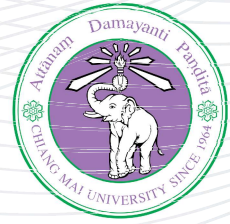




# ABSTRACTS BOOK



# DIFT 2026-1

Digital Innovation and Financial  
Technology Conference  
(2026-1)

Regulating the Revolution:  
Digital Asset Business 2026

6th June 2026



INFORMATION



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CMU International College  
of Digital Innovation



# **Abstracts of the DIFT 2026-1 Conference Digital Innovation and Financial Technology**

**Theme:**

Regulating the Revolution: Digital Asset Business 2026

**Date:**

6<sup>th</sup> June 2026

**Location:**

International College of Digital Innovation  
Chiang Mai University  
Chiang Mai, Thailand

**Editor:**

International College of Digital Innovation  
Chiang Mai University

**Published by:**

International College of Digital Innovation  
Chiang Mai University  
Chiang Mai, Thailand

## **PREFACE**

This abstract booklet compiles the abstracts of the scholarly papers presented at the DIFT 2026-1 Conference, proudly organized by the International College of Digital Innovation, Chiang Mai University. The conference takes place at the International College of Digital Innovation Building in Chiang Mai, Thailand, on 6 June 2026.

The primary objective of this conference is to provide a premier interdisciplinary platform for policymakers, researchers, and industry professionals to exchange innovative ideas, share empirical experiences, and foster meaningful academic discourse. Academic innovators, industry leaders, research institutions, R&D enterprises, and governmental organizations are brought together to collaborate on a diverse range of topics pivotal to digital innovation, financial technology, and policy development. While the core themes center on policy formulation and digital transformation, the conference actively embraces contributions from emerging and interrelated fields.

All submitted abstracts have undergone a rigorous peer-review process managed by the DIFT 2026-1 Scientific Committee to ensure the highest standards of content and presentation quality. Detailed information regarding the conference agenda and activities can be accessed at: [urlhttps://icdi.cmu.ac.th/DIFT/2026-1/](https://icdi.cmu.ac.th/DIFT/2026-1/)

We would like to extend our profound gratitude to all committee members, reviewers, and contributors for their invaluable dedication. We wish all participants a highly successful, intellectually stimulating, and engaging experience at DIFT 2026-1.

DIFT 2026-1 Organizer  
15 June 2026

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# CONFERENCE SCHEDULE

DIFT2026-1

Regulating the Revolution: Digital Asset Business 2026

6 June 2026, 08:00-15:00

International College of Digital Innovation Building, Chiang Mai University

**Chairman:** Asst. Prof. Dr. Autcharyapanitkul, Kittawit

**Co-chair 1:** Asst. Prof. Dr. Ahmad Yahya Dawod (All-day session)

**Co-chair 2:** Asst. Prof. Dr. Piyachat Udomwong (Morning session)

**Co-chair 2:** Asst. Prof. Dr. Seamus Lyons (Afternoon session)

Room: ICB 1102 [Zoom ID: 872909 2671, Passcode: 2671]	
08:00-08:45	Registration
08:45-09:00	Report Speech Report Speech by Asst. Prof. Dr. Rujira Ouncharoen Dean of International College of Digital Innovation
09:00-10:00	Keynote Talk "Digital Assets Business Under Thai Laws" Thitiwat Wasarath Chief Legal Compliance and Risk Officer, Gulf Binance Co., Ltd.
10.30-10.50	The Evolution of Governance Discourse in Uniswap DAO By Using BERTopic (Miao Peng)
10.50-11.10	Automated Transaction Risk Scoring in Cryptocurrency Exchanges with a KYT Model for FATF Compliance (Xuan He)
11.10-11.30	Leakage-Controlled and Stability-Aware Motif-Derived Structural Features for Blockchain Transaction Graph Anomaly Detection (Tong Yang)
11.30-11.50	Digital Transformation for Sustainable Development: Examining the Effects of ICT Infrastructure on Socioeconomic Outcomes in Thailand (Phatteera Phengphit)
11.50-13.00	Lunch Break
13.00-13.20	Bitcoin-to-U.S.-Sector Volatility Spillovers: A TVP-VAR Connectedness Framework with Endogenous ChangePoint Detection (Waewwan La-onsri)
13.20-13.40	Beyond Lexical Analysis: The Meme Receptance Model for Understanding Visual Rhetoric and Social Utility (Linhai Zhang)
13.40-14.00	A Hybrid Imputation Neural Network for Electric Vehicle Time Series Data with Climate-Aging Conditioning and Its Application to Energy Consumption Prediction (Jie Niu)

**Chairman:** Dr. Watcharin Sarachai

**Co-chair 1:** Dr. Parot Ratnapinda (All-day session)

**Co-chair 2:** Assoc. Prof. Dr. Thacha Lawanna (Morning session)

**Co-chair 2:** Dr. Michael John Harris (Afternoon session)

Room: ICB 1210 [Zoom ID: 872909 2671, Passcode: 2671]	
10.30-10.50	Teacher Shortages and improving Education Quality in the ASEAN Using Digital Education Platforms (Hong Fang Jiang)
10.50-11.10	Traceability in the Tea Supply Chain Based on Blockchain Technology (Su Jue Jiao)
11.10-11.30	An Exploratory Study of Factors Influencing Consumer Purchasing Behavior Toward IoT Smart-Home Devices in China (Chen Guosheng)
11.30-11.50	Multi-Objective Optimisation for Substation Asset Replacement Planning: An NSGA-III-Based ISO 55000 Cost-Performance-Risk Framework (Jianbo Han)
11.50-13.00	Lunch Break
13.00-13.20	AI-Driven Optimization Models for Enhancing Furniture Upcycling Lifecycle Sustainability (Yalan Dan)
13.20-13.40	Do Filter Bubbles Exist on TikTok? Empirical Findings from 669 Chinese University Students (Lin He)

**Chairman:** Assoc. Prof. Dr. S P Gayathri

**Co-chair 1:** Dr. Siva Shankar Ramasamy (All-day session)

**Co-chair 2:** Asst. Prof. Dr. Somsak Chanaim (Morning session)

**Co-chair 2:** Dr. Suttida Suwannayod (Afternoon session)

Room: ICB 1211 [Zoom ID: 872909 2671, Passcode: 2671]	
10.30-10.50	The Impact of Customized Logistics Under the Influence of IoT Applied in Cross-Border E-Commerce (Shiyu Li)
10.50-11.10	AI-Driven Personalized Recommendations in Digital Banking: Examining Privacy, Trust, and Loyalty from a FinTech Perspective (Haiting Liu)
11.10-11.30	Digital Twin-Based Multi-Source Fusion for Real-Time Health Management and Remaining Useful Life Prediction of Industrial Equipment (Peiyan Guo)
11.30-11.50	Leveraging Artificial Intelligence for Digital Innovation: A Data-Driven Study on Perceived Authenticity and Consumer Trust in Smart Tourism (Weiqi He)
11.50-13.00	Lunch Break
13.00-13.20	Social Influence and Dual-Dimensional Trust on XR Technology Acceptance: Empirical Evidence from Employees of Chinese Telecom Enterprises (Zhu Hui)
13.20-13.40	The Effect of AI-Driven Digital Capabilities on Innovation Adoption among Smallholder Sugarcane Farmers in China (Wen Liao)

# Teacher Shortages and improving Education quality in the ASEAN using Digital Education Platforms

Hong Fang Jiang<sup>1\*</sup> and Siva Shankar Ramasamy<sup>2</sup>

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## Abstract

The global education sector has undergone major transformation after the COVID-19 pandemic, forcing institutions to adopt alternative approaches to maintain educational continuity. One of the major post-pandemic challenges is the shortage of qualified teachers in international schools, especially across the ASEAN region. This situation has created opportunities for innovation through digital education platforms that can support teaching and learning processes. This study examines the feasibility, advantages, and limitations of recruiting international schoolteachers while integrating digital platforms to reduce the gap between teachers and students. The research evaluates teacher recruitment, training, support systems, and quality assessment by reviewing existing studies and collecting feedback from stakeholders, including students, teachers, and school administrators. In addition, sentiment analysis is applied to support decision-making related to digital education platforms and teacher performance evaluation. The findings contribute to the growing discussion on innovative educational solutions that can address post-pandemic challenges and improve access to quality education in the ASEAN region.

**KEYWORDS:** Post-pandemic, International school, Teacher shortages, ASEAN region, Digital education platform, Quality Education

# **AI-Driven Personalized Recommendations in Digital Banking: Examining Privacy, Trust, and Loyalty from a FinTech Perspective**

Haiting Liu<sup>1</sup> and Ahmad Yahya Dawod<sup>2\*</sup>

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## **Abstract**

As digital banks continue to expand their FinTech offerings, they have started applying AI algorithms in order to personalize recommendation systems and enhance customer experience through interactions. While there is no doubt that such technological innovation allows for higher customization and convenience, data privacy and protection emerge as key variables to consider when measuring user satisfaction and trust. Thus, this study is focused on the impact of AI-driven personalized recommendations (AIPR) on customer trust (CT) and customer loyalty (CL), where privacy and security (PS) serve as the mediating variable. With regard to theoretical support, this study is guided by the Privacy Calculus Theory, Technology Acceptance Model, and Trust-Commitment Theory and proposes a conceptual model explaining the impact of AIPR on customers' relationships in a digital banking environment. In this context, primary data was obtained from 284 digital banking clients living in mainland China and analyzed using PLS-SEM method. According to the research findings, AIPR positively impacts PS, CT, and CL. Besides, PS significantly influences both CT and CL and partially mediates the effect of AIPR on the discussed relational outcomes.

**KEYWORDS:** FinTech, digital banking, AI-driven personalization, privacy and security, customer trust and loyalty

# The Evolution of Governance Discourse in Uniswap DAO By Using BERTopic

Miao Peng<sup>1\*</sup> and Nathapon Udomlertsakul<sup>2</sup>

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## Abstract

This paper examines how governance discourse evolves within decentralized autonomous organizations (DAOs). Using a dataset of 405 Uniswap governance forum discussions from 2020 to 2026, the research applies BERTopic to identify dominant governance themes and examines their distribution across four governance periods. The results show clear shifts in discussion priorities. Early discourse focuses more on fee switches, treasury governance, proposal procedures, and participation, while later periods show greater attention to protocol deployment, delegation, governance coordination, and ecosystem management. These findings indicate that governance discourse becomes more differentiated as Uniswap DAO develops. The paper contributes to DAO governance research by demonstrating how topic modeling can be used to study discourse evolution in decentralized governance forums.

**KEYWORDS:** Decentralized Autonomous Organization (DAO), DeFi Governance; Governance Discourse, Topic Modeling, Uniswap

# Automated Transaction Risk Scoring in Cryptocurrency Exchanges with a KYT Model for FATF Compliance

Xuan He<sup>1\*</sup> and Nathapon Udomlertsaku<sup>2</sup>

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## Abstract

This paper develops a KYT risk scoring framework for cryptocurrency exchange inflow monitoring. The study focuses on USDT/ERC-20 inflows on Ethereum, using a 60-day observation window and one- to three-hop upstream paths. The central problem is how to translate the FATF risk-based approach, industry address labels, and observable on-chain structures into an explainable scoring process. The framework defines five first-level risk entries: Obfuscation / Mixing, Cross-chain Layering, Darknet Interaction, Sanctioned Inflow, and High-risk Cluster Exposure. The five entries are selected according to three criteria: regulatory or industry basis, on-chain identifiability, and independent measurement function. The model then calculates risk through Exposure Aggregation, Flow Dynamics, and a Strong Trigger Mechanism, and maps the final score into Low, Medium, High, and Severe tiers. Three real ERC-20 address cases show that the model can distinguish a high-volume low-risk address, a high-risk-cluster-dominated address, and a mixer-related address. The case outputs are broadly consistent with anonymized external KYT tools in risk direction. The model is not proposed as a replacement for commercial KYT systems or human compliance judgment. Its value lies in providing a transparent, reviewable, and auditable inflow risk scoring framework.

**KEYWORDS:** KYT, cryptocurrency exchange, transaction risk scoring, FATF, USDT, address labels, anti-money laundering

# Digital Twin-Based Multi-Source Fusion for Real-Time Health Management and Remaining Useful Life Prediction of Industrial Equipment

Peiyan Guo<sup>1</sup> and Ahmad Yahya Dawod<sup>2\*</sup>

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## Abstract

Industrial equipment operating under complex environments requires reliable health assessment and lifetime forecasting to support predictive maintenance. Existing methods generally rely on simple feature concatenation or parallel multi-task learning architectures, which restrict source-level interpretability and weaken the explicit correlation between health index (HI) and remaining useful life (RUL) prediction. To improve the relationship modeling between equipment condition and degradation progression, this study develops a digital twin-based masked gated multi-source Transformer framework, named DT-MGMS-HI Transformer. The proposed framework integrates heterogeneous information from vibration, temperature, humidity, pressure sensors, and PLC operational logs. A masked gated fusion strategy is introduced to adaptively capture the contribution of different data sources, while the estimated health index is further utilized to enhance lifetime prediction capability. Experiments conducted on the Edge-AI industrial sensor dataset show that the proposed model achieves a MAE of 0.755, an RMSE of 1.239, and a  $R^2$  of 0.901 for equipment lifetime estimation. The research results demonstrate that multi-source fusion and health index guided learning can effectively improve remaining useful life prediction performance and can provide interpretability support for intelligent industrial maintenance.

**KEYWORDS:** Digital twin, multi-source fusion, health index, remaining useful life, DT-MGMS-HI Transformer

# The Impact of Customized Logistics Under the Influence of IoT Applied in Cross-Border E-Commerce

Shiyu Li<sup>1\*</sup> and Ahmad Yahya Dawod<sup>2</sup>

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## Abstract

The accelerated development of international business activities is leading to operational complications in the functioning of cross-border e-commerce (CBEC) logistics in China. Conventional logistics are unable to ensure sufficient adaptability to maintain the equilibrium between increasing operational costs and the demand for individualized service offerings. In this regard, the present study aims to explore the effect of IoT on customized logistics models in CBEC supply chains. The methodology adopted in this research included the analysis of operational data gathered from five logistics enterprises (2020-2025) and survey results from 1,000 customers in Shenzhen, Shanghai, and Chengdu. Multivariate ordinary least squares (OLS) regression analysis with interaction effects and back-propagation neural network were used to measure the efficiency of supply chains. The findings reveal that logistics customization positively impacts customer loyalty and operational performance, especially when combined with IOT solutions. Specifically, the interaction effect helped reduce operational costs by 5-10%, and increased visibility and efficiency of delivery processes. Furthermore, neural network optimization was helpful to optimize Vehicle Routing Problems (VRPs) and minimize transit bottlenecks.

**KEYWORDS:** Cross-Border E-Commerce, Customized Logistics, Internet of Things (IOT), Vehicle Routing Problem (VRP), Logistics 4.0

# Traceability in the Tea Supply Chain Based on Blockchain Technology

Su Jue Jiao<sup>1\*</sup>, Naret Suyaroj<sup>2</sup> and Siva Shankar Ramasamy<sup>3</sup>

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## Abstract

The tea industry, essential to China's cultural landscape and economic growth, is facing international scrutiny over product quality and supply chain management. But the current tea supply chain lacks transparency and traceability, which has become a bottleneck for the development of the industry, leading to decline in consumer trust, market competitiveness, and increasing compliance costs. This research offers a fresh viewpoint, facilitated by blockchain technology, to get the rid of this dilemma by giving transparent and verifiable data at every stage of the supply chain via a decentralized immutable ledger infrastructure. The present study proposes an IoT and data analytic integrated blockchain system for agriculture under the institutional setting of the Agricultural Products Quality and Safety Law (QSL) which went into effect in 2023. At each stage of the supply chain, from cultivation, processing, logistics, and sales, this system captures and confirms important information. By enabling real-time tracking, automatic execution of smart contracts, and transparent data sharing the system provides full visibility into quality, source and logistics of tea. Through case studies and blockchain simulations, the system presented shows that it greatly increases operational efficiency, fraud risks are considerably lesser and provides more trust in the tea brands for consumers. In addition to serving these two objectives, the study further explores the scalability of blockchain for agriculture and the consequences of its integration for policymaking, thereby providing theoretical contributions and practical implications for the sustainable development of the tea sector. The results show blockchain not only satisfies modern agriculture's push for transparency and digitization, it also enhances the global image and market competitiveness of China's tea industry.

**KEYWORDS:** Blockchain, Tea Supply Chain, Transparency, Traceability, IoT, Quality Assurance, Sustainability

# **An Exploratory Study of Factors Influencing Consumer Purchasing Behavior Toward IoT Smart-Home Devices in China**

Chen Guosheng

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## **Abstract**

This exploratory study investigates the factors influencing Chinese consumers' purchasing behavior toward IoT smart-home devices. Based on a quantitative research design, 407 valid online questionnaires were collected from Chinese consumers. The conceptual framework integrates five independent variables — technological confidence, price sensitivity, product innovativeness, data privacy awareness, and social media influence—with consumer purchase behavior. Reliability and validity analyses show excellent internal consistency (Cronbach's  $\alpha > 0.86$ ) and good construct validity (KMO = 0.924, cumulative variance explained = 73.002%). Descriptive results indicate that technological confidence (M = 4.445/7), product innovativeness (M = 4.457/7), and social media influence (M = 4.402/7) are at moderately high levels and positively associated with purchase behavior (M = 4.441/7), while price sensitivity (M = 3.527/7) and data privacy awareness (M = 3.493/7) are at moderate levels and do not constitute major barriers. The findings validate the applicability of the Technology Acceptance Model and Diffusion of Innovation Theory in China's smart home context. Practical recommendations include lowering usage barriers, focusing on differentiated innovation, leveraging KOL and user-generated content on social media, adopting value-based pricing, and building transparent data governance. Future research should expand sample diversity and explore mediating mechanisms.

**KEYWORDS:**IoT Smart-Home Devices, Consumer Purchasing Behavior, Technological Confidence, Price Sensitivity, Product Innovativeness, Data Privacy Awareness, Social Media Influence

# **Leveraging Artificial Intelligence for Digital Innovation: A Data-Driven Study on Perceived Authenticity and Consumer Trust in Smart Tourism**

Weiqli He<sup>1\*</sup> and Ahmad Yahya Dawod<sup>2</sup>

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## **Abstract**

This study examines travelers' perceptions of AI-generated and human-created destination content in smart tourism environments using the Stimulus–Organism–Response (SOR) framework. A quantitative experimental design and Structural Equation Modeling (SEM) were employed to test the relationships among content source, AI disclosure, perceived authenticity, consumer trust, and travel intention. The results reveal no significant difference in perceived authenticity between AI-generated and human-created tourism content, while AI disclosure significantly influences travelers' evaluations. Furthermore, perceived authenticity positively affects consumer trust and travel intention. These findings challenge the traditional assumption that AI-generated tourism communication is inherently perceived as less authentic and provide new insights into AI-assisted destination marketing.

**KEYWORDS:** Smart Tourism, AI-Generated Content, Perceived Authenticity, Consumer Trust, SOR Framework

# Multi-Objective Optimisation for Substation Asset Replacement Planning: An NSGA-III-Based ISO 55000 Cost–Performance–Risk Framework

Jianbo Han<sup>1\*</sup>, Annop Tananchana<sup>2</sup>, Naret Suyaroj<sup>3</sup>, and Nopasit Chakpitak<sup>4</sup>

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## Abstract

Modern power utilities face escalating challenges in substation asset replacement planning driven by ageing infrastructure, heterogeneous asset lifecycles, and growing operational risks from the energy transition. Conventional single-objective planning frameworks, focusing exclusively on cost minimisation, are insufficient to capture the multi-dimensional trade-offs among cost, performance, and risk—the three strategic pillars mandated by the ISO 55000 asset management standard. This paper proposes a three-objective optimisation framework for Substation Asset Replacement Planning (SARP) that simultaneously minimises Total Cost of Ownership (TCO), maximises system reliability (SAIDI/SAIFI), and minimises heterogeneity-weighted operational risk, formulated as a Multi-Objective Optimisation (MOO) problem solved using the Non-dominated Sorting Genetic Algorithm III (NSGA-III). The framework is applied to a simulated eight-asset-group substation dataset representative of a metropolitan utility substation in Bangkok, Thailand, with a 10-year planning horizon (2026–2035). NSGA-III ( $n_{gen}=200$ , population=91) identifies 21 Pareto-optimal replacement strategies, demonstrating a 63.0% improvement in SAIDI/SAIFI reliability and a 72.2% reduction in operational risk compared to a Do-Nothing baseline, at a comparable lifecycle cost. Entropy-based objective weighting reveals that reliability performance (43.63%) and operational risk (35.55%) are stronger discriminants than cost (20.82%), confirming the necessity of a multi-objective approach. As a proof-of-concept study employing simulated data, this work establishes the methodological foundation for a future research programme incorporating Monte Carlo Simulation for uncertainty analysis and TOPSIS for stakeholder-driven strategy selection.

**KEYWORDS:** Substation asset replacement planning, NSGA-III, multi-objective optimisation, ISO 55000, Pareto frontier, Total Cost of Ownership

# Digital Transformation for Sustainable Development: Examining the Effects of ICT Infrastructure on Socioeconomic Outcomes in Thailand

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## Abstract

This study aims to examine the effects of ICT infrastructure on socioeconomic outcomes in Thailand by providing an integrated perspective on digital transformation for sustainable development. Secondary data covering the period 2009-2024 were collected from the World Bank and the SDG Transformation Center. Data were analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM) to evaluate both the measurement and structural models.

The empirical findings reveal that ICT infrastructure significantly and positively enhances socioeconomic outcomes. The structural model demonstrates substantial explanatory power ( $R^2 = 0.978$ ) and satisfactory predictive relevance, confirming the significant influence of ICT infrastructure on socioeconomic development outcomes in Thailand.

This study contributes to theoretical advancement by extending the digital transformation and sustainable development literature through the integration of ICT infrastructure and multidimensional socioeconomic outcomes into a unified analytical framework. The findings demonstrate that digital technologies and ICT infrastructure can function as strategic drivers of sustainable socioeconomic development by promoting economic prosperity and social inclusion. Furthermore, this study enriches the existing body of knowledge by providing empirical evidence from Thailand as a developing economy context that remains underexplored in prior ICT and sustainable development research. The findings also support the argument that investment in digital infrastructure plays a critical role in achieving long-term sustainable development goals in the digital era.

**KEYWORDS:** ICT Infrastructure, Socioeconomic Outcomes, Digital Transformation, Sustainable Development

# **Social Influence and Dual-Dimensional Trust on XR Technology Acceptance: Empirical Evidence from Employees of Chinese Telecom Enterprises**

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## **Abstract**

This The rapid development of digital technology is profoundly changing the business operation mode. Among them, the application of extended reality technology (XR) in industries such as communications has attracted more and more attention. Large state-owned communications companies in China are trying to promote the application of XR technology in scenarios such as employee training, customer service and business process optimization. However, at the employee level, the actual adoption rate of XR is still low, and there is limited empirical research on its influencing factors. This paper takes employees of Chinese three major telecommunications operators as the research object to study the determinants of their intention to adopt XR technology. Based on the Unified Theory of Acceptance and Use of Technology (UTAUT2), this study introduces the "Dual-Dimensional Trust" variable (technology trust and organizational trust) and adds personal innovativeness as an extended variable. A total of 315 valid data were collected by distributing questionnaires, and SPSS and PLS-SEM were used for analysis. The results show that social influence, facilitating conditions, organizational trust, technology trust and personal innovativeness all have a significant positive impact on employees' behavioural intention to adopt XR technology ( $R^2 = 0.672$ ), and the model fit is good. Among them, social influence is the most significant, and the influence of organizational trust is higher than that of technical trust, which highlights the key role of society and organization in promoting employee technology adoption in the context of collectivist culture of Chinese state-owned enterprises. This study not only enriches the theoretical research on XR technology adoption, but also provides practical guidance for other state-owned enterprises with similar organizational structures and cultural characteristics.

**KEYWORDS:** Extended Reality (XR), UTAUT2; Dual-Dimensional Trust, Personal Innovativeness, Behavioral Intention

# **Beyond Lexical Analysis: The Meme Receptance Model for Understanding Visual Rhetoric and Social Utility**

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## **Abstract**

In the contemporary digital ecosystems, Internet memes have evolved from simple humorous symbols to complicated tools for public discourse and social identity construction. Although the Technology Acceptance Model (TAM) has been generally validated to explore and explain the user acceptance of new technology, there is still a limitation when it is applied to Internet memes, a form of digital artefacts defined by intertextuality and subculture. Existing research mainly focuses on TAM's utility factors (PU and PEOU), struggling to explain the emotional resonance and cultural acceptance mechanism with memes. VADER, as one of the traditional sentiment analysis tools, overly emphasizes the sentiment of lexicons, lacking the capacity to analyze text and visual elements, which hardly decode the complex visual rhetoric and contextual irony in meme culture. Moreover, current studies on memes mainly concentrate on comparing their stylistic variations and semantic shifts across national borders. However, scholars have not constructed a definitive framework or paradigm to explain these phenomena. To address this limitation, this study proposes the Meme Receptance Model (MRM), an innovative extension of TAM that integrates emotional resonance, stance and other potential factors as core predictors of user adoption. Trying to analyze representative memes and popular comments from the meme community on Reddit. By combining automated machine learning with users' deep textual and visual analysis, this study investigates how experienced online users transform meme aesthetics into social utility. This research extends the TAM framework into digital culture, facilitates the mutual understanding of memes across different cultures, and explains the reasons for their virality on social media.

**KEYWORDS:** Internet meme, digital innovation, Meme Receptance Model (MRM), Sentiment analysis

# AI-Driven Optimization Models for Enhancing Furniture Upcycling Lifecycle Sustainability

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## Abstract

This study seeks to provide actionable insights for businesses and policymakers to accelerate the transition towards a more sustainable furniture industry. Sustainability in the furniture industry has gained significant attention amid global environmental pressures and resource scarcity. Upcycling furniture, which involves repurposing discarded materials into new products, extends furniture lifecycles and reduces waste. However, enhancing the lifecycle sustainability of upcycled products requires sophisticated evaluation models and optimization strategies. Recent advances in artificial intelligence (AI) offer transformative potential by enabling data-driven lifecycle assessments, predictive maintenance, and design optimization for sustainable production. AI tools can analyze complex datasets to optimize materials selection, reduce carbon footprints, and improve the economic feasibility of upcycling processes. Consumer behavior plays a crucial role in driving the adoption of sustainable furniture products, with age-based generational differences influencing green consumption choices. Generation Z and Millennials, raised in an era of heightened environmental awareness, are more likely to prioritize sustainability in purchasing decisions and pay a premium for upcycled furniture. In contrast, older generations such as Generation X and Baby Boomers may prioritize durability, cost, and brand reputation over sustainability. Understanding these generational differences is essential for developing targeted marketing strategies and product designs. AI can analyze consumer data to identify patterns and preferences across different age groups, enabling businesses to tailor messaging and product offerings to resonate with specific generational cohorts, thereby increasing the adoption of upcycled furniture and promoting sustainable consumption practices. This research investigates the integration of AI technology into furniture upcycling, aiming to develop comprehensive evaluation models and strategic frameworks that enhance both environmental and economic sustainability in line with circular economy principles, by considering generational differences in consumer behavior.

**KEYWORDS:** Circular Economy, Furniture Industry Sustainability, Upcycling, Generational Consumption Differences, AI Applications

# Leakage-Controlled and Stability-Aware Motif-Derived Structural Features for Blockchain Transaction Graph Anomaly Detection

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## Abstract

Blockchain transaction anomaly detection is important for identifying illicit and suspicious activities in digital asset ecosystems. Since blockchain transactions naturally form graph structures, graph neural networks have been widely used for this task. However, standard message-passing models may underuse high-order structural patterns that are useful for distinguishing suspicious transaction behaviours. In addition, time-ordered blockchain data require careful feature construction to avoid future information leakage and to maintain reliability under temporal distribution shift. This study proposes a leakage-controlled and stability-aware motif-derived structural feature framework for blockchain transaction graph anomaly detection. The framework enhances raw transaction attributes with predefined motif features and Weisfeiler-Lehman-derived structural features. To ensure reliable evaluation, feature normalization and WL motif selection are fitted only on the training period and then frozen for validation and test data. A stability-aware WL motif selection strategy is further introduced to balance discriminative power, temporal stability, and feature redundancy.

The proposed framework is evaluated using multiple GNN and non-GNN classifiers, controlled ablation studies, time-ordered robustness analysis, and motif drift analysis. The results show that motif-derived structural features provide lightweight, architecture-agnostic, and interpretable high-order structural signals for blockchain anomaly detection. In particular, predefined motifs serve as relatively stable structural priors, while WL-derived motifs provide complementary discriminative signals whose reliability can be improved through stability-aware selection

**KEYWORDS:** blockchain, cryptocurrency transaction networks, anomaly detection, graph neural networks, time-ordered transaction graphs, structural motifs

# Bitcoin-to-U.S.-Sector Volatility Spillovers: A TVP-VAR Connectedness Framework with Endogenous Change-Point Detection

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## Abstract

This paper investigates volatility spillovers between Bitcoin and the eleven SP 500 sectors using a time-varying parameter vector autoregression framework, asymmetric semivariance decomposition, and endogenous change-point detection. The results indicate that the Bitcoin-sector system is strongly interconnected, with connectedness increasing sharply during periods of market stress, most notably during the COVID-19 shock and the 2022 monetary tightening episode. Although Bitcoin transmits economically meaningful volatility to several sectors, particularly Consumer Discretionary, Information Technology, Energy, and Financials, the reverse transmission from equity sectors to Bitcoin is stronger on average, indicating that Bitcoin is more commonly a receiver than a persistent net transmitter of sectoral volatility. The findings also reveal pronounced asymmetry, as downside spillovers exceed upside spillovers, implying that adverse shocks generate stronger cross-market transmission. Regime analysis further shows that the most highly connected periods coincide with a more negative net position for Bitcoin within the spillover network. Overall, the evidence suggests that Bitcoin is not detached from traditional equity markets; rather, it operates as a state-dependent component of the U.S. sectoral volatility system whose role becomes more pronounced during adverse market conditions.

**KEYWORDS:** Bitcoin, sectoral volatility, spillovers, connectedness, change-point-detection, time-varying, VAR

# The Effect of AI-Driven Digital Capabilities on Innovation Adoption among Smallholder Sugarcane Farmers in China

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## Abstract

The digital transformation in the agricultural sector is accelerating. However, there is still limited empirical evidence on how the digital capabilities driven by artificial intelligence affect the innovation adoption at the level of small farmers. To fill this gap, this study examines the impact of the digital capabilities driven by artificial intelligence on the innovation adoption of smallholder sugarcane farmers in China, answering the research question: How do the digital capabilities driven by artificial intelligence affect the innovation adoption of smallholder sugarcane farmers in China? Based on the dynamic capability theory, the digital capabilities driven by artificial intelligence are conceived as three dimensions: perception, analysis, and adaptive reconfiguration capabilities. A quantitative research design was adopted. The main data came from smallholder sugarcane farmers in Guangxi, China. Data analysis was conducted using RStudio for data cleaning, reliability testing, and descriptive statistics, and then the partial least squares structural equation model was used in SmartPLS to test the measurement model and structural model. The research results show that the digital capabilities driven by artificial intelligence have a significant positive impact on innovation adoption. Among these three dimensions, the influence of analysis and adaptive reconfiguration capabilities is the most significant. These findings confirm that innovation adoption is not merely a response to external conditions, but an adaptive process driven by capabilities. This study expands the research in the fields related to digital innovation and dynamic capabilities, shifting the focus of analysis from external pressures to the internal capability building at the level of smallholder farmers. At the same time, it provides practical application insights for digital promotion services and agricultural policy design.

**KEYWORDS:** AI-driven digital capabilities, innovation adoption, smallholder farmers, dynamic capability theory, sugarcane

# A Hybrid Imputation Neural Network for Electric Vehicle Time Series Data with Climate-Aging Conditioning and Its Application to Energy Consumption Prediction

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## Abstract

Accurate and physically consistent time-series data serve as foundational elements for energy consumption analysis, battery health assessment, and driving range prediction in electric vehicles (EVs). However, real-world EV telemetry data acquired under national standards like GB/T 32960 frequently exhibit extensive missing values due to communication disruptions, sensor malfunctions, and state-dependent data acquisition protocols. Conventional imputation approaches, encompassing statistical interpolation techniques and purely data-driven neural network models, neglect critical physical constraints, operational regime transitions, and structured inter-variable dependencies inherent to EV systems, thereby generating physically infeasible reconstructions that compromise downstream analytical performance. This study introduces a Physics-Aware Hybrid Imputation Network (PAHIN) that reframes missing-value imputation as a system-level reconstruction challenge rather than a generic sequence completion problem. The proposed framework integrates hybrid temporal modeling for capturing long-range dependencies, a physics-informed variable dependency graph encoding electro-thermal relationships, state-conditional imputation mechanisms synchronized with vehicle operating modes, and a consistency-preserving loss function enforcing energy conservation principles and thermal coherence. The methodology is validated through experiments on a comprehensive real-world dataset comprising more than 59.93 million temporal observations from 30 battery electric vehicles collected over three years across diverse climatic zones, incorporating granular cell-level voltage measurements, temperature readings, and alarm logs. Empirical evaluations demonstrate that PAHIN achieves superior performance compared to state-of-the-art imputation benchmarks in both quantitative accuracy metrics and physical plausibility criteria, effectively minimizing imputation errors while significantly reducing constraint violation occurrences. Moreover, downstream evaluations demonstrate that PAHIN-imputed data enhance the robustness of energy consumption modeling and driving range estimation under realistic missing data patterns. Comprehensive ablation studies verify that each proposed component independently contributes to performance improvements. The proposed framework establishes a theoretically grounded, interpretable, and reproducible methodology for electric vehicle time-series data imputation while providing broader methodological insights for data reconstruction tasks in cyber-physical energy systems.

**KEYWORDS:** Electric Vehicle, Time-Series Data, Missing Value Imputation, Neural Networks, Battery Aging, Energy Consumption Prediction

# Do Filter Bubbles Exist on TikTok? Empirical Findings from 669 Chinese University Students

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## Abstract

In contemporary social media ecosystems, algorithmic mechanisms have emerged as the principal drivers of personalized information dissemination across digital platforms. Prolonged algorithmic exposure may result in cognitive biases, technological dependency, and content homogenization, potentially amplifying the "filter bubble" phenomenon. The empirical verification of filter bubble existence remains contested due to methodological limitations, rendering this issue a subject of intense debate within digital communication scholarship. This investigation develops a measurement scale for assessing the "filter bubble perception effect" specifically on the TikTok platform, It is called DouYin in China. Through semi-structured interviews with 20 participants combined with quantitative questionnaire analysis, three core dimensions characterizing the filter bubble effect were identified: content homogenization, source homogenization, and opinion convergence perception. A 15-item measurement instrument was subsequently developed. Psychometric evaluation demonstrated robust reliability and validity across all scale dimensions, with Cronbach's  $\alpha$  coefficients exceeding 0.8, KMO values above 0.8, factor loadings surpassing 0.7, mean variance extracted (AVE) estimates exceeding 0.5, and composite reliability (CR) metrics greater than 0.7. Structural equation modeling confirmed significant factor-item correlations, establishing the scale's applicability for measuring filter bubble effects across social media platforms. Methodologically, the assessment framework advanced from conventional single-criterion judgment to an Analytic Hierarchy Process (AHP) weighted evaluation system. Empirical findings indicate that while bubble filtering effects do manifest on the DouYin platform, their prevalence remains limited in magnitude, suggesting no immediate concern regarding algorithm-induced large-scale information silos among users.

**KEYWORDS:** Human-centered computing, Collaborative and social computing, Empirical studies in collaborative and social computing



