

COVID-19 Effects on Two-Wheeler Consumer Buying Behaviour

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CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

The COVID-19 pandemic, which emerged at the end of 2019 and swiftly escalated into a worldwide economic downturn, has significantly and profoundly affected individuals, societies, economies, and industries globally. SARS-CoV-2, a new coronavirus, posed an unprecedented threat to public health systems and governments, leading to the adoption of broad policies including lockdowns, social distancing laws, and bans on international travel. These steps were essential in preventing the virus's spread, but they also set off a chain reaction of disruptions in several industries, forcing people to reevaluate their priorities, lives, and consumption patterns.

Due to this chaos, the automotive sector, an essential component of modern society, found itself navigating uncharted territory. The two-wheeler component of this market, which includes motorcycles, scooters, and electric bikes, has seen several notable changes in customer behaviour. It is impossible to overstate the impact of the pandemic on how people perceive and interact with mobility options, and it has ushered in a new phase of consideration and choice when it comes to buying two-wheelers.

In a world of accelerating economic transformation, understanding the importance of researching how the COVID-19 epidemic has affected [consumer behaviour](#) within the two-wheeler business becomes essential. These observations provide an essential perspective through which companies operating in this market can modify and customize their strategies to take into account changing consumer preferences, demands, and expectations. Understanding these developments is crucial for maintaining the resilience and expansion of businesses operating in the two-wheeler sector, whether it be due to an upsurge in demand for personal transportation options to replace public transportation, the increasing emphasis on sustainability, or changes in financing preferences.

This chapter discussed the literature review of the COVID-19 pandemic on customer buying behaviour in the two-wheeler industry. It examines some significant factors, such as the shift in mobility preferences toward personal transportation, economic influences like affordability and government incentives, the growth of digitalization and online purchasing, improved safety and hygiene concerns,

growing environmental considerations favouring eco-friendly possibilities, disruptions in the supply chain, impacts on brand loyalty and trust, financing options and affordability, and the evolving post-pandemic buying trends. These factors taken together offer light on how the pandemic has altered consumer preferences and choices in the two-wheeler industry.

2.2 Shift in Mobility Preferences

This section discusses the Changes in Consumer Preferences and the Rise in demand for two-wheelers.

2.2.1 Changes in Consumer Preferences

In Section 2.2.1, a literature review is focused on Changes in Consumer Preferences.

In 2019, Lang et al. [1] examined the profound effect of incorporating electric, shared, and autonomous vehicles on the future of the automotive sector. It refers to the shifting values and distinct requirements of customers requiring creative transportation strategies in the future. The study explores the challenges of integrating societal change and new technological advancements within a socio-technical system. The research identifies crucial insights into the impending changes in customer behaviour and organizational strategy by examining organizational expectations. It emphasizes the significance of developing an effective steering system to encourage innovation and boost creativity within the company, thereby ensuring long-term success in a market that was becoming more competitive.

In 2020, Vij et al. [2] investigated customer demand as well as willingness to pay for on-demand transport (ODT) services in Australia. By conducting a thorough statewide poll of close to 4,000 regionally and demographically appropriate Australians, it was able to achieve this. The study's objectives were to comprehend the ODT market as it exists today and to identify the variables that affect customer usage trends. Additionally, it considers how shared electric autonomous vehicles can affect the ODT business case, particularly in terms of convenience and cost-effectiveness. The research also explores the relationship between ODT use and demographic variables including age and work status, offering light on how ODT services may affect the use of public transportation by different population segments.

2.2.2 Rise in demand for two-wheelers

In Section 2.2.1, a literature review is focused on the rising demand for two-wheelers

In 2021, Bhatia et al. [3] addressed the essential role that automobiles play in the current fast-paced society, acknowledging their influence on performance, productivity, and convenience in daily life. This study aims to comprehend consumer attitudes about and preferences for electric two-wheelers.

Additionally, it evaluates customer levels of knowledge and awareness regarding electric cars and looks into how different features of electric two-wheelers affect consumer choice. The analysis uses structured questionnaires as a data-collecting technique and delivers marketing implications to help producers and marketers build effective approaches for electric two-wheelers in this changing automotive environment.

In 2020, Eccarius et al. [4] discussed a critical problem of urban transportation and its rising demand in rapidly developing regions, primarily met by private automobiles, especially conventional two-wheelers that contribute substantially to air pollution. With a focus on electric motorbikes as a new and ecologically friendly alternative, the study underlines the research gap in consumer acceptance of alternative fuel-powered two-wheelers. It performs a thorough analysis of the growth of motorcycles throughout Asia. The report evaluates previous studies on the uptake of electric motorbikes and classifies powered two-wheelers according to legal, fuel, and technical considerations. It also examines deployment tactics, whether ownership-based or access-based.

In 2022, Jamal et al. [5] looked into how individuals in Dhaka, Bangladesh, changed their preferences for modes of transportation and the difficulties they encountered as a result of the COVID-19 pandemic's post-lockdown era. The goal of the study was to comprehend how commuters strike a compromise between their health, their budget, and the accessibility of safe transportation options. The research intends to shed light on the complex decision-making processes and trade-offs that commuters make when choosing their modes of transportation through in-depth semi-structured interviews with young commuters. The findings highlight the challenges and issues that commuters encounter and suggest potential strategies to make the transition to safer and more environmentally friendly forms of transportation in Dhaka. Table 2.1 shows the reviews by various authors about Shift in Mobility Preferences.

Table 2.1 Analysis of Shift in Mobility Preferences

Author Name [Citation]	Aim	Advantages	Drawbacks
Lang et al. [1]	This paper will examine the effects of merging shared, autonomous, and electric automobiles on the automotive sector.	Transformation of Mobility Meeting Evolving Customer Demands Influencing Customer Behavior and Strategy	Costly Infrastructure Investments Safety and Reliability Challenges Job Displacement

Vij et al. [2]	This paper analyzes the existing market environment and evaluates customer demand and willingness to pay for on-demand transport (ODT) services in Australia.	Flexibility Traffic Reduction Convenience Cost-Effective Environmental Benefits	Traffic Congestion Impact on Public Transit Labor Displacement Privacy and Safety
Bhatia et al. [3]	Investigating consumer opinions, desires, and knowledge regarding electric two-wheeler vehicles is the objective of this work.	Environmentally Friendly Air Quality Improvement Lower Operating Costs Reduced Noise Pollution Energy Independence	Limited Range Extended Charging Time Charging Infrastructure Higher Initial Cost Limited Model Variety Battery Degradation
Eccarius et al. [4]	This paper seeks to fill a research gap in consumer adoption of electric motorbikes as an environmentally responsible substitute for traditional two-wheelers, with an emphasis on Asia.	Environmentally Sustainable Reduced Carbon Footprint Instant Torque Reduced Vibration Quiet Operation Simplicity	Charging Infrastructure Limited Variety Longer Charging Time Higher Initial Cost Limited Range

Jamal et al. [5]	The purpose of this paper is to evaluate commuters' preferred modes of transportation and the related issues they face in Dhaka, Bangladesh, following the lockdown.	offers insights into the transport mode preferences and dilemmas faced by Dhaka, Bangladesh, in the post-lockdown period. Offers a qualitative understanding of the perceptions and concerns of young commuters residing in Dhaka ensuring a systematic and rigorous analysis of the data.	COVID-19 Risk Perception Limited Switching Flexibility Trade-offs and Dilemmas Transition Challenges
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2.3 Economic Factors

This section discusses the Impact of Economic Uncertainty on Purchasing Power and Affordability and the Influence of Government Incentives and Stimulus Packages on Consumer Buying Decisions.

2.3.1 Impact of Economic Uncertainty on Purchasing Power and Affordability

In Section 2.3.1, a literature review is concentrated on the Impact of Economic Uncertainty on Purchasing Power and Affordability

In 2020, Kumar et al. [6] explored the challenges provoking India as it endeavours to accomplish widespread electric vehicle (EV) adoption by 2030. It examines the Government of India's (GOI) initiatives to support R&D in the EV industry and evaluates the work remaining to be carried out in this area. In order to provide insights into both the global and Indian settings, the research analyzes barriers to the commercialization of EVs in India and gathers data from secondary sources. To further explore these difficulties, a focus group study with 11 participants from business and academics was carried out. The study's findings highlight the importance of the sharing economy and public utilities in encouraging the adoption of EVs, especially in light of the expensive nature of EVs, the insufficiency of infrastructure, and the low purchasing power of Indian customers. The government has a chance to improve resource management in the network of electric-powered transportation systems by adopting a perspective on the sharing economy.

In 2020, Rajper et al. [7] offered an in-depth review concentrated on the prospects of electric vehicles (EVs) in emerging nations. The review seeks to provide an overview of the challenges and opportunities related to various EV kinds, such as electric two-wheelers, electric four-wheelers, and hybrid electric vehicles. by using the PRISMA (Primary Reporting Items for Systematic Reviews and Meta-analysis) standards. According to the research, [electric two-wheelers](#) offer a more promising and affordable alternative for sustainable mobility, however, electric four-wheelers may not be a practical choice in developing nations due to their high purchase price.

In 2016, Altenburg et al. [8] studied the ongoing global transition from established internal combustion engine-based transport technologies to emerging forms of electromobility. This transformation was being studied simultaneously in four different nations: France, Germany, China, and India. The purpose of the study was to shed light on the factors that determine how technological paths were created in the area of electromobility. Four main factors technological capabilities, demand dynamics, political priorities, and economic governance can be identified as the main causes of divergence because they each have a significant impact on the choice of technologies and business models among different countries.

2.3.2 Influence of Government Incentives and Stimulus Packages on Consumer Buying Decisions

In Section 2.3.2, a literature review is emphasized on the Influence of Government Incentives and Stimulus Packages on Consumer Buying Decisions

In 2014, Ruan et al. [9] reviewed the significance of government in shaping the development path of disruptive technology. This paper looks at how government policies – both supportive and prohibitive impacted the development of the electric bike (E-bike) industry in China for instance. also looks at how the distinctive features of disruptive innovation affected the business strategies of e-bike companies and prompted a parallel evolution of the market and the institutional setting. By educating students on successful tactics for supporting disruptive technologies and targeting industries related to pollution prevention and new energy automobiles.

In 2021, Jayasingh et al. [10] focused on the factors consumers utilized to decide whether or not to purchase electric two-wheelers (E2Ws). By identifying key variables, including concerns regarding the environment, expected financial benefit, charging facilities, social influence, and gender, that have an impact on consumers' attitudes and intentions toward adopting these cars, the research intends to construct a behavioural adoption intention model for E2Ws. This study helps governments and electric two-wheeler enterprises understand consumer behaviour and preferences surrounding the adoption of E2W through empirical analysis and questionnaire-based data collecting. In the end, the study helps to comprehend the market dynamics around the adoption of electric two-wheelers. Table 2.2 illustrates the reviews by various authors about Economic Factors.

Table 2.2 Analysis of Economic Factors

Author Name [Citation]	Aim	Advantages	Drawbacks
Kumar et al. [6]	The purpose of this study is to examine the obstacles India will face in its effort to achieve broad EV adoption by 2030, as well as the steps taken by the Indian government to support EV industry R&D.	Improved Air Quality Reduced Fossil Fuel Dependence Job Creation Enhanced Energy Security	High Initial Cost Battery Technology Issues Electricity Grid Strain Limited Model Variety Charging Infrastructure Challenges
Rajper et al. [7]	In order to evaluate the prospects for electric cars (EVs) in developing nations, the purpose of this research is to undertake a thorough literature review.	Cost-Effective Travel Energy Savings Emissions Reduction	limited range and battery life High Upfront Costs Charging Infrastructure Constraints Lack of Awareness and Knowledge
Altenburg et al. [8]	The purpose of this paper is to study the dynamics and factors that affect how technical paths are created throughout transitions, as well as the various techniques and business models that have been adopted in France, Germany, China, and India.	Environmental Sustainability Improved Air Quality Reduced Noise Pollution Energy Diversification Innovation and Job Creation	Limited Range and Longer Charging High Initial Costs and Infrastructure Battery Environmental Impact Electricity Source Concerns Job Losses Regulatory and Policy Challenges

Ruan et al. [9]	Through an in-depth analysis of the electric bike (E-bike) business in China, this paper seeks to analyze how the government can influence the trajectory of a disruptive innovation (DI).	Market Suitability Exploiting Non-Consumption Market Share Capture	Limited Government Support Regulatory Challenges Infrastructure Limitations Cultural Barriers Limited Resources
Jayasingh et al. [10]	This study looks at gender-based differences in consumer attitudes and adoption intentions for electric two-wheelers (E2Ws) in order to construct a comprehensive behavioural adoption intention model for E2Ws.	reducing air pollution. Higher energy efficiency and lower operating costs. Reduced maintenance and quieter rides. Cost-effective and environmentally friendly urban mobility.	Limited driving range especially for long journeys. Insufficient charging infrastructure may cause range anxiety. Longer charging times compared to quick refuelling. Higher initial cost compared to traditional gasoline-powered two-wheelers.

2.4 Digitalization and Online Purchases

This section discusses the Surge in Online Research and Purchasing of Two-Wheelers and the Role of Digital Platforms and Virtual Showrooms in the Buying Process

2.4.1 Surge in Online Research and Purchasing of Two-Wheelers

In Section 2.4.1, a literature review is focused on the Surge in Online Research and Purchasing of Two-Wheelers

In 2015, Yogi et al. [11] studied the amount of product quality in the setting of two-wheelers in the Indian market, with an emphasis on customers' objectives and preferences when purchasing these vehicles. The goal of the study was to examine several quality parameters and how they affect consumer choice. The study also employs fuzzy logic methods and empirical data to accomplish its research goals. In order to contribute to a framework for evaluating product quality and purchase strategies in the Indian two-wheeler industry, it offers insights into the variables that affect consumers' decisions when purchasing two-wheelers.

In 2015, Weerasiri et al. [12] investigated the elements impacting customer choices regarding Indian

two-wheeler brands in the Sri Lankan market. The study tries to comprehend the reasons behind the rise in popularity of Indian two-wheeler companies and the particular elements that influence consumers' purchasing behaviour in this situation. The study also examines the influence of demographic characteristics on two-wheeler purchase decisions, including age, gender, income level, and education level. The results provide information that marketers may use to improve their segmentation and targeting tactics in the two-wheeler sales sector, especially in Sri Lanka's automobile industry.

In 2014, Shinde et al. [13] assessed how the Indian two-wheeler market had changed and evolved, focusing on how consumer preferences had changed and how a more sophisticated and aspiring consumer base had emerged. It intends to investigate how Indian consumers, particularly the younger generation with disposable wealth, have affected the shift away from cost and mileage concerns to a focus on aesthetics, power, and prestige in the choosing of two-wheelers. The research paper may also look into the segmentation of customer groups' preferences, such as youthful riders, female riders, and employed professionals, and how these preferences have influenced the product choices made in the Indian two-wheeler market.

2.4.2 Role of Digital Platforms and Virtual Showrooms in the Buying Process

In Section 2.4.2, a literature review is centered on the Role of Digital Platforms and Virtual Showrooms in the Buying Process

In 2021, Shah et al. [14] conducted a thorough investigation into the perspectives of both consumers and dealers to study the characteristics of the Indian automobile business. The goal of the study was to comprehend how consumers view and employ digital tools and marketing channels during the auto-buying process, especially in situations where buying a vehicle entails a sizeable financial commitment. Additionally, it intends to assess the efficiency of various digital tools and promotion techniques used in the automotive sector, including Virtual Reality, Augmented Reality, and others. This study, which was done in conjunction with the Federation of Automobile Dealer Association of India, offers insightful information about the blending of physical and digital touchpoints, highlighting the opinions and experiences of both dealers and customers and was backed by solid statistical analyses.

In 2019, Jain et al. [15] investigated and explained the impact of digital platforms on Indian customers' choices of luxury products. The study tries to build a cycle framework that demonstrates how digital media affects Indian customers across the many stages of their luxury brand purchasing experience, from pre-purchase to post-purchase stages, through qualitative studies and data analysis. The research also emphasizes how consumers' purchase behaviours and brand preferences were shaped by digital reference groups in the context of luxury consumption in India. Table 2.3 demonstrates the reviews by various authors about Digitalization and Online Purchases.

Table 2.3 Analysis of Digitalization and Online Purchases

Author Name [Citation]	Aim	Advantages	Drawbacks
Yogi et al. [11]	The purpose of this study is to examine consumers' preferences for several product quality factors when buying two-wheelers in the Indian market.	High trade-in value, power to climb hilly areas, availability of many accessories, high pick-up, effective braking system High engine durability	low precision minimum accuracy limited generalizability
Weerasiri et al. [12]	The purpose of this study is to define and investigate the variables affecting Sri Lankan customers' choice of Indian two-wheeler brands.	Wide range of options Affordability Fuel efficiency Durability and reliability Availability of spare parts and after-sales service	Perception of lower quality Limited availability of models Competition from other international brands Less extensive after-sales service and spare parts availability
Shinde et al. [13]	In order to assess how the Indian two-wheeler market has changed, this paper will concentrate on changing customer preferences and how they affect product offerings and market dynamics.	Better ground clearance, and larger wheels, improved suspension for rural areas. Positioning as powerful and stylish vehicles. Availability of new designs and technologies enhancing appeal. Executive and entry-level models offering higher mileage.	Lower fuel efficiency compared to scooters. Higher maintenance and repair costs. require more skill and experience to ride, especially for beginners. Higher risk of accidents and injuries due to higher speeds and less stability.

Shah et al. [14]	The purpose of this paper is to examine and evaluate the efficacy and uptake of digital tools and marketing channels in the Indian automobile market from the perspectives of both consumers and dealers, offering insights into the changing landscape of consumer preferences and dealership practices.	Enhanced customer relations and personalized experiences Facilitated online enquiries, and streamlined the customer experience. Manufacturers can establish digital sales and after-sales platforms to meet evolving customer preferences. Digital tools enable convenient services like finance, delivery, and test drives at customers' locations.	Risk of losing personal connection with customers due to virtual interactions. Challenges in maintaining profitability while providing doorstep services. Potential compromise on the personal touch and impact of physical showrooms.
Jain et al. [15]	The purpose of this study is to thoroughly explain how digital platforms affect Indian consumers' decision-making and behaviour.	Enhanced connectivity with tech-savvy Indian consumers. Greater influence on consumers' decision-making for luxury brand purchases. Increased engagement with young Indian consumers who frequently buy luxury brands.	limited availability of digital platforms on consumers' decision-making process for luxury brands in the country.

2.5 Safety and Hygiene Concerns

This section explores the impact of vehicle choice on health and safety and the Adoption of safety features and accessories in two-wheeler purchases

2.5.1 influence of vehicle choice on health and safety

In Section 2.5.1, a literature review revolves around the influence of vehicle choice on health and

safety

In 2019, Shafique et al. [16] analyzed the current state of nanotechnology and its potential applications in improving the comfort, security, and speed of transportation vehicles. It thoroughly analyzes current innovations, such as nano-coatings, filters, tire materials, improved engine performance, and decreased fuel consumption. The study addresses the significance of nanomaterials in encouraging sustainable and healthier transportation vehicles and supporting environmentally friendly practices in the global transportation business.

In 2015, Eichelberger et al. [17] conducted research and offered up-to-date insights into the automobile selections chosen by American parents for their young drivers. It evaluates the model years, makes, and safety features of the automobiles that teenagers drive, as well as the factors that led to these decisions and their financial effects. The study emphasizes the requirement for consumer education to assist parents in selecting safer vehicles for their young drivers.

In 2018, Yuan et al. [18] examined the effects of range anxiety on driving emotions and behaviours among Battery Electric Vehicle (BEV) drivers in China. The goal of the study was to measure range anxiety and its impacts, with an emphasis on the safety buffer interval in particular. In order to improve future BEV interface design and safety, factors impacting range anxiety, such as driving experience and recharge accessibility will be evaluated.

2.5.2 Adoption of safety features and accessories in two-wheeler purchases

In Section 2.5.1, a literature review is concentrated on the influence of vehicle choice on health and safety

In 2022, Javed et al. [19] evaluated Pakistani consumers' preferences for two-wheeler electric vehicles (E-bikes) in comparison to vehicles powered by internal combustion engines (ICEs). In order to help policymakers encourage the use of electric vehicles, the study seeks to determine the factors affecting consumer decisions. In order to promote the acceptability and purchase of E-bikes in Pakistan, the research also emphasizes the need for greater knowledge, better design, safety considerations, extended charging infrastructure, better mileage, and competitive prices.

In 2016, Sriyogi et al. [20] examined and evaluated the dimensions of product quality in the framework of two-wheelers in the Indian market. It seeks to comprehend the priorities of customers when they buy two-wheelers from various manufacturers and offers an outline for product quality and buying approaches based on these considerations. The study investigates the relationship between different quality parameters and how they affect the purchase of two-wheelers. Table 2.4 displays the reviews by various authors about Safety and Hygiene Concerns.

Table 2.4 Analysis of Safety and Hygiene Concerns

Author Name [Citation]	Aim	Advantages	Drawbacks
Shafique et al. [16]	In order to improve safety, usability, and sustainability overall, this study will examine how nanotechnology is used in transportation vehicles.	Enhanced safety and durability of vehicles Improved air quality Enhanced grip, traction, and tire performance Improved engine performance and reduced fuel consumption.	Health Risks Environmental Concerns High cost vehicles may face regulatory challenges related to safety, labelling, and testing standards.
Eichelberger et al. [17]	This study was designed to update and expand prior research on American parents' selections of automobiles for their adolescent children.	Offers an understanding of important safety aspects. highlighting potential safety concerns. provides a comprehensive overview of vehicle preferences ensures robust	Lack of information on the specific criteria used by parents in their vehicle choices. Limited perspective, as it only considers parents' views. Absence of information on vehicle safety features.
Yuan et al. [18]	The purpose of this study is to explore range anxiety among Battery Electric Vehicle (BEV) drivers in China, quantify it, and investigate how it is influenced by things like driving expertise, access to recharge stations, and emotional resilience.	provide insights into the range anxiety experienced by BEV drivers and its impact on their driving behaviours	stress and reduced confidence among BEV drivers. limit the willingness to take long trips and affect overall convenience. The emotional impact and safety concerns

Javed et al. [19]	In this study, customer preferences for electric two-wheeler vehicles (E-bikes) in Pakistan in comparison to those for internal combustion engine (ICE) vehicles are investigated and understood.	Reduced greenhouse gas emissions and air pollution. Promotion of sustainable transportation. Higher energy efficiency Lower operating costs.	Limited driving range Longer charging time Limited charging infrastructure Higher upfront cost. Limited model options
Sriyogi et al. [20]	The objective of this study is to assess the aspects of product quality that influence Indian consumers' two-wheeler purchase decisions and to create plans to improve both product quality and the buying experience.	leads to customer value and satisfaction. Understanding customer opinions aids in producing quality products. high trade-in value, power for hilly areas, accessory availability, efficient pick-up during overtaking. enhance reliability and durability.	Higher cost Compatibility issues limited availability in the market Maintenance and repair costs

2.6 Environmental Considerations

This section discusses the Increased awareness of environmental issues during the pandemic and the Impact on the demand for electric and eco-friendly two-wheelers

2.6.1 Increased awareness of environmental issues during the pandemic

In Section 2.6.1, a literature review is focused on Increased awareness of environmental issues during the pandemic

In 2021, Severo et al. [21] scrutinized the impact of the COVID-19 pandemic on ecological consciousness, environmentally friendly consumption, and social accountability among individuals belonging to the Baby Boomer, X, and Y generations residing in Brazil and Portugal. Analysis of survey data from 3,236 individuals was done using quantitative approaches, notably structural equation modelling. The results show that the pandemic significantly changed people's behaviour, particularly in the areas of sustainable consumerism, environmental awareness, and social responsibility, with a

relatively lower impact on those areas. Notably, the Baby Boomer age and Portugal both show increased sensitivity to these changes. This study also provides a helpful framework for analyzing the socio-environmental and conscious consumption ramifications of paradigm-shifting occurrences like the COVID-19 epidemic.

In 2020, Rupani et al. [22] investigated and outlined the multifaceted consequences of the COVID-19 pandemic, including its social, economic, and environmental impacts. It focuses particularly on environmental issues, such as global migration, waste management, air quality improvements, waste fires, and air pollution. The paper aims to provide a thorough overview of how the pandemic-induced lockdowns and decreased human mobility have impacted the natural environment, with a special focus on the positive changes observed, like decreases in carbon emissions, enhanced air quality, and lowered water pollution, while also taking into account the broader implications for environmental sustainability in a rapidly evolving world.

In 2022, Rajaonson et al. [23] discovered and defined the adverse ecological effects resulting from the shift in travel demand to non-urban destinations in Canada during the COVID-19 pandemic, mainly triggered by the closure of national borders. The study, which focused on 19 particular locations, identified and examined 83 distinct negative environmental impacts that were reported in 22 out of 194 papers after conducting a thorough analysis of Canadian media coverage. The results show that beach tourism was largely responsible for these detrimental effects, followed by problems with car use and garbage disposal. The incorrect disposal of waste into the environment was also responsible for a substantial share of the issues.

2.6.2 Impact on the demand for electric and eco-friendly two-wheelers

In Section 2.6.2, a literature review is concentrated on Impact on the demand for electric and eco-friendly two-wheelers

In 2021, Huu et al. [24] examined and assessed the present-day roadway traffic scenario in major urban areas of Vietnam, especially concentrating on the negative impacts due to the high density of private motorcycles, such as traffic congestion and environmental pollution. In order to address these issues, the study intends to shed light on the movement in public opinion toward the adoption of alternative, more environmentally friendly modes of transportation, particularly electric two-wheelers. It also aims to investigate if switching to eco-friendly automobiles in Vietnam's urban traffic, takes into account elements like socioeconomic status and societal traits. Additionally, offers suggestions to promote the creation and use of greener, more efficient motorcycle alternatives, helping to create a more sustainable urban transportation landscape in Vietnam.

In 2021, Huang et al. [25] proposed a smartphone application-based support that offers consumers information on fewer emissions of greenhouse gases when using e-scooters, with the objective of

boosting consumer understanding of air quality and their intention to purchase e-scooters. In order to investigate the variables impacting user acceptance of table-based mobile information outlining emission reductions from six air pollution sources, the study employs the extended unified theory of acceptance and use of technology, adding the variable of environmental awareness (EA). The study's conclusions show that notions like habit, EA, social influence, and effort expectancy can be useful indicators of users' behavioural intentions to use app services to receive information about air pollution. Additionally, after users have received table-based air pollution information, both EA and behavioural intention were shown to be effective predictors of users' purchase intentions for e-scooter items. Table 2.5 illustrates the reviews by various authors about Environmental Considerations.

Table 2.5 Analysis of Environmental Considerations

Author Name [Citation]	Aim	Advantages	Drawbacks
Severo et al. [21]	This study aims to investigate the effects of the COVID-19 epidemic on social responsibility, environmentally conscious consumption, and environmental consciousness among various generations in Brazil and Portugal.	sustainable consumption behavioural changes in environmental awareness and social responsibility Varied perceptions among different generations A significant influence on people's behaviour, with a focus on responsibility and sustainability.	delays and shortages in sustainable products and services. Diversion of resources The pandemic's financial difficulties and decreased support for green efforts. Environmental rules and policies that have been postponed or cancelled as a result of crisis management objectives changing.

Rupani et al. [22]	The purpose of this research is to examine and describe the environmental effects of the COVID-19 pandemic, with a focus on the implications for sustainability. Changes in air quality, pollution levels, waste management, wildlife, and international migration are highlighted.	Vital for developing operative control measures and averting further disease spread. Recognizes infection sources, including animal markets, supporting outbreak prevention. Guides procedures to avoid human-to-human transmission in communities and healthcare settings. Helps categorize transmission factors and informs containment approaches.	Rapid disease spread and real-time data necessities Difficulty in gaining exact early-stage info on sources and transmission modes. Ethical anxieties regarding revealing individuals to the virus or potential harm. Logistical obstacles, including resource boundaries and international collaboration.
Rajaonson et al. [23]	This study's objective is to evaluate and categorize the detrimental environmental effects of increased domestic tourism to rural areas of Canada during the COVID-19 epidemic.	Empirical insights from local media content provide a complete understanding. Analysis of 194 papers offers a robust dataset for discoveries and conclusions. Recognizes beach tourism as the key source of negative effects, enabling targeted interventions. Highlights common issues like car use and waste disposal for focused mitigation efforts.	negative environmental impacts in Canada. Beach tourism was a major contributor to these negative impacts, raising concerns about visitor numbers. car use and waste disposal, both at 36.1%. Border closures shifted travel to non-urban areas, possibly straining local infrastructure and resources.

Huu et al. [24]	This study examines the transition to environmentally friendly alternatives like electric two-wheelers, assesses the state of road traffic in major Vietnamese cities, and offers suggestions for fostering sustainable urban mobility.	Dominant role in transporting goods and passengers Flexibility and accessibility to diverse destinations. Door-to-door service for direct delivery and pickup. Cost-effectiveness Efficient distribution, employment opportunities	Traffic congestion, especially in urban areas, causing delays accidents leading to injuries, loss, and damage Environmental concerns, including air pollution and carbon emissions Limited capacity
Huang et al. [25]	With an emphasis on raising environmental consciousness and e-scooter purchase intention, the purpose of this paper is to investigate and determine the elements influencing user acceptability of a mobile application-based service delivering information on reduced greenhouse gas emissions from e-scooters.	Raises awareness of air quality Employs a broad framework for accepting technology while keeping the environment in mind. Effective predictors of behavioural intention include habit, environmental awareness, social influence, and effort expectancy. Environmental consciousness and behavioural intent both predict the likelihood of purchasing an e-scooter.	Dependence on mobile technology may exclude individuals without smartphones or internet access. Data accuracy and reliability in estimating greenhouse gas reductions could be questioned. Potential for user fatigue or habituation to the app's messaging over time. Although the service has its advantages, it has drawbacks in terms of user priorities, accessibility, data accuracy, user involvement, and addressing systemic issues.

2.7 Supply Chain Disruptions

In Section 2.7, a literature review is focused on Supply Chain Disruptions

In 2021, Rajan et al. [26] presented and discussed the creation of a type B ambulance, which was specially created to meet the demands of rural areas, with an emphasis on connecting rural

inhabitants to the closest medical facility during emergencies. With the aim of lowering the mortality rate in villages and offering a comfortable mode of transportation in crowded traffic regions, this new idea tries to address the difficulties traditional four-wheeled ambulances confront in rural settings. The ambulance's trailer-based design not only drastically lowers production costs, but also features necessary medical gear. With an adjustable trailer clip and the ability to be detached when not needed for emergencies, the ambulance was made to be readily coupled to a bike chassis frame in case of an emergency. This design provides a flexible and affordable solution for enhancing healthcare access in remote regions.

In 2010, Dubey et al. [27] looked into the use of simulation-based modelling in the design of an international supply chain with a particular emphasis on lowering Forrester impacts. The paper intends to show how simulation findings can be used to improve the accuracy of innovative product forecasts while reducing the risks associated with currency changes using a study utilizing one of India's top two-wheeler manufacturing companies. By doing this, the study offers insightful information about how cutting-edge modelling tools can improve supply chain operations and support businesses' competitiveness and resilience in a global setting.

In 2020, Biswas et al. [28] discussed the significant effect of the COVID-19 pandemic on the supply chains of multiple manufacturing sectors, including frozen foods, grocery items, emergency goods, and services. It highlights how crucial it was for manufacturing industries with complex supply networks to come up with workable plans for surviving such a catastrophe. In the context of the Indian manufacturing sector during a lockdown, the study identifies and examines five key obstacles to the supply chain, including a lack of labour, difficulties with local law enforcement, transportation restrictions, a lack of raw materials, and cash flow issues. In the study, a method for pairwise comparisons based on the fuzzy analytical hierarchy process (Fuzzy-AHP) was proposed.

In 2019, Chanda et al. [29] studied the attitudes of Indian consumers towards sustainable development and its impact on their decision-making process when buying two-wheelers. The study aims to investigate how customer perspectives, notably those related to green values, proactive climate change techniques, and sustainability, impact their intention to purchase environmentally friendly two-wheelers in light of the fact that India was one of the most polluted nations in the world. The study adopts a data-driven methodology, putting out hypotheses to find correlations between attitude-related factors and the intention to buy such vehicles. Utilizing factor analysis with IBM SPSS 20, the gathered data was examined to get important insights into how sustainability attitudes influence consumer decisions within the Indian two-wheeler market. Table 2.6 shows the reviews by various authors about Supply Chain Disruptions.

Table 2.6 Analysis of Supply Chain Disruptions

Author Name [Citation]	Aim	Advantages	Drawbacks
Rajan et al. [26]	The purpose of this paper is to present and describe the design of a type B ambulance for rural areas, with an emphasis on enhancing access to healthcare in times of emergency while reducing manufacturing costs and offering a versatile, bike-based solution.	Prompt patient care and responsiveness in emergency situations Lower ambulance production costs Capacity to transport a patient and the required medical supplies Sheet metal covering the whole body provides protection. A comfortable ride in congested areas	Limited capacity when compared to ambulances with four wheels Potentially less control and stability compared to ambulances with four wheels Less room is needed for medical supplies and equipment. Limited ability to negotiate uneven or rocky terrain
Dubey et al. [27]	Using a study of a top two-wheeler manufacturing company in India, this paper aims to demonstrate how simulation modelling may be used to improve creative product forecasts and reduce currency fluctuation risks in the design of a global supply chain.	Simulation modelling lessens Forrester's impacts on global supply chain design. enhances innovative product forecasting for improved planning. Mitigates currency fluctuation risks, decreasing potential financial losses.	Time-consuming and complex processes Experienced staff with knowledge of simulation modelling and supply chain management is crucial. Models rely on presumptions and simplifications that could not accurately reflect the complexity of the real world.

Biswas et al. [28]	This paper's objective is to identify and examine the main obstacles that the Indian manufacturing sector encountered during the COVID-19 lockdown.	increase output and income guarantee legal conformity make sure the supply chain's material flow is seamless. keeps up production rates and satisfies demand. offers enough money to support ongoing operations.	Time and resource-intensive process for recognizing and analyzing barriers. Complex manufacturing supply chains disruptive and costly operational changes.
Chanda et al. [29]	The purpose of this paper is to investigate the impact of Indian consumers' sustainability views, including green ideals and proactive climate change strategies.	Provides information on Indian consumers' socially conscious buying habits. Uses the Cronbach Alpha test to do reliability testing. improves awareness of social responsibility among consumers	Dependency on Self-Reported Data Data Analysis Limitations Small Sample Size Limited Scope

2.8 Brand Loyalty and Trust

This section discusses How customer trust in established brands was reinforced or challenged and the Influence of brand reputation on buying decisions during uncertain times

2.8.1 How customer trust in established brands was reinforced or challenged

In Section 2.8.1, a literature review is centered on How customer trust in established brands was reinforced or challenged

In 2017, Datrika et al. [30] used a sample size of 600 randomly chosen participants to explore the impact of specific independent and demographic characteristics on the reliability of four well-known two-wheeler brands (Hero, Bajaj, Honda, and TVS) among consumers in Hyderabad. The goal of the study was to determine whether these characteristics had any appreciable influence on brand

trustworthiness through the use of descriptive statistics and non-parametric testing. However, the investigation finally showed that there was no discernible influence, which prompted the discussion of different ramifications for two-wheeler marketers and customers.

In 2014, Pongiannan et al. [31] explored the association between brand equity and client retention for two-wheeler brands in India, with a particular emphasis on major players like Hero Honda Motors Limited (HHML), Bajaj Auto Limited (Bajaj Auto), and TVS Motor Company Limited (TVS). The study aims to evaluate how brand equity, which was defined as the added value a brand name brings to a product, influences customer loyalty and the capacity of these brands to retain their customer base in a highly competitive industry, in light of the critical importance of customer satisfaction and retention in the success of businesses. The purpose of this study was to examine this relationship in order to offer marketers and businesses involved in the Indian two-wheeler market useful information.

In 2014, Yuvaraju et al. [32] analyzed consumer fulfilment with Honda Bike by analyzing several variables such as mileage, performance, pick-up, service quality, design, and price. The study includes survey-based research findings that show respondents' levels of satisfaction with these aspects. The chi-square test was used in statistical analysis as part of the paper to see if there were any notable differences in the preferences of different consumers for things like mileage, pick-up, cost, and design. The study's ultimate goal was to shed light on the critical factors impacting consumer satisfaction with Honda Bikes and to pinpoint areas where the company's product and service offerings may be improved.

2.8.2 Influence of brand reputation on buying decisions during uncertain times

In Section 2.8.2, a literature review is concentrated on How customer trust in established brands was reinforced or challenged

In 2015, Park et al. [33] assessed the effects of review ratings, especially severe ratings (both positive and negative), on the perceived utility and enjoyment of online consumer knowledge, with an emphasis on restaurant reviews in London and New York. The purpose of the study was to comprehend how users react to heuristic cues, such as star ratings in online reviews, and how these cues affect how they assess information. The research examines the complex effects of review ratings through empirical analysis, demonstrating how extreme ratings affect perceptions differently from moderate ratings, thus advancing the comprehension of customer behaviour in the context of online reviews and decision-making.

In 2018, Sahoo et al. [34] examined the consequences of online product reviews on the probability of product returns. An analytical model was used to examine how variations in the tone and detail of product reviews affect rational, risk-averse consumers' decisions to buy and return products. The study then employs transaction-level data from a North American specialized shop to empirically

examine these claims. Even after controlling for other characteristics, the results show that more reviews and reviews that consumers rate as "helpful" were associated with fewer product returns. Additionally, the study shows that when there were fewer evaluations available, users tended to purchase more alternative products, maybe to reduce uncertainty, which leads to more returns. The study also shows that showing exaggerated average evaluations for products results in higher. Table 2.7 shows the reviews by various authors about Brand Loyalty and Trust.

Table 2.7 Analysis of Brand Loyalty and Trust

Author Name [Citation]	Aim	Advantages	Drawbacks
Datrika et al. [30]	This innovative qualitative study's goal was to determine how demographic and independent factors affected consumers' perceptions of the reliability of four major two-wheeler brands in Hyderabad.	Economic and competitive advantages. Better attracting and keeping customers. Increased client advocacy and loyalty. The power to demand high prices. Possessing resilience in the face of adversity.	A decline in skepticism and customer confidence. Decreased market share and sales Challenges in acquiring and keeping customers Failure to secure premium rates More susceptible to crises

Pongiannan et al. [31]	In the context of the top two-wheeler brands in India, this study aims to examine the connection between brand equity and customer retention, paying particular attention to how brand equity affects consumer loyalty and long-term retention.	increases the value of the product and marketing results. reduces the price of acquiring customers. decrease customer churn and boost sales. less expensive than acquisition. Loyalty programs, trust, and after-sales services encourage retention. Guarantees and product quality are crucial.	It can be difficult to maintain customer happiness and successful retention. Effective retention techniques are designed to stop customers from leaving. Providing high-quality goods and post-sale services is crucial for customer retention. Issues with client retention and satisfaction
Yuvaraju et al. [32]	The purpose of this study is to evaluate and analyze consumer satisfaction with Honda Bikes by concentrating on elements like mileage, performance, pick-up, service quality, design, price, and consumer awareness of advertisements, as well as potentially significant variances in consumer preferences.	Exceptional client satisfaction providing premium products at competitive prices. introducing motorcycles with affordable prices, such as the 110cc Dream Yuga. increasing consumer preference and brand recognition.	Strictly focused on a few key elements. Insufficient qualitative research Limitations on generalizability The Chi-square test could be unable to identify the true causes of discrepancies.

Park et al. [33]	This study uses restaurant reviews from London and New York as a study to examine the impact of review ratings, particularly extreme evaluations (positive and negative), on the perceived value and enjoyment of online consumer information.	oversimplify the method of evaluation This could lead to ill-informed decisions. A successful online reputation eroding dependability and credibility. conceivably ignoring helpful criticism enhance the good or service.	Online customer testimonials might not always give a complete or accurate picture of the good or service being reviewed. a distorted impression of the general quality. relevant to all tourism-related industries. The absence of uniform standards
Sahoo et al. [34]	This study aims to evaluate the economic implications for businesses in the context of customer behavior and online reviews, as well as how online product reviews, including their tone and precision, effect the likelihood of product returns.	Offers information on how consumer behavior and online product reviews are related. increasing the study's application. emphasizing the value of objective and thorough web reviews. Recognizes a propensity for alternative product purchases by consumers Draws attention to the financial burden managing goods returns places on businesses.	It might not accurately reflect the complexity of product returns in different contexts or sectors. fail to take into consideration all conceivable confusing factors that can affect product returns. They don't always represent how consumers actually make decisions. It omits to discuss the particular operational and financial difficulties involved in handling goods returns.

2.9 Financing Options and Affordability

In Section 2.9, a literature review is focused on Financing Options and Affordability

In 2020, RAMANA et al. [35] analyzed and comprehended the structure of individual consumer purchasing habits and decision-making procedures among motorcycle users in the framework of the extremely competitive Indian two-wheeler market. This study intends to offer important insights into why consumers make particular purchasing decisions because India ranks as the second-largest producer of two-wheelers globally and faces rising competition from foreign players. The study focuses on pre-purchase behavioural aspects, such as the amount of time between having an idea and acting on it, demographic influences, and the numerous information sources people utilize before buying a motorcycle. The study aims to assist marketers in creating successful marketing strategies that affect customer consumption decisions in this dynamic market by examining the data obtained through questionnaires and using analytical techniques like percentages and chi-square testing.

In 2019, Ghosh et al [36] studied the progress and development of the Indian two-wheeler sector since its beginnings in 1955, with an emphasis on the factors impacting customer purchasing habits in Delhi-NCR. Sales volume has increased significantly, and the sector has seen major technological breakthroughs, with sales expected to reach 11 million devices annually in 2020. This empirical study looks into the factors that influence two-wheeler buyers' choices, with a focus on post-purchase satisfaction with regard to maintenance costs, fuel efficiency, and part availability. The research reveals five major characteristics impacting customer purchase behaviour in this dynamic market through a structured questionnaire given to 170 two-wheeler owners in Delhi-NCR and exploratory factor analysis. The study also emphasizes the effects of variables like growing gas prices and the next generation's appetite for sports bikes.

In 2019, SELVA et al. [37] evaluated customer preferences for Electric Vehicles (EVs) as a substitute for Internal Combustion engine vehicles, with a particular emphasis on three primary factors. It begins by evaluating consumer knowledge of EVs in both urban and rural locations. It also looks at consumer preferences for EVs. Finally, it looks into the variables that affect customer purchasing decisions when it comes to EVs. The results show that since its debut, EV purchases have gradually increased in India, with metropolitan areas showing better knowledge than rural ones. To increase EV sales in both urban and rural areas, it was believed that major infrastructural development, government backing, technology improvements, industrial cooperation, and legislative reforms were required.

In 2022, Suryawanshi et al. [38] conducted an analysis that identified the key variables impacting the post-pandemic purchasing decisions of Two-Wheeler consumers in certain regions of Delhi and Haryana, India. These factors included finances, vehicle characteristics, promotion, and service. The Analytical Hierarchical Process (AHP) was utilized in the study to identify the most important selection factors that buyers consider when choosing two-wheelers. Based on price range and engine size (CC), it ranks five key firms, including Hero Honda, Yamaha, Suzuki, Hero, and TVS Motors, illuminating

consumer preferences in the post-pandemic era. With the possibility to expand the study to clients in other regions of the nation, this research intends to help Two-Wheeler marketers modify their promotional techniques and virtual marketing plans to efficiently target purchasers. Table 2.8 shows the reviews by various authors about Financing Options and Affordability.

Table 2.8 Analysis of Financing Options and Affordability

Author Name [Citation]	Aim	Advantages	Drawbacks
RAMANA et al. [35]	This study's objective is to examine how pre-purchase behavioural characteristics, demographic effects, and information sources affect consumers' choices to acquire motorcycles in the highly competitive Indian two-wheeler industry.	Offers insightful information on the variables impacting consumer choice in the severely competitive Indian two-wheeler sector. Supports the development and improvement of marketing plans to successfully sway customer purchasing decisions. Assists in improving understanding of consumer behaviour and preferences in a significant Indian automotive industry.	It falls short of capturing the full range of variables impacting consumer purchasing decisions. They depend on self-reported data from surveys, which may be biased or inaccurate due to respondent error. The results might not take into account the fast-shifting market dynamics or other factors, such as the state of the economy or technology improvements, that affect customer behaviour.
Ghosh et al. [36]	This study's goal is to identify and evaluate the major variables that affect two-wheeler users' purchasing decisions in Delhi-NCR.	Significant increase and sales Increasing production capacity and technology Possibility of Pan-Indian model Elements that affect how consumers make purchases	Exploding fuel costs Safety dangers Limited after-purchase contentment Tubeless tires aren't widely available. Constrained financial options

SELVA et al. [37]	With an emphasis on determining customer knowledge and preferences, the purpose of this research is to examine and comprehend consumer preferences for electric vehicles (EVs) in India.	Lessened contamination of the environment Budget-friendly and cost-effective the use of electric two-wheelers in urban and rural settings. Low maintenance expenses encourage the use of electric vehicles nationwide, helping both urban and rural areas.	Few people are aware of or have knowledge of electric two-wheelers, especially in rural areas. Due to their price sensitivity, rural consumers may view electric two-wheelers as more expensive than conventional options, which could affect their preference. Users may experience a range of anxiety and annoyance due to the limited amount of charging infrastructure that is still available, both in urban and rural settings.
Suryawanshi et al. [38]	The purpose of this study is to identify and rank the important selection factors that affect buyers of two-wheelers in particular regions after a pandemic.	enabling a thorough analysis of the variables impacting customer decisions. ensuring that all pertinent factors were given the proper weight. It made it easier to analyze criteria quantitatively, which improved the study's objectivity and rigour.	Pairwise comparisons that are complex Incapability of Adaptation Because AHP focuses primarily on quantitative analysis, it might not effectively take qualitative or intangible components into account, thus missing crucial factors.

2.10 Post-Pandemic Buying Trends

In Section 2.10, a literature review is concentrated on Post-Pandemic Buying Trends

In 2021, Bali et al. [39] studied and assessed the obstacles and interruptions faced by the Indian Two-Wheeler industry, which predated the COVID-19 pandemic and were exacerbated by it. The report examines the issues facing the sector, such as a slowdown in output and NBFC defaults that result in falling revenues. It also looks at how the pandemic affects supply and demand in the marketplace for two-wheelers. The document also identifies two COVID-19-related successes, including increased funding for the "Make in India" campaign and a reevaluation of business tactics in the automotive

sector. In the end, this study seeks to shed light on the dynamics of the two-wheeler business in the face of large potential and obstacles.

In 2020, Pase et al. [40] investigated the consequences of the COVID-19 pandemic on urban transportation trends, with a particular emphasis on New York City's bike-sharing system. The study intends to identify the connections between bike-sharing, public transportation, and various means of mobility during the pandemic by studying Smart City data. The study sheds light on the socioeconomic factors affecting urban mobility and offers useful knowledge for next city- and neighbourhood-level urban planning. The New York City case study identifies major themes that occurred during the lockdown, analyzes mobility and socioeconomic data to comprehend how the epidemic affected various areas, and offers recommendations for the future development of the city's bike-sharing program and management of its urban infrastructure.

In 2023, Christidis et al. [41] reviewed significant modifications in lifestyles and patterns of movement caused by the COVID-19 pandemic, with an emphasis on their potential effect on transport policy in the short to medium term. In order to identify changes in mobility patterns and modal preferences and their potential effects on transportation costs, congestion, and emissions, the analysis makes use of a variety of data sources and methodologies, including travel surveys, congestion monitoring, public transport statistics, and active mobility modelling. The report also evaluates city-level transportation policy initiatives and offers empirical support for its key conclusions through a study involving 40 European towns. This research intends to inform stakeholders and policymakers about the changing urban mobility scene and inform the next transportation policy decisions.

In 2022, Pawar et al. [42] investigated and comprehended the changes in customer purchasing behaviour brought on by the COVID-19 epidemic and the following establishment of the "New Normal," specifically in the context of the Indian car industry. It explores the intricate interplay of economic, technological, and psychological factors that affect consumer psychology, such as perceptions of product quality, pricing, income, preferences, lifestyle, and shifts in purchasing patterns. The purpose of this study was to shed light on the changing dynamics of demand in the Indian automobile sector and provide insights into how the sector has adapted and flourished in the post-pandemic environment by analyzing these changes in customer behaviour and preferences.

In 2023, Tan et al. [43] assessed the long-term consequences of remote employment on travel habits in the San Francisco Bay Area, with a focus on the tech sector. To better understand remote work preferences and expectations, commute habits, interest in relocation, and mode choices, the study polled over 660 IT workers. The results show that a large number of IT professionals predict hybrid work arrangements following the pandemic, which will affect their commute patterns and decrease interest in transferring outside of the region. The study also reveals a pattern of suburbanization among IT professionals, who may also choose less environmentally friendly means of transportation for longer commutes. It does, however, imply that sustaining online grocery and food delivery habits could aid in reducing some of the adverse environmental impacts linked to an increase in car use. Table 2.9 shows the reviews by various authors about Post-Pandemic Buying Trends.

Table 2.9 Analysis of Post-Pandemic Buying Trends

Author Name [Citation]	Aim	Advantages	Drawbacks
Bali et al. [39]	The purpose of this paper is to assess the difficulties the Indian two-wheeler industry encountered both before and during the COVID-19 pandemic and to pinpoint any opportunities or advancements that may have arisen as a result of these difficulties.	increased investments as a result of China's interruptions to the supply chain. raising the possibility of advancements. Show resiliency in the face of difficulties. put staff safety first. improve customers' ownership experiences.	The Covid-19 pandemic has spread to almost all markets for two-wheelers, posing new difficulties for business. It restricted customers' ability to send their automobiles in for planned maintenance or repairs, which affected the industry. This had an impact on the demand for all types of vehicles, including two-wheelers.
Pase et al. [40]	This study's objective is to investigate how the COVID-19 pandemic has affected urban mobility patterns, with a focus on how the city's bike-sharing program is used, to gain knowledge that may be applied to future urban planning and infrastructure management.	Provides information on socioeconomic variables affecting urban mobility. Aids in determining how the pandemic has affected various communities. Guide upcoming neighborhood- and urban-planning initiatives. Provides information for managing urban infrastructure and improving bike-sharing programs.	Narrow in scope, concentrating mostly on the bike-sharing program. Accuracy and representativeness issues with data are possible. Other cities may not be able to immediately apply the findings. Potential bias resulting from poor data quality and availability.

Christidis et al. [41]	This study aims to evaluate the COVID-19 pandemic's effects on lifestyles and mobility patterns by looking at changes in overall transportation activity, modal preferences, and traffic congestion. It also offers recommendations for short- to medium-term transportation policy.	The administration of urban transportation is improved by new data sources like IoT, sensors, mobile devices, and social network data. make decisions more effectively and optimize urban transportation. New data sources support businesses like Mobility as a Service (MaaS) and foster innovation in urban transportation.	Interpreting data from new sources might be difficult, subject to bias, and have a narrow focus. Data accuracy and dependability vary according to functionality and technology. Infrastructure, technology, and data management all demand large investments. Problems with data standards and integration could prevent efficient utilization.
Pawar et al. [42]	To understand how the COVID-19 epidemic has affected consumer purchasing patterns in the Indian automobile sector and how it has affected demand and the industry's trajectory in the "New Normal" era, the purpose of this research is to investigate those effects.	Rapid adjustment facilitated economic recovery Increasing sustainability Enhanced resiliency Emphasizing the need to comprehend and address consumer behaviour Increased client satisfaction	High price Supply Chain Breakdowns Customers' Uncertainty Market Conflict Use online sales instead

Tan et al. [43]	The purpose of this study is to evaluate tech employees' long-term travel and relocation patterns in light of emerging trends in remote work in the wake of the COVID-19 epidemic.	a versatile hybrid work model. The elimination of time-consuming and stressful commuting, which encourages sustainability and reduces non-work trips. Continued internet purchasing, which will eliminate the need for additional car excursions. Possibilities for relocation within the area for better suburban quality of life.	The potential for tech professionals who relocate more than 10 miles from their office to rely on less environmentally friendly modes of transportation. The work-life balance is impacted by blurred work-life boundaries. Fewer opportunities for social interaction and collaboration, which affects teamwork and innovation.
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2.11 Marketing and Communication Strategies

In Section 2.11, a literature review is engrossed on Marketing and Communication Strategies

In 2013, Paudel et al. [44] extensively examined the numerous difficulties and historical settings that have influenced Nepal's status as one of the least developed nations worldwide. It attempts to shed insight on the geographical obstacles caused by the nation's hilly terrain and their effects on infrastructure growth, restricted industrialization, and trade imbalance, notably the strong reliance on India for trade and transit. The report also aims to illustrate Nepal's historical isolation up to the middle of the 20th century, as well as its subsequent efforts at growth through Five Year Plans. The goal of this paper was to provide a comprehensive knowledge of Nepal's economic and developmental concerns by looking at these aspects. It also hopes to present some ideas for potential solutions to Nepal's problems with poverty and debt as well as with expanding its trading relationships with other countries.

In 2018, Chakma et al. [45] performed an in-depth investigation of global company tactics utilized by TVS Motor Company within the framework of the two-wheeler motorcycle sector in Bangladesh. This investigation explores several areas of TVS's strategy, including sales and marketing, brand creation, target market categories, marketing communication strategies, and advertising guidelines. The purpose of this essay was to shed light on these elements to show how TVS Motor Company operates in Bangladesh's fiercely competitive motorcycle market against formidable opponents such as

Runner, Bajaj, Honda, and others. The document also stresses TVS's strategies for market expansion and cost competitiveness, as well as its dedication to building a connection with clients that benefits both parties. The study concludes with suggestions for strengthening TVS's market presence and brand image in Bangladesh, highlighting the significance of after-sales services, web marketing, promotional events, sponsorships, and effective TV ads as possible routes for success.

In 2013, Kumar et al. [46] investigated the fundamental function of advertising in raising consumer awareness of brand-produced goods and addressing their requirements. It investigates how advertising can successfully sway and alter customer behaviour, especially that of female consumers who were frequently seduced by claims of product enjoyment. The study acknowledges that different stakeholders, such as marketers, agencies, media outlets, and consumers, have varied perceptions of advertising depending on their needs, opportunities, and expectations. The paper aims to address the difficulty of making advertisements more obvious, alluring, and captivating to consumers. In the modern environment, advertising remains a significant means of sales promotion. The study's specific focus was on how advertising affects women consumers' decisions to buy two-wheelers, with the ultimate objective of reviving marketing and advertising tactics to target a wider market segment. It highlights how advertising affects customers' choices when it comes to branded goods and emphasizes that young consumers, in particular, have a big say in buying decisions.

In 2020, Supriya et al. [47] investigated the consequences of marketing information on consumer buying behaviour within the framework of two-wheeler customers in Belagavi District. With an emphasis on their effect on sales of two-wheeler automobiles, the study tries to ascertain how different advertising messages affect client demographics and the conceptual variables associated with advertising. The study makes use of logistic regression analysis to gain insights into the elements of advertising messaging that have the greatest impact on customer behaviour. Secondary data from pertinent sources is used to supplement the primary data, which was gathered using structured questionnaires from a sample of 572 two-wheeler consumers in the Belagavi District. The study's findings show the importance of developing customer demographic-focused messaging to reach a larger user base and the important contribution that conceptual advertising messaging aspects have to improving the efficiency of the two-wheeler industry.

In 2021, Saravanakumar et al. [48] inspected the significant impact of the Indian automotive industry on the economy of the nation and its phenomenal growth trajectory, focusing in particular on the fiercely competitive two-wheeler market. The study intends to analyze the significant influence of advertising on consumer purchasing behaviour, with a specific focus on the Chennai area, in considering the importance of advertising in influencing and attracting consumers in this sector. The research aims to identify the relationship between these characteristics and their impact on two-wheeler customers' buying motivations, product recognition, and purchasing decisions by using purposive sampling and examining the interaction between demographic factors and advertising elements. In the end, this study advances knowledge of how advertising affects consumer behaviour in the context of marketing two-wheelers and highlights the need for additional in-depth research in this vital and dynamic field of inquiry within the Indian automotive sector.

In 2018, Singh et al. [49] explored how consumer intentions were affected by these attitudes and how celebrity credibility influences them. The study proves that celebrity credibility greatly affects customers' sentiments toward the brand and the advertisement by performing this research with 380 participants and focusing on four key two-wheeler brands in India that have celebrity endorsements. Additionally, it shows how these attitudes influence intentions to buy in a good way. The results confirm the viability and applicability of the celebrity credibility scale in understanding consumer behaviour in the context of celebrity endorsements, offering insightful information to advertisers and marketers in the Indian market. Table 2.10 shows the reviews by various authors about Marketing and Communication Strategies.

In 2018, Dongre et al. [50] conducted a literature review that examines the crucial role that advertising plays in influencing consumer behaviour and purchase decisions, especially in the context of two-wheeler vehicles. This review aims to analyze the trends and the effects of various advertising methods on consumers' purchasing decisions in an increasingly globalized world where advertising is growing as a potent communication tool across numerous media channels. It looks at the effectiveness of advertisements in informing, persuading, and influencing consumers' decision-making when it comes to buying two-wheelers. The article also aims to investigate consumer perceptions of the caliber and efficacy of marketing for two-wheeler items.

Table 2.10 Analysis of Marketing and Communication Strategies

Author Name [Citation]	Aim	Advantages	Drawbacks
Paudel et al. [44]	examined Nepal's growth obstacles, including trade deficits and geographic restrictions.	Offers information on the marketing methods used by Bajaj and Hero Honda motorcycles in Nepal. Talks about the difficulties and goals of selling Hero Honda and Bajaj motorcycles in Nepal. Provides an assessment of the advertising campaigns used by Hero Honda and Bajaj motorcycles in Nepal.	Insufficient in-depth examination of particular marketing tactics There is no evaluation of how well these techniques work to boost sales. Insufficient data on consumer satisfaction and brand awareness. Ignoring the elements affecting Chitwan district customers' preferences.

Chakma et al. [45]	analyzed the two-wheeler market strategy of TVS Motor Company in Bangladesh.	Insufficient in-depth analysis of certain marketing strategies The effectiveness of these strategies for increasing sales has not been evaluated. Inadequate information on brand recognition and consumer satisfaction. Ignoring the variables influencing the choices of Chitwan district clients.	Not enough in-depth examination of specific marketing tactics There has been no evaluation of how well these tactics work to boost sales. Inadequate data on consumer satisfaction and brand recognition. Ignoring the factors impacting customers' decisions in the Chitwan district.
Kumar et al. [46]	examined how advertising affects consumer behaviour, specifically that of women.	Combines voice and video for immediate product prominence and legitimacy. Has an impact on buying decisions, especially when it comes to items like cards, stationery, presents, and cosmetics. Urban youths in India are more likely to purchase things that are advertised on television, and they view TV ads favourably because they think the products live up to their expectations.	High charges, especially during prime hours, could be unaffordable for small firms. Because it relies heavily on audio-visual material, it is less effective at reaching consumers with low literacy rates. Lessened impact and reach due to the fall in traditional television viewership caused by the emergence of digital platforms and streaming services.

Supriya et al. [47]	The purpose of this study is to evaluate how advertising messages affect consumers' purchasing decisions for two-wheelers in the Belagavi District	Understanding how advertisements affect consumers' purchasing decisions enables firms to plan their advertising campaigns and marketing initiatives strategically, perhaps resulting in more effective and focused advertising methods.	the generalizability's limitations. While the study's conclusions are important for the Belagavi District's particular situation, they might not be broadly relevant to various markets or geographic areas. Because consumer behaviour might fluctuate greatly among demographic groups, geographic regions, and cultural contexts, it can be difficult to generalize the study's findings.
Saravanakumar et al. [48]	examined the effect of advertising on consumer behaviour in the two-wheeler market in India.	In Tamil Nadu's two-wheeler business, advertising is essential for influencing and luring customers. raise public awareness and satisfy customer needs. Consumer behaviour is greatly influenced by advertising, which shapes consumers' purchasing and consuming behaviours. investigate the connection between many elements influencing advertising and consumer behaviour	Too many commercials can make consumers jaded or doubtful. Advertising that is misleading or deceptive may mislead or trick consumers. Advertisements may lead to impulsive purchases rather than deliberate ones. They could encourage materialistic ideals or unreasonably high expectations. Consumer groups that are weak or susceptible may be disproportionately impacted by advertising.

Singh et al. [49]	The purpose of this study is to examine how consumer attitudes and purchase intentions are impacted by celebrity endorsement of two-wheeler brands in the Indian market.	Validated in the context of India: Application to situations in the real world Positive attitude and buying intention influence: robustness and applicability Adding cultural components	Discretionary Generalizability celebrity endorsement small sample size Absence of Comparison Analysis Social Desirability Bias That Could Exist
Dongre et al. [50]	This study aims to evaluate the influence of advertising on customers' decision-making while buying two-wheelers, with a particular emphasis on assessing the efficacy of various advertising tactics.	Increases consumer interest and brand exposure. Makes use of artistic and emotive components to draw viewers in. Effective on television, combining peer pressure and families. Expresses the features and quality of the product. Improves brand recognition and identification.	The influence of celebrity endorsements on consumer decisions may not always be significant. Some consumers don't respond to commercials or are unconcerned about them. Consumer preferences might not coincide with advertising priorities. The effects of advertisements could not be the same at every level of the decision-making process.

2.12 Research gap

the existing literature offers valuable perspectives on the influence of the COVID-19 pandemic on consumer behaviour, particularly in the context of feasible consumption, environmental consciousness, and wider economic consequences, there is an apparent gap in research, especially addressing the consequences of the pandemic on customer buying behaviour within the two-wheeler industry [38]. There is a lack of thorough analysis about how these changes have translated into purchases of two-wheeler automobiles, even though existing studies have studied changes in environmental consciousness and social responsibility throughout the pandemic [21]. Additionally, little study has been done that takes into account the regional or national variations in these behavioural adjustments, such as those seen in various countries like India [6].

To address this research gap, this study provides a concentrated and comprehensive evaluation of

how the pandemic has influenced consumer choices within the two-wheeler industry. This study examines the precise variables and forces that have influenced consumer choices both during and after the pandemic, taking into account the changing nature of sustainable consumerism, environmental awareness, and prevailing economic situations. Additionally, the study will look at regional and market-specific differences in consumer behaviour, with an emphasis on markets like India that bring distinct potential and difficulties for the two-wheeler industry. To help stakeholders successfully adapt to the post-pandemic consumer landscape and contribute to sustainable and resilient growth in the two-wheeler industry.

2.13 Summary

The new coronavirus SARS-CoV-2 that triggered the COVID-19 epidemic has permanently altered civilizations, economies, and industries all over the world. Emerging in late 2019, this extraordinary disaster grew quickly, forcing nations to implement severe restrictions like lockdowns, social exclusion, and travel bans to stop its spread. The effects of the pandemic have been widespread, influencing numerous aspects of human life, including how people choose what to buy. The automotive business, particularly the two-wheeler category, has seen notable changes in consumer behaviour. Understanding how COVID-19 will affect consumer purchasing behaviour in the two-wheeler market is crucial because it provides information about how customers' tastes, demands, and expectations will change during and after a worldwide crisis. To ensure their resilience and growth in a post-pandemic environment, businesses can use this knowledge to modify their strategies to match the changing needs of their target audience.

In the literature review chapter, we explored the impact of the COVID-19 pandemic on consumer purchasing habits within the two-wheeler industry. We examined some key elements, such as the apparent shift in mobility preferences toward personal transportation, economic influences like affordability and government incentives, the growth of digitalization and online purchasing channels, elevated safety and hygiene concerns, the expanding significance of environmental considerations favouring eco-friendly options, disruptions in the supply chain, the effects on brand loyalty and trust, financing options, and plenty of other factors. Collectively, all of these factors shed light on how the pandemic had altered consumer preferences and choices about two-wheelers.

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