



# The Factors Influencing Continuous Intention to Adopt E-commerce Recommender System: The Mediating Role of Trust in Technology in Henan, China

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**Abstract**— *The exponential growth of e-commerce in Henan, China necessitates a deeper understanding of the factors influencing the continuous intention to adopt recommender systems, a crucial tool in enhancing online shopping experiences. This research aims to fill a knowledge gap in the Chinese e-commerce landscape, specifically in Henan, by investigating the unique cultural, social, and economic factors shaping user behavior. Building on a comprehensive literature review, the study identifies cultural orientation, privacy concerns, and user experience as critical drivers of recommender system adoption. Trust in technology emerges as a mediating factor influencing users' continuous intention. The primary objectives are to investigate the factors impacting continuous intention to adopt recommender systems and examine the mediating role of trust in technology. The anticipated findings will not only contribute to the broader understanding of consumer behavior in a rapidly growing digital market but will also provide practical recommendations for businesses to optimize their recommender systems, ultimately fostering increased sales in the Henan's e-commerce landscape.*

**Keywords**— *Consumer behavior, Continuous intention, E-commerce, Recommender systems, Trust in technology*

## I. INTRODUCTION

In the dynamic and thriving landscape of Chinese e-commerce, characterized by unprecedented sales figures on events like Singles' Day, and the nation's undisputed global market dominance, the integral role of recommender systems is underscored (Liu et al., 2021). To help customers locate, comprehend, and get information about a product, the recommender systems generates a taxonomy. The recommendation approach increases the efficacy and efficiency of e-commerce applications, resulting in improved customer experience and services (Coussement et al., 2021). Strong evidence was discovered by researcher Li et al., (2022) internet shoppers leave their shopping carts and walk out of site. It is therefore

evidently crucial to look at how personalisation affects consumers' propensity to make purchases when they shop online. In addition, this research will assess how customer purchase intention in the context of online purchasing is impacted by cultural orientation, privacy concerns, and purchase experiences personalisation.

### 1.1 Background of Research

In recent years, e-commerce has experienced an extraordinary growth in China (Gao, 2023). Recommender systems play a crucial role in e-commerce by helping consumers find products that match their preferences and past behaviors. Therefore, understanding of Chinese consumer's e-commerce adoption behavior has attracted increasing attentions from both marketers and academia

(Gao, 2023). The research addresses this critical gap by delving into influential factors such as cultural orientation, privacy concerns, and user experience, aiming to provide a comprehensive perspective on the intricacies of continuous adoption.

Henan province presents a distinct scenario where challenges, including low trust levels, data sparsity, language barriers, and cultural nuances, act as formidable barriers to the effective functioning of recommender systems (China Briefing, 2022; Quach et al., 2022; Kowalczyk, 2018). For example, trust is a significant factor in e-commerce adoption. In Henan, as in many other regions, consumers skeptical about the security of online transactions and the authenticity of products. This low level of trust can hinder the effectiveness of recommender systems, as users may be reluctant to engage fully with online platforms or share personal data that is crucial for accurate recommendations (Zhou, 2022).

### **1.2 Research Problem**

Recommender systems rely on large volumes of data to function effectively, in less urbanized areas or among demographics that are late adopters of technology, there is insufficient data on consumer behavior (Di Palma, 2023). This data sparsity makes it difficult for algorithms to generate accurate and personalized recommendations, reducing the overall effectiveness of the system. Besides, while Mandarin is the official language of China, there are significant linguistic variations across the country (Di Palma, 2023). In Henan, local dialects and variations in language use can pose a challenge for recommender systems that are primarily designed to operate in standard Mandarin. This can lead to misinterpretations and less relevant recommendations, affecting user satisfaction and engagement. Last, consumer preferences and behaviors are deeply influenced by local culture (Sun et al., 2023). Henan, with its rich history and traditional values, may have different shopping habits compared to more cosmopolitan areas like Beijing or Shanghai (Sun et al., 2023). For instance, Henan consumers prefer products that align with traditional Chinese medicine practices or local culinary tastes.

Additionally, family-oriented purchases and products that emphasize cultural heritage could be more popular in Henan. This study not only identifies these challenges but also seeks to unravel their impact on system effectiveness and user adoption. By probing into the mediating role of trust in technology and scrutinizing privacy concerns (Hu et al., 2010; McKnight et al., 2004), the research aims to offer nuanced insights into continuous adoption and system optimization. In essence, the paramount importance of this study lies in its potential to enrich understanding of

recommender system adoption in the vibrant Chinese e-commerce landscape. By responding to these critical gaps, the research aspires not only to contribute academically but also provide practical strategies for e-commerce businesses to optimize their operations in Henan. These insights can help e-commerce platforms design better user experiences, improve customer trust and satisfaction, and ultimately increase their market share in this distinctive region.

### **1.3 Research Gaps**

There are several critical research gaps in the existing literature on recommender systems in the Chinese e-commerce landscape, specifically in Henan province. Firstly, most studies focus on initial adoption and acceptance rather than sustained use of recommender systems (Liu & Ding, 2022). Existing research often highlights technological aspects and initial consumer reactions, with less attention to long-term engagement (Liu & Ding, 2022). Many studies take a general approach to e-commerce behaviors, missing the specific factors influencing continuous use of recommender systems. The increasing complexity of recommender systems has outpaced academic research on long-term user interaction and satisfaction (Yao et al., 2022). Additionally, the rapid changes in the Chinese e-commerce market necessitate ongoing research into factors affecting continuous adoption, such as trust and habit formation (Yao et al., 2022).

Secondly, research often generalizes cultural factors across China, overlooking regional differences like those in Henan with its distinct cultural heritage and consumer behaviors. While privacy concerns are well-documented, there is limited research on how these concerns vary in different Chinese regions, including Henan, where local cultural attitudes may impact data sharing. Also, studies tend to focus on technological aspects without fully exploring how cultural context in Henan affects user interactions and satisfaction with recommender systems.

Thirdly, the study aims to address unique challenges prevalent in the Chinese e-commerce landscape, such as low trust levels, data sparsity, language barriers, and distinctive cultural differences, and their consequential impact on the effectiveness of recommender systems. Existing studies often examine these challenges in isolation or focus on broader e-commerce trends without delving into their specific effects on recommender systems. Therefore, there is a need for targeted research that explores how these unique challenges intersect and influence the performance and user acceptance of recommender systems in the context of Chinese e-commerce, particularly in regions like Henan province.

Addressing this gap is essential for developing tailored strategies to optimize recommender systems and enhance the overall e-commerce experience for Chinese consumers.

Lastly, the dynamics of privacy concerns and the mediating role of trust in technology has not been thoroughly investigated (Wang et al., 2022), pointing to a critical gap in understanding its influence on continuous adoption and the overall effectiveness of recommender systems in the Chinese market. This gap includes the limited focus on continuous adoption, with existing research predominantly examining initial adoption rather than factors influencing sustained use (Wang et al., 2022). Studies often address broad trust issues like privacy and security concerns but do not specifically explore how trust in recommender systems affects their effectiveness. There is also insufficient research on how trust in technology varies across different regions and cultures within. The research aims to fill these gaps and contribute valuable insights with practical implications for optimizing e-commerce strategies in Henan province and beyond.

#### 1.4 Research Questions

How does Cultural Orientation influence the continuous intention to adopt e-commerce recommender systems in Henan, China?

How do Privacy Concerns impact the continuous intention to adopt e-commerce recommender systems in Henan, China?

What is the effect of User Experience on the continuous intention to adopt e-commerce recommender systems in Henan, China?

Does Trust in Technology mediate the relationships between Cultural Orientation, Privacy Concerns, User Experience, and the continuous intention to adopt e-commerce recommender systems in Henan, China?

#### 1.5 Research Objectives

To examine the relationship between Cultural Orientation and intention to adopt e-commerce recommender systems in Henan, China.

To examine how Privacy Concerns influence continuous intention to adopt e-commerce recommender systems in Henan, China.

To examine the impact of User Experience on continuous intention to adopt e-commerce recommender systems in Henan, China.

To examine the mediating role of trust in technology between Cultural Orientation, Privacy Concerns, User Experience and continuous intention to adopt e-commerce recommender systems in Henan, China.

## II. LITERATURE REVIEW

The current literature on the impact of continuous intention to adopt recommender systems in Henan province is limited (Liu, et al., 2021), creating a notable research gap. While recommender systems have gained widespread use in e-commerce, there is a lack of comprehensive studies focusing on the Henan region, particularly examining the influencing factors of cultural orientation. For example, significantly fewer data points show up in the scatter plot for Henan, suggesting limited research or data collection efforts in this region (Zhang & Meng, 2023). Compared to other regions (e.g., Beijing, Shanghai), which have a denser distribution of data points, Henan appears underrepresented, highlighting a research gap. Also, the data points for Henan exhibit high variability and inconsistent patterns, indicating potential issues with research robustness or uniformity in methodologies (Zhang & Meng, 2023).

### 2.1 Cultural Orientation

According to Earley, culture is defined as '*the individual-level manifestations of shared meaning systems that are learned from other members of the society.*' (Earley, 2002, p. 273). Similar to this, Johansen (Cloud, 1998) defined '*culture as a collection of shared values and beliefs among members of the same community which act as a guide for those members' behaviour.*' Also, according to Hofstede (1984), '*culture is the collective mind-programming that distinguishes members of one group from those of other groups.*' In a previous research, Hofstede (1984) classified any national culture into five distinct groups. These include uncertainty avoidance, power distance, masculinity, collectivism, and long-term orientation. Hence, culture is an important player in the discussions of e-commerce studies (Rabayah et al., 2021). This study is focused on how these cultural factors lead the user trust in technology, and affect when recommender system in e-commerce is adopted in Henan, China.

### 2.2 Privacy Concerns

Personalization also has been found to be of significant value to users, by reducing time and effort, promoting better service matching, and encouraging the best possible customer experience (Knijnenburg et al., 2012). However, users could be hesitant to take benefit of the conveniences that sophisticated personalised technology (Culnan, 2000) brings about since these benefits always involve some privacy cost. The "privacy-personalization trade-off" is a term used to describe this issue (Chellappa & Sin, 2005). According to researcher Li et al., (2023) use privacy calculus theory to explain the privacy paradox, which involves users logically evaluating the net value received

from information disclosure while accounting for their privacy concerns and associated privacy loss. In an online environment, trust is closely linked to privacy, and consumers heavily depend on the trustworthiness of an online vendor when sharing personal information (Soleimani, 2021). Studies have also shown that trust may greatly mediate the impact of privacy assurance practices on users' privacy concerns at the institutional level (Guo et al., 2021). According to another research (Kaili & Kapitsaki, 2022), privacy coping techniques (such as giving users control) might assure users that their information would only be accessed and used with their consent, hence increasing users' perceptions of the service provider's trust and finally resulting in a decrease in privacy fear.

### 2.3 User Experience

Due to the technical property of recommendation systems, previously identified problems have mainly been solved technically, such as through research on algorithms. However, some results (Liu & Wang, 2023) may be counterintuitive if looking at recommenders from the user experience perspective. Researchers, from the user's perspective, have initiated the examination of system effectiveness and evaluation standards (Pu et al., 2012). However, it is more challenging for recommenders to improve the user experience due to major user interface limitations on recommender systems in e-commerce, such as lack of trust in technology (Gallego et al., 2013). According to Gavalas et al., (2014), evaluating the efficacy and usefulness of recommendation systems requires taking into consideration user experiences. Other researchers have backed this similar concept. Researchers (Yu & Huang, 2020) suggested that rather than how quickly or accurately the results would be generated, the main issue when creating any efficient recommender system was figuring out how people would respond to and adopt the new technology. Applications wise, a user preference oriented collaborative recommendation algorithm was put out, where user preferences were included and shown to be helpful in improving the effectiveness of the recommendation system (Gao et al., 2014). This study will increase awareness of new challenges and opportunities faced by recommenders system in e-commerce from the users' perspective by looking at multiple factors that might affect the quality of the user experience.

### III. HYPOTHESIS

H1: Cultural Orientation positively influences the continuous intention to adopt e-commerce recommender systems.

H2: Privacy Concerns negatively impact the continuous intention to adopt e-commerce recommender systems.

H3: User Experience positively influences the continuous intention to adopt e-commerce recommender systems.

H4: Trust in Technology mediates the relationship between Cultural Orientation and the continuous intention to adopt e-commerce recommender systems.

H5: Trust in Technology mediates the relationship between Privacy Concerns and the continuous intention to adopt e-commerce recommender systems.

H6: Trust in Technology mediates the relationship between User Experience and the continuous intention to adopt e-commerce recommender systems.

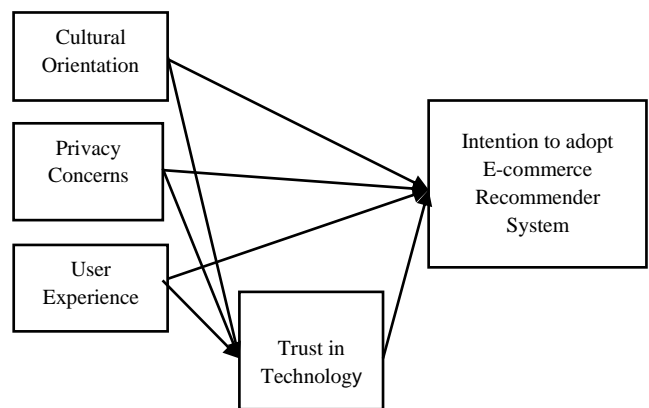


Fig.1: Conceptual Framework

### IV. CONCLUSION

The expected outcomes of this research include practical recommendations for enhancing recommender systems in e-commerce platforms, leading to increased user engagement and satisfaction. This research will also contribute to the academic literature by providing insights into the factors influencing the continuous use of technology in a specific regional context.

### REFERENCES

- [1] China passes sweeping recommendation algorithm regulations.(2022). <https://bostonglobalforum.org/news/china-passes-sweeping-recommendation-algorithm-regulations/>
- [2] Culnan, M. J. (2000). Protecting privacy online: Is self-regulation working? *Journal of Public Policy & Marketing*, 19(1), 20–26. <https://doi.org/10.1509/jppm.19.1.20.16944>



- [3] Chellappa, R. K., & Sin, R. G. (2005). *Personalization versus privacy: An empirical examination of the online consumer's dilemma - information technology and management*. SpringerLink. <https://link.springer.com/article/10.1007/s10799-005-5879-y>
- [4] Coussement, K., De Bock, K. W., & Geuens, S. (2021). A decision-analytic framework for interpretable recommendation systems with multiple input data sources: A case study for a European e-tailer. *Annals of Operations Research*, 315(2), 671–694. <https://doi.org/10.1007/s10479-021-03979-4>
- [5] Di Palma, D. (2023). Retrieval-augmented recommender system: Enhancing Recommender Systems with large language models. Proceedings of the 17th ACM Conference on Recommender Systems. <https://doi.org/10.1145/3604915.3608889>
- [6] Earley, P. C. (2002). Redefining interactions across cultures and organizations: Moving forward with cultural intelligence. *Research in Organizational Behavior*, 24, 271–299. [https://doi.org/10.1016/s0191-3085\(02\)24008-3](https://doi.org/10.1016/s0191-3085(02)24008-3)
- [7] Gallego, D., Woerndl, W., & Huecas, G. (2013). Evaluating the impact of proactivity in the user experience of a context-aware restaurant recommender for Android smartphones. *Journal of Systems Architecture*, 59(9), 748–758. <https://doi.org/10.1016/j.sysarc.2013.02.004>
- [8] Gavalas, D., Konstantopoulos, C., Mastakas, K., & Pantziou, G. (2014). Mobile Recommender Systems in Tourism. *Journal of Network and Computer Applications*, 39, 319–333. <https://doi.org/10.1016/j.jnca.2013.04.006>
- [9] Gao, H., Wang, S., Yang, B., & Yang, H. (2014). User preference-oriented collaborative recommendation algorithm in e-commerce. *Journal of Software*, 9(7). <https://doi.org/10.4304/jsw.9.7.1886-1893>
- [10] Gao, J. (2023). Design and development of e-commerce recommendation system based on Big Data Technology. 2023 4th International Conference on E-Commerce and Internet Technology (ECIT 2023), 36–40. [https://doi.org/10.2991/978-94-6463-210-1\\_6](https://doi.org/10.2991/978-94-6463-210-1_6)
- [11] Guo, Y., Wang, X., & Wang, C. (2021). Impact of privacy policy content on perceived effectiveness of privacy policy: The role of vulnerability, benevolence and privacy concern. *Journal of Enterprise Information Management*, 35(3), 774–795. <https://doi.org/10.1108/jeim-12-2020-0481>
- [12] Hu, X., Wu, G., Wu, Y., & Zhang, H. (2010). The effects of web assurance seals on consumers' initial trust in an online vendor: A functional perspective. *Decision Support Systems*, 48(2), 407–418. <https://doi.org/10.1016/j.dss.2009.10.004>
- [13] Hofstede, G. (1984). The cultural relativity of the quality of life concept. *Academy of Management Review*, 9(3), 389–398. <https://doi.org/10.5465/amr.1984.4279653>
- [14] Kowalczyk, J. (2018). The Evolvement of online consumer behavior: The ROPO and reverse ROPO effect in Poland and Germany. *Journal of Management and Business Administration*. Central Europe, 26(3), 14–29. <https://doi.org/10.7206/jmba.ce.2450-7814.233>
- [15] Knijnenburg, B. P., Willemsen, M. C., Gantner, Z., Soncu, H., & Newell, C. (2012). Explaining the user experience of Recommender Systems. *User Modeling and User-Adapted Interaction*, 22(4–5), 441–504. <https://doi.org/10.1007/s11257-011-9118-4>
- [16] Kaili, M., & Kapitsaki, G. (2022). Privacy policy beautifier: Bringing privacy policies closer to users. Proceedings of the 18th International Conference on Web Information Systems and Technologies. <https://doi.org/10.5220/0011541600003318>
- [17] Learning exercises. (1998). Involving Community Members in Focus Groups, 51–84. <https://doi.org/10.4135/9781483328140.n3>
- [18] Liu, Y., & Wang, Y. (2023). Empirical study on the factors affecting user stickiness of online visual art platform from the perspective of User Experience. *IEEE Access*, 11, 60763–60776. <https://doi.org/10.1109/access.2023.3284541>
- [19] Liu, A., Osewe, M., Shi, Y., Zhen, X., & Wu, Y. (2021). Cross-border e-commerce development and challenges in China: A systematic literature review. *Journal of Theoretical and Applied Electronic Commerce Research*, 17(1), 69–88. <https://doi.org/10.3390/jtaer17010004>
- [20] Li, J., Zhang, Y., & Mou, J. (2023). Understanding information disclosures and privacy sensitivity on short-form video platforms: An empirical investigation. *Journal of Retailing and Consumer Services*, 72, 103292. <https://doi.org/10.1016/j.jretconser.2023.103292>
- [21] Liu, Y., & Ding, Z. (2022). Personalized recommendation model of electronic commerce in New Media era based on semantic emotion analysis. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.952622>
- [22] Li, J., Gu, Z., & Dai, Y. (2022). Impact of sports sponsorship motivation on consumer purchase intention: Mediating effect based on consumer attitude. *Sustainability*, 14(22), 15430. <https://doi.org/10.3390/su142215430>
- [23] Liu, Y., Li, H., & Li, X. (2021). Trust in recommender systems in China: Conceptualization and scale development. *Journal of Business Research*, 131, 524–533. doi: 10.1016/j.jbusres.2021.03.020
- [24] Mcknight, D. H., Kacmar, C. J., & Choudhury, V. (2004). Shifting factors and the ineffectiveness of third party assurance seals: A two-stage model of initial trust in a web business. *Electronic Markets*, 14(3), 252–266. <https://doi.org/10.1080/1019678042000245263>
- [25] Pu, P., Chen, L., & Hu, R. (2012). Evaluating Recommender Systems from the user's perspective: Survey of the state of the art. *User Modeling and User-Adapted Interaction*, 22(4–5), 317–355. <https://doi.org/10.1007/s11257-011-9115-7>
- [26] Quach, S., Thaichon, P., Martin, K. D., Weaven, S., & Palmatier, R. W. (2022). Digital technologies: Tensions in privacy and Data. *Journal of the Academy of Marketing Science*, 50(6), 1299–1323. <https://doi.org/10.1007/s11747-022-00845-y>
- [27] Rabayah, K.S., Maree, M. & Alhashmi, S.M. (2021). Cultural factors that influence the adoption of e-commerce: A Palestinian case study. *Information Development*, 38(4), pp. 623–640. <https://doi.org/10.1177/02666669211006887>
- [28] Sun, G., Guo, C., Li, B., & Li, H. (2023). Cultural inclusivity and corporate social responsibility in China. *Humanities and Social Sciences Communications*, 10(1). <https://doi.org/10.1057/s41599-023-02193-w>

- [29] Wang, J., Shahzad, F., Ahmad, Z., Abdullah, M., & Hassan, N. M. (2022). Trust and consumers' purchase intention in a Social Commerce Platform: A meta-analytic approach. *SAGE Open*, 12(2), 215824402210912. <https://doi.org/10.1177/21582440221091262>
- [30] Yao, P., Osman, S., Sabri, M. F., & Zainudin, N. (2022). Consumer behavior in online-to-offline (O2O) commerce: A thematic review. *Sustainability*, 14(13), 7842. <https://doi.org/10.3390/su14137842>
- [31] Yu, N., & Huang, Y.-T. (2020). Important factors affecting user experience design and satisfaction of a mobile health app—a case study of Daily Yoga App. *International Journal of Environmental Research and Public Health*, 17(19), 6967. <https://doi.org/10.3390/ijerph17196967>
- [32] Zhang, W., & Meng, F. (2023). Enterprise digital transformation and regional green innovation efficiency based on the perspective of Digital Capability: Evidence from China. *Systems*, 11(11), 526. <https://doi.org/10.3390/systems11110526>
- [33] Zhou, Q. (2022). Study on the effect of cause-related marketing perception on customers' out-of-role behavior based on a moderated mediation model. *Proceedings of the 1st International Conference on Public Management, Digital Economy and Internet Technology*. <https://doi.org/10.5220/0011734200003607>