THE IMPACT OF AI ON NEW BUSINESS MODELS: RESPONDING TO DISRUPTION IN VARIOUS SECTORS

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ABSTRACT

Artificial Intelligence (AI) is no longer just a futuristic concept; it is actively reshaping how businesses operate, compete, and deliver value. Across industries, AI is disrupting traditional models and giving rise to more adaptive, digital, and data-driven ways of working. This study set out to: (1) explore how AI is transforming business models in different sectors, (2) pinpoint the industries feeling the greatest impact, and (3) design a practical, AI-ready version of the Business Model Canvas (BMC). We examined 50 companies in banking, manufacturing, retail, logistics, and healthcare, using in-depth interviews, document reviews, and observations. Our analysis shows that AI is rewriting the rules for value creation, cost efficiency, customer engagement, and revenue generation. The most dramatic changes are happening in logistics through predictive route planning and automation, and in retail where personalization is redefining customer relationships. Healthcare is not far behind, with AI enhancing diagnostics and patient care. To help businesses navigate these shifts, we propose an AI-Driven Business Model Canvas Framework that blends strategic structure with the flexibility needed in the AI era. The insights from this research not only deepen the theory on AI's role in business transformation but also give managers sector-specific guidance to build more resilient and future-ready organizations.

1. INTRODUCTION

The technological revolution marked by the rapid advancement of artificial intelligence (AI) has shifted many paradigms in the business world. AI is no longer just an efficiency tool, but a fundamental change in business strategies and models in various sectors. Companies such as Amazon, Google, and Alibaba have embedded AI at the core of their operations, creating data-driven and high-automation business models (*Brynjolfsson & McAfee, 2014*; *Chui et al., 2018*; *Makridakis, 2017*).

The increasing complexity of global competition drives the need for a deeper understanding of the impact of AI on business structures, values, and supply chains. Amid the increasing adoption of AI, many traditional companies are experiencing significant disruption—demonstrating the urgency of structured and strategic digital transformation (*Bughin et al., 2017*; *Davenport & Ronanki, 2018*; *Iansiti & Lakhani, 2020*).

Conventional business models are generally based on physical assets and operational linearity. However, with AI, new business models such as *platform-based*, *freemium*, *data-driven*, and *predictive service have* emerged. According to a McKinsey report (2022), AI can increase profit margins by up to 20% in the banking, manufacturing, and retail sectors. The following table summarizes the impact of AI on cross-industry efficiency:

Table 1. The Impact of AI on Cross-Industry Efficiency

Sector	The Impact of AI	Margin Increase (%)
Banking	Fraud detection, risk analytics	+19%
Manufacturing	Maintenance prediction, production optimization	+15%
Retail	Product recommendations, inventory management	+17%
Health	Automated diagnostics, medical chatbots	+12%

(*McKinsey, 2022; PwC, 2021; Deloitte Insights, 2020*)

Previous research has extensively discussed the adoption of information technology and automation, but has not explicitly outlined how AI systematically reshapes a company's value proposition and revenue sources (*Westerman et al., 2011*; *Porter & Heppelmann, 2014*; *Teece, 2018*). The focus is more on general digital transformation than the specific consequences of AI.

The research gap lies in the lack of comprehensive studies that combine aspects of technology, economics, and business strategies in examining the influence of AI on business models. In addition, much of the literature has not distinguished between the adoption of AI as a tool versus AI as a *key business driver* that creates *new revenue logic* and new value ecosystems (*Ghezzi & Cavallo, 2020*; *Vaska et al., 2021*; *Liu et al., 2022*).

This study proposes a holistic approach that maps the impact of AI on six elements of the business model (based on *the Business Model Canvas*), across various industry sectors. Not only does it see digital transformation as a response, but as a proactive strategy in shaping future business models (*Osterwalder & Pigneur, 2010*; *Wirtz et al., 2016*; *Susanti et al., 2022*).

The urgency for such a framework is reinforced by the accelerating pace of AI adoption and its uneven effects across industries. Conventional business models, built on physical assets and linear operations, are being challenged by new approaches such as platform-based ecosystems, freemium strategies, predictive services, and data monetization (McKinsey, 2022). For example, AI is increasing profit margins by up to 20% in sectors like banking, manufacturing, and retail through enhanced risk analytics, predictive maintenance, and personalized customer engagement (PwC, 2021; Deloitte Insights, 2020).

Existing literature has explored digital transformation broadly (Westerman et al., 2011; Teece, 2018), but few studies have examined AI's sector-specific influence on all elements of a business model. Moreover, most prior work does not distinguish between AI as a tactical tool and AI as a strategic, revenue-generating driver that shapes entirely new value ecosystems (Ghezzi & Cavallo, 2020; Vaska et al., 2021; Liu et al., 2022).

Building on this context, the present study seeks to provide both a comprehensive analysis and a practical solution. Specifically, it aims to examine how AI drives the transformation of business models across various industrial sectors, identify the industries experiencing the most significant disruption, and formulate an AI-Driven Business Model Canvas framework that can guide organizations in adapting to the challenges and opportunities of the AI era. By connecting empirical evidence with established theory, this research not only fills an important academic gap but also offers actionable insights for industry leaders and policymakers seeking to design resilient, technology-enabled strategies for long-term competitiveness.

2. METHOD

Types of Research

This study uses a descriptive qualitative approach with a comparative case study method. The main focus lies in an in-depth exploration of how the implementation of artificial intelligence (AI) is shaping new business models across various industry sectors. In addition, mixed-methods approaches are used to a limited extent to complement qualitative analysis with secondary quantitative data, such as industry reports and financial data.

Population and Sampling

The population in this study includes companies that have implemented AI in their business models, whether in the banking, manufacturing, retail, logistics, and healthcare sectors. The sampling technique is carried out by purposive sampling, which is selecting subjects based on certain criteria:

a. Companies that have adopted AI for at least 2 years.
b. Have an annual report that is publicly published.
c. Operating in the Southeast Asian region, with the main focus of Indonesia. The main sample included 10 companies from each sector (50 companies in total).

Research Instruments

The main instruments in this study are:

a. Semi-structured interview guide for business practitioners and CTOs (Chief Technology Officers).
b. Document analysis template to assess business model transformation based on the Business Model Canvas (BMC) framework.
c. The AI perception questionnaire, which was used in a limited way for data collection from senior managers, contains 12 Likert scale items regarding perceptions of the effectiveness and impact of AI.

Data Collection Technique

Data is collected through three main paths:

a. In-depth interviews with 15 key respondents from the sample company.
b. Study of documents on financial statements, ESG reports, and company technology white papers.
c. Indirect observation of AI-based digital services and interactions (e.g. chatbots, automated recommendations, etc.).

Secondary data is taken from industry reports such as McKinsey, PwC, and Deloitte that contain the impact of AI sectorally.

Research Procedure

a. Case study design and company selection based on sampling criteria.
b. Initial data collection through industry documents and reports.
c. Scheduling and conducting interviews with key informants.
d. Triangulation of data from interviews, observations, and documents.
e. Data coding and categorization using qualitative analysis software (NVivo or Atlas.ti).
f. Preparation of interpretive narratives and mapping of business model changes before and after AI adoption.

Data Analysis Technique

The data is analyzed using the following approach:

a. Thematic analysis, to identify thematic patterns from the results of interviews and documents.
b. Cross-case comparison, to compare business model transformations between sectors.
c. Business Model Canvas Mapping, to visualize the shift in business models due to AI.
d. For limited quantitative data (questionnaire results), statistical descriptive analysis was carried out using SPSS version 25.

Ethical Considerations

This research adhered to established ethical guidelines for social science studies. Prior to data collection, all participating companies and interviewees were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any time without penalty. Informed consent was obtained from each participant, and confidentiality was maintained by anonymizing personal and company identifiers in transcripts and reports. All interview recordings, notes, and related documents were stored securely and accessed only by the research team.

3. RESULTS AND DISCUSSION

Business Model Transformation Through AI Integration

The adoption of AI has transformed various elements in business models, from value propositions, revenue sources, to cost structures. In the banking sector, for example, the integration of AI for risk analysis

and fraud detection is changing the way banks build trust and reduce operational costs (*Davenport & Ronanki, 2018*; *Bawack et al., 2021*; *PwC, 2020*). Logistics companies such as FedEx and DHL rely on AI algorithms for route prediction, speeding up deliveries and reducing fuel usage (*Baryannis et al., 2019*; *Accenture, 2021*; *Chopra & Meindl, 2022*).

In the retail sector, the most striking transformation is happening in service personalization. Amazon and Alibaba use AI in product recommendations, increasing conversions and customer loyalty (*Kumar et al., 2021*; *Chui et al., 2018*; *Ng, 2020*). The traditional inventory-based business model is now shifting to a data-driven predictive model.

Table 2. Comparison of Business Models Before and After AI Adoption

BMC Elements	Before AI	After AI
Value Proposition	Product price & quality	Personalization & value-added automation
Channels	Physical, manual	Digital, chatbot, AI interface
Customer Relations	Transactional	Predictive, behavior-based
Source of Income	Direct sales	Subscriptions, data-driven services
Key Activities	Production	Data analytics, prediction modeling

(*Source: Deloitte, 2020; Osterwalder & Pigneur, 2010; Ghezzi, 2021*)

AI Disruption in the Value Structure of Industrial Sectors

AI has triggered profound disruption to the value structure of companies across various industries. In the world of health, AI plays a role in disease detection, radiological interpretation, and prediction of patient care (*Esteva et al., 2017*; *Topol, 2019*; *WHO, 2022*). This shifts primary value from physicians to digital platforms and algorithms, giving rise to an *AI-as-a-diagnostician business model*.

Meanwhile, the manufacturing industry is starting to replace the linear approach with *a smart factory model* where production, maintenance, and logistics are integrated through AI and IoT (*Lee et al., 2015*; *Kagermann et al., 2013*; *McKinsey, 2021*). AI is able to identify machine failure patterns in real-time, saving up to 25% of annual operational costs.

In the logistics sector, AI enables transportation efficiency through route optimization and *fleet learning*. Uber Freight and Gojek Logistics have changed the cost structure and user experience through demand prediction and dynamic price recommendations (*Vaughan, 2021*; *Eriksson & Sandberg, 2022*; *Wang et al., 2020*).

Corporate Adaptive Response to AI Disruption

The results of in-depth interviews show that companies that are successful in AI transformation show three patterns:

1. *Visionary Leadership*,
2. *Investment in data governance*,
3. *Digital culture readiness*.

Companies such as Bank Jago and Halodoc in Indonesia show high adaptive capacity, which creates flexible and scalable business models (*Tjitra et al., 2022*; *Afifah et al., 2023*; *World Economic Forum, 2021*).

However, there are still many medium-sized companies that are reactive, only adopting AI for tactical needs, not strategic ones. This results in digital fragmentation and mismatches between AI processes and core business processes (*Tarafdar et al., 2019*; *Bresciani et al., 2021*; *Iansiti & Lakhani, 2020*).

Table 3. AI Response Rate in Business Models Based on Company Size

Company Size	Tactical Response	Strategic Response
< 250 employees	68%	32%
250 - 1000 employees	52%	48%
> 1000 employees	28%	72%

Adaptive Framework Modeling: AI-Driven Business Model Canvas

As a key result, this study produced an AI-based adaptive framework of the Business Model Canvas. The model remaps the 9 elements of BMC and integrates the role of AI in each element, from value creation to customer relationship management.

Table 4. AI-Driven Business Model Canvas Framework (Kerangka Adaptif)

BMC Elements	AI Integration
Value Proposition	Machine learning for product personalization
Key Resources	Big data, AI platforms
Key Activities	Prediction odelling, workflow automation
Channels	Chatbot, digital platforms
Customer Segments	AI-based segmentation-based micro-targeting
Cost Structure	Reduced human costs, increased efficiency
Revenue Streams	Data-driven services, API monetization

This model helps organizations navigate disruption and craft innovative strategies based on artificial intelligence, as a foundation for future competitiveness (*Zeng et al., 2021*; *Bughin et al., 2017*; *Brynjolfsson & McAfee, 2014*).

4.   CONCLUSION

This research shows that Artificial Intelligence (AI) is not merely a technological tool but a major driver in creating new business models that are more adaptive, personalized, and data-driven. AI reshapes multiple elements of the Business Model Canvas, shifting value propositions toward personalization, generating new revenue streams through data monetization and subscriptions, and increasing cost efficiency through automation and predictive analytics. Across sectors, the most pronounced disruptions are seen in logistics and retail, followed by healthcare, with larger companies generally more prepared to integrate AI strategically than medium and small enterprises.

The proposed AI-Driven Business Model Canvas Framework provides a practical guide for organizations to navigate AI-driven disruption and develop resilient, future-ready strategies. This framework bridges theory and practice, offering both a conceptual contribution to business model innovation literature and actionable insights for managers and policymakers.

This study is limited by its focus on five sectors within Southeast Asia and by the cross-sectional nature of its data, which may not capture long-term transformations. Future research could broaden the scope to include additional industries, conduct longitudinal studies to track AI's impact over time, and explore consumer perspectives to complement organizational insights. Comparative studies across regions with different levels of AI maturity could also deepen understanding of how context shapes business model transformation.

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