30        name: 'smallText',
31        title: 'SmallText',
32        type: 'string',
33      },
34      {
35        name: 'midText',
36        title: 'MidText',
37        type: 'string',
38      },
39      {
40        name: 'largeText1',
41        title: 'LargeText1',
```

Figure 11: Sanity database schema contd.

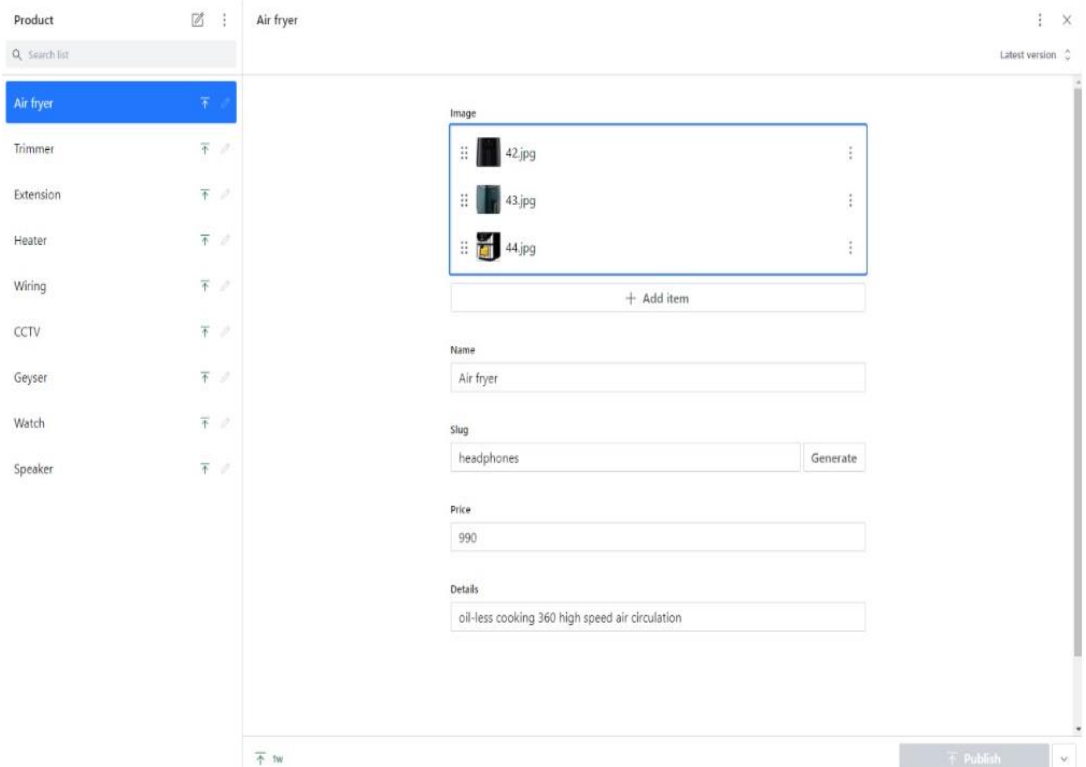


Figure 12: Entering the product details using Sanity.io

```

1 import Stripe from "stripe";
2
3 const stripe = new Stripe(process.env.NEXT_PUBLIC_STRIPE_SECRET_KEY);
4
5 export default async function handler(req, res) {
6   if (req.method === 'POST') {
7     try {
8       const params = {
9         submit_type: 'pay',
10        mode: 'payment',
11        payment_method_types: ['card'],
12        billing_address_collection: 'auto',
13        shipping_options: [
14          { shipping_rate: 'shr_1NK59ySD2yAua6EqVlQ9Tcmf' },
15        ],
16        line_items: req.body.map((item) => {
17          const img = item.image[0].asset_ref;
18          const newImage = img.replace('image-', 'https://cdn.sanity.io/images/jhsbom09/production/').replace('-webp', '.webp');
19
20          return {
21            price_data: {
22              currency: 'INR',
23              product_data: {
24                name: item.name,
25                images: [newImage],
26              },
27              unit_amount: item.price * 100,
28            },
29            adjustable_quantity: {
30              enabled: true,
31              minimum: 1,
32            },
33            quantity: item.quantity
34          };
35        });
36        success_url: `${req.headers.origin}/success`,
37        cancel_url: `${req.headers.origin}/canceled`,
38      };
39    }

```

Figure 13: Stripe configuration

3.5 Key Challenges

Developing an e-commerce platform to automate an offline electrical business comes with a number of issues that call for careful thought and calculated answers.

- **Integration Complexity**

It can be difficult to integrate an e-commerce platform with current offline business procedures; this calls for a smooth transition between online and offline operations. To solve this, create a thorough integration plan to guarantee a seamless transfer that doesn't interfere with regular business operations.

- **Data Migration Issues**

Data loss, format discrepancies, and inconsistencies may arise throughout the data migration process from legacy systems to the new platform. The solution for this is to throughout the migration process, implement comprehensive data validation and testing methods together with a well-defined rollback mechanism in case of errors.

- **Security Concerns**

The challenge lies in ensuring the security of critical corporate data, financial information, and customer information, all of which depend on strong defences against cyber threats. To prevent possible breaches, use robust encryption, safe payment gateways, and frequent security audits.

- **User Adoption and Training**

Employees and customers who are not familiar with online systems may oppose the introduction of the e-commerce platform, so strong training programs are required. To ensure a seamless transition, create thorough training materials and offer continuing assistance to employees and clients.

- **Operational Disruptions**

The implementation procedure might interfere with ongoing business activities, which could cause brief hiccups in order fulfilment or inventory control. Schedule deployment for times when business is slow, convey any changes in a clear and understandable manner, and have backup plans for order fulfilment.

Addressing these challenges requires a holistic and proactive approach, involving collaboration across departments, ongoing communication, and a commitment to continuous improvement throughout the project lifecycle.

Chapter – 4 : TESTING

4.1 Testing Strategy

Here are the software resources used in this project

1. FIGMA (UI/UX Design)

For UI/UX design, FIGMA is used, facilitating iterative and collaborative design processes. Wireframes, prototypes, and visual communication of user interface elements are produced by designers using FIGMA. The real-time collaboration functionalities enable smooth communication between the development and design teams. Figma design is for people to create, share, and test designs for websites, mobile apps, and other digital products and experiences. It is a popular tool for designers, product managers, writers and developers and helps anyone involved in the design process contribute, give feedback, and make better decisions, faster. Figma has revolutionized the field of UI/UX design by providing a comprehensive platform for creating, sharing, and testing designs across teams and projects. Its intuitive interface and robust feature set empower designers to seamlessly translate ideas into tangible prototypes and mockups, streamlining the iterative design process. With Figma's collaborative capabilities, teams can work synchronously on projects, eliminating silos and fostering cross-functional communication and feedback loops. Whether it's wireframing, prototyping, or creating pixel-perfect visual designs, Figma offers a versatile toolkit that caters to the diverse needs of designers, product managers, writers, and developers alike. Its real-time collaboration features enable stakeholders to contribute insights, provide feedback, and make informed decisions, accelerating the design iteration cycle and driving product innovation. By centralizing the design workflow within a single platform, Figma promotes efficiency and transparency, enabling teams to deliver high-quality digital experiences on time and within budget. As a result, Figma has emerged as the tool of choice for design teams worldwide, setting the standard for collaborative design in the digital age.

FIGMA is used by people all around the world because,

Rapid prototyping. With overlays, the animations, hover, clicks and a lot more functionalities Figma becomes exceptional for Prototyping. While tools like Invision provides a lot more functionalities, Figma is irreplaceable because of its easy to learn nature. You can also install the Figma android application and present the prototype using your mobile device. The Benefits of the Cloud. Using Figma in your UI/UX workflow you can take all the benefits of the cloud. It ensures autosaving the files so that you don't have to worry about losing them accidentally. You can go beyond your local desktop and work from anywhere, from any machine – you just need your sign in id and password. Real-time Collaboration. Figma calls itself a UX design tool that allows the entire team to see and interact with the latest designs by accessing a single, live URL and this is entirely true. It the perfect tool for Real-time collaboration where the entire team can work together and the changes will be seen real time. It's on your browser, just click and start get started. Using Figma you can go beyond your computer, since it is a browser-based tool, it works seamlessly with all the operating systems be it Windows, Mac or Linux hence considered a cross platform user interface design tool. It is also Lightweight and exporting files is very straightforward. Vibrant community and easy resources to learn. Figma has the most vibrant community of people using it – from professional UI/UX designers to people doing design as a hobby. This becomes really beneficial for the beginners in the field since they get to have more resources and online support wherever they get stuck. Simple to learn and simple to use. One of the reasons for Figma's disruption of the UI/UX space and beating giants like Adobe is its fast-learning curve. Figma is super simple to use and has a very large community of professionals using it, hence you can find multiple tutorials on Figma. Figma is now more than just a UI design and prototyping tool. Its is being used across fields from stuff like designing Thumbnails to creating presentations. It is also positioned as an online graphic design tool for creating logos, social media graphics, presentations and a lot more.

2. JavaScript

JavaScript is an essential scripting language for front-end development projects due to its versatility. It facilitates client-side functionalities, improves user experience, and allows dynamic and interactive user interfaces. Because JavaScript runs inside web browsers, it's an essential part of developing interactive and responsive web applications. JavaScript is a lightweight, cross-platform, single-threaded, and interpreted compiled programming language. It is also known as the scripting language for webpages. It is well-known for the development of web pages, and many non-browser environments also use it. JavaScript is a weakly typed language (dynamically typed). JavaScript can be used for Client-side developments as well as Server-side developments. JavaScript is both an imperative and declarative type of language. JavaScript contains a standard library of objects, like Array, Date, and Math, and a core set of language elements like operators, control structures, and statements. JavaScript's significance in front-end development cannot be overstated, as it serves as the backbone for crafting dynamic and engaging user interfaces. Its versatility spans beyond traditional web development, finding utility in server-side scripting via frameworks like Node.js. This adaptability ensures a seamless experience for developers across the full stack of web development. JavaScript's lightweight nature makes it ideal for enhancing webpage interactivity without compromising load times or performance. Its single-threaded execution model, while sometimes seen as a limitation, has spurred innovations like asynchronous programming patterns, enabling efficient handling of concurrent tasks without blocking the main thread. Despite being primarily associated with web browsers, JavaScript's reach extends to non-browser environments through platforms like Electron and React Native, enabling the creation of desktop and mobile applications with familiar web technologies. JavaScript's dynamic typing allows for flexible and expressive code, though it necessitates careful attention to type coercion and potential pitfalls. Its imperative and declarative nature empowers developers to express logic in a concise and readable manner, facilitating

collaboration and code maintenance. With a rich standard library and a thriving ecosystem of third-party packages, JavaScript equips developers with the tools needed to tackle a wide range of challenges, from data manipulation to complex UI interactions. In essence, JavaScript stands as a cornerstone of modern web development, enabling the creation of immersive digital experiences across platforms and devices.

3. Python

Python is used in the project for a number of reasons, such as server-side chores, automation, and scripting. It is appropriate for a variety of development jobs due to its readability, adaptability, and large libraries. Python may be used for data analysis, automation, or backend scripting in the project. Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built-in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy-to-learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed. Python's versatility extends beyond mere backend scripting; it's also a powerful tool for web development, thanks to frameworks like Django and Flask. Its robust ecosystem of third-party packages facilitates rapid prototyping and development, enabling teams to meet tight deadlines and deliver high-quality software efficiently. Python's popularity within the data science community is another testament to its capabilities, with libraries like NumPy, pandas, and scikit-learn empowering analysts and researchers to glean insights from vast datasets. Moreover, its cross-platform compatibility ensures seamless deployment across various environments, from local machines to cloud servers. As an interpreted language, Python fosters an iterative development process, allowing for quick experimentation and refinement

of ideas. Its clean and concise syntax promotes collaboration among team members, fostering a cohesive and maintainable codebase. Whether it's building web applications, automating routine tasks, or crunching numbers, Python remains a go-to choice for developers across industries.

4. Sanity.io

Sanity.io plays a pivotal role in the development and management of the e-commerce platform for the electrical store. As a real-time content management system (CMS), Sanity.io offers a flexible and powerful solution for managing structured content across multiple channels. Its application in this project extends to several critical areas:

Content Management and Organization. Sanity.io is utilized to manage diverse types of content on the e-commerce platform, including product descriptions, images, categories, and promotional materials. Its rich text editor and customizable schemas make it possible to structure content efficiently, tailored specifically to the needs of an electrical store. This system ensures that all product information is organized and easily accessible, both for the backend management and for frontend presentation.

Real-time Updates. One of the standout features of using Sanity.io in this project is its capability for real-time updates. When product information or pricing needs to be updated, the changes are instantly reflected on the website without downtime or delays. This feature is essential for maintaining up-to-date inventory and pricing information, which is critical for customer satisfaction and operational accuracy.

Scalable Content Architecture. As the electrical store expands its inventory or diversifies its content, Sanity.io's scalable architecture supports this growth seamlessly. The platform's backend is designed to handle increasing loads of data and complex queries efficiently, which is vital for an expanding e-commerce operation.

Multi-platform Content Syndication. Sanity.io enables content to be reused across different platforms beyond the e-commerce site itself, such as mobile apps, digital displays, or even promotional emails. This ability to syndicate content seamlessly ensures consistent messaging and branding across all customer touchpoints.

Customizable User Interfaces. The Sanity Studio, a customizable editing environment provided by Sanity.io, allows the development team to tailor the CMS interface according to the specific needs of the store's staff. This customization makes the management of products and content more intuitive and aligned with internal workflows, significantly enhancing productivity.

Collaborative Features. Sanity.io supports collaborative efforts in content creation and management, allowing multiple team members to work on the same document simultaneously. This feature is particularly beneficial for marketing teams to coordinate campaigns or for product management teams to update listings in coordination.

Enhanced Security and Compliance. Sanity.io includes robust security features to protect sensitive content and user data. Compliance with standards and regulations concerning data security and privacy can be more systematically managed and enforced, thanks to Sanity's comprehensive security measures. The integration of Sanity.io into the electrical store's e-commerce platform brings sophisticated content management capabilities that are scalable, real-time, and highly customizable. This not only improves the efficiency and effectiveness of content management processes but also enhances the overall user experience by ensuring that the content is consistent, up-to-date, and securely managed across all platforms.

This project combines a number of potent software tools to produce an all-inclusive e-commerce solution for automating the physical hardware store. FIGMA uses collaborative UI/UX design to start the process. The server-side and

dynamic, responsive features are handled by Node.js and JavaScript, respectively. Python offers flexibility for scripting and possible backend operations. The combination of these technologies guarantees a stable and expandable base for the e-commerce platform's effective deployment.

a. Unit Testing:

Objective. Test individual components (functions, methods) for correctness.

Tools. For JavaScript, frameworks like Jest or Mocha can be utilized. For Python, pytest is an excellent choice. These tools help validate that each unit of the code performs as expected independently.

Scope. Includes testing individual functions and methods in the JavaScript and Python codebase.

b. Integration Testing

Objective. Ensure that integrated components (front-end to back-end) work together as expected.

Tools. Use tools like Postman for testing API integrations and Cypress for end-to-end tests that involve both frontend and backend systems.

Scope. Covers testing interactions between the frontend, API calls, database access, and Stripe payment integrations.

c. System Testing

Objective. Verify the complete and integrated software product.

Tools. Selenium or Cypress for automating browser-based testing across different environments.

Scope. Encompasses all modules of the software to ensure they work together correctly and efficiently from start to finish of any business process.

d. Performance Testing

Objective. Ensure that the website can handle expected and peak loads.

Tools. Load testing with Apache JMeter or similar tools to simulate multiple users accessing the website simultaneously.

Scope. Tests the website's response times, throughput, and speed under various load conditions.

e. Security Testing.

Objective. Identify any vulnerabilities in the website that could be exploited.

Tools. OWASP ZAP or similar for finding security threats such as SQL injection, XSS, etc.

Scope. All aspects of the system, including data encryption, secure payment processing via Stripe, and user data privacy.

f. Usability Testing

Objective. Ensure the website is easy to use and navigate.

Tools. User testing sessions, A/B testing, and usability testing tools like Hotjar.

Scope. Interface design, overall user experience, and interaction flows designed in FIGMA.

g. Accessibility Testing

Objective. Confirm that the website is usable by people of all abilities and disabilities.

Tools. Automated tools such as Axe or Lighthouse integrated in the development process.

Scope. Compliance with WCAG (Web Content Accessibility Guidelines) and ensuring the website is accessible to as broad an audience as possible.

4.2 Test Cases and Outcomes

a. Test Case Examples

Test Case 1, Checkout Process

Objective. Validate the entire checkout process including cart addition, address input, and payment via Stripe.

Procedure. Add products to the cart, proceed to checkout, fill in shipping details, and complete a payment using Stripe.

Expected Outcome. The payment is processed correctly, and the order confirmation page is displayed.

Test Case 2, Mobile Responsiveness

Objective. Ensure the website is fully functional and displays correctly on mobile devices.

Procedure. Access the website on various devices and manually check usability and layout integrity.

Expected Outcome. The website adjusts according to different screen sizes and retains functionality.

Test Case 3, User Registration and Login

Objective. Check the reliability of the user authentication process.

Procedure. Attempt to register with valid and invalid details, and log in to the system.

Expected Outcome. Registration and login are successful with valid details, while incorrect details are appropriately rejected.

b. Outcomes

The expected outcomes from executing these test cases include identifying any functional issues, performance bottlenecks, security vulnerabilities, or usability concerns that need addressing before going live. These tests help ensure that the website offers a secure, efficient, and enjoyable shopping experience, aligning with the overall objectives of your project. Each outcome provides actionable insights, helping to refine and optimize the e-commerce platform further.

Chapter – 5 : RESULTS AND EVALUATIONS

5.1 Results

The results of the project to automate the offline electrical store through the development of an e-commerce platform are multifaceted and encompass various aspects of business and technology. Below are key results and outcomes:

1. Increased Market Reach

The electrical store's market reach was effectively extended beyond its physical location via the e-commerce platform. Global transactions were aided by the web presence, which drew clients from other countries.

2. Enhanced Customer Engagement

The e-commerce website's round-the-clock accessibility gave users the freedom to peruse and buy whenever it was most convenient for them. Visitor traffic and activity on the website grew, indicating improved customer engagement.

3. Streamlined Inventory Management

Stock tracking procedures were effectively streamlined by automated inventory management technologies. Error rates were decreased and stock levels were optimized, which increased operational efficiency.

4. Efficient Order Processing

The e-commerce platform processed orders quickly and precisely, reducing mistakes and delays. Higher customer satisfaction was a result of order fulfilment that was completed more efficiently.

5. Successful Marketing and Promotion

Digital marketing tactics drew in a wide range of clients and successfully advertised products. Successful marketing strategies showed increased brand awareness and internet presence.

6. Positive User Feedback

Feedback and user acceptance testing revealed favourable opinions about the user interface and general functionality of the system. A user-friendly experience resulted from iterative changes based on user feedback.

7. Adaptability and Scalability

The initiative showed flexibility in response to shifting market conditions and consumer behaviour. The e-commerce platform demonstrated scalability by supporting larger user and product catalogue loads.

8. Sustained Business Growth

The e-commerce platform's effective deployment aided in the ongoing expansion of the company. The electrical store was positioned by the project as a force to be reckoned with in the online market.

In conclusion, the project produced favourable outcomes in terms of customer happiness, market expansion, operational efficiency, and overall business growth. The old company model was successfully integrated with digital technologies, bringing it into line with current consumer expectations and market trends. Continual observation, feedback systems, and flexibility are essential for maintaining the project's beneficial results.

Chapter – 6 : CONCLUSIONS AND FUTURE SCOPE

6.1 Conclusion

The objectives that have been defined for the e-commerce project on electrical appliances are carefully designed to bring about a radical change in the business environment. The convergence of efficiency, worldwide reach, and unmatched customer happiness is the ultimate goal. Liberating itself from conventional limitations, the idea imagines a global marketplace that serves clients beyond national boundaries. The dedication to being available around-the-clock fits nicely with the modern lifestyle, understanding that time zones do not limit customer comfort. It becomes clear that automated inventory management is essential to raising operational effectiveness. The project enhances the core of the business by avoiding errors and tracking stock levels with ease, so ensuring prudent resource utilization. The prioritization of order processing efficiency is indicative of a commitment to deliver a prompt and precise transaction experience to clients, hence reducing delays and promoting customer satisfaction.

The project strategically incorporates digital marketing methods in recognition of the ever-changing nature of the digital landscape. This acknowledgement is based on the knowledge that success in the online sphere is accelerated by visibility. The company uses impactful and targeted digital campaigns to not only market its goods but also to create a strong online presence that appeals to potential customers through a variety of channels.

Fundamentally, these goals present an image of a company ready for change, one that is aware of the pulse of contemporary trade and dedicated to not just surviving but flourishing in a digital environment. In the cutthroat world of online retail, the project deliberately aligns each goal to provide a symphony of global accessibility, operational prowess, and customer-centricity.

6.2 Future Scope

At the forefront of our strategy is the development of an intuitive e-commerce website. This website will serve as the cornerstone of our online presence, providing users with a seamless and efficient platform to browse, explore, and purchase our products or services. With a focus on simplicity and functionality, the website will be designed to cater to the diverse needs and preferences of our target audience. From streamlined navigation to visually engaging product displays, every aspect of the website will be meticulously crafted to ensure a satisfying and rewarding shopping experience for our customers.

In addition to the e-commerce website, our strategy also encompasses the creation of a feature-rich mobile application. In today's mobile-centric world, having a dedicated app is essential for reaching and engaging with users on the go. The mobile app will leverage the latest technologies and design principles to deliver a seamless and immersive shopping experience across all mobile devices. Whether it's browsing products, making purchases, or accessing exclusive deals and offers, the app will empower users to engage with our brand anytime, anywhere. By adopting a dual-platform approach, we aim to cater to the diverse preferences and habits of modern consumers. While some users may prefer the convenience of shopping on a website, others may prefer the flexibility and mobility offered by a mobile app. By providing both options, we ensure that no potential customer is left behind, thus maximizing our reach and potential for growth. Moreover, by prioritizing user-friendly design and intuitive functionality across both platforms, we aim to not only improve the overall shopping experience but also to foster long-term customer loyalty and satisfaction. A satisfied customer is not only more likely to make repeat purchases but also to recommend our brand to others, thereby helping us to expand our clientele and establish a strong foothold in the market.

In conclusion, our dual-platform approach to e-commerce is not just a strategic decision; it's a reflection of our commitment to meeting the evolving needs and expectations of our customers. By investing in both an intuitive e-commerce

website and a feature-rich mobile application, we are laying the foundation for sustained growth, success, and innovation in the years to come.

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