National Research Journal of Banking and Finance Management
Volume No: 12, Issue No: 1, Year: 2025 (January-June)
PP: 114-122
ISSN No: 2349-6762
Peer Reviewed & Refereed Journal (IF: 7.56)
Journal Website www.nrjbfm.in

VIRTUAL REALITY MARKETING STRATEGIES IN AUTOMOTIVE INDUSTRY; LITERATURE REVIEW AND RESEARCH AGENDA

M. Mekala

Vice Principal and Associate Professor, Department of Management, Karuppannan Mariappan College, Muthur

K. Arun Ganessh

Ph.D Research Scholar, Department of Management, Karuppannan Mariappan College, Muthur

ABSTRACT

The integration of Virtual Reality (VR) technology in the automotive industry has transformed marketing strategies by offering immersive and interactive customer experiences. VR enables potential buyers to explore vehicle features, test-drive simulations, and customize models in a virtual environment, significantly influencing purchase decisions. The literature review synthesizes existing research on VR marketing applications in the automotive sector, highlighting key trends, technological advancements, consumer behavior insights, and strategic marketing implications. The review also identifies gaps in current research, particularly in areas such as long-term customer engagement, return on investment (ROI), and cross-cultural effectiveness of VR campaigns. Based on the literature, a future research agenda is proposed, emphasizing interdisciplinary approaches, performance measurement frameworks, and integration of VR with other emerging technologies like AR, AI, and IoT. The article serves as a foundation for scholars and practitioners seeking to understand and optimize VR-driven marketing strategies in the evolving automotive landscape.

Keywords: Virtual Reality (VR), Automotive Marketing, Immersive Technology, Consumer Behavior, Digital Marketing Strategies, Customer Experience, Vehicle Simulation, Technological Innovation, Research Agenda and Literature Review

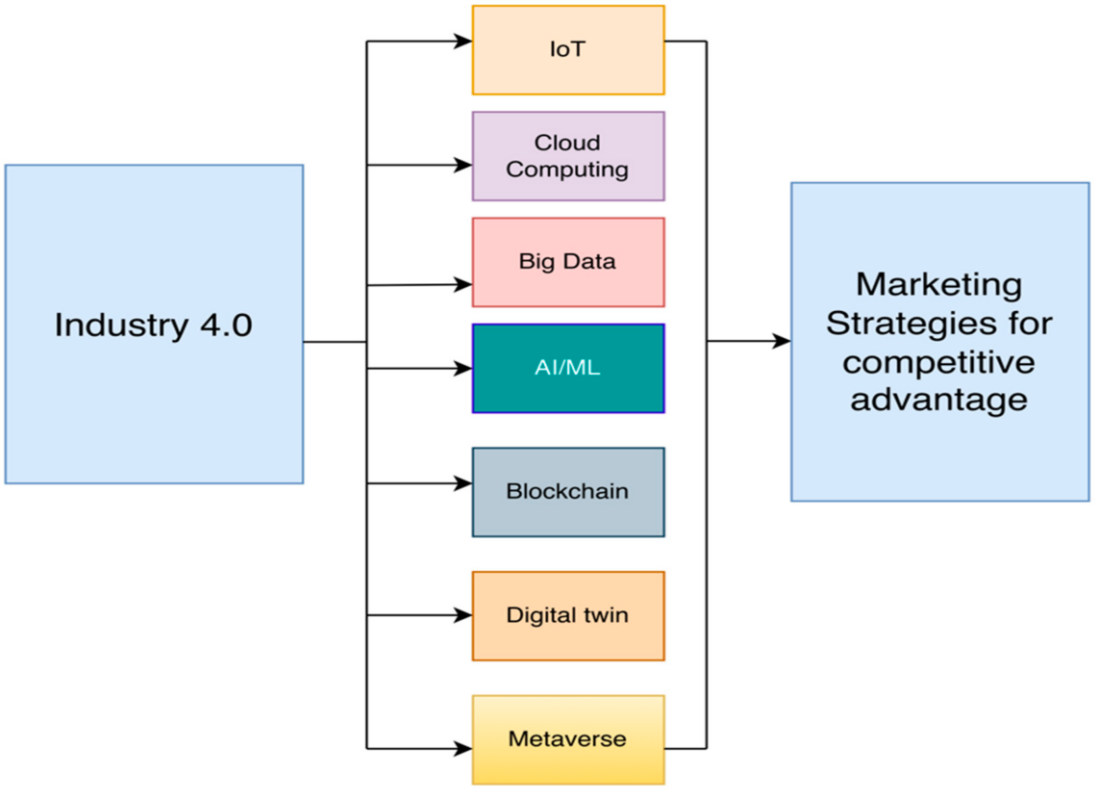
INTRODUCTION

The swift advancement of digital technology has transformed the marketing landscape, with Virtual Reality (VR) emerging as a prominent leader in this transformation. The car industry has notably experienced one of the most effective consequences of VR marketing, offering customers an immersive and participatory experience. Given that automotive acquisitions are high-involvement decisions, buyers need more than conventional advertising; they desire authentic experiences that simulate ownership. Virtual reality technology can fulfil this need by allowing potential buyers to engage in a virtual test drive, explore features, and customise models without visiting a showroom. In a technologically savvy metropolis like Bangalore, characterized by elevated consumer awareness and significant digital engagement, virtual reality in car marketing is gaining traction. Automobile manufacturers are employing virtual reality to differentiate their goods, reduce information asymmetry, and shorten the time

ISSN No: 2349-6762
Peer Reviewed & Refereed Journal (IF: 7.56)
Journal Website www.nrjbfm.in

needed for purchasing decisions. Marketers are revolutionizing the consumer experience with automobile brands with 360-degree virtual vehicle tours, real-time customizing options, and showroom simulations.

Figure: 1



SIGNIFICANCE OF THE RESEARCH

The automotive sector is experiencing a fundamental transformation in its consumer engagement, mostly driven by technical advancements and changing digital tastes. Among these advances, Virtual Reality (VR) has emerged as a transformative marketing instrument that enables brands to provide immersive, experience-driven interactions. It can thereafter serve as a baseline for interpreting regional variations in consumer susceptibility to new technology, hence guiding targeted marketing strategies in urban Indian marketplaces. The study emphasizes the revolutionary potential of VR in automotive marketing and stresses the necessity for data-driven, consumer-centric strategies in implementing these technologies to enhance conversion rates and brand loyalty.

LITERATURE REVIEW AND RESEARCH AGENDA

Singh and Modgil (2023) examined the utilization of lean supply chain strategies and their effects on Indian automobile companies. The article examines the adoption of essential lean methodologies, including Just-In-Time (JIT) and minimization, by juxtaposing survey

ISSN No: 2349-6762
Peer Reviewed & Refereed Journal (IF: 7.56)
Journal Website www.nrjbfm.in

responses with real-world instances from Indian OEMs and Tier 1 suppliers. The findings indicate that while a significant number of companies possess knowledge of lean strategies, their implementation varies due to challenges such as constrained infrastructure capacities, skill deficiencies, resistance to change, and insufficient technology adoption. The effective application of lean concepts yields enhanced operational efficiency, streamlined inventory management, and increased responsiveness to client requests. Support from top management, ongoing worker development, and the implementation of IT systems are identified as the key components of lean organisational transformation. The authors demonstrate via structural equation modelling that lean methods significantly correlate favourably with essential supply chain performance metrics, including cost savings, lead-time reductions, and product quality. The authors advocate for enhanced policy support and collaboration among companies to eliminate barriers to lean adoption and its integration into Indian manufacturing.

Liu et al. (2023) examined the development, characteristics, and automotive uses of magnesium alloy, emphasising its role in the advancement of lightweight vehicle engineering. The authors assert that magnesium's exceptional strength-to-weight ratio, enhanced damping properties, and recyclability render it an optimal material for vehicle light weighting and improved fuel efficiency. A comprehensive discussion of fundamental production methods, including high-pressure die casting, extrusion, and sheet forming, is provided, along with the metallurgical challenges related to corrosion protection, weld ability, and mechanical qualities. The research analyses extensive data from diverse global Original Equipment Manufacturers to delineate certain applications, such as engine blocks, gearbox housings, seat frames and steering wheels. The study examines the economic and regulatory variables that facilitate or hinder the use of magnesium alloys. Furthermore, the article examines contemporary developments in alloy composition and surface finishing processes to enhance material durability and resilience. The utilisation of magnesium in vehicle design can be advanced through process innovation, materials research, reduced lifetime costs, and enhanced collaboration via comprehensive light weighting strategies.

Priarone et al. (2023) investigated the potential of additive manufacturing (AM) to enhance environmental performance in the automobile sector, focusing on material modifications and the redesign of components to optimise weight reduction. The study illustrates multiple scenarios to highlight how technologies such as selective laser melting (SLM) and electron beam melting (EBM) in additive manufacturing (AM) provide efficient material utilization and excellent component performance. The core findings indicate that additive manufacturing yields lighter components while concurrently reducing waste and energy usage compared to traditional methods. The environmental benefits are primarily contingent upon the selection of materials, design methodology, and scale of production activities. The authors assess the trade-offs involved in substituting conventional metals like steel or aluminum with lighter materials, while examining how topology optimization and design for additive manufacturing enhance both efficiency and environmental sustainability concurrently. Employing a life cycle assessment methodology, researchers measure greenhouse gas emissions and resource efficiency, concluding that additive manufacturing significantly mitigates negative environmental impacts associated with car production. The realization of optimal environmental advantages from additive manufacturing requires

ISSN No: 2349-6762
Peer Reviewed & Refereed Journal (IF: 7.56)
Journal Website www.nrjbfm.in

manufacturers to concentrate on systemic integration, supply chain collaboration, and policy endorsement to promote sustainable vehicle design innovation.

Ryu and Do (2023) presented a methodical framework addressing software inventory, licensing, versioning, and supplier collaboration, specifically designed for the automobile sector. The company utilises central repositories and platform-based solutions for software administration to facilitate collaboration with internal and external stakeholders. Identified critical constraints include the absence of standardised SAM processes, fragmented software responsibilities, and ongoing legal ambiguities about intellectual property rights. The authors assert that the implementation of cross-functional monitoring, training, and automation is essential to tackle these difficulties. The proposed technique ensures enhanced tracing and reutilization of source code across several vehicle platforms, as well as cost effectiveness and quality assurance in the production process. According to the report, efficient SAM processes are essential for digitally modernising the automotive sector.

Smania et al. (2023) investigated the response of a subscription-based car model, which offers flexible access, to evolving consumer preferences, especially among urban and younger demographics who priorities access over ownership. The research indicates that digital platforms, telemetric, data analytics, and flexible financing are significant facilitators of this approach, as evidenced by an analysis of leading automakers and mobility providers. The authors assert that the implementation of subscription services enhances environmental sustainability by promoting more efficient fleet operations, improving overall vehicle utilisation, and minimizing lifecycle waste, particularly when paired with electric or hybrid vehicles. Nonetheless, persistent challenges about regulations governing the business, economics, and consumer confidence impede advancement. To attain outcomes, automakers must modify their sales approach, enhance their technological infrastructure, and collaborate closely with mobility solutions and insurance providers. The essay asserts that automobile subscription is crucial in servitized automotive business models, ensuring financial flexibility and ecological accountability as the automotive sector transitions to digitisation and sustainable practices.

Totlani (2023) examined the necessary strategic and operational transformations automotive manufacturers must undertake to effectively transition to electric cars (EVs). The study identifies key variables influencing the adoption of electric vehicles, such as governmental regulations, heightened environmental consciousness, evolving customer preferences, and advancements in battery technology. It asserts that conventional automobile makers must alter their tactics by enhancing electric vehicle product development, implementing modular production, and strategically managing battery logistics. The authors underscore the necessity for strategic coordination among automakers, technologists, innovative startups, and national authorities to ensure sustained and robust advancement and manufacture of electric vehicles. Furthermore, the enhancement of staff skills and organisational agility is essential, since the shift to electric vehicles necessitates a workforce proficient in software, electronics, and sustainability initiatives. The essay also addresses the importance of implementing progressive after-sales service strategies, such as remote diagnostics and predictive maintenance, which are crucial for fostering customer trust in electric vehicles

ISSN No: 2349-6762
Peer Reviewed & Refereed Journal (IF: 7.56)
Journal Website www.nrjbfm.in

(EVs). It is recommended that corporations implement a phased and contextually-aware deployment of electric vehicles, highlighting the necessity to synchronise supply with market preparedness or regulatory demands globally. Ultimately, the research offers a framework for automakers to not only maintain but also disseminate in the ongoing initiative to electrify transportation.

Zhong (2023) delineated how automakers employ social media marketing (SMM) strategies to engage modern consumers and facilitate brand success. The study will examine the transition from traditional advertising techniques to interactive, instantaneous communication facilitated by platforms such as Instagram, YouTube, Facebook, and TikTok. The report indicates that social media platform utilisation enables automakers to customise their strategies, monitor consumer behaviours, and facilitate interactive communication to foster loyalty and brand communities. The report classifies techniques into content marketing, influencer collaborations, real-time customer service, and the promotion of user-generated content, illustrating via industry examples that each enhances outcomes. The data indicates that utilising social media marketing for product introductions, test drive bookings, and consumer feedback processing is more cost-effective than traditional advertising methods. Nonetheless, obstacles like as ensuring brand continuity, adapting to evolving social media algorithms, and managing unfavourable press continue to provide hurdles. Success, as delineated in the article, requires firms to embrace data-driven methodologies, integrate social media content into comprehensive strategies, and prioritise social listening technologies for insight acquisition. The article asserts that SMM has become a crucial tool in the automotive marketing repertoire, enabling businesses to maintain relevance amid the rise of digital consumption.

Brandtner et al. (2022) examined how automotive businesses adopt and execute data-driven digital services. The report illustrates the automotive industry's shift from traditional product-centric methodologies to service-oriented alternatives, including predictive maintenance, in-car entertainment, and a pay-for-services model. Through the investigation of real-world situations and the acquisition of empirical data, the authors identify critical success elements, including the imperative for modern IT infrastructure, the ability for real-time data analysis, user-centric service development, and collaborative alliances beyond the automotive sector. Furthermore, the report underscores that the data flow from connected automobiles provides OEMs with insights into customer behaviour, facilitating the customisation of the end-user experience. The paper addresses data privacy concerns, the integration of legacy systems, and the challenges of overcoming internal resistance to change. The authors anticipate that the convergence of AI, IoT, and 5G technologies will enable the automobile industry to deliver more transformative services and models. The analysis indicates that data-centric products are essential for customer satisfaction, operational efficiency, and the creation of new revenue streams, hence facilitating digital agility in the swiftly changing transportation landscape.

Hussein and Yuniarinto (2022) investigated the influence of brand experience on brand loyalty within the Indonesian automotive sector, highlighting customer pleasure and brand trust as significant mediators. The research categorises brand experience into sensory,

ISSN No: 2349-6762
Peer Reviewed & Refereed Journal (IF: 7.56)
Journal Website www.nrjbfm.in

emotional, cognitive, and behavioural dimensions based on survey responses from Indonesian car owners. Customer pleasure and trust correlated with a favourable brand experience, yielding enhanced customer loyalty. Research indicates that the connection between brand experience and loyalty is indirect, highlighting the importance of customers' assessments of a company's convenience, service quality, and emotional connection. The study's findings are beneficial for car businesses aiming to enhance long-term client retention. The writers advocate for unwavering consistency in branding, immersive consumer experiences, and transparent communication to foster trust. Given the prevalence of brand switching in Indonesia, automobile companies must prioritise the creation of unique experiences to sustain client connections. The research builds upon prior studies to connect brand experiences with loyalty, highlighting broader aspects of customer contact.

Miguel et al. (2022) assessed the correlation between dynamic capabilities and customer satisfaction amid the rapid digital transformation in the automobile sector. The study indicates that dynamic skills, including adaptive management, innovation, and technology integration, empower organisations to swiftly address alterations in client demands and market conditions. Through digitised practices such as connected vehicles, online services, and data analytics, organisations can improve customer happiness and optimise operational operations. Companies possessing substantial dynamic capabilities enhance customer satisfaction by providing personalised, seamless services and minimising the response time to client enquiries. Research indicates that companies implementing digital transformation techniques, including AI and cloud computing, exhibit superior performance in critical customer satisfaction metrics such as convenience, reliability, and perceived value. The report indicates that firms must embrace agility, technological innovation, and ongoing education to maintain market leadership and improve customer connections in the digital age.

Papulová et al. (2022) examined how smart industrial technologies, including robotics, AI, and IoT, are transforming the automobile sector through the revolution of manufacturing processes. The authors utilise case studies to delineate the impact of these technologies on automotive corporations, facilitating increased production, cost reduction, and quality enhancement. It is significant that automation enables manufacturers to monitor operations in real time and implement predictive maintenance, hence reducing downtime and enhancing productivity. They address the necessity for substantial front-end financial investment, the incorporation of a professional workforce, and the risks to data security. The authors note that successful implementation relies on a robust synergy between humans and machines, necessitating workforce development for the management and enhancement of new technologies. The authors underscore that the amalgamation of data and the application of big data analytics are crucial for manufacturers to make educated decisions throughout the production process. The report concludes by evaluating the possibilities of Industry 4.0 within the automotive sector, recommending a measured approach to automation integration to alleviate workforce resistance and facilitate effective change management.

Piromalis and Kantaros (2022) focused on the digital twin phenomena in the automobile sector, emphasising its significance in advancing the integration of physical and digital systems. A digital twin in automotive manufacturing serves as a dynamic virtual

ISSN No: 2349-6762
Peer Reviewed & Refereed Journal (IF: 7.56)
Journal Website www.nrjbfm.in

representation of real-world assets and processes, facilitating the timely tracking, simulation, and optimisation of vehicle performance and production efficiency. The authors contend that digital twins allow manufacturers to oversee every stage of the vehicle's lifecycle, from initial design to ongoing maintenance and use. Automotive businesses utilise digital twins to simulate various scenarios that may lead to breakdowns, thereby optimising their production processes and achieving significant cost savings and enhanced operational efficiency. The essay emphasises the collaboration between traditional manufacturing and contemporary digital solutions, highlighting how digital twins offer a feedback mechanism that enhances both product quality and consumer happiness. Furthermore, it addresses concerns regarding data safety and the obstacles associated with system integration. The article concludes that investment in digital twins is crucial for sustainability, efficiency, and innovative growth, and that such investment can advance the burgeoning subject of mobility.

Balinado et al. (2021) investigated the relationship between service quality and customer satisfaction in automated after-sales service contexts in their 2021 study. The inquiry indicates that service quality, encompassing promptness, reliability, knowledge, and customer service, is a significant determinant of client pleasure and loyalty. The research of responses from car customers who utilised after-sales services, including maintenance, repairs, and warranties, showed a strong correlation between high service quality and customer satisfaction. Fundamentally, customer trust and loyalty are founded on proficient communication abilities, exhibited technical expertise, and a dedication to personalised service, as revealed by study. Moreover, satisfied clients are inclined to generate repeat business and disseminate positive referrals about the service provider. The authors conclude that automakers should prioritise ongoing employee training, the integration of new technology, and the enhancement of service processes to elevate consumer happiness. Automotive after-sales suppliers must focus on offering consistently high-quality service to sustain a competitive advantage in an increasingly customer-centric sector.

CONCLUSION

Virtual Reality (VR) has emerged as a powerful tool in reshaping marketing strategies within the automotive industry, offering immersive and engaging experiences that traditional media cannot match. This literature review highlights how VR is being utilized to enhance customer experience, product visualization, brand interaction, and emotional engagement. While current studies demonstrate the effectiveness of VR in attracting and retaining customers, there is a notable gap in long-term impact assessment, cost-benefit analysis, and consumer behavior across diverse cultural contexts. The findings suggest that VR not only revolutionizes how vehicles are marketed but also offers untapped potential when integrated with complementary technologies like Augmented Reality (AR), Artificial Intelligence (AI), and the Internet of Things (IoT). As the automotive industry moves toward digital transformation, VR-based strategies are likely to become more prominent. Future research must focus on developing measurable performance indicators, understanding psychological impacts, and exploring scalable VR marketing models to fully harness its strategic value.

ISSN No: 2349-6762
Peer Reviewed & Refereed Journal (IF: 7.56)
Journal Website www.nrjbfm.in

REFERENCES

1. Balinado, J.R.; Prasetyo, Y.T.; Young, M.N.; Persada, S.F.; Miraja, B.A.; Redi, A.A.N.P. The effect of service quality on customer satisfaction in an automotive after-sales service. Journal Open Innovation. Technology. Mark. Complex. 2021, 7, 116.
2. Brandtner, P.; Mayrboeck, R.; Zimmermann, R.(2022) Data-Driven Digital Services in the Automotive Industry: Implementation in Practice, Success Factors, and Future Potential. In Proceedings of the 2022 13th International Conference on E-Business, Management and Economics, Beijing, China, 16–18 2022; pp. 185–191
3. Firu, A.C.; Tapîrdea, A.I.; Feier, A.I.; Drăghici, G. Virtual reality in the automotive field in industry 4.0. Mater. Today Proc. 2021, 45, 4177–4182.
4. Guerola-Navarro, V.; Gil-Gomez, H.; Oltra-Badenes, R.; Sendra-García, J. Customer Relationship Management and Its Impact on Innovation: A Literature Review. J. Bus. Res. 2021, 129, 83–87.
5. Hashim, A.M.; Whitfield, T.; Jackson, S.; Effendi, R.A.A.R. (2021),The application of experimental aesthetics to a marketing research method in the automotive industry. In Proceedings of the 2nd International Conference on Management, Economy, Education, Social Science and Technology (METEC2021), Penang, Malaysia, 26–27.
6. Henriques, A.C.; Winkler, I. (2021) The Advancement of Virtual Reality in Automotive Market Research: Challenges and Opportunities. Applied. Science., 11, 11610.
7. Hussein, A.S.; Yuniarinto, A.(2022) The Effect of Brand Experience on Brand Loyalty in Indonesian automotive Industry: The Mediating Role of Customer Satisfaction and Brand Trust. Journal Business. Management. Review. 3, 106–118.
8. Kumar Singh, R.; Modgil, S. (2023) Assessment of lean supply chain practices in Indian automotive industry. Global. Business. Review, 24, 68–105
9. Lang, J.W.; Reber, B.; Aldori, H. How Tesla created advantages in the ev automotive paradigm, through an integrated business model of value capture and value creation. Bus. Management. Stud. Int. J. 2021, 9, 385–404.
10. Liu, B.; Yang, J.; Zhang, X.; Yang, Q.; Zhang, J.; Li, X.(2023) Development and application of magnesium alloy parts for automotive OEMs: A review. Journal Magnes. Alloys 2023, 11, 15–47.
11. Miguel, P.M.D.; De-Pablos-Heredero, C.; Montes, J.L.; García, A. Impact of dynamic capabilities on customer satisfaction through digital transformation in the automotive sector. Sustainability 2022, 14, 4772
12. Papulová, Z.; Gazova, A.; Sufliarsky, Ľ. (2022), Implementation of automation technologies of industry 4.0 in automotive manufacturing companies. Procedia Computer. Science. 200, 1488–1497.

ISSN No: 2349-6762
Peer Reviewed & Refereed Journal (IF: 7.56)
Journal Website www.nrjbfm.in

13. Piromalis, D.; Kantaros, A. Digital twins in the automotive industry: The road toward physical-digital convergence. Appl. Syst. Innovation. 2022, 5, 65.
14. Priarone, P.C.; Catalano, A.R.; Settineri, L. (2023) Additive manufacturing for the automotive industry: On the life-cycle environmental implications of material substitution and light weighting through re-design. Prog. Addit. Manufacturer, 8, 1229–1240
15. Ryu, C.; Do, S. (2023) A Method for Managing Software Assets in the Automotive Industry (Focusing on the Case of Hyundai Motor Company and Parts Makers). Appl. Sci. 13, 4174.
16. Smania, G.S.; Arakaki, I.R.Y.; Oliveira, A.F.; Cauchick-Miguel, P.A.; de Sousa Mendes, G.H.(2023) Car subscription services: Automakers' shift towards servitized and sustainable business models. Sustain. Prod. Consumer. 2023, 36, 184–193
17. Totlani, R. (2023), How automotive firms can better adapt to the shift to electric vehicles. Innovation. Res. Thoughts 9, 42–54
18. Trivedi, J. P., & Kishore, K. (2020). Investigating the factors influencing consumers' purchase intention for electric cars: an emerging market perspective. International Journal of Economics and Business Research, 20(2), 117-137
19. Wells, P., Wang, X., Wang, L., Liu, H., & Orsato, R. (2020). More friends than foes? The impact of automobility-as-a-service on the incumbent automotive industry. Technological Forecasting and Social Change, 154, 119975.
20. Zhong, Y. (2023) Adoption of Social Media Marketing Strategies in Automotive Industry. J. Educ. Humanities. Social. Science., 16, 123–128.