DOCTORAL (PhD) DISSERTATION

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HUNGARIAN UNIVERSITY OF AGRICULTURAL AND LIFE SCIENCES

Examining the Factors Influencing the Use of Artificial Intelligence in Hungarian E-Commerce Using the UTAUT2 Model

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THESES

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1. Introduction

E-commerce has gradually integrated into everyday life over the past two decades, becoming entirely commonplace for consumers during the COVID-19 pandemic. On the service provider side, this transformation has been even more pronounced, as businesses underwent rapid digital adaptation to meet evolving consumer demands. At the same time, the emergence of generative artificial intelligence (AI)-based language models, such as ChatGPT and its competitors, marked a significant turning point for the internet. The unprecedented acceleration in content generation driven by AI has led to a situation where the majority of online content is now produced by artificial intelligence rather than human users. This phenomenon has had a profound impact on various industries, particularly e-commerce, where AI-driven solutions have reshaped key processes, including product management, marketing, and customer engagement. The introduction of generative AI has dramatically accelerated tasks such as content creation, store management, and customer communication, ultimately influencing business performance and competitive positioning.

Given the rapid development and increasing presence of AI in e-commerce, the adoption and acceptance of these technologies represent a compelling research area. To examine this phenomenon systematically, I have chosen the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model as the theoretical framework for my research. UTAUT2 is a widely applied model for studying technology adoption, as it integrates insights from over 30 previous technology acceptance theories. While originally developed for analyzing consumer behavior, I have adapted this model to a corporate setting, as AI adoption in e-commerce is primarily driven by business owners, managers, employees, marketers, and developers. Their decisions and acceptance will ultimately determine the extent to which AI-powered generative tools become integrated into the e-commerce sector. Furthermore, the UTAUT2 model was specifically designed to examine technologies intended for everyday use, making it a suitable choice for analyzing AI adoption within business environments.

The core pillars of my dissertation are e-commerce, corporate decision-making, artificial intelligence, and technology adoption. The primary objective is to explore the key factors influencing AI adoption in the Hungarian e-commerce sector and to generate insights that

contribute to both academic research and practical applications in the industry. Given the global rise of e-commerce and the increasing reliance on AI-driven solutions, understanding the factors that drive or hinder AI adoption is of critical importance. Over the past decade, technological advancements—particularly in artificial intelligence and digitalization—have fundamentally reshaped online shopping experiences and business operations. AI has played a pivotal role in personalizing shopping experiences, automating customer service, and enabling data-driven marketing strategies. These innovations have significantly enhanced customer satisfaction and engagement while simultaneously improving business efficiency.

AI-powered solutions allow businesses to analyze vast datasets, facilitating personalized product recommendations, dynamic pricing strategies, and optimized supply chain management. Chatbots, for example, provide real-time customer support, fostering trust and brand loyalty. However, the integration of AI-driven systems also raises challenges, particularly regarding data privacy and security. As a result, businesses must navigate these concerns carefully to maintain consumer trust while leveraging the efficiency benefits of AI. The UTAUT2 model provides a valuable framework for understanding the factors that influence technology adoption by examining constructs such as performance expectancy, effort expectancy, and social influence. Its application to the e-commerce sector offers meaningful insights into the drivers of AI acceptance and allows for a context-specific analysis of the technological transformation occurring within the industry.

The integration of AI and UTAUT2 is particularly relevant in today's rapidly evolving e-commerce landscape, where maintaining competitiveness requires continuous adaptation to technological advancements. Businesses must focus on improving customer experiences through AI-driven personalization, enhancing operational efficiency with automation, and addressing data privacy concerns to ensure long-term trust and compliance. Through this dissertation, I aim to contribute both to the academic discourse and industry practices by analyzing the adoption of AI in Hungarian e-commerce and its implications for businesses and technology developers.

2. Research Objectives and Hypotheses

The primary aim of my dissertation is to examine the adoption and diffusion of artificial intelligence (AI) in the Hungarian e-commerce sector using the UTAUT2 model. To achieve this, I have structured my research objectives, research questions, and hypotheses as follows:

O1: Objective 1 – Identifying the Factors Influencing AI Adoption in Hungarian E-Commerce

Q1: Research Question 1 – What factors influence behavioral intention toward AI adoption and actual usage behavior in the Hungarian e-commerce sector, and to what extent?

Hypotheses Related to Objective 1:

H1: Facilitating conditions (FC) positively influence behavioral intention (BI) to use AI in Hungarian e-commerce.

H2: Hedonic motivation (HM) positively influences behavioral intention (BI) to use AI.

H3: Price value (PV) positively influences behavioral intention (BI) to use AI.

H4: Habit (HA) positively influences behavioral intention (BI) to use AI.

H5: Habit (HA) positively influences actual AI usage (UB).

H6: Behavioral intention (BI) positively influences actual AI usage (UB).

O2: Objective 2 – Investigating the Influence of Individual User Attributes on AI Adoption

Q2: Research Question 2 – To what extent do individual user attributes (e.g., age, experience) influence behavioral intention toward AI adoption and actual usage behavior in the Hungarian e-commerce sector?

Hypotheses Related to Objective 2:

H7: Age (AGE) moderates the relationship between facilitating conditions (FC) and behavioral intention (BI) to use AI in Hungarian e-commerce.

H8: Age (AGE) moderates the relationship between hedonic motivation (HM) and behavioral intention (BI) to use AI.

H9: Age (AGE) moderates the relationship between price value (PV) and behavioral intention (BI) to use AI.

H10: Age (AGE) moderates the relationship between habit (HA) and behavioral intention (BI) to use AI.

H11: Experience (EXPERIENCE) moderates the relationship between facilitating conditions (FC) and behavioral intention (BI) to use AI.

H12: Experience (EXPERIENCE) moderates the relationship between hedonic motivation (HM) and behavioral intention (BI) to use AI.

H13: Experience (EXPERIENCE) moderates the relationship between price value (PV) and behavioral intention (BI) to use AI.

H14: Experience (EXPERIENCE) moderates the relationship between habit (HA) and behavioral intention (BI) to use AI.

Scope and Justification of the Research

The core focus of my dissertation is to explore the factors influencing AI adoption in the Hungarian e-commerce sector. Given that approximately 40,000 online stores operate in Hungary (Ekerstat, 2024), and the number of AI-driven e-commerce solutions is difficult to estimate, I chose to narrow my research population to e-commerce businesses and professionals working in this sector.

A potential future research direction is to expand the study to include consumer perspectives, examining their preferences, emotions, and attitudes toward AI-based e-commerce solutions. Studies suggest that anthropomorphization of AI agents can reduce users' anxiety and resistance (Mulcahy et al., 2024; Huang, 2021). Furthermore, my qualitative interviews highlighted that users tend to distrust AI-driven processes if they are aware of AI involvement, but when unaware, they report high satisfaction levels.

Although the UTAUT2 model was originally developed to study consumer technology acceptance, I applied it in a corporate setting, while maintaining a user-centric approach. My respondents included e-commerce business owners, managers, marketers, and developers, who evaluated AI adoption based on their own professional experiences.

In light of this, and based on the UTAUT2 framework, my research questions were formulated as follows:

K1: What factors influence AI adoption intention and actual usage behavior in Hungarian e-commerce, and to what extent?

K2: How do individual attributes such as age and experience affect AI adoption behavior?

The original UTAUT2 model by Venkatesh et al. (2012) proposed five hypotheses, primarily for moderation analysis. However, I expanded the scope to examine direct relationships between key AI adoption factors, such as habit strength and price value perception. While deviating from the original five-hypothesis structure, my doctoral research aims for a more comprehensive and in-depth analysis of the interrelationships between variables and the role of moderators.

To ensure broad data coverage, I designed my qualitative interviews based on the UTAUT2 framework, carefully selecting interviewees to align with the research objectives. I conducted in-depth interviews with 10 online store owners and 10 AI experts, ensuring a diverse range of perspectives. The qualitative phase preceded the quantitative survey, allowing me to refine my AI- and e-commerce-focused survey based on content analysis of the interviews.

The qualitative findings also led me to broaden the survey respondent pool, as both experts and business owners emphasized that AI tools are not exclusively used by business owners or decision-makers. Instead, employees, external consultants, marketing professionals, and developers often integrate AI solutions into business operations, primarily to enhance their own productivity, ultimately impacting the company's overall activities.

Methodology of the Survey and Model Adaptation

The survey data collection followed the UTAUT2 methodology as defined by Venkatesh et al.. While their original study examined mobile internet adoption, I adapted their questionnaire to focus on artificial intelligence in e-commerce. The qualitative research insights were incorporated into this adaptation, ensuring the questionnaire's relevance to the target audience.

The second objective and associated research question were defined based on the model's moderators. These moderators represent individual attributes that may influence AI adoption behavior, specifically:

- Age
- Experience
- (Gender was excluded, as prior research and expert interviews suggested no significant relevance in this context.)

Additionally, in the original UTAUT model (Venkatesh et al., 2003), voluntariness of use was included as a moderator. However, since AI adoption in e-commerce is a voluntary decision, this was another reason for selecting UTAUT2 as the primary framework.

C2: Objective 2 – Identifying the Influence of Individual Attributes on AI Adoption in Hungarian E-Commerce

K2: Research Question 2 – To what extent do age and experience influence AI adoption intention and actual usage behavior?

The primary goal of my research was to answer these questions and test the proposed hypotheses. My qualitative and quantitative data collection methods, as well as the analysis, were conducted using content analysis and PLS-SEM modeling techniques.

3. Literature review

In my literature review, I aim to present three major topics and their interconnections, providing a comprehensive overview of their relationships and intersections.

In the first section, I introduce the core subject of my research—electronic commerce (e-commerce)—by discussing its historical development, theoretical background, classification, and global and regional trends. Only after this broader contextualization do I turn to the Hungarian e-commerce sector, as it forms the primary analytical framework of my dissertation.

The second section of the literature review focuses on artificial intelligence (AI), which I examine as an influential factor in my research. I explore various forms of AI, its challenges, advantages, and limitations, with an emphasis on relevant research findings in the field. Additionally, I assess the economic opportunities and efficiency implications of AI applications.

The final section of the literature review discusses technology acceptance models, where I introduce key theoretical frameworks and methodologies that have influenced the Unified Theory of Acceptance and Use of Technology (UTAUT2) model employed in my dissertation. I provide a detailed examination of the UTAUT2 methodology, highlighting its applicability and limitations within the e-commerce sector. This discussion is particularly critical, as my dissertation is built upon this theoretical foundation, embedding my hypotheses within the UTAUT2 framework to address my research questions comprehensively.

4.1. Introduction to the UTAUT2 Model and Its Application in E-Commerce

Over the past decades, numerous models have been developed to examine technology acceptance, aiming to identify the factors that either facilitate or hinder adoption. Among the most widely used models are the Technology Acceptance Model (TAM) and the Unified Theory

of Acceptance and Use of Technology (UTAUT). The UTAUT2 model, which serves as the central framework of this dissertation, is particularly useful for analyzing consumer technology usage patterns in e-commerce, as it incorporates a broader range of user motivations.

The UTAUT2 model was developed by Venkatesh et al. (2012) to extend the applicability of the original UTAUT model to the consumer sector. This enhanced version identifies seven key constructs and three moderating factors, all of which directly or indirectly influence technology usage intention and actual adoption. The following sections introduce these constructs and moderators, emphasizing their relevance within the e-commerce domain.

4.2. Key Constructs of the UTAUT2 Model

1. Performance Expectancy (PE): This construct measures the extent to which users expect the technology to improve their efficiency or performance. In e-commerce, AI-based solutions can contribute to increased sales and enhanced customer satisfaction.
2. Effort Expectancy (EE): This refers to how easy users perceive the technology to be. In e-commerce, intuitive and user-friendly AI-based systems enhance user experience and willingness to adopt the technology.
3. Social Influence (SI): This variable reflects the impact of users' social environment (family, friends, colleagues) on technology adoption. In e-commerce, social media and influencers play a crucial role in promoting new technologies.
4. Facilitating Conditions (FC): This construct assesses the extent to which users perceive they have the necessary tools and support to use the technology. In e-commerce, this includes technical skills and adequate IT infrastructure.
5. Hedonic Motivation (HM): A key addition in the UTAUT2 model, this construct examines the enjoyment users derive from using a technology. Interactive and experience-driven AI solutions can enhance the entertainment value of e-commerce platforms.
6. Price Value (PV): This measures how users perceive the cost of a technology relative to its benefits. In e-commerce, AI tools’ cost-effectiveness is particularly important as they can reduce operational expenses in the long run.

7. Habit (HA): This indicates the extent to which users are inclined to regularly use a technology. In e-commerce, users are more likely to integrate familiar technologies into their daily routines, facilitating AI adoption.

4.3 Moderators of the UTAUT2 Model

The UTAUT2 model identifies three moderators that refine the relationships between constructs and technology usage. These moderators play a significant role in the e-commerce and AI adoption context:

Gender: Men and women may react differently to new technologies. According to UTAUT2, men are more influenced by performance expectancy and social influence, while women place greater emphasis on effort expectancy and ease of use.

Age: Age influences how users value hedonic motivation and facilitating conditions. In e-commerce, younger users may be more attracted to visually engaging platforms, while older users prioritize simplicity and efficiency.

Experience: Technological experience is another key moderator. In e-commerce, experienced users integrate AI solutions more easily, whereas newcomers may require additional support.

4.4. Application of the UTAUT2 Model in E-commerce

The UTAUT2 model has been widely applied in various contexts to analyze technology adoption, including e-commerce. In online shopping behavior research, factors such as social influence, habit, price value, and performance expectancy are particularly relevant. The constructs of the UTAUT2 model are well-adapted to e-commerce since user experience, ease of use, and emotional motivations play central roles in online purchasing.

Studies by Shoheib & Abu-Shanab (2022), Vinerean et al. (2022), and Hakim et al. (2024) confirm the applicability of the UTAUT2 model in e-commerce. These studies highlight that consumer-side constructs of the model are increasingly important, significantly influencing AI application adoption.

Thus, the UTAUT2 model serves as a valuable framework for examining the acceptance of AI applications in e-commerce, as it integrates various individual, social, and hedonic factors that influence user behavior.

5. Materials and Methods

5.1. Data Collection Methods

The research consisted of two primary data collection phases: a qualitative interview phase involving in-depth interviews with 10 e-commerce entrepreneurs and 10 artificial intelligence (AI) experts, and an online survey that gathered data from 344 respondents. The objective of the qualitative phase was to gain a deeper understanding of the examined phenomena through expert interviews, while the survey phase allowed for the collection and analysis of quantitative data. I plan to conduct a second qualitative data collection phase in future research based on the principle of triangulation.

5.2. Qualitative Research Methodology

During the qualitative research phase, I conducted semi-structured in-depth interviews, following Kvale's (2005) seven-step interview framework. The primary goal was to obtain a comprehensive understanding of AI and e-commerce experts' perspectives related to the dissertation's topic. Participants were selected through a combination of personal outreach and snowball sampling, ensuring that only relevant and knowledgeable professionals took part in the study.

The interview questions were designed based on the key constructs of the UTAUT2 model (e.g., performance expectancy, effort expectancy, and social influence) to ensure alignment with the research's methodological framework. The main themes emerging from the in-depth interviews focused on the diffusion of AI tools, entrepreneurial attitudes, and regulatory challenges. The qualitative findings played a crucial role in refining the quantitative research design and provided valuable insights into the integration of AI applications in the Hungarian e-commerce sector.

5.3. Presentation of the Quantitative Research

5.4. Sample Description

The 301 respondents participating in the study exhibited demographic diversity. 64.45% were male, while 35.55% were female. The average age was 37.27 years with significant variation (SD = 9.49), allowing for an analysis of age-related effects. Respondents were categorized into four age groups: young adults (18–29 years), adults (30–44 years), middle-aged (45–59 years), and seniors (60+ years). The largest group was adults (54.15%), followed by young adults (23.26%), middle-aged individuals (21.26%), and seniors (1.33%).

62.9% of respondents held a higher education degree, and 88.6% were directly involved in e-commerce. Within this, 27.5% were online store owners, 9.3% were managers, 27.8% were employees, 15% were marketing professionals, and 9% were developers. This diversity enabled a deeper understanding of technological usage differences within the sector.

Technology Usage Patterns and Attitudes Toward AI

Most respondents (49.9%) had been using artificial intelligence for 1–2 years, indicating a certain level of experience. Examining attitudes toward AI usage, 76% believed AI improves their workplace productivity, while 67% found AI easy to use. Hedonic motivation played a significant role, as 85% considered AI entertaining, and 90.7% found it enjoyable.

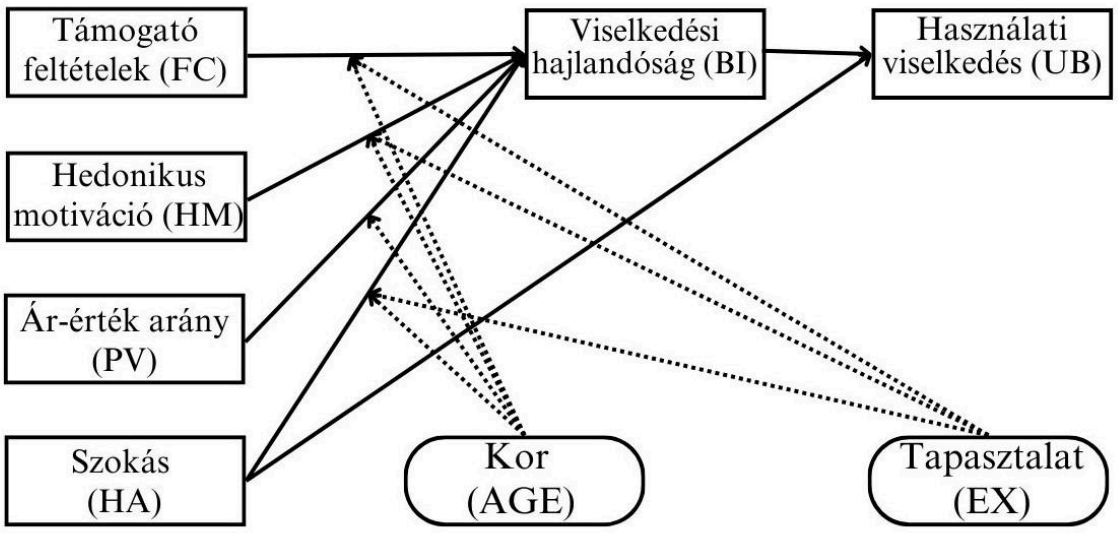
Regarding price-value perception, 48% were satisfied with the cost of AI services, and more than 80% planned to continue using the technology in the future. Among AI tools, ChatGPT was the most widely used (98.2%), followed by Copilot (17.6%).

Methodology for Processing the Questionnaires: Structural Equation Modeling (SEM)

For data analysis, I employed the PLS-SEM method, which is particularly suitable for smaller samples and enables the empirical testing of complex theoretical models. The ADANCO and Jamovi software were used to test the research model hypotheses and map the effects of moderating variables. The model evaluation incorporated statistical indicators such as explained

variance (R^2), path coefficients (β), effect sizes (f^2), and reliability and validity criteria (e.g., AVE, CR, HTMT).

1. Figure: The research model



Source: own research, 2025

The PLS-SEM model developed during the research illustrates the relationships between the UTAUT2 variables as well as the mechanisms of the moderating factors' effects.

6. Results

6.1 Qualitative Research Findings

The corporate adoption and diffusion of artificial intelligence (AI) is a complex process influenced by various technological, social, and economic factors. Based on the analysis of interviews conducted with 10 AI experts and 10 e-commerce practitioners, I identified the following key themes and conclusions:

Table 2: Summary of Expert and E-commerce Interviews

Topic	Barriers to Adoption	Facilitators of Adoption
Lack of Technological Knowledge and Skills	Many companies lack the necessary technological knowledge and skills for the effective implementation of artificial intelligence, hindering its adoption. Additionally, the absence of adequate training programs and information sources makes it challenging for employees to acquire the competencies needed for AI utilization.	Through educational programs, workshops, and training sessions, companies can prepare their employees for the effective use of AI tools, with a particular focus on prompt engineering and no-code platforms. Moreover, the proliferation of intuitive AI tools that require minimal technological background facilitates widespread adoption, especially among non-technical users.
Privacy and Legal Concerns	AI adoption is significantly hindered by privacy concerns—particularly risks associated with handling sensitive data—and legal uncertainties, such as questions regarding the ownership and uniqueness of AI-generated content, which lead to distrust.	The application of advanced data protection technologies is essential to ensure the security of both users and businesses. Simultaneously, clear and unambiguous legal regulations are needed to define the copyright status of AI-generated content.
Industry Pressure and Economic Expectations	Companies are often hesitant about AI adoption due to the uncertainty surrounding costs and return on investment, which can slow down the widespread adoption of the technology. At the same time, competitive pressure within the	Showcasing the advantages of successful AI projects encourages companies to embrace AI, while no-code platforms make integration simpler and more cost-effective.

	industry may compel firms to implement AI solutions, and if the expected results are not achieved, this can lead to frustration and resistance.	

Source: Own research, 2025

Based on the results of the interviews, I obtained a comprehensive overview of the current state and challenges of artificial intelligence (AI) adoption from the perspectives of both industry experts and e-commerce practitioners. In the Conclusions and Recommendations chapter, I was able to draw detailed conclusions and formulate recommendations regarding AI acceptance based on the identified trends.

To examine the spread of AI in e-commerce, I employed a survey-based methodology and analyzed the collected data using statistical modeling techniques. The quantitative research aimed to empirically test the factors influencing AI adoption and usage, providing data-driven insights into user attitudes, motivations, and potential barriers.

6.2. Results of the Quantitative Research

The objective of my quantitative research was to empirically test the UTAUT2 model in the Hungarian e-commerce sector, with a particular focus on the use of artificial intelligence. During data collection, I adapted the original UTAUT2 scales, considering the technological context and the results of qualitative research. The gender moderator was excluded, as neither the literature nor the interviews confirmed its relevance. I applied a two-step analytical approach: first, I examined the direct effects using PLS-SEM modeling, followed by hierarchical regression analysis to test moderation effects.

I assessed the validity and reliability of the measurement model using various statistical methods. Internal consistency was confirmed by Dijkstra-Henseler's ρA (BI = 0.8621; HA = 0.8403), Jöreskog's ρc (BI = 0.8585; HA = 0.8015), and Cronbach’s alpha (BI = 0.8575; HA = 0.8051), all exceeding the critical threshold of 0.7. Convergent validity was supported by average variance extracted (AVE) values above the acceptable threshold of 0.5 (e.g., PV =

0.8653), ensuring that each construct represents a single dimension. The structural model fit was deemed adequate based on the standardized root mean square residual (SRMR = 0.0619).

The hypothesis testing revealed that facilitating conditions ($\beta = -0.054$, $p = 0.545$) and hedonic motivation ($\beta = 0.226$, $p = 0.099$) did not significantly influence behavioral intention toward artificial intelligence use. In contrast, price value ($\beta = 0.111$, $p = 0.033$) and habit ($\beta = 0.652$, $p < 0.001$) had a significant positive effect on usage intention, with habit demonstrating the strongest relationship among all variables (Cohen's $f^2 = 0.582$). Regarding actual usage, habit ($\beta = 0.592$, $p < 0.001$) exhibited substantial explanatory power (Cohen's $f^2 = 0.225$), whereas the direct effect of behavioral intention was not statistically significant ($\beta = 0.171$, $p = 0.266$).

In the moderation analysis, I examined the effects of age and experience. For age, the explanatory power of the model increased significantly ($\Delta R^2 = 0.028$, $F(5, 291) = 4.09$, $p = 0.001$). Age negatively moderated the effect of facilitating conditions ($\beta = -0.01$, $p = 0.038$), while it strengthened the influence of hedonic motivation among older users ($\beta = 0.02$, $p = 0.007$). In the case of experience, the explanatory power increased by $\Delta R^2 = 0.035$ ($F(5, 291) = 5.27$, $p < 0.001$), with facilitating conditions exerting a stronger effect among experienced users ($\beta = 0.10$, $p = 0.034$), while the impact of hedonic motivation weakened ($\beta = -0.18$, $p < 0.001$).

Overall, habit and price value emerged as the most significant determinants of artificial intelligence adoption, while the role of facilitating conditions and hedonic motivation was context-dependent. The differential effects of age and experience highlight further research opportunities for understanding the dynamics of technology acceptance in greater depth.

In my research, I examined 14 hypotheses based on the UTAUT2 model to address the previously formulated research questions. Due to the length constraints of the thesis summary, I present each hypothesis concisely in tabular form only.

Table 3: Results of Hypothesis Testing

Hypothesis	Result
H1: Facilitating conditions (FC) increase behavioral intention (BI) to use artificial intelligence in the Hungarian e-commerce sector.	Rejected
H2: Hedonic motivation (HM) increases behavioral intention (BI) to use artificial intelligence.	Rejected
H3: Price value (PV) increases behavioral intention (BI) to use artificial intelligence.	Supported
H4: Habit (HA) increases behavioral intention (BI) to use artificial intelligence.	Supported
H5: Habit (HA) increases the actual use (UB) of artificial intelligence.	Supported
H6: Behavioral intention (BI) to use artificial intelligence increases actual usage (UB).	Rejected
H7: Age (AGE) moderates the effect of facilitating conditions (FC) on behavioral intention (BI) to use artificial intelligence in the Hungarian e-commerce sector.	Supported

H8: Age (AGE) moderates the relationship between hedonic motivation (HM) and behavioral intention (BI) to use artificial intelligence in the Hungarian e-commerce sector.	Supported
H9: Age (AGE) moderates the relationship between price value (PV) and behavioral intention (BI) to adopt artificial intelligence in the e-commerce sector.	Rejected
H10: Age (AGE) moderates the relationship between habit (HA) and behavioral intention (BI) to use artificial intelligence in the e-commerce sector.	Rejected
H11: Experience (EXPERIENCE) moderates the relationship between facilitating conditions (FC) and behavioral intention (BI) to adopt artificial intelligence in the e-commerce sector.	Supported
H12: Experience (EXPERIENCE) moderates the relationship between hedonic motivation (HM) and behavioral intention (BI) to use artificial intelligence in the Hungarian e-commerce sector.	Supported
H13: Experience (EXPERIENCE) moderates the relationship between price value (PV) and behavioral intention (BI) to adopt artificial intelligence in the Hungarian e-commerce sector.	Rejected

H14: Experience (EXPERIENCE) moderates the relationship between habit (HA) and behavioral intention (BI) to adopt artificial intelligence in the Hungarian e-commerce sector.	Rejected

Source: Own research, 2025

7. New Scientific Findings

Below, I detail the key scientific findings of my research that contribute to expanding knowledge on the acceptance of artificial intelligence in the e-commerce sector:

1. The primary barrier to AI adoption in business is not technological availability but internal organizational readiness and knowledge gaps.
Based on my qualitative research, I conclude that one of the most significant obstacles to AI adoption in business is not the accessibility of technology but the internal knowledge and organizational preparedness of companies. The lack of technological expertise, uncertainties regarding data protection and legal frameworks, and concerns about economic return serve as major deterrents. The successful integration of AI in businesses is influenced not primarily by the complexity of the technology but by adequate training, regulatory clarity, and the effective communication of business benefits.

2. Habit (HA) is the most significant predictor of AI usage intention and actual adoption.
One of the strongest effects observed in the research is related to the habit variable. Established AI usage habits play a decisive role in determining whether users are willing to continue using the technology in the future and whether they actually adopt it. This finding highlights that fostering and reinforcing habitual AI use is crucial for increasing AI acceptance.

3. The relationship between behavioral intention (BI) and actual usage (UB) was not significant in AI adoption.
A fundamental assumption of the UTAUT2 model is that BI is the strongest predictor of UB. However, my research showed that in the case of AI, usage intention does not necessarily lead to

actual adoption. This suggests that AI implementation is influenced by external factors such as organizational decisions, infrastructure, and regulatory constraints, indicating a need to reinterpret the BI-UB relationship in this context.

4. Experience (EX) significantly moderates the effects of various constructs on usage intention (BI).

The results indicate that experience positively moderates the effect of facilitating conditions (FC) on usage intention (BI). For more experienced users, the positive impact of facilitating conditions on usage intention is amplified, whereas for less experienced e-commerce stakeholders, the influence of facilitating conditions is less pronounced.

In contrast, the moderating effect of experience on hedonic motivation is negative. More experienced users are less influenced by hedonic motivation in their usage intention, whereas for less experienced users, hedonic motivation plays a stronger role.

5. Age moderates AI adoption.

The results show that age negatively moderates the effect of facilitating conditions (FC) on BI, meaning that the older an individual is, the less FC contributes to increasing BI.

Conversely, the effect of hedonic motivation (HM) strengthens with increasing age, implying that enjoyment derived from entertainment becomes a more significant factor in behavioral intention among older users.

6. The effects of price value (PV) and habit (HA) on behavioral intention (BI) are independent of both age (AGE) and experience (EX), as neither moderating factor was found to be significant.

8. Summary

In my dissertation, I provided a comprehensive overview of the development and current state of Hungarian e-commerce, as well as the sector's readiness to adopt artificial intelligence (AI)-based solutions. Through a literature review, I examined the history of e-commerce, defined its key concepts, and presented the latest international and domestic trends. Following this, I elaborated on the concept of AI and its potential role in digital commerce. This was followed by an introduction to technology acceptance models, with a particular focus on the UTAUT2 model, which served as the theoretical framework for my research.

The study investigated the factors influencing AI adoption in the Hungarian e-commerce sector using both qualitative and quantitative research methods. In the qualitative phase, I conducted interviews with industry experts to gain deeper insights into the motivations and challenges associated with AI adoption. The quantitative research involved a survey-based assessment of user attitudes and perceptions of AI, which I analyzed in line with the constructs of the UTAUT2 model.

The findings indicate that user experience, habit, and price value are key determinants of AI adoption, whereas social influence and performance expectancy play a lesser role. These results support the notion that AI adoption in the Hungarian e-commerce sector is not solely explained by general theoretical constructs but is significantly influenced by users' specific experiences and everyday practices.

The results of my research contribute to enriching the discourse surrounding AI adoption, further developing the UTAUT2 model, and, hopefully, providing valuable insights not only to the scientific community but also to professionals in the e-commerce industry.

Publications Related to the Dissertation

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