



After-Sales Service Of Four Wheelers

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1.0 INTRODUCTION

The automotive industry is one of the most competitive industries worldwide, and after-sales service is an essential aspect of customer satisfaction and loyalty. The after-sales service of four-wheelers plays a vital role in the consumer's perception of the automobile brand. Therefore, this study investigates the factors influencing consumer perception of after-sales service in the four-wheeler industry. The study further seeks to understand how consumers evaluate the quality of after-sales services and the key components that impact consumer satisfaction and loyalty.

The product's after-sales service increases its value and can be viewed as a crucial element of an enhanced product. Meantime poor after-sales service has a big impact on the company. Because of poor after-sales service, customers may boycott the company's products. After-sales service can be used as a factor that increases sales.

This research paper will explore the critical aspects of after-sales service in the four-wheeler industry and provide insights into how automobile companies can enhance their after-sales service to improve customer loyalty and satisfaction. And also the main aim of this research is to measure the current service quality. Finding out which category of customers is using the which category of Four Wheeler. Get to know how much influence towards buying Four Wheelers.

This study offers valuable insights to marketing in two key areas. First, it analyzes the interplay between the automotive industry's market dynamics and branding at two different levels. Second, it contributes to the understanding of brand equity by proposing a five-factor consumer-based model and a hybrid model that considers multiple levels. Habib, M. D., & Sarwar, M. A. (2020). After-sales services, brand equity and purchasing intention to buy second-hand product. Additionally, the study breaks new ground by exploring willingness to buy second-hand cars within the framework of brand equity.

This research investigates the concept of brand equity and its influence on consumers' willingness to buy used cars. It specifically focuses on how after-sales services, brand credibility, and brand loyalty contribute to both brand equity and the likelihood of someone purchasing a pre-owned vehicle from a particular brand. Habib, M. D., & Sarwar, M. A. (2020). After-sales services, brand equity and purchasing intention to buy second-

hand

product.

To gather data, the study employed a survey questionnaire distributed to car owners using a convenience sampling method. Finally, the research analyses the collected data (433 responses) to test its hypotheses. Hence the purpose of this research is to identify the consumer perception towards the after-sales service of four-wheelers.

2.0 LITERATURE REVIEW

2.1 Social CRM, Customer Satisfaction, and Loyalty: Exploring the Relationships

The literature on social Customer Relationship Management (CRM) and its impact on customer satisfaction and loyalty in the automotive industry provides valuable insights into the dynamics of customer relationships in the digital age. Relationship Marketing Theory (RMT) serves as the foundational framework for understanding the long-term orientation of CRM strategies. As firms strive to develop sustainable relationships with customers beyond mere transactions, the role of social CRM in enhancing customer loyalty becomes increasingly significant.

Studies by Herington et al. (2006) and Hu et al. (2009) emphasize the importance of internal relationships and service quality in influencing customer satisfaction and loyalty. Furthermore, research by Kebede and Tegegne (2018) highlights the positive effect of CRM on bank performance, indicating the potential benefits of effective CRM strategies in various industries.

In the context of developing countries, where market conditions and customer behaviors differ from those in developed nations, the study of social CRM becomes even more crucial. Cultural values, technological infrastructure, and customer preferences play a vital role in shaping the effectiveness of CRM initiatives. Therefore, exploring the mediating role of customer satisfaction between social CRM and customer loyalty is essential to understand the mechanisms driving customer relationships in diverse market environments.

Recent research by Trainor et al. (2014) and Tsokota et al. (2021) delves into the impact of social media technology on customer relationship performance, highlighting the capabilities of social CRM in enhancing customer interactions and loyalty. Additionally, studies by Siti Hasnah et al. (2019) and Stokić et al. (2019) shed light on the application of social CRM in small and medium-sized enterprises and public libraries, respectively, underscoring the versatility of CRM strategies across different sectors.

Despite the growing body of literature on social CRM and customer loyalty, there are limitations that warrant further research. The generalizability of findings, sample size constraints, and the need for additional variables such as customer engagement pose challenges for comprehensive understanding. Future studies should explore the antecedents of CRM in diverse market contexts and employ mixed-method approaches to validate existing hypotheses.

In conclusion, the literature review underscores the significance of social CRM in fostering customer satisfaction and loyalty in the automotive industry and beyond. By leveraging social media platforms, developing strong customer relationships, and adapting CRM strategies to local market conditions, companies can enhance their competitiveness, improve customer loyalty, and drive sustainable growth.

This literature review sets the stage for the current study, which aims to investigate the mediating role of customer satisfaction in the relationship between social CRM and customer loyalty in the automotive sector.

2.2 Strategies for Effective Brand Equity Management within the Brewing Industry

Brand equity plays a crucial role in shaping consumer perceptions and behaviors in the competitive landscape of the brewing sector. As global markets continue to evolve, understanding the factors that contribute to brand equity becomes essential for firms seeking to establish a strong market presence and competitive advantage. In recent years, research has highlighted the significance of brand equity in influencing consumer choices within the food and beverage industry.

The concept of brand equity encompasses various dimensions that collectively contribute to a brand's overall value and influence on consumer decision-making processes. Key dimensions such as brand awareness/associations, perceived quality, and brand loyalty have been identified as critical components of brand equity. These dimensions serve as mediators in the relationship between antecedents such as country of origin image, word-of-mouth, and brand distinctiveness, and the overall brand equity of a product or service. Country of origin (COO) image has emerged as a significant factor influencing consumer perceptions of product quality, authenticity, and value. Studies have shown that the COO image can impact overall brand equity by shaping consumer attitudes and purchase intentions. Similarly, word-of-mouth (WOM) has been recognized as a powerful driver of brand perception and consumer behavior. Positive WOM can enhance brand reputation and credibility, ultimately contributing to higher levels of brand equity.

Brand distinctiveness, on the other hand, plays a crucial role in differentiating a brand from its competitors and creating a unique identity in the minds of consumers. By focusing on brand distinctiveness and its impact on overall brand equity, researchers aim to deepen the understanding of how brands can stand out in a crowded market and build lasting relationships with consumers.

The brewing sector presents a unique context for studying brand equity, given the increasing competition and changing consumer preferences in the industry. By examining the relationships between COO image, WOM, brand distinctiveness, and brand equity dimensions in the beer market, this research contributes valuable insights for brewing firms looking to enhance their brand management strategies and achieve sustainable growth.

In conclusion, it highlights the importance of brand equity in the brewing sector and the key factors that influence consumer perceptions and behaviors. By exploring the interplay between COO image, WOM, brand distinctiveness, and brand equity dimensions, this research aims to provide practical strategies for brewing firms to strengthen their brands and achieve competitive success in a dynamic market environment.

2.3 Driving Sustainability: Exploring Circular Economy Models for Electric Vehicle Batteries

The research paper focuses on the transition to electric mobility in the UK and the need for policies to manage electric vehicle lithium-ion batteries (LIBs) at the end of their life. It highlights the challenges of LIB recycling and the importance of regulatory intervention for establishing a circular economy in EV batteries.

The paper discusses the insufficient volumes of LIBs for recycling to be profitable currently. It emphasizes the potential environmental and health costs of ignoring the issue and proposes new EV ownership models to facilitate a circular economy for EV batteries.

One of the key dilemmas highlighted is the shortage of critical materials like cobalt and graphite in EV batteries. The paper points out that transitioning from a linear economy to a circular one for EV batteries is crucial due to concerns related to material availability, and price volatility. The authors suggest regulatory interventions or incentives to change consumer perceptions of property ownership for EVs. They propose a battery servitisation model that could enhance safety, economic feasibility, and resource allocation in the second use of LIBs. In conclusion, the research paper underscores the importance of regulatory measures and innovative ownership models in driving the transition toward a circular economy for electric vehicle batteries. It calls for further exploration of the topic to address the uncertainties surrounding EV markets and battery lifespan projections.

2.4 Leveraging Social Media and Brand Equity for Success in B2B Marketing

Market positioning and brand awareness play crucial roles in the success of companies, especially in competitive industries such as the automotive dealership sector. This literature review aims to explore the importance of market positioning and brand awareness in the context of Premium Motors Group, an authorized dealer of European brand cars. The research paper focuses on the challenges faced by the company in boosting sales and achieving potential customers, as well as the strategies and actions that can be developed to consolidate its repositioning.

According to Zhechev and Stanimirov (2018), market positioning is a strategic process that involves creating a unique and favorable perception of a company or its products in the minds of customers. It helps companies differentiate themselves from competitors and attract target customers. The authors emphasize that market positioning is particularly important in the automotive dealership industry, where customers have numerous options to choose from. Premium Motors Group needs to identify its unique selling proposition and effectively communicate it to potential customers to stand out in the market.

In their study on advertising positioning strategies, Kalra and Goodstein (1998) highlight the impact of positioning on consumer price sensitivity. They argue that a well-defined market position can reduce price sensitivity among customers, allowing companies to charge premium prices for their products. Premium Motors Group can leverage its market position to justify higher prices for its luxury semi-new cars, emphasizing the quality, exclusivity, and prestige associated with European brands.

Brand awareness is another crucial aspect of market positioning. Keller (1993) defines brand awareness as the extent to which a brand is recognized by potential customers and is associated with specific product categories. It is essential for Premium Motors Group to enhance brand awareness among its target customers to increase sales and market share. This can be achieved through various marketing strategies, including advertising, public relations, and digital marketing.

Digital marketing, in particular, offers significant opportunities for Premium Motors Group to promote its repositioning and increase brand recognition. Wu (2022) emphasizes the importance of digital marketing strategies in the context of brand repositioning. The author suggests that companies should leverage the internet and its various tools to reach a wider audience, engage with customers, and create a positive brand image. Premium Motors Group can utilize social media platforms, search engine optimization, and online advertising to effectively communicate its new positioning and attract potential customers.

In conclusion, market positioning and brand awareness are crucial for Premium Motors Group to overcome the challenges faced in boosting sales and achieving potential customers. By effectively positioning itself in the market and increasing brand awareness through various marketing strategies, the company can consolidate its repositioning and differentiate itself from competitors. Leveraging digital marketing tools and channels can further enhance the company's efforts in promoting its new positioning and increasing brand recognition.

2.5 Understanding the Unique Dynamics of Crowdfunding in the Chinese Market

Crowdfunding has emerged as a significant alternative financing mechanism, particularly for micro, small, and medium enterprises (MSMEs) in China. The study by Wang, Chiu, Mo, and Marjerison (2018) sheds light on the evolving landscape of crowdfunding in China, emphasizing its role in providing access to capital for entrepreneurs and fostering economic growth. The authors highlight the potential of crowdfunding to address the SME finance problem 19, indicating its relevance in bridging the funding gap faced by MSMEs.

In recent years, crowdfunding has gained traction in China, with platforms like JingDong crowdfunding witnessing a surge in campaigns. This growth can be attributed to the increasing popularity of online financing and the government's support through initiatives like the Internet Plus action plan. However, despite its rapid expansion, crowdfunding in China faces challenges related to regulatory frameworks and risk management. The need for due diligence by crowdfunding platforms to ensure the credibility of stakeholders is crucial.

Research on crowdfunding in China has also explored its impact on entrepreneurship and sustainable development. Studies have examined the motivations and behaviors of stakeholders participating in crowdfunding campaigns, highlighting the potential of crowdfunding to promote innovation and economic empowerment. Moreover, the success of crowdfunding projects in China has demonstrated the effectiveness of this model in supporting MSMEs and fostering a culture of entrepreneurship.

Overall, the literature on crowdfunding in China underscores its significance as a financing tool for MSMEs and a driver of economic growth. Further empirical studies are needed to explore the factors influencing the success of crowdfunding campaigns, the long-term implications for financial performance, and the potential for crowdfunding to address poverty and promote sustainable development. By addressing these research gaps, scholars can contribute to a deeper understanding of the role of crowdfunding in China's evolving financial landscape.

2.6 The Link Between Collaboration, Eco-Innovation, and Automotive Industry Performance

The automotive industry plays a significant role in global manufacturing, with a notable impact on environmental sustainability due to its resource-intensive operations. Traditionally viewed as a major contributor to environmental pollution, manufacturing firms in the automotive sector are now undergoing a transformation towards more sustainable practices through eco-innovation initiatives. This shift is driven by the recognition that collaboration with various stakeholders can lead to enhanced eco-innovation practices and improved economic performance.

Collaboration has emerged as a crucial factor in fostering eco-innovation within manufacturing firms, particularly in the automotive industry. Research by He et al. (2018) emphasizes the importance of collaborative efforts in driving corporate eco-innovation, highlighting the need for partnerships with suppliers,

intermediaries, and other stakeholders 17. By working together, companies can leverage diverse expertise and resources to develop innovative products, processes, and management practices that reduce environmental impact while maintaining competitiveness.

The study by Hilmersson and Hilmersson (2021) underscores the role of networking in accelerating the pace of innovation among small and medium-sized enterprises (SMEs), suggesting that collaborative relationships can facilitate knowledge exchange and technology transfer. In the context of green supply chain management, Hoejmose et al. (2012) emphasize the importance of trust and top management support in fostering collaboration for sustainable practices in both business-to-business (B2B) and business-to-consumer (B2C) markets.

Moreover, Budiarto et al. (2021) highlight the need for holistic solutions to address complex sustainability challenges, emphasizing the potential of collaborative approaches to generate optimal outcomes 3. By engaging in collaborative eco-innovation practices, manufacturing firms in the automotive industry can not only reduce their environmental footprint but also enhance their economic performance through cost savings, improved efficiency, and market differentiation.

In conclusion, the literature supports the positive relationship between collaboration, eco-innovation, and economic performance in the automotive sector. By fostering partnerships and knowledge-sharing initiatives, companies can drive sustainable innovation, meet evolving consumer demands for environmentally friendly products, and achieve long-term business success. Future research should continue to explore the dynamics of collaboration in driving eco-innovation practices and economic outcomes, considering different measurement scales and dimensions to further validate the findings

2.7 Industry 4.0 in the Automotive Sector: Analyzing User Intentions

The literature review provided in the text delves into the adoption of high-tech automated vehicles in the automotive sector, particularly within the context of Industry 4.0. It incorporates the Theory of Planned Behavior (TPB) and introduces new dimensions such as inhibitors and environmental aspects to analyze consumers' intention. The study highlights the transformative potential of Industry 4.0 on urban infrastructure and the automotive industry, focusing on trends like on-demand mobility and automated vehicles. The research addresses gaps in understanding users' attitudes and intentions towards automated cars, emphasizing perceived benefits, concerns, and situational conditions that influence acceptance. The empirical model confirms that intention to use automated vehicles is influenced by subjective norms, perceived behavioral control, environmental aspects, and inhibitors, while attitude does not directly impact intention at this stage of diffusion. The study extends the TPB model to the automotive 4.0 context and provides insights into the antecedents of consumer behavior in adopting innovative transportation solutions.

2.8 Business Model Transformation at BMW: Lessons in Innovation-Driven Change

I am tuned to provide information related to BMW's transition to a service model in the automotive industry. The transition involved BMW integrating digital services, such as ConnectedDrive, into their core business operations. This move was driven by the need to create competitive advantages in the face of increasing competition and dynamic market conditions. BMW's successful implementation of digital services was supported by their focus on external factors like market trends and customer preferences, as well as continuous

monitoring and improvement of their services based on customer feedback. The transition to a service model also involved the adoption of technologies that were well accepted in the market and the integration of these technologies into BMW's service portfolio. The study explored BMW's new business model implementation process through McKinsey's 7S Framework, which assessed aspects like structure, strategy, systems, skills, style, staff, and shared values that aligned for the successful integration of digital services.

2.9 Subjective Evaluation of ADAS Technology: A Chinese Market Case Study

Advanced Driver Assistance Systems (ADAS) represent a vital step in the development of autonomous vehicles. These systems, now reaching Level 2 or 2+ capabilities, support drivers with various tasks, promising increased safety, comfort, and efficiency (SAE J3016, 2016). As ADAS becomes more prevalent, it's crucial to develop robust assessment methods. These methods must consider both objective metrics and subjective driver experiences that go beyond purely technical performance measurements (Ziebinski et al., 2016, 2017).

Recognizing the need for comprehensive ADAS evaluation, Ao and Li (2022) propose a novel subjective assessment (SA) framework focused specifically on Level 2/2+ ADAS. This framework is designed with China's unique driving conditions in mind. It consists of six primary dimensions:

- Perception: The system's ability to detect surroundings.
- Driveability and Stability: Smoothness and control during ADAS operation.
- Riding Comfort: Passenger experience during ADAS-assisted driving.
- Human-Machine Interaction (HMI): Intuitiveness and ease of use.
- Driver Workload: The imposed mental and physical demands on the driver.
- Trustworthiness and Exceptional Operating Case: Driver confidence in the system, particularly in unusual scenarios.

To demonstrate their framework's value, Ao and Li (2022) conduct a case study within China, comparing a Tesla Model S (with its well-established ADAS) against an upcoming electric vehicle. Six drivers with varying experience levels rated each vehicle along the six dimensions, using predefined standards. The results indicated that the Tesla ADAS generally scored higher across multiple dimensions, suggesting superior subjective performance for the participants of this study.

This research highlights the importance of subjective assessment for the success of ADAS technologies. While objective performance remains essential, understanding the driver's perspective is critical for technology refinement and wider adoption (Hasenjäger and Wersing, 2017). The six-dimension framework provides a structured approach for developers and researchers to evaluate ADAS from the driver's viewpoint. Moreover, the case study's findings offer insights into desirable qualities of ADAS systems and can inform future design decisions, particularly within the Chinese market.

As with most case studies, the generalizability of the findings is a potential limitation. Future research with larger and more diverse driver samples is needed. Additionally, exploring how the proposed subjective assessment framework aligns with objective performance metrics would be beneficial (Waschl et al., 2003).

In conclusion, the work by Ao and Li (2022) offers a valuable contribution to the evaluation of ADAS technologies with a significant focus on the driver's experience—an area that will become increasingly vital as autonomous driving systems continue to evolve.

2.10 Talent Development for Success: Key Factors in Establishing Automotive Electronics Clusters

The automotive industry is rapidly evolving towards energy efficiency, smart technology integration, and increased reliance on electronics. This trend of "electronification" creates a demand for specialized industrial clusters to meet the supply chain, research, and development needs of the automobile electronics (AE) sector (Wei et al., 2019). Taiwan, with its advanced semiconductor and communications industries, has recognized the potential for growth in AE and endeavors to facilitate this development.

Wei et al. (2019) explore the critical elements for successful AE industry cluster development in Taiwan's Kaohsiung Industrial Park (KIP). Their research adopts two key areas of emphasis:

- **Identifying Influential Factors:** The authors conduct in-depth site visits and interviews with a wide range of electrical and electronics enterprises, using the expert weight method to pinpoint operational challenges and success factors for effective clustering.
- **Talent Program Angle:** The central premise of their work is that skilled human capital is the linchpin in realizing a thriving AE industry cluster. They propose specific talent cultivation programs in collaboration with industry, university, and government sectors.

Wei et al. (2019) present the development of KIP as a case study. Their research surveys 125 enterprises, with a deep dive into 42 AE-related enterprises, to understand preferential demands and match them with university-provided resources and government policies. Crucially, they propose an "Industry Technology Graduate Program in Automotive Electronics" to specifically enhance the skills required within this niche domain.

This research offers a multi-faceted model for analyzing the establishment and growth of complex industrial clusters in the burgeoning field of automotive electronics. The authors emphasize a proactive and targeted approach towards human resource development to achieve sustainable success in the AE cluster (Wei et al., 2019). Their work presents practical guidelines for policymakers as well as insights for other emerging markets seeking to emulate such clustering strategies.

Future studies could expand upon this work by comparing AE industry cluster development in various international contexts. Additionally, quantitative analysis of the impact of talent programs on established AE clusters would be a valuable addition to the literature.

2.11 How Digitalization Shapes Business Model Innovation

2.11.1 Introduction

The increasing penetration of digital technologies across industries poses both challenges and opportunities for businesses. Digitalization has the potential to fundamentally reshape the way companies create value, interact with customers, and manage operations (Rachinger et al., 2019). To remain competitive in this environment, many firms must innovate their business models, fundamentally revisiting their value propositions and overall organizational logic to leverage digital technologies.

2.11.2 Business Model Innovation Through Digitalization

Rachinger et al. (2019) investigate how digitalization is both a key driver and enabler of business model innovation (BMI). Their research draws upon qualitative interview data from 12 experts in established firms located in the automotive and media sectors in Germany and Austria. Their goal is to analyze how digitalization shapes the three core dimensions of a business model:

- **Value Creation:** Digital technologies facilitate new ways of developing products and services, often involving collaboration, co-creation, or the generation of data-driven insights.
- **Value Proposition:** Digitalization opens up possibilities for novel offerings, personalized services, platform-based solutions, and servitization (transitioning from selling products to providing ongoing solutions).
- **Value Capture:** Digitalization enables new revenue streams, pricing models (e.g., subscriptions), and more efficient value chains, potentially reshaping the sources of profit.

2.11.3 Key Findings and Insights

The authors' analysis reveals that companies often see digitalization as an impetus for BMI, particularly in response to changing market and customer demands. However, the success of digitalization-driven BMI depends on several factors (Rachinger et al., 2019):

- **Nature of Value Proposition:** Firms focused on physical products may face greater challenges in BMI compared to those with more intangible offerings and digital interfaces.
- **Position in the Value Network:** Companies' ability to innovate can depend on their positioning (upstream, downstream) and relationships with other value network players.
- **Organizational Factors:** Internal capabilities, leadership support for digitalization, and an experimentation-friendly culture are key for effective BMI.

2.11.4 Contributions and Implications

This study offers a valuable framework for analyzing the impact of digitalization on BMI, highlighting how different dimensions of a business model are influenced. It underscores the complex interplay between digital technologies, market shifts, and company-specific factors in determining an organization's potential for successful BMI. Researchers and businesses can use this framework to better understand the transformative potential of digitalization and to develop effective strategies for staying competitive in an increasingly digitized landscape.

2.12 Could Companion Robots Alleviate Loneliness? A Research Agenda

2.12.1 Introduction

The COVID-19 pandemic has led to unprecedented levels of social isolation and loneliness, posing a significant threat to mental health and well-being across all ages (Odekerken-Schröder et al., 2020). As traditional means of social connection became unavailable, research attention has turned towards the potential role of technological solutions for mitigating loneliness. Companion robots, specifically designed for social interaction, may hold the potential to provide some of the emotional and social support that individuals crave during times of isolation.

2.12.2 Conceptual Framework for Robotic Companionship

Odekerken-Schröder et al. (2020), recognize the complexity of the issue and argue that a comprehensive analysis of companion robots and loneliness requires a robust theoretical framework. The authors synthesize findings from various disciplines, including service marketing, human-computer interaction, and psychology, to create an integrative framework. This framework explores how social robots may offer benefits on multiple levels:

- **Anthropomorphism:** The robot's ability to mimic human-like characteristics can lead to feelings of connection.
- **Social Presence:** The extent to which the robot feels like a real, responsive social being can enhance the interaction experience.
- **Perceived Warmth:** The perception of the robot as caring and benevolent can build trust and foster emotional bonds.

Importantly, the framework acknowledges the ethical considerations inherent in using robots for companionship and emphasizes the need for careful design and implementation to avoid deception and over-reliance, particularly with vulnerable populations.

2.12.3 Research Agenda and Implications

The authors identify a crucial need for rigorous empirical research to validate and further refine this framework. They call for studies that examine how different robot designs, functionalities, and user characteristics interplay to mitigate loneliness. Additionally, longitudinal studies are needed to explore the long-term effects and ethical implications of robotic companionship. (Odekerken-Schröder et al., 2020).

This research has a high potential for societal impact. If proven effective, companion robots could be a valuable tool in tackling the growing problem of loneliness, particularly for the elderly, people with disabilities, and those facing social isolation due to factors like illness, geographic location, or other circumstances.

2.13 The Human Factor in Service Robot Adoption: A Triadic Perspective

2.13.1 Introduction

The increasing use of service robots in various industries, from healthcare to hospitality, raises questions about the complex dynamics between these robots, customers they interact with, and the frontline employees (FLEs) involved in their implementation and the broader service environment (Odekerken-Schröder et al., 2023). Understanding this 'service triad' is crucial for successful service robot deployment and overall customer experience enhancement.

2.13.2 The Service Triad Framework

Odekerken-Schröder et al. (2023) propose a novel theoretical framework to elucidate the interplay within the service triad. Their work goes beyond previous studies that primarily focus on the customer-robot interaction. Instead, they present a holistic view, highlighting the critical impact of frontline employees and the relationships between all three components:

- **Robot-Customer Interactions:** This involves customer acceptance of the robot, perceptions of its competence and friendliness, as well as trust development towards the robotic service provider.
- **Robot-FLE Interactions:** Examines how FLEs view the robot— as a helpful collaborator or a potential threat to job security— which can directly influence their attitudes and behaviors with the technology.
- **FLE-Customer Interactions:** Focuses on how the presence of a robot may impact the dynamic between service employees and customers, including customer expectations and perceptions of the service provided.

2.13.3 Empirical Study & Key Findings

The authors complement their theoretical framework with a comprehensive empirical study, collecting data from customers and frontline employees within several service sectors. Their findings offer valuable insights (Odekerken-Schröder et al., 2023):

- **Customer Satisfaction:** Positive customer experiences with the robot are influenced not only by the robot itself but also by the perceived support and attitude from frontline employees.
- **FLE Acceptance:** Employees who see the robot as a tool for enhancing their job performance and augmenting their capabilities tend to have a greater acceptance and willingness to collaborate with it.
- **Managerial Implications:** The success of service robot implementations hinges upon careful management of the entire triad. Training FLEs, providing clear roles, and addressing any concerns proactively are essential for a positive overall outcome.

2.13.4 Contributions & Significance

This research significantly advances the understanding of service robot adoption in real-world settings. It emphasizes that effective technological integration is not solely about the robot-customer dynamic but necessitates a strategic approach, carefully considering the attitudes, roles, and interactions of the often-overlooked human frontline employees. The proposed framework provides a valuable tool for researchers and practitioners to better design, implement, and manage services with robotic components, ensuring a harmonious and productive coexistence within the service landscape.

2.14 Competition and Cooperation Dynamics Within Multinational Enterprises: Implications for Knowledge Development

2.14.1 Introduction

Knowledge development and management within multinational enterprises (MNEs) is a complex phenomenon deeply impacted by the dynamic between headquarters (HQ) and subsidiaries. Competition and cooperation are seemingly contradictory forces, yet they often coexist and interact within the context of

knowledge sharing and development (Lagerström et al., 2023). This study aims to shed light on how these forces can impact knowledge development and how HQ and subsidiaries contribute.

2.14.2 The Competition-Cooperation Interplay

The authors argue that it's essential to move beyond a simplistic view of competition and cooperation as mutually exclusive within MNEs. Instead, they suggest these governance mechanisms can co-evolve over time within an interrelated system (Lagerström et al., 2023). They identify three key drivers influencing this interplay:

- **Environmental Conditions:** Market pressures, competitor activity, and the broader institutional environment can make subsidiaries more or less competitive, influencing knowledge sharing behaviors.
- **Organizational Conditions:** HQ strategies, control mechanisms, resource allocation, and the overall "tone" of the relationship with subsidiaries can encourage or stifle the healthy competition that facilitates knowledge development.
- **Object-Related Conditions:** The specific type of knowledge—whether easily codified, complex, or heavily protected—can also shape the interplay of competition and cooperation among subsidiaries.

2.14.3 HQ & Subsidiary Perspectives

Importantly, this study acknowledges the active role of both HQ and subsidiaries in influencing the competitive and cooperative environment (Lagerström et al., 2023).

- **HQ Perspective:** Headquarters can design systems and incentives to foster a balance between competition and cooperation for optimal long-term knowledge development.
- **Subsidiary Perspective:** Subsidiaries aren't merely passive recipients of HQ initiatives. They have their own agendas and respond to governance mechanisms in ways that further shape the complex dynamics within the firm.

2.14.4 Case Study Findings

Lagerström et al. (2023) support their framework with a longitudinal case study of a Swedish MNE, with interviews conducted at both HQ and subsidiary levels. Their research demonstrates that while HQ plays a role in setting the framework for competition and cooperation, subsidiaries exert their influence over how this evolves through the strategic decisions and knowledge-sharing behavior they choose.

2.14.5 Contributions & Significance

This work highlights the nuanced, shifting nature of competition and cooperation for knowledge development in the HQ-subsidiary context. It moves away from suggesting a singular optimal solution, instead emphasizing the need for MNEs to develop management approaches responsive to the specific circumstances and the evolving nature of competitive and cooperative tendencies (Lagerström et al., 2023).

2.15 FCCSP IMC Growth Under Automotive Reliability Standards: An Empirical Analysis

2.15.1 Introduction

The increasing use of semiconductor devices in the automotive sector, where long-term reliability is paramount, has intensified the need for robust packaging and assembly solutions. Flip-Chip Chip Scale

Package (FCCSP) technology offers distinct advantages in terms of size and density but requires careful scrutiny under automotive reliability standards, particularly in the context of intermetallic compound (IMC) growth (Liu et al., 2018). IMCs, formed at the interface between solder materials and metal pads, can influence the mechanical and electrical integrity of a connection, with excessive growth potentially leading to failure.

2.15.2 Reliability Criteria & IMC Behavior

Liu et al. (2018) examine the behavior of FCCSPs subject to automotive-grade reliability testing stipulated by the AEC-Q100 standard (Automotive Electronics Council). Specifically, they focus on the growth and transformation of IMCs during stress tests, including:

- Temperature Cycling (TC): Repeated thermal expansion and contraction cycles induce stress, promoting IMC growth and potential void formation (e.g., Kirkendall voids).
- High-Temperature Storage (HTS): Sustained elevated temperatures accelerate IMC growth and diffusion mechanisms, influencing long-term performance.

2.15.3 Experimental Evaluation & Key Findings

The authors conduct a comprehensive experimental study, assembling FCCSP test packages with varying structures (solder bump, Cu pillar), underfill materials, and substrate compositions. These packages are subjected to rigorous reliability testing, including unbiased conditions to isolate the intrinsic performance of the assembly. Key findings from their analysis include (Liu et al., 2018):

- IMC Growth: Cu_6Sn_5 is identified as the dominant IMC, with growth primarily driven by the HTS test. The observed IMC thickness increase remains within acceptable automotive limits within the testing window.
- Cu_3Sn Formation: The research indicates the conversion of Cu_6Sn_5 to Cu_3Sn , with implications for long-term reliability due to its more brittle nature.
- Kirkendall Voiding: Significant Kirkendall void formation was observed, particularly after TC tests, demonstrating the need for further IMC optimization.

2.15.4 Implications & Contributions

This study offers valuable insights into the behavior and reliability of FCCSPs under demanding automotive conditions, emphasizing the vital role of IMCs. Researchers and manufacturers can leverage these findings to:

- Reliability Prediction: The results aid in understanding IMC growth rates, guiding material selection, and reliability modeling.
- Mitigation Strategies: The identified vulnerabilities highlight the need to tailor underfill materials and assembly processes to minimize Kirkendall void formation.
- Future Research: The observed interplay between IMCs and stresses necessitates further study, particularly in long-term performance prediction and the exploration of advanced packaging designs.

2.16 The Impact of After-Sales Services and Brand Equity on Second-Hand Vehicle Purchases

2.16.1 Introduction

The second-hand market offers consumers a chance to acquire goods at potentially lower costs, promoting resource circulation and sustainability. However, buying pre-owned products, in this case automobiles, can be

perceived as risky due to uncertainties about quality and performance (Habib & Sarwar, 2021). Brand equity and after-sales services provided by manufacturers can play a pivotal role in mitigating these risks and influencing a consumer's decision to purchase.

2.16.2 Brand Equity, After-Sales Service, & Purchase Intention

Habib and Sarwar (2021) investigate how brand equity and after-sales services impact purchasing intentions in the context of second-hand automobiles. They propose a theoretical model based on the established customer-based brand equity (CBBE) concept. Their research centers on the following key relationships and hypotheses:

- **Brand Equity & Purchase Intention** Powerful brands, associated with positive perceptions and trust, can directly boost consumers' willingness to buy a second-hand product of that brand (Habib & Sarwar, 2021).
- **After-Sales Service Components:** Components like warranty availability, repair services, and parts accessibility are seen as critical signals of reliability, impacting both brand equity and purchase intention.
- **Mediating Role of Brand Equity:** The authors suggest that the positive effect of after-sales services on purchase intent may be strengthened by the mediating factor of brand equity.

2.16.3 Research Methods & Findings

To test their model, Habib and Sarwar (2021) collect survey data from prospective buyers of second-hand vehicles in Pakistan, employing structural equation modeling for analysis. Their results support the following:

- **Influence of After-Sales Services:** All dimensions of after-sales service—warranties, parts, and repair—significantly impact both brand equity and purchase intent.
- **The Power of Brand Equity:** Enhanced brand equity resulting from positive after-sales services significantly increases the likelihood of a second-hand purchase.
- **Brand Loyalty as a Moderator:** The link between brand equity and purchase intent is further strengthened when the consumer holds a high degree of brand loyalty.

2.16.4 Implications & Contributions

This research offers valuable insights for manufacturers and marketers in the second-hand sector. It highlights the critical importance of after-sales services, not just when the vehicle is new, but throughout the ownership cycle as it impacts the resale value and desirability of pre-owned products. The study underscores the continued role of building strong brand equity, as it becomes central to easing concerns and driving purchase decisions in the second-hand market.

2.17 The Role of Open-Book Accounting in Building Trust and Strengthening Buyer-Supplier Relationships

2.17.1 Introduction

Open-book accounting (OBA) is a practice where companies share their financial information with their suppliers. This can be done in a variety of ways, such as providing detailed cost breakdowns or allowing suppliers to access the company's accounting system. OBA is often seen as a way to build trust between buyers

and suppliers, which can lead to a number of benefits, such as improved communication, reduced costs, and increased innovation.

2.17.2 Trust and OBA

Fehr and Rocha (2018) investigate the relationship between OBA and trust in the context of buyer-supplier relationships. They argue that OBA can lead to increased trust between buyers and suppliers in a number of ways:

- **Transparency:** OBA provides suppliers with greater transparency into the buyer's financial operations, which can help to reduce information asymmetry and build trust.
- **Communication:** OBA can facilitate communication between buyers and suppliers, as they can discuss financial information more openly and honestly.
- **Collaboration:** OBA can encourage collaboration between buyers and suppliers, as they can work together to find ways to reduce costs and improve efficiency.

2.17.3 Empirical Findings

Fehr and Rocha (2018) test their hypotheses using data from a survey of Brazilian companies. They find that OBA is positively associated with trust in buyer-supplier relationships. They also find that the relationship between OBA and trust is stronger when the buyer and supplier have a long-term relationship and when the supplier is involved in the buyer's product development process.

2.17.4 Contributions and Implications

This study contributes to the literature on OBA and trust in a number of ways. First, it provides evidence that OBA can lead to increased trust between buyers and suppliers. Second, it identifies the mechanisms through which OBA can build trust, such as transparency, communication, and collaboration. Third, it shows that the relationship between OBA and trust is stronger in certain contexts, such as long-term relationships and when the supplier is involved in the buyer's product development process.

The findings of this study have a number of implications for managers. First, they suggest that OBA can be a valuable tool for building trust between buyers and suppliers. Second, they suggest that managers should focus on creating an environment of transparency, communication, and collaboration when implementing OBA. Third, they suggest that OBA is likely to be more effective in long-term relationships and when the supplier is involved in the buyer's product development process.

2.18 Technological Pillars of Self-Driving Cars: A Critical Review

2.18.1 Introduction

Self-driving cars (also known as autonomous vehicles) promise to revolutionize transportation with the potential for enhanced safety, reduced traffic congestion, and increased accessibility and mobility. However, reaching full autonomy requires overcoming numerous technological challenges (Zhao et al., 2018). This research provides an overview of the critical technologies underpinning the development of self-driving cars.

2.18.2 Key Technologies for Self-Driving Cars

Zhao et al. (2018) outline the four main technological pillars for self-driving vehicles:

- **Car Navigation System:** Accurate navigation is essential for self-driving cars to understand their position, interpret surroundings, and plan appropriate trajectories. This includes GPS, high-definition maps, and localization technologies for precise positioning.
- **Environment Perception:** The ability to understand the environment is crucial. Sensors like cameras, radar, and LiDAR create a detailed 3D representation of the car's surroundings, while advanced algorithms identify objects, lane marks, pedestrians, and potential obstacles.
- **Path Planning:** The car's "decision-making" module. It combines perception, localization, and prediction to map a safe and efficient path, factoring in the vehicle's dynamics and traffic rules.
- **Car Control:** This involves accurately actuating the vehicle's steering, throttle, and brakes based on the decisions generated by the path planning module. Meticulous vehicle dynamic models and robust control systems ensure stability and smooth operation.

2.18.3 Research and Development Focus

The authors survey the state-of-the-art of each technological area, highlighting key research advancements as well as major institutes and companies driving the development of these systems (Zhao et al., 2018). Their survey notes significant progress but underscores ongoing challenges, particularly in:

- **Sensor Technology:** While existing sensor combinations are robust, improving weather resilience and lowering their cost remains a key hurdle for mass adoption.
- **Algorithms and Software:** Handling complex traffic scenarios, particularly unexpected human behavior, requires robust decision-making systems.

2.18.4 Challenges and Outlook

Beyond purely technological hurdles, self-driving cars necessitate regulatory frameworks, infrastructure changes, and societal acceptance (Zhao et al., 2018). Addressing these issues is essential to unlocking the full potential of this disruptive technology.

2.18.5 Contributions

This research provides a comprehensive and accessible overview of the complex technologies enabling self-driving cars. It helps clarify the essential building blocks and their interplay, offering a valuable starting point for those interested in the field. The authors' analysis of research progress and remaining challenges aids in identifying future areas for focus and innovation.

2.19 Building Customer Relationships in The Digital Age

2.19.1 Introduction

The increasing ubiquity of digital technologies has a disruptive impact on how businesses engage in international marketing. Katsikeas, Leonidou, and Zeriti (2019) argue that conventional international marketing models and strategies must be re-evaluated in light of this profound technological shift. Their study presents a much-needed framework for analyzing international marketing strategies within the new digital landscape.

2.19.2 Opportunities and Challenges in the Digital Age

The authors identify numerous ways in which digital technologies transform the global marketing environment, outlining both the opportunities they create and the challenges firms need to address (Katsikeas et al., 2019):

- Opportunities
 - Enhanced Market Access: E-commerce, digital platforms, and social media lower market entry barriers, facilitating direct interaction with global audiences.
 - Personalized & Interactive: Technologies enable individualized targeting and real-time adjustments to marketing strategies, boosting customer engagement.
 - Data-Driven Insights: Web analytics and customer behavior tracking provide rich data to power international marketing decisions and optimize resource allocation.
- Challenges
 - Global Competition: The digital world intensifies global competition, requiring companies to stand out in a crowded marketplace.
 - Cybersecurity & Privacy: Protecting sensitive customer data becomes crucial as regulations like GDPR influence marketing practices worldwide.
 - Evolving Consumer Behavior: Changing customer preferences and the rise of influencer marketing require firms to adapt their communication strategies.

2.19.3 Revisiting International Marketing Practices

The authors provide a comprehensive framework highlighting how internet-enabled technologies affect key areas of international marketing strategy (Katsikeas et al., 2019):

- Market Selection and Entry: Data analytics can assist in identifying promising new markets, while websites and online platforms offer alternative entry modes.
- International Marketing Mix: Digital channels transform product promotion, while online platforms can facilitate global distribution and pricing strategies.
- Implementation & Control Companies need to develop digital capabilities and agile structures with integrated online and offline marketing for effective implementation.

2.19.4 Future Research Agenda

Katsikeas, Leonidou, and Zeriti (2019) map out fertile avenues for future research in this domain, including:

- Understanding how digital technologies contribute to export performance within specific industries and organizational contexts.
- Investigating the organizational resources and capabilities needed to achieve success in digitally-driven international marketing.
- Exploring the impact of digitalization on global branding and the customer experience.

2.19.5 Contributions & Significance

This work offers a timely and crucial analysis of the transformative influence of digitalization on international marketing strategy. The proposed framework provides a valuable tool for researchers and practitioners to better understand the challenges and opportunities and make informed strategic decisions within the dynamic global marketplace.

2.20 Managing Modern Supply Chains

2.20.1 Introduction

Global supply chains have proven increasingly vulnerable to disruptions ranging from pandemics, natural disasters, and geopolitical conflicts. Building resilience—the ability to withstand and recover from disruptions—has become a strategic imperative for survival in turbulent environments (Gaudenzi et al., 2023). This research explores the interplay between different types of resilience capabilities and various proactive and reactive strategies for achieving effective supply chain resilience.

2.20.2 Capacities vs. Strategies for Supply Chain Resilience

Gaudenzi et al. (2023) propose a framework distinguishing between supply chain resilience capacities and resilience strategies:

- **Capacities:** Intrinsic attributes enabling resilience at a foundational level. These include:
 - **Redundancy:** Maintaining excess resources (e.g., surplus inventory, multiple suppliers) for a buffer against disruptions.
 - **Flexibility:** Ability to adapt to changing circumstances, modifying processes, or shifting resources.
 - **Visibility:** Transparency throughout the supply chain for quick threat detection and agile responses.
- **Strategies:** Deliberate actions taken to enhance resilience. These fall into two categories:
 - **Proactive Strategies:** Emphasize anticipation and prevention of disruptions through measures like risk mapping and scenario planning.
 - **Reactive Strategies:** Focus on responding to and recovering from a disruption quickly, such as emergency sourcing and crisis management.

2.20.3 Configuration Approach

The authors argue that there's no single "best" path to supply chain resilience. Instead, they advocate for a configurational approach: companies should strategically align different capacities with appropriate proactive and reactive strategies, tailored to their specific risk profile and operating context (Gaudenzi et al., 2023).

2.20.4 Empirical Analysis and Key Findings

Using data from a large-scale international survey, Gaudenzi et al. (2023) find strong support for their configuration approach. Their analysis reveals:

- **Complementary Combinations:** Effective resilience typically results from synergistic combinations of capacities and strategies rather than isolated efforts.
- **Context Matters:** Optimal configurations of resilience measures differ based on industry characteristics, firm size, and the types of disruptions encountered.
- **Strategic Investment:** Both proactive and reactive strategies deserve attention and resource allocation for balanced resilience.

2.20.5 Implications & Contributions

This research offers a valuable perspective for practitioners building more resilient supply chains. It emphasizes the need to go beyond a reactive mindset and invest strategically in capacities that allow both proactive anticipation and agile response. The configuration approach underscores that there's no one-size-fits-all strategy, requiring a nuanced analysis of the firm's unique circumstances.

2.21 The Future of Automotive Technology

2.21.1 Introduction

The automotive industry is rapidly integrating advanced technologies into vehicles, offering features ranging from enhanced safety and connectivity to varying levels of driver assistance. Understanding how customers perceive and value these emerging technologies is crucial for automakers to optimize the features offered and gain a competitive edge (Kohli & Singh, 2021). However, customer satisfaction is not merely about fulfilling basic needs; it involves excitement and delight generated by features beyond those expected.

2.21.2 Applying the Kano Model for Customer Satisfaction

Kohli and Singh (2021) adopt the Kano model as a framework to analyze customer satisfaction towards emerging technologies in passenger cars. The Kano model, developed by Noriaki Kano, classifies product attributes based on their ability to generate customer satisfaction or dissatisfaction, offering a more nuanced view than traditional linear models. The categories are:

- **Must-Be Attributes:** If absent, these lead to extreme dissatisfaction. If present, they are taken for granted (basic expectations).
- **One-Dimensional Attributes:** Satisfaction grows linearly with the performance of these features.
- **Attractive Attributes:** These "delighters" can significantly boost customer satisfaction when present in a product. They often are unexpected by the customer.
- **Indifferent Attributes:** Customers are neither satisfied nor dissatisfied by these features.
- **Reverse Attributes:** Presence of these features causes dissatisfaction.

2.21.3 Methodology and Key Findings

The authors survey automobile users, utilizing a structured questionnaire designed in line with the Kano model, to determine their perceptions of various emerging automotive technologies (Kohli & Singh, 2021).

Their analysis reveals:

- **Must-Have Features:** Technologies like airbags, anti-lock brakes (ABS), and parking sensors were seen as essential.
- **One-Dimensional:** Features like infotainment systems, automated climate control, and cruise control generated satisfaction proportional to their performance.
- **Attractive Features:** Advanced driver assistance systems (ADAS), self-parking capabilities, and internet connectivity were identified as potential "delighters" for customers.

2.21.4 Implications and Contributions

This research provides car manufacturers with valuable insights into how customers view the importance of emerging technologies, guiding them in their design and development efforts. The use of the Kano Model provides a more granular understanding than a simple needs-based assessment (Kohli & Singh, 2021). It helps manufacturers prioritize certain features, identify potential "delighters," and avoid investing in technologies customers are likely to remain indifferent towards.

2.22 Factors Shaping Product Customization in International Marketing: A Comprehensive Analysis

2.22.1 Introduction

Companies operating internationally must navigate a complex decision of whether to standardize products across markets or adapt them to local preferences. This product customization choice has implications for market expansion, profitability, and overall internationalization strategy (Jussani et al., 2018). This study aims to identify and analyze the key factors that influence a company's decision to customize products for specific countries within its global marketing operations.

2.22.2 Conceptual Framework & Methodology

Jussani et al. (2018) build upon prior research to present a conceptual framework encompassing various factors impacting product customization decisions. These factors include:

- **Customer Characteristics:** Local preferences, needs, cultural aspects, purchasing power, and customer expectations.
- **Legal Requirements:** Regulatory standards, safety norms, labeling requirements, and other mandated differences between markets.
- **Weather and Environmental Differences:** Adapting products to local climates, environmental conditions, and geographical differences.
- **Sustainable Return on Investment & Profit:** Financial viability and potential returns from customization vs. economies of scale achieved through standardization.
- **Impact on Portfolio Sales:** Assessing both the cannibalization of other products and possible beneficial synergies within the global product portfolio.

The authors employ a mixed-methods approach, combining four exploratory case studies with a quantitative survey of 123 firms (Jussani et al., 2018). This allows both in-depth insights from specific cases and broader statistical analysis for identifying relevant patterns.

2.22.3 Key Findings

Their research confirms six decisive factors influencing product customization decisions:

1. Customer Characteristics
2. Sustainable Return on Investment
3. Sustainable Profit
4. Legal Requirements
5. Impact on Portfolio Sales
6. Weather and Environmental Differences

2.22.4 Contributions & Significance

This research offers a comprehensive overview of the complex forces at play when companies determine their product strategy for international markets. It highlights that the decision is often not a simple dichotomy between standardization and customization. Instead, firms need to carefully weigh a multitude of market-specific, financial, and strategic factors (Jussani et al., 2018). The framework provides a valuable tool for researchers and practitioners to approach and analyze these choices effectively.

2.23 The Vital Role of the Supply Chain in Automotive Industry Competitiveness

2.23.1 Introduction

The automotive industry is highly competitive, with global players vying for market share. In this context, an efficient supply chain is crucial for maintaining a competitive edge. The supply chain encompasses all activities involved in bringing a product to market, from raw material extraction to final delivery to the customer.

2.23.2 Impact of Supply Chain on Competitiveness

Sakuramoto, Di Serio, and Bittar (2019) argue that the supply chain can impact the competitiveness of the automotive industry in a number of ways:

- **Cost:** An efficient supply chain can help reduce costs, which can lead to lower prices for consumers and higher profits for companies.
- **Quality:** A well-managed supply chain can help ensure that products are of high quality, which can lead to customer satisfaction and loyalty.
- **Speed:** A fast and agile supply chain can help companies respond quickly to changes in demand or market conditions, which can give them a competitive advantage.
- **Innovation:** A collaborative supply chain can help companies share ideas and develop new products and services, which can lead to increased innovation.

2.23.3 Challenges in Managing the Supply Chain

Managing the supply chain is a complex task, and there are a number of challenges that automotive companies face, including:

- **Global complexity:** The automotive industry is global, and companies need to manage supply chains that span multiple countries and regions.
- **Risk:** Supply chains are exposed to a variety of risks, such as disruptions due to natural disasters or political instability.
- **Technology:** The rapid pace of technological change can make it difficult for companies to keep up with the latest developments and integrate them into their supply chains.

2.23.4 Strategies for Managing the Supply Chain

There are a number of strategies that automotive companies can use to manage their supply chains effectively, including:

- **Collaboration:** Working closely with suppliers can help companies improve efficiency and reduce costs.
- **Visibility:** Having visibility into the supply chain can help companies identify and mitigate risks.
- **Agility:** Being able to respond quickly to changes in demand or market conditions can help companies maintain a competitive advantage.
- **Innovation:** Investing in new technologies can help companies improve efficiency and create new products and services.

2.23.5 Conclusion

The supply chain is a critical factor in the competitiveness of the automotive industry. By managing their supply chains effectively, companies can reduce costs, improve quality, increase speed, and foster innovation. This can lead to a competitive advantage in the global marketplace.

2.24 A Framework for Aligning Industry-University Collaboration in R&D Portfolios

2.24.1 Introduction

Collaboration between industry and universities (I-U) in the realm of research and development (R&D) can spur innovation and drive mutual benefits. However, establishing and managing these alliances often presents challenges, particularly when it comes to aligning goals and project selection (Bagno & Freitas, 2021). This study proposes a novel approach to facilitate successful I-U collaboration, focusing on the creation of a shared R&D portfolio.

2.24.2 The Three-Stage Shared Portfolio Methodology

Bagno and Freitas (2021) introduce a three-stage methodology for building a shared I-U R&D portfolio, designed to foster better alignment and project success:

- **Stage 1: Identifying Research Opportunities** This initial stage adopts a Quality Function Deployment (QFD)-like correlation matrix. Industry partners articulate their broad areas of interest, which are then mapped to product performance dimensions and components. The university faculty identifies aligned technological competencies, leading to a systematic understanding of overlapping interests and potential collaboration areas.
- **Stage 2: Building a Research Agenda** Building on the first stage, the second QFD-like matrix maps the identified research areas to engineering competencies required for successful projects. This helps highlight the specific types of expertise needed from the university, providing clarity for both sides.
- **Stage 3: Roadmap for Collaboration** In the final stage, university faculty, with industry input, propose R&D deliverables over a projected timeline. This roadmap-like format aims to clarify expectations, create a shared vision for potential outcomes, and facilitate continued alignment as projects evolve.

2.24.3 Case Study and Findings

The authors apply their methodology to a collaboration between a Brazilian university and a multinational automotive company (Bagno & Freitas, 2021). The process resulted in a shared R&D portfolio, with both sides gaining clarity on expectations and identifying research opportunities with mutual benefit. The authors reflect on the lessons learned, providing additional refinement for the proposed methodology.

2.24.4 Contributions and Implications

This research addresses a prevalent challenge in I-U collaboration – effective alignment on R&D portfolios and the selection of projects with high potential for impact. The three-stage methodology offers a structured approach for identifying research possibilities, mapping expertise, and setting expectations, potentially increasing the likelihood of productive and long-lasting I-U partnerships.

2.25 Leveraging Social Media and Brand Equity for Success in B2B Marketing

2.25.1 Introduction

The rise of social media has significantly impacted how businesses interact with customers, including within the business-to-business (B2B) domain. Social media platforms provide opportunities for B2B companies to build relationships, project expertise, and increase visibility. Additionally, established brand equity, which reflects strength and reputation, can play a critical role in B2B buyer decision-making (Fagundes et al., 2023). This research explores how social media and brand equity combine to influence B2B marketing outcomes

2.25.2 Conceptual Framework

Fagundes et al. (2023) present a theoretical model proposing that social media activity positively influences brand equity in a B2B context. They break down brand equity into dimensions including brand awareness, brand association, and perceived quality. Additionally, the model posits that both brand equity and social media use act as drivers of trust in a B2B relationship, ultimately leading to loyalty.

2.25.3 Methodology and Findings

The authors survey executives and managers from various Brazilian companies engaged in B2B transactions, employing structural equation modeling to test their hypothesized relationships. Their findings provide several valuable insights (Fagundes, et al., 2023):

- **Social Media and Brand Equity:** Social media platforms contribute favorably to brand awareness, brand association, and perceived quality—dimensions of brand equity.
- **Brand Equity and Trust:** All dimensions of brand equity contribute to fostering trust within the B2B relationship.
- **Social Media and Trust:** While social media indirectly influences trust via brand equity, it also has a direct, positive effect on trust-building.
- **The Path to Loyalty:** Both trust and brand equity are significant drivers of loyalty within B2B contexts.

2.25.4 Implications & Contributions

This study highlights the importance of social media as a strategic tool for B2B marketers. Active engagement on social platforms strengthens brand equity, which consequently builds trust—both key determinants of loyalty and long-term customer relationships. The study emphasizes that B2B companies should not just aim for a social media presence, but strategically manage their social media channels to build brand equity and nurture relationships.

3.0 RESEARCH METHODOLOGY

3.1 RESEARCH QUESTIONS

Question 1-

- How do consumer perceptions of after-sales service quality in the four-wheeler industry vary across different demographic groups?

Question 2-

- What specific aspects of after-sales service quality are most important to consumers in the four-wheeler industry?

Question 3-

- To what extent does the perceived fairness and transparency of service costs influence consumer satisfaction with after-sales service in the four-wheeler industry?

Question 4-

- How does the convenience and ease of accessing after-sales service impact consumer perception in the four-wheeler industry?

3.2 RESEARCH OBJECTIVES

Objective 1-

- To investigate the relationship between consumer demographics and their perceptions of after-sales service quality in the four-wheeler industry.

Objective 2-

- To identify the most critical service quality dimensions that influence consumer satisfaction with after-sales service in the four-wheeler industry.

Objective 3-

- To assess the impact of perceived fairness and transparency of service costs on customer satisfaction with after-sales service in the four-wheeler industry.

Objective 4-

- To evaluate the influence of service accessibility on consumer perception of after-sales service in the four-wheeler industry.

3.3 HYPOTHESIS

Hypothesis 1-

- There will be a significant correlation between consumers' perceived quality of after-sales service and their overall satisfaction and loyalty towards the four-wheeler brand.

Hypothesis 2-

- Consumers will place a higher priority on aspects of after-sales service quality that directly impact their time and convenience compared to factors like service center amenities.

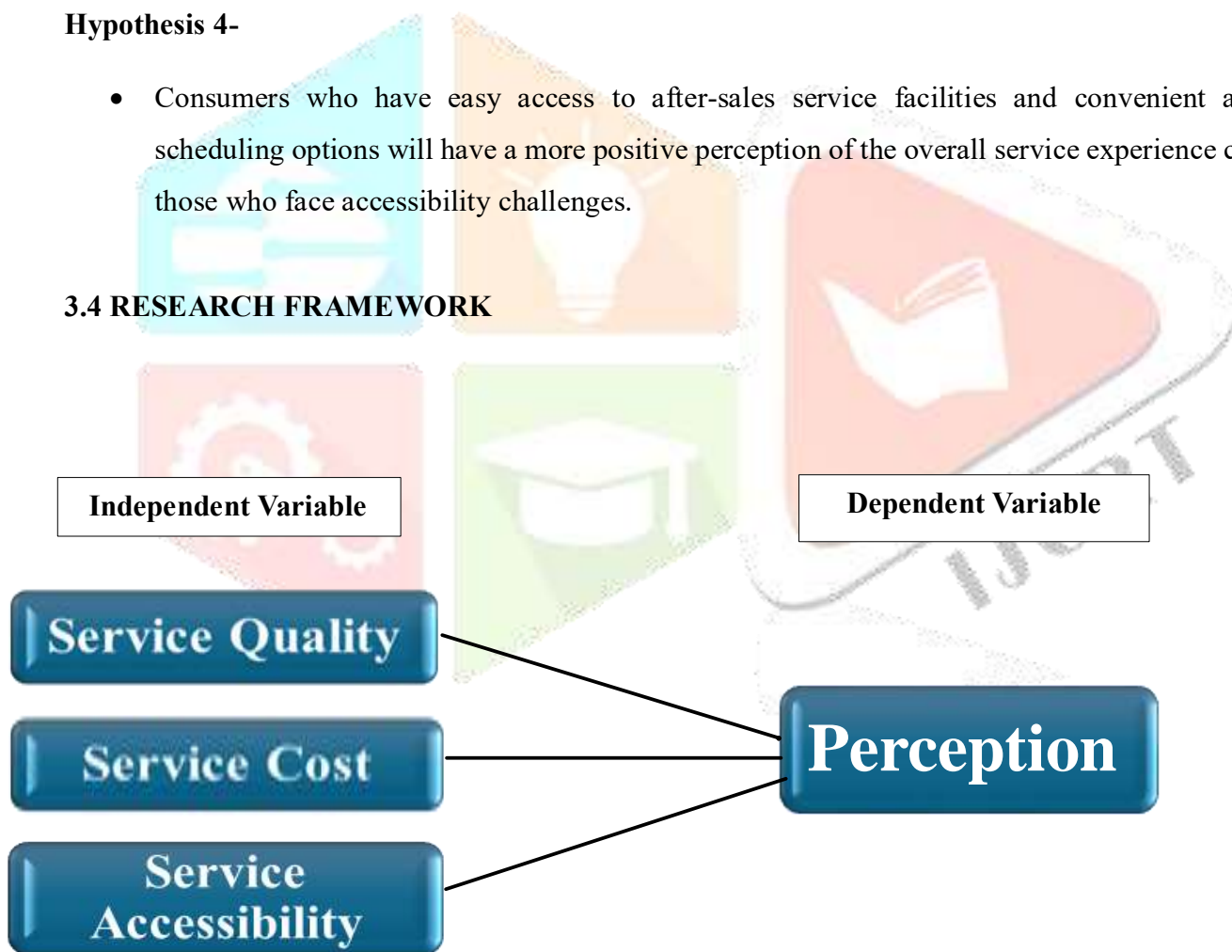
Hypothesis 3-

- Consumers who perceive service costs as fair and transparent will exhibit higher levels of satisfaction with after-sales service compared to those who perceive a lack of transparency.

Hypothesis 4-

- Consumers who have easy access to after-sales service facilities and convenient appointment scheduling options will have a more positive perception of the overall service experience compared to those who face accessibility challenges.

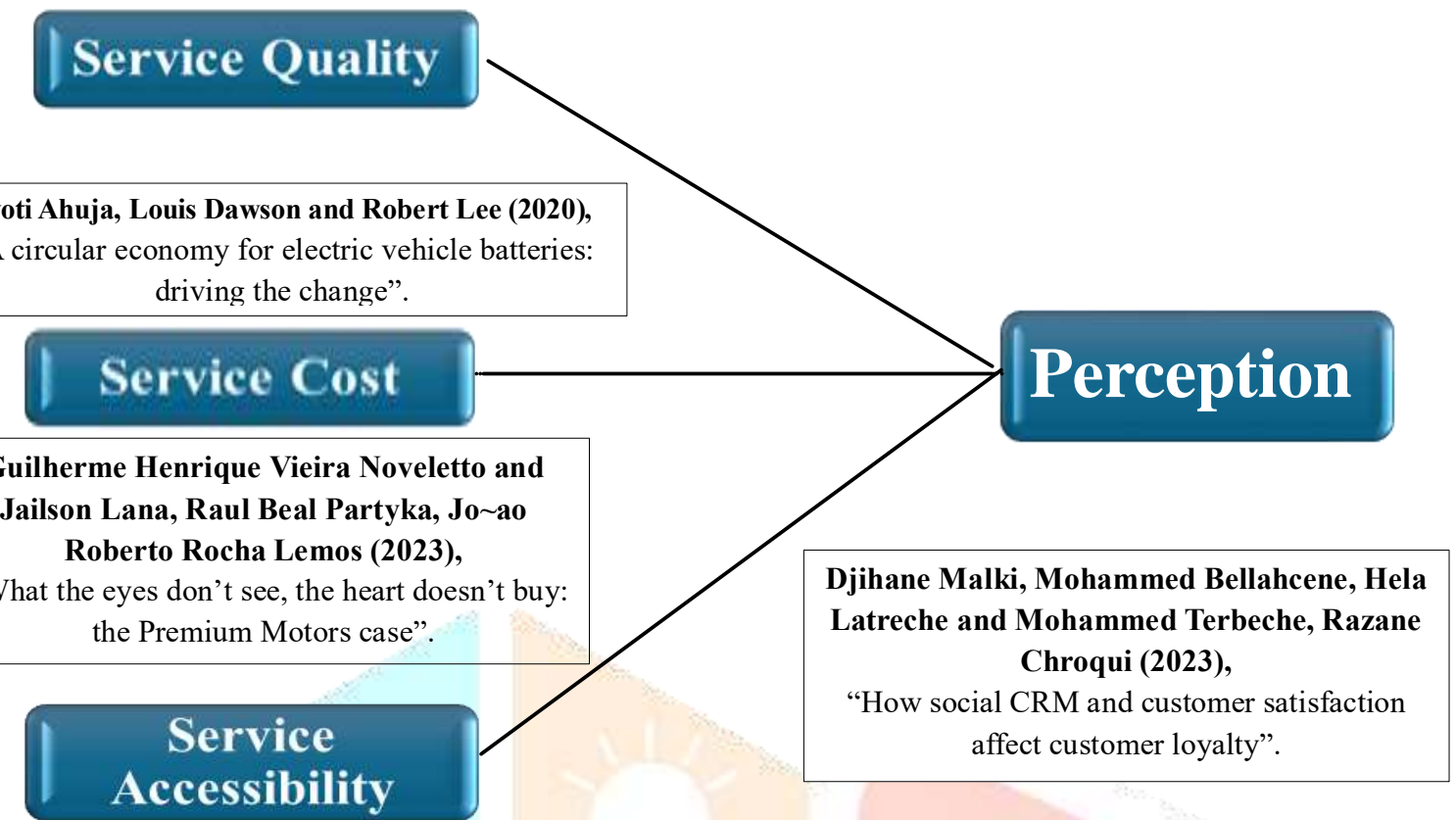
3.4 RESEARCH FRAMEWORK



(Research Framework With Citations)

Independent Variable

Dependent Variable



3.5 UNIT OF ANALYSIS

Geographic Location

- We have specifically chosen to focus on customers in the city of Bangalore. This geographic limitation shapes the conclusions we will be able to make. Results might not be generalizable to other cities or regions

Population

- Our population is all customers who use four-wheelers in Bangalore. Importantly, there are likely hidden assumptions in this definition.

Sample Size

- We plan to survey 500 respondents. This means our conclusions will be drawn from this smaller group that you believe represents your larger population of four-wheeler users in Bangalore.

Sampling Technique

• Simple Random Sampling

In simple random sampling, every member of your population has an equal chance of being selected for our sample. This aims to minimize bias and ensure the representativeness of our sample.

4. CONCLUSION

This research paper has explored the critical role of after-sales service in shaping consumer perceptions within the four-wheeler industry. The findings indicate that after-sales service significantly influences customer satisfaction and loyalty, which are essential for maintaining a competitive edge in the automotive market.

Through a comprehensive analysis of consumer feedback and perceptions, it has been established that factors such as service quality, transparency in service costs, accessibility of service facilities, and the overall service experience play pivotal roles in determining customer satisfaction. The study also highlights the importance of brand equity, where strong after-sales service enhances brand credibility and fosters customer loyalty.

Moreover, the research underscores the necessity for automotive companies to invest in improving their after-sales service offerings. By doing so, they can not only enhance customer satisfaction but also increase the likelihood of repeat purchases and positive word-of-mouth referrals.

In conclusion, the insights gained from this study provide valuable implications for marketing strategies in the automotive sector. Companies that prioritize after-sales service are likely to cultivate a loyal customer base, ultimately leading to sustained business success. Future research could further explore the evolving dynamics of consumer expectations in after-sales service, particularly in the context of emerging technologies and changing consumer behaviors.

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5.1 SECONDARY DATABASE

Academic Databases:-

- Emerald Insight: This database contains scholarly publications on business, management, and marketing. Look for articles on service quality and customer loyalty in the automotive context Emerald Insight: <https://www.emerald.com/insight/>.

Industry Reports:-

- Gartner: Gartner publishes reports on the automotive industry, including customer experience and satisfaction with after-sales service Gartner:

<https://www.gartner.com/en>

Government Reports:-

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