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AI-Powered Platforms: Automated Transactions in Digital Marketplaces

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Aim of the Study

This thesis explores the convergence of digital platform business models and artificial intelligence (AI), with a specific focus on how AI can enable the automation of complex transactions within digital marketplaces. The central research question driving this work is: **To what extent can complex transactions in digital marketplaces be automated by using artificial intelligence?**

A secondary line of inquiry investigates whether increasing algorithmic optimisation and automation reduces the importance of traditional user interfaces (UIs) in digital platforms: **Does algorithm optimisation reduce UI importance in digital marketplaces?**

These questions are highly relevant in light of the ongoing digital transformation of business and society, where digital platforms increasingly serve as the infrastructure for economic activity and AI becomes the operational backbone of leading firms (Davenport & Mittal, 2023; Iansiti & Lakhani, 2020; Mucha & Seppala, 2020). These are AI-first companies, i.e., organisations whose business models are built around scalable algorithmic learning and real-time adaptation using AI (Davenport & Mittal, 2023). While AI-first companies like Amazon, Airbnb, and Uber have used AI for personalisation and recommendation, this thesis explores a more advanced integration: AI not only as a support system but as a decision-maker capable of initiating and completing transactions on behalf of the user in AI-Powered Platforms.

Area of Concern

Digital platform business models have fundamentally reshaped the way value is created and exchanged in the digital economy, enabling two-sided and multi-sided ecosystems where different user groups interact (Boudreau & Hagiu, 2008; Rochet & Tirole, 2003). However, the integration of AI into these platforms is still under-explored in the literature (Mucha & Seppala, 2020), especially in the context of decision-making and transaction execution in marketplaces – the platform interface where transactions between groups occur.

Investigative Approach

The thesis employs a multi-method research design. It begins with an extensive literature review spanning platform economics, AI capabilities, decision-making theories (Simon, 1955), and automation technologies. Theoretical constructs such as network effects, transaction costs (Evans & Schmalensee, 2016), and platform governance (Gawer & Cusumano, 2014) are used to frame the analysis.

The study investigates how various digital assistants leverage recommender systems currently embedded in digital platforms to interpret user needs and the extent to which they complete multi-step transactions autonomously – in other words, taking decisions on behalf of users. This is done through a series of 781 experimental interactions with mainstream digital assistants and Large Language Model (LLM)-based tools – Alexa (242 instances), Google Assistant (49), Siri (no direct experiments but evaluated via documentation), ChatGPT-3 (384), and Bing (106). The thesis outlines five levels of AI decision-making, from basic, scripted actions (Level 1) to fully autonomous transactions tailored to user-specific rules (Level 5). Intermediate levels add comparison, shortlisting, and partial automation for low-complexity choices.

Results

Experiments showed all tested tools below Level 4. Alexa and Siri were at Level 1, limited to basic, pre-programmed actions; Google Assistant reached Level 1.5, with broader capabilities but still requiring the user to perform manual comparisons of the items in the marketplace (e.g., goods) to reach a final decision. ChatGPT-3 achieved Level 3 by shortlisting potential items from which the user could choose, based on the initial query and through multiple iterations, while Bing reached Level 3.5, adding internet access and limited autonomous selection for low-complexity queries. Although decision-making and task automation still lagged and no tool exhibited full autonomy, results showed a clear trend toward greater algorithmic autonomy. Based on this premise, the concept of the Decision-Making Engine (DME) is introduced. DMEs are envisioned as an evolution of recommender systems and positioned at level 5: rather than simply proposing options, they analyse context, infer preferences, and autonomously select the optimal choice based on contextual and dynamic data from the user.

The thesis highlights that DMEs can be further leveraged as AI tools, which are already used to automate complex decision-making in environments with predictable and repetitive variables. In addition to B2C marketplaces, the thesis suggests integrating DMEs into price comparison engines and B2B marketplaces, where ERP systems are commonly used. In contrast, more volatile, uncertain, complex, and ambiguous settings still require human judgment or hybrid systems. The thesis emphasizes that user trust, data availability, regulatory environments, and platform maturity are key enablers of successful AI integration.

Contribution

This thesis contributes to both theory and practice by introducing the DME as a novel concept that reframes how AI can transform user decision pathways in platforms. Experiments revealed the limitations but also the emerging potential of LLM-based assistants to be repurposed for automating end-to-end transactions. DMEs can reduce cognitive load, shorten transactional paths, and challenge search-based UIs. As users shift from choosing themselves to delegating decisions to algorithms, the need for UIs as we know them today diminishes. Theoretically, it extends the resource-based view (Barney, 1991) by positioning the DME as a strategic resource for value creation and defensibility – that is, gaining a competitive advantage over rivals by delivering faster and tailored decisions to users – especially in industries where competition increasingly occurs not over content, but on the quality of the recommendations, such as in the music industry (Arditi, 2019). Practically, it provides platform strategists with guidance to rank the decision-making capabilities of current digital assistants and LLM-based tools and, accordingly, inform pathways to automate user choices through DMEs while anticipating shifts in user behaviour.

The thesis remains highly relevant in 2025 and beyond. While most digital assistants still stop short of making decisions for users, also by design, AI agents – systems that use AI and tools to accomplish actions in order to reach a given goal autonomously (Bornet et al., 2025) – have exploded in the last couple of years and are now widely discussed. These systems embody and extend the DME concept (aligned with Level 5, as described in the Investigative Approach section and corresponding to Level 3 of the scale proposed by Bornet et al., 2025), performing increasingly complex transactions without human oversight and transforming the user experience from recommendation to execution. As users grow more comfortable delegating decisions, digital platforms face both a threat and an opportunity to strategically integrate AI agents as value-creating assets or risk being commoditised by them as they bypass platform interfaces to perform complex transactions directly. This thesis provides strategic insights to help navigate these challenges. Further empirical research is therefore needed to examine how digital platforms can strategically adapt to, harness, and co-evolve with AI agents.

More Information

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More information about the thesis: https://www.researchgate.net/publication/369762615_AI-Powered_Platforms_automated_transactions_in_digital_marketplaces

Declaration of AI

During the preparation of this work, the author used OpenAI's ChatGPT to assist with summarizing thesis content, refining language, and structuring the digest.

Additional Comments

To maintain alignment with contemporary IS literature, the term "recommender systems" was preferred over alternatives, such as "recommendation engines", to improve the clarity and readability of this digest.

To ensure theoretical alignment, the digest has been contextualised with reference to the resource-based view and reinforced through an example related to the music industry.

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