

Structured Abstracts of 'Corporate Decision-Making and Leadership Strategies' session

Explainable AI for Enhanced Decision-Making in Product Development: A systematic literature review

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Background and introduction: The integration of artificial intelligence (AI) in product innovation has the potential to enhance decision-making by providing data-driven insights. However, the lack of transparency in AI decision-making processes often limits its adoption, particularly among cross-functional and non-technical teams. Explainable AI (XAI) has emerged as a critical research area aimed at increasing the interpretability and trustworthiness of AI models.

Objective: This study aims to investigate the current state and state-of-the-art knowledge in the field of explainable AI as a decision support tool within product innovation, with a particular focus on non-technical stakeholders and cross-functional teams. Through the SLR, the research seeks to map the existing body of work, identify key themes, methodologies, and knowledge gaps.

Methodology: A structured research was conducted across three major academic databases: Scopus, ScienceDirect, and Web of Science. The review focused on publications from the last 6 years to capture recent advancements in the field. The initial keyword analysis included over 117 articles, from which relevant studies were selected based on predefined inclusion and exclusion criteria. The final dataset was subjected to analysis to identify emerging trends, gaps, and insights.

Results: The SLR reveals a noticeable increase in interest and research activity surrounding explainable AI, particularly in relation to general decision support systems. A key finding is that, despite its potential value, XAI is still underutilized in product innovation decision-making contexts. Only a small subset of studies addresses how XAI can support interdisciplinary collaboration or enhance the interpretability of design and development recommendations for non-technical users.

Conclusions: The review identifies a critical research gap in applying explainable AI within collaborative product innovation settings. There is a need for more domain-specific investigations that consider the cognitive and communication needs of non-technical stakeholders. Future studies should prioritize different approaches that integrate explainability into the workflows of product innovation teams.

Limitations and future research directions: While the general benefits of XAI are increasingly recognized, the specific application to cross-functional innovation teams remains underdeveloped. Transparency and interpretability are essential for bridging the trust gap between AI systems and human decision-makers, but further research is needed to tailor XAI approaches to the collaborative, dynamic, and interdisciplinary nature of product innovation.

Keywords: Explainable AI, Product Development, Decision Support System, Transparency

Application of Machine Learning in Financial Fraud Detection and Prevention - A Comparative Analysis of Algorithms

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Background and introduction: Detecting fraudulent activities in the financial sector is a critical challenge requiring robust and adaptive approaches. This paper investigates the application of machine learning (ML) algorithms—Logistic Regression, SVM, KNN, Decision Trees and Random Forests—for credit card fraud detection. Utilizing a highly imbalanced dataset, models were evaluated using precision, recall, and F2 score, prioritizing recall to minimize undetected fraud.

Objective: This paper investigates the application of machine learning (ML) algorithms—Logistic Regression, SVM, KNN, Decision Trees and Random Forests—for credit card fraud detection. Utilizing a highly imbalanced dataset, models were evaluated using precision, recall, and F2 score, prioritizing recall to minimize undetected fraud.

Methodology: This paper aims to address these gaps through a comprehensive, comparative analysis of five widely adopted machine learning algorithms—Logistic Regression, Support Vector Machines (SVM), K-Nearest Neighbors (KNN), Decision Trees, and Random Forests—in the context of real-world credit card fraud detection. Using a publicly available, highly imbalanced dataset, the paper evaluates each model based on performance metrics particularly suited to fraud detection scenarios, including recall, precision

Results: Our findings demonstrate that Logistic Regression achieved the highest recall (91%), effectively identifying the majority of fraudulent transactions while maintaining a low false-negative rate. SVM offered balanced performance with a recall of 89%, while Random Forests exhibited superior precision (98%), minimizing false alarms. These results highlight the strengths and trade-offs of ML algorithms in uncovering complex patterns within large-scale financial data, reducing fraud risk when integrated

Conclusions: Logistic Regression, SVM, and Random Forest emerged as the most promising algorithms for credit card fraud detection in this paper. Their relative strengths provide financial institutions with viable options depending on whether recall, precision, or a balance of both is the operational priority. While machine learning does not eliminate fraud, it clearly offers a powerful tool for reducing risk and enhancing financial security when applied with careful data preparation and appropriate evaluation

Limitations and future research directions: Despite improvements, none achieved perfect detection, and some fraudulent transactions were still missed. Additionally, synthetic oversampling introduces limitations related to generalizability and may not fully represent real fraud patterns. Future work should explore more advanced algorithms, such as ensemble learning with hybrid models or deep learning techniques, and focus on real-time deployment and model retraining on continuously updated data.

Keywords: The paper investigates the application of machine learning (ML) algorithms—Logistic Regression, SVM, KNN, Decision Trees and



Symbiosis and Tension Between Profit and Purpose Across European Healthcare Systems

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Background and introduction: European healthcare is grounded in equity and universal access, yet the involvement of for-profit actors varies across systems. Broadly, countries fall into three patterns: Privately-Integrated Systems with significant for-profit roles, mixed-systems with regulated coexistence, and dominant-public systems with limited private involvement. This mix raises questions about competition, complementarity, and system outcomes.

Objective: To objectively review how profit- and purpose-driven healthcare actors coexist across European systems and identify patterns that shape their interaction and influence system performance.

Methodology: A comparative review of selected European countries is conducted, grouped into privately-integrated, mixed, and dominant-public systems based on the scale of for-profit integration. Each group is analyzed through examples of regulatory frameworks, funding models, and public-private interaction to identify structural features influencing collaboration, conflict, and performance.

Results: Privately-Integrated Systems, such as the Netherlands and Switzerland, show stable coexistence where roles and reimbursements are clearly defined. Mixed-systems like France and Austria balance access and flexibility through regulation and public funding. Dominant-public systems such as the UK and Nordic countries show limited integration, yet rely on private capacity in specific areas. Poor regulation across any group tends to increase inefficiencies and inequity.

Conclusions: The coexistence of profit- and purpose-driven actors varies across Privately-Integrated, Mixed-Governed, and Public-Led systems. Where roles are structurally defined and guided by aligned objectives, cooperation leads to improved efficiency and accessibility. The dynamics are not binary but reflect national priorities, institutional maturity, and policy design, shaping how effectively public and private sectors can serve patient-centred outcomes.

Limitations and future research directions: This study is limited by its reliance on secondary sources and broad system-level grouping, which may overlook sub-national variation. Future research should explore in-depth country case studies, longitudinal policy shifts, and emerging areas such as digital health integration and public trust. Stakeholder perspectives could reveal how patients and professionals perceive this evolving public-private landscape.

Keywords: public-private healthcare, for-profit actors, non-profit systems, health policy, service delivery



Artificial Intelligence and Digital Twin Technology for Cardiac Surgery Decision Support

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Background and introduction: Cardiovascular disease remains the leading cause of death, demanding precise, data-driven decision-making. This study examines the development, application, and commercialization of an agentic AI-powered Clinical Decision Support System (CDSS) for cardiac surgical care, developed by health tech startup Dr. Data, Inc. The aim of the proprietary Digital Twin agent is to more precisely predict post-operative outcomes.

Objective: The objective is to develop a scalable, secure, and commercially viable software-as-a-service (SaaS) business model. The agentic AI-powered CDSS supports decision making for cardiac surgery patients by predicting risks of each surgery type, matching patients to digital twins with the best survival probability, while also reducing clinician documentation burden, and optimizing hospital workflows through a personalized, on-premise AI system using real-world data.

Methodology: Technical development incorporated quantitative data from two cardiovascular registries and real-world data from a European academic hospital. Market readiness was assessed via 14 stakeholder interviews and surveys, including clinicians, administrators, and IT leaders. Business development by in-house business developers and collaboration with two university start-up accelerator programs support intellectual property submissions, market analytics, and analysis of commercialization potential.

Results: Technical development involved over 70,000 patients for model training and application development. The application's 4 AI agents are powered by large language models and custom ML algorithms, including a radiology interpretation agent, a Digital Twin agent, and a clinical guidelines agent. Results were presented at two scientific conferences and the manuscript is under review. A business model, including revenue projections, market analysis, and intellectual property analysis were completed.

Conclusions: Dr. Data's agentic AI CDSS reduces variability in cardiovascular surgical decision-making by combining AI tools for automatic radiology reports, Digital Twin simulations, and guideline-based recommendations. It enhances clinical efficiency and decision accuracy, with strong support from pilot users. The findings confirm the system's practical value and commercial viability, highlighting the transformative potential of AI-driven tools in complex medical workflows.

Limitations and future research directions: Limitations include data heterogeneity, limited availability of annotated datasets, and evolving regulations, which may impact model validation and deployment. Future research should focus on data standardization, expanding multi-institutional datasets, and aligning AI model development with regulatory frameworks to enhance scalability, clinical reliability, and long-term adoption.

Keywords: Artificial Intelligence, Digital Twin, Machine Learning, Decision Support, Cardiology



From Well-Trodden Paths to Uncharted Needs Pharma's Response to Rare Diseases

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Background and introduction: Rare diseases, while individually uncommon, comprise over one-third of people suffering from all diseases. Historically sidelined due to limited economic return, they are now prompting a shift in pharmaceutical strategy, catalyzed by lessons from recent health crises such as COVID-19 a battle on steroids against a disease that showcased the power of rapid, adaptive innovation.

Objective: Most large pharma firms now have a significant portion of their pipelines dedicated to rare diseases, with 50–65% or even two-thirds of their R&D portfolios targeting rare conditions. This article analyses how classic and new pharma (traditionally distinct in methods, scale, and pace) can evolve synergistically. It aims to clarify their boundaries and overlaps while exploring how hybrid models could advance rare disease treatment.

Methodology: Using literature review, case analysis, and comparative tables, the study contrasts the reliability and scale of classic pharma with the precision and agility of new pharma. It highlights how regulatory models, development timelines, and innovation dynamics intersect across both.

Results: Preliminary findings show that classic and new pharma differ across key dimensions, such as scientific approach, business models, regulatory behavior, and societal focus. This article will present these differences in a structured, dichotomic format to clarify strengths and tensions. This comparison suggests that, rather than competing, the two models are converging. Their integration forms hybrid strategies that blend reliability with agility, enabling more effective innovation in rare disease.

Conclusions: The interplay between classic and new pharma has the potential to reshape rare disease treatment. Their complementarity enables a more inclusive, urgent, and effective development ecosystem, moving from rigid pathways to adaptive precision.

Limitations and future research directions: Further empirical validation is needed, particularly across low-resource settings. Future work should assess hybrid models, policy levers, and patient-centered impact over time.

Keywords: rare diseases, classic pharma, new pharma, hybrid models, drug development, therapeutic innovation, regulatory strategy



AI in Market Research as a Mirror and a Moulder of Public Opinion and Organisational Strategy

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Background and introduction: Marketing companies have long shaped markets by blending branding, strategy and innovation support. Market research, which is central to marketing, uses varied methods to understand public sentiment. As AI absorbs these methods, the line between the marketing company and the algorithm blurs. With AI guiding innovation and shaping perception, core marketing services risk becoming a commodity. Marketing may be swallowed by AI itself.

Objective: This study investigates how AI is overtaking traditional market research methods and altering the strategic role of marketing. It aims to understand how AI shifts marketing from persuasion to public conditioning and the implications this holds for innovation leadership and democratic discourse.

Methodology: The study combines analysis of AI-native research technologies with scenario-based stakeholder modelling. It examines how AI tools influence insight generation, public shaping and strategic control.

Results: AI-driven tools are increasingly displacing traditional market research practices by delivering continuous, context-aware insights. Behavioural simulations allow organisations to model consumer responses and explore adoption scenarios without live panels. These emerging capabilities suggest that market research is evolving from reactive data collection towards dynamic systems that observe and influence preferences, with implications for internal teams and external service providers.

Conclusions: Beyond transforming marketing, AI is redefining what marketing is and blurring the line between persuasion and manipulation. As AI systems guide innovation and shape public thought, marketing's identity evolves into continuous behavioural influence. The outcome is not fixed; it will depend on how societies choose to integrate, govern and critically scrutinise these emerging forms of automated persuasion.

Limitations and future research directions: This study offers conceptual insights and anticipates strategic shifts. Further empirical research is needed to track AI's long-term impact on public opinion, innovation cycles and ethical boundaries. Special attention is needed on how AI tools are governed to avoid manipulation and cognitive commodification.

Keywords: AI in marketing, market research automation, innovation strategy, simulated behaviour, public opinion, ethical risk



Steering through Competence Disruption while the Mobility Game Rewrites Its Own Rules

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Background and introduction: The automotive world is no longer what it used to be. AI, cybersecurity, digital twins and societal demands twist the rules of the game, reshaping skills, business models and power balances. Startups breach old walls, OEMs face new rivals and trust-centred design rewires user expectations. Competence and leadership must evolve or risk irrelevance.

Objective: This paper offers a strategic guide to help leaders steer through competence disruption. It explores how technological shifts, societal expectations and agile new entrants reshape sector structures, guiding executives in realigning strategy, workforce development and dynamic partnerships.

Methodology: A conceptual synthesis connects technology trends, organisational shifts, Social Sciences and Humanities (SSH) integration and entrepreneurial dynamics. It uncovers competence transitions, partnership models, leadership challenges and trust-building practices vital for survival in a rapidly transforming mobility landscape.

Results: New entrants weaponise digital platforms, AI and trust-based services, confronting established players. Skills blend technical, ethical and societal domains. Leadership agility, cross-sector cooperation and user-driven innovation become non-negotiable ingredients for sustainable competitiveness at every level.

Conclusions: To stay in the game, leaders must realign competencies with shifting rules. This means embedding SSH in design, fostering trust, forging adaptive partnerships and adopting flexible, knowledge-based strategies that evolve with both technology and society.

Limitations and future research directions: Empirical work should validate these pathways across diverse contexts. Future studies may explore how competence-sharing, trust mechanisms and ecosystem-level partnerships unfold between OEMs, SMEs and new mobility actors in real-world disruptions.

Keywords: Automotive skills evolution, AI, cybersecurity, mobility services, trust, business strategy, startups, servitisation



Women Entrepreneurs Driving Cyber-Physical Innovation

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Background and introduction: Women remain underrepresented in Europe's deep tech and Cyber-Physical Systems (CPS) startups, especially in leadership roles. Despite policies and funding, gender gaps persist due to structural, financial, and cultural barriers that limit women's participation and entrepreneurial engagement.

Objective: This study investigates how cascade funding mechanisms like DigiFed influence female participation in technical entrepreneurship and identifies supportive measures to mitigate risk aversion and increase engagement in cooperative projects.

Methodology: We analyse gender participation trends using quantitative and qualitative data collected across three DigiFed open calls conducted in 2020 and 2021, focusing on female leadership within cascade-funded CPS-focused projects. Our methodology includes tracking of application metrics, funding outcomes and implementation roles, complemented by insights from gender integration workshops and structured project monitoring.

Results: Results show that female involvement gradually increases, particularly in collaborative (Twin) projects, suggesting a link between cooperation and engagement. However, the proportion of women-led applications remains low. A consistent pattern of risk aversion and preference for partnership emerges, influencing proposal quality and participation behaviour.

Conclusions: Cascade funding encourages women's participation when fostering early cooperation. Extended application timelines and collaborative formats help mitigate risk concerns. However, increased proposal quality did not clearly translate into stronger implementation performance.

Limitations and future research directions: Findings are limited by sample size and project scope. Future research should explore earlier career interventions, structural funding reforms, and longitudinal impacts of cooperation-focused funding on gender balance in technical innovation ecosystems.

Keywords: cascade funding, gender balance, startups, women entrepreneurs



Copilots in Safety-Critical Engineering: Responsible Use of Large Language Models in Embedded System Development

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Background and introduction: Large Language Models (LLMs) are being explored to assist engineers in the development of safety-critical embedded systems. While these AI models offer significant potential for improving productivity and knowledge access, their use introduces risks such as hallucination, context loss, and misinterpretation, especially when applied to safety-relevant decisions governed by standards like ISO 26262 or IEC 61508. This paper explores how to responsibly integrate LLMs into such workflows.

Objective: The goal of this work is to define structured concepts and design guidelines for safely using LLMs as copilots in the development of safety-critical embedded systems. Specifically, we aim to support engineers working on tasks like requirements engineering, hazard analysis, standards interpretation, and documentation generation, while ensuring human oversight and compliance with safety assurance norms remain central to the process.

Methodology: We analyse representative engineering tasks within the development of safety-critical systems, identifying opportunities and risks associated with LLM use in each. We use the development of an electric steering column lock (ESCL) as a running automotive example. Based on engineering experience, scenario walkthroughs, and task analysis, we develop a usage framework, risk classification model, and mitigation strategies including context injection, output validation, and role partitioning.

Results: We present a conceptual framework for LLM integration in safety-critical engineering. The engineering use cases—ranging from requirements authoring to hazard analysis—are supported with domain-specific prompting strategies and review practices. We define boundaries for acceptable use, illustrate outputs via the ESCL example, and highlight how general-purpose and fine-tuned models differ in terms of reliability, control, and deployment safety.

Conclusions: LLMs can enhance engineering productivity, traceability, and onboarding in safety-critical embedded systems development if used within structured, human-in-the-loop workflows. Our guidance framework enables responsible integration of LLMs as copilots without undermining accountability, assurance, or standard compliance. We advocate for domain-specific validation, reviewable outputs, and careful trust boundaries to maximize benefit while minimizing misuse.

Limitations and future research directions: This study is conceptual and based on expert reasoning and example scenarios. It does not include empirical usability studies, longitudinal team adoption insights, or performance benchmarking of different LLM types. Future work will focus on in-situ evaluation of engineering teams, integration with traceability and certification tools, domain-specific fine-tuning, and educational frameworks for AI-augmented safety engineering.

Keywords: LLM, Copilot, Safety-Critical System Development, AI-Assisted Development



Tourism, GDP, and Social Outcomes: Strategic Insights for Transatlantic and Pacific-Basin Promotional Marketing

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Background and introduction: The year 2025 marks a critical juncture for global tourism and economic policy, particularly in the Pacific Basin. In the United States, inbound tourism has declined sharply. New York City alone is expected to lose 2 million international visitors, resulting in a projected \$4 billion loss in tourism, visa delays, trade barriers, and threats to economic stability. Meanwhile, Europe continues to experience growth in tourism demand, albeit with rising concerns over overtourism and sustainability.

Objective: This paper addresses these questions by constructing a structural equation model (SEM) that captures the causal relationships between GDP per capita, tourism, and key social outcomes. We simulate the effects of economic variables on regional payoffs for America, Europe, and Pacific-Basin economies, and test five hypotheses grounded in economic theory and supported by Nobel Laureates: Becker, Krugman, Deaton, Sims, and Heckman.

Methodology: We employ a log-linear SEM framework to estimate the direct and indirect effects of GDP per capita and tourism on regional welfare outcomes using panel data from 85 countries spanning 1995 – 2023. The sample comprises a diverse range of economies from all continents, incorporating variables such as Tourism, GDP per capita, HALE, GHS, Crime, and Employment.

Results: Europe and Pacific-Basin economies benefit from increased tourism and GDP, experiencing reductions in crime and improvements in health-adjusted life expectancy (HALE). The United States, in contrast, shows diminishing welfare returns and a slight rise in unemployment, despite economic growth, supporting the five Nobel-backed hypotheses: Becker, Krugman, Deaton, Sims, and Heckman.

Conclusions: These results validate the five theoretical Nobel Laureates and underscore the importance of region-specific economic and promotional strategies.

- Tourism promotion must be integrated with the labor market and health policy
- Economic growth should be aligned with social equity and resilience goals
- One-size-fits-all strategies are ineffective in a region marked by economic diversity and institutional variation.

Limitations and future research directions: Future research should explore dynamic extensions of the model, incorporate climate and migration variables, and test for nonlinearities in the growth-welfare relationship. Policymakers are encouraged to adopt region-specific strategies that balance economic expansion with social equity and labor market resilience.

Keywords: Tourism Finance, Regional Development, Structural Equation Modeling (SEM), Crime and Unemployment, Pacific-Basin Economies