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The Necessity of Strategic Transformation of Real Estate Digital Operations from the Perspective of Information Economic Management

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Abstract: Unlocking the bricks-and-clicks revolution, information economic management and strategic management practices enable the transformation of digital real estate operations. This study investigates the need for strategic transformation of digital real estate operations from the perspective of information economic management. N=287 volunteer real estate agents in Shanghai, China, participated in the survey to investigate the influence of strategic management practices on real estate digital transformation and the mediating and moderating effects of information economic management. PLS-SEM (partial least squares structural equation modeling) was used to conduct the statistical analysis with smart-PLS v.4.0. Strategic management practices (SMP) are crucial to the success of real estate digital transformation (REDT), according to the study's findings. Importantly, the results statistically confirm that information economic management is a significant mediator and moderator in the relationship between SMP and REDT. The managerial implications of the present study include the importance of incorporating information economic management into strategic decision-making in real estate firms. In contrast, the academic implications include extending prior literature on digital transformation and financial information management in the real estate industry.

1. Introduction

In recent years, the real estate industry has witnessed a significant digital transformation due to the rapid development of digital technologies (such as 3D printing, cloud computing, the internet of things, and building information modeling (Zahra, 2021)). As a result, real estate companies are progressively implementing digital transformation initiatives to enhance operational efficiency and competitiveness (Jelonek et al., 2022). For the successful execution of digital transformation initiatives, however, effective strategic management practices and information economic management are required (Fischer et al., 2020). Consequently, the purpose of this study is to examine the need for strategic change in China's digital real estate operations from the information economic management perspective. (Morrison, 2019, Rogoff & Yang, 2021, and Zahra, 2021).

Chinese real estate significantly contributes to the country's gross domestic product (GDP) (Morrison, 2019; Rogoff & Yang, 2021). The Chinese real estate market is expanding and changing swiftly due to rising urbanization and income levels (Rogoff & Yang, 2021). According to the National Bureau of Statistics of China, total real estate development expenditures in China will reach 13,77 trillion yuan (approximately USD 2.2 trillion) in 2020, a 7% increase from 2019 (Fang et al., 2018; Taskinsoy, 2020; Wei & Liao, 2016). However, the industry faces several obstacles, such as increased competition, rising prices, and altering consumer preferences. To overcome these challenges, real estate firms must implement digital transformation initiatives (Rogers, 2016).

Adopting digital technologies is crucial for the survival and success of real estate enterprises in the twenty-first century (Mazzoni et al., 2021). For the successful implementation of digital transformation initiatives, however, effective strategic management practices and information economic management are required (Fischer et al., 2020). Despite the growing significance of real estate digital transformation, China lacks research on the need for strategic change in real estate digital operations from the perspective of information economic management (Shen et al., 2022; Ullah et al., 2021). Consequently, this research will contribute to the existing corpus of knowledge by investigating the effect of strategic management practices and information economic management on the digital transformation of the real estate industry.

Prior research has examined the impact of digital transformation in the real estate industry. For instance, Ullah and Sepasgozar (2020) examined the factors that influence the adoption of digital technologies in the Chinese real estate industry. They found that technological innovation, organizational readiness, and external environmental factors were their industry's primary drivers of digital transformation. Similarly, Garcia-Teruel (2020) examined the impact of digital technologies on the European real estate industry. While digital technologies can improve the efficacy and transparency of real estate transactions, they have a mixed effect on property prices, the researchers found.

This study focuses on four factors: strategic management practices, the digital transformation of real estate, information economic management as a mediator, and financial information management as a moderator. Strategic management practices are the actions real estate companies take to attain their strategic objectives (Gepner et al., 2022). Digital transformation incorporates digital technologies to increase operational efficiency and competitiveness in real estate (Zhai et al., 2022). Information economic management efficiently uses information resources to generate economic value (Saeidi et al., 2019). Banka et al. (2022). According to Gabryelczyk

(2020), real estate companies must adopt a strategic approach to digital transformation to realize their full potential. Similarly, Hiep et al. (2021) discovered that strategic planning and vision are crucial success factors for the digital transformation of the real estate industry.

Effective information economic administration is also necessary to successfully implement real estate digital transformation initiatives (Tomii Furjan et al., 2020). According to Jelonek et al. (2022), effective use of information resources can increase the competitiveness of real estate enterprises. Moreover, information economic management can link strategic management practices and digital transformation in real estate (Banka et al., 2022). This investigation is being conducted in the Chinese real estate industry context. China has the largest real estate market in the world, with significant potential for digital transformation (Casalino et al., 2019; Ulas, 2019). However, the sector faces several obstacles, such as regulatory constraints, data privacy concerns, and a talent shortage (Kozyreva et al., 2020). To keep up with the digital era, the strategic management practices of real estate companies must undergo significant change (Jelonek et al., 2022). Real estate digital transformation is crucial to this transformation process because it enables businesses to increase operational efficiency, reduce expenses, and enhance customer experience (Ulas & Zaki, 2019). In addition, the significance of information economic management cannot be overstated, as it aids businesses in making informed decisions, optimizing resources, and accomplishing business objectives (Ulas, 2019).

Due to China's rapid economic growth and urbanization, the real estate industry in China has expanded significantly in recent decades (Liang et al., 2022). Therefore, real estate firms must urgently implement digital technologies and transform their operations to adapt to the shifting business environment (Nanda et al., 2021). Despite the growing significance of real estate digital transformation and information economic management, little research has been conducted on their relationship. Consequently, this study aims to fill this void by examining the need for strategic transformation of digital real estate operations from the perspective of information economic management. This study seeks to investigate the extent to which strategic management practices in the real estate industry influence the adoption of real estate digital transformation, as well as the mediating and moderating role of information economic management. Consequently, the purpose of this study is to provide insights into the significance of real estate digital transformation and information financial management in the Chinese real estate industry, as well as practical recommendations for real estate firms seeking to enhance their competitiveness in the digital age.

2. Literature Review and Hypotheses Development

Real estate has existed for centuries and has contributed significantly to the global economy (Bhambra, 2020). Li et al. (2020) note that the industry has undergone significant transformation in recent years, primarily due to the proliferation of digital technologies. Incorporating digital technologies into real estate operations has afforded the sector unprecedented opportunities to enhance performance, consumer experience, and financial returns (Eltweri, Faccia, & Khassawneh). This literature review investigates the need for strategic transformation of digital real estate operations from the perspective of information economic management (Hanelt et al., 2021). This study investigates the relationship between strategic management practices, digital transformation of real estate, and information economic management (Kraus et al., 2021).

3. Strategic Management Practices

Real estate has existed for centuries and has contributed significantly to the global economy (Bhambra, 2020). Li et al. (2020) note that the industry has undergone significant transformation in recent years, primarily due to the proliferation of digital technologies. Incorporating digital technologies into real estate operations has afforded the sector unprecedented opportunities to enhance performance, consumer experience, and financial returns (Eltweri, Faccia, & Khassawneh). This literature review investigates the need for strategic transformation of digital real estate operations from the perspective of information economic management (Hanelt et al., 2021). This study investigates the relationship between strategic management practices, digital transformation of real estate, and information economic management (Kraus et al., 2021).

4. Information Economic Management and Real Estate Digital Transformation

Effective information economic management practices are necessary to successfully implement real estate digital transformation initiatives (Chanias et al., 2019). Anejionu et al. (2019); Zhang et al. (2022). According to van Tulder et al. (2018), information economic management mediates the complex and multifaceted relationship between strategic management practices, real estate digital transformation, and financial information management. Several studies have been conducted on the relationship between these variables in the context of the real estate industry (Huy et al., 2021). For instance, Chang and Sokol (2022) discovered that the effectiveness of strategic management practices in real estate is contingent on the level of information economic

management. (Tien & Thuan, 2019) Real estate firms with a high level of financial information management are more likely to achieve their strategic objectives than those without. Moreover, the research found that real estate companies that integrate digital technologies into their operations are more likely to achieve their strategic goals (Garcia-Teruel, 2020; Maron & Tomal, 2020). The degree of information economic management determines the effectiveness of digital technologies in real estate operations (Nez-Merino et al., 2020).

Similar research found that information economic management mediates and moderates the relationship between strategic management practices and the digital transformation of real estate (Mohamed & Saad, 2022; Yang et al., 2023). Porter et al. (2019) discovered that information economic management mediates the relationship between strategic planning and digital transformation in real estate operations (Agustina et al., 2022). According to research (Smith & Tardif, 2009), real estate companies with effective information economic management practices are more likely to incorporate digital technologies into their operations.

Hypothesis 1: Strategic management practices in the real estate business positively impact real estate digital transformation.

Hypothesis 2: Information economic management mediates the relationship between strategic management practices and real estate digital transformation.

Hypothesis 3: Information economic management moderates the relationship between strategic management practices and real estate digital transformation.

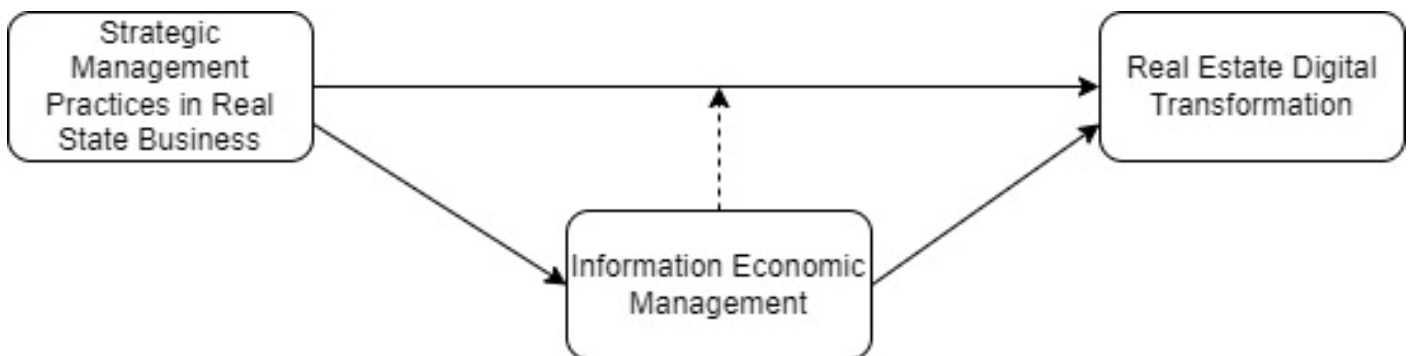


Figure 1. Conceptual Model

5. Methodology

5.1 Sampling and Procedure

This study aimed to examine the significance of the strategic change in digital real estate operations in Shanghai, China, from the perspective of information economic management. The following section describes the study's methodology, including the research plan, data acquisition, and analysis procedures. This study employed a quantitative cross-sectional survey design for its research. A survey was conducted in Shanghai, China, to acquire information from 287 real estate professionals. This design was selected because it allowed for the accumulation of data from a large sample size and provided a statistically significant representation of the population. Convenience sampling was used to determine the sample, which entailed selecting available and willing respondents to participate in the study. This study utilized a self-administered questionnaire disseminated online via various social media platforms and email. Respondents were instructed to complete the questionnaire at their leisure and transmit it electronically.

The questionnaire consisted of closed-ended questions, which made data analysis and quantification straightforward. Biasutti et al. (2012) developed a twelve-item scale to capture data for information economic management. Oniwinde's (2019) six-item scale was used to measure real estate digital transformation. In addition, this study employed Marubu's (2012) eleven-item scale to measure strategic management practices in the real estate industry.

The data were analyzed using version 4.0 of PLS-SEM. PLS-SEM is a widely used statistical method in social science research because it permits testing intricate theoretical models with a small sample size. PLS-SEM is particularly advantageous for exploratory study because it can identify and model relationships between variables even when the underlying structure is unknown. The analysis consisted of several phases. Initial data cleansing and validation were conducted to ensure the data's accuracy and completeness. Following this, the reliability and validity of the survey instrument were evaluated using factor analysis, and the results were used to validate the construct validity of the measurement model. Finally, the

structural model was evaluated using PLS-SEM, which allowed for testing the research hypotheses and identifying any significant relationships between the variables. This investigation was conducted following ethical guidelines for social science research. Respondents were informed of the purpose of the study, and their participation was purely voluntary. Confidentiality and anonymity were maintained throughout the study, and all participants gave their informed assent.

Overall, the methodology of this study was appropriate for the research concerns and objectives. PLS-SEM 4.0 was utilized to test complex theoretical models with a small sample size, and the survey instrument was designed to collect valid and reliable data on the variables of interest. The convenience sampling method utilized in this study may limit the generalizability of

the results to a larger population. However, the large sample size and rigorous analysis methods used in this study contribute to the validity and reliability of the findings.

5.2 Statistical Analysis and Results

All variables in the study had acceptable Cronbach's alpha values, indicating outstanding internal consistency, as revealed by the analysis. (See Table 1). Information Economic Management, Real Estate Digital Transformation, and Strategic Management Practices in Real Estate Business had alpha values of 0.852, 0.914, and 0.832. These results indicate that the measurement items used to evaluate each variable were reliable; therefore, the collected data could be used to test the hypotheses.

Table 1: Cronbach's Alpha Values for Variables

	Cronbach's alpha
Information Economic Management	0.852
Real Estate Digital Transformation	0.914
Strategic Management Practices in Real Estate Business	0.832

Table 2 displays the results of the variables' extracted loadings, composite reliability, and average variance. All items have significant loadings on their respective variables, ranging from 0.552 to 0.877. Each variable's composite reliability scores are also quite high, with values of 0.88 for Strategic Management Practices in Real Estate Business, 0.89 for Real Estate Digital Transformation, and 0.94 for Information Economic

Management. The average variance extracted (AVE) scores for each variable are also satisfactory, with values of 0.564, 0.594, and 0.587 for Strategic Management Practices in Real Estate Business, Real Estate Digital Transformation, and Information Economic Management, respectively. These findings indicate that the variables in the study are valid and reliable indicators of the constructs they are intended to represent.

Table 2: Loadings, Composite Reliability, and Average Variance Extracted

	Item	Loading	CR	AVE
Information Economic Management	IEM1	0.839	0.944	0.587
	IEM10	0.756		
	IEM11	0.643		
	IEM12	0.670		
	IEM2	0.673		
	IEM3	0.832		
	IEM4	0.756		
	IEM5	0.819		
	IEM6	0.858		
	IEM7	0.766		
Real Estate Digital Transformation	REDT1	0.870	0.897	0.594
	REDT2	0.804		
	REDT3	0.785		
	REDT4	0.713		
	REDT5	0.826		
	REDT6	0.596		
Strategic Management Practices in Real Estate Business	SMP1	0.552	0.885	0.564
	SMP10	0.785		
	SMP2	0.590		
	SMP3	0.611		
	SMP4	0.743		
	SMP5	0.735		
	SMP6	0.606		
	SMP8	0.731		
SMP9	0.733			

According to Table 3, the Heterotrait Monotrait (HTMT) ratio between all constructs is less than the 0.90 thresholds, indicating discriminant validity (Leguina, 2015). The HTMT value between Information Economic Management and Real Estate Digital Transformation is 0.274, below the recommended cut-off value, indicating that these constructs have a high level

of discriminant validity. The HTMT value between Strategic Management Practices in Real Estate Business and Real Estate Digital Transformation is 0.437, also below the recommended cut-off value, indicating that these constructs have strong discriminant validity. In general, the discriminant validity of the model's constructs is supported.

Table 3: HTMT Discriminant Validity

	1	2	3
Information economic management			
Real estate digital transformation	0.274		
Strategic management practices in the real estate business	0.755	0.437	

Table 4 displays the R-squared values of the model's variables. The results indicate that strategic management practices in the real estate industry explain 30.1% of the mediating variable, information economic management

Table 4: R2 Values of Variables

	R Square
Information economic management	0.301
Real estate digital transformation	0.242

Table 5 presents the model fit indices for the saturated and estimated models. The standardized root means square residual (SRMR) values of 0.070 and 0.074 for the saturated and estimated models indicate an acceptable fit. The chi-square values for the saturated and estimated models were 1776.022

Table 5: Model Fit Predictive Relevance of Model

	Saturated Model	Estimated Model
SRMR	0.070	0.074
Chi-Square	1776.022	1822.118
Q ² predict	0.341	

The data coefficients for the hypotheses tested in this investigation are displayed in Table 6. The first hypothesis examined the connection between information economic management and real estate digital transformation. The outcomes indicate a positive coefficient of 0.384 and a standard deviation 0.099. The relationship is significant at the 0.05 level, as indicated by the t-statistic of 3.866 and the p-value of 0.000. Therefore, it can be concluded that information economic management has a substantial positive impact on the digital transformation of the real estate industry. The second hypothesis examined the indirect connection between strategic

variance, and 24.2% of the conflict in the dependent variable, real estate digital transformation. These values indicate that the independent variable exerts a moderate influence on both the dependent and mediating variables.

and 1822.118, respectively. Although the chi-square value for the estimated model was marginally higher, this value can be influenced by sample size, and the other fit indices indicate an acceptable fit. The Q²predict value for the estimated model was 0.341, indicating the model's high predictive accuracy.

management practices in the real estate industry, information economic management, and real estate digital transformation. The findings reveal a positive coefficient of 0.211 and a standard deviation 0.066. The relationship is significant at the 0.05 level, as indicated by the t-statistic of 3.184 and the p-value of 0.001. Therefore, it can be concluded that strategic management practices in the real estate industry have a significant positive impact on information economic management, which has a significant positive impact on the digital transformation of the real estate industry.

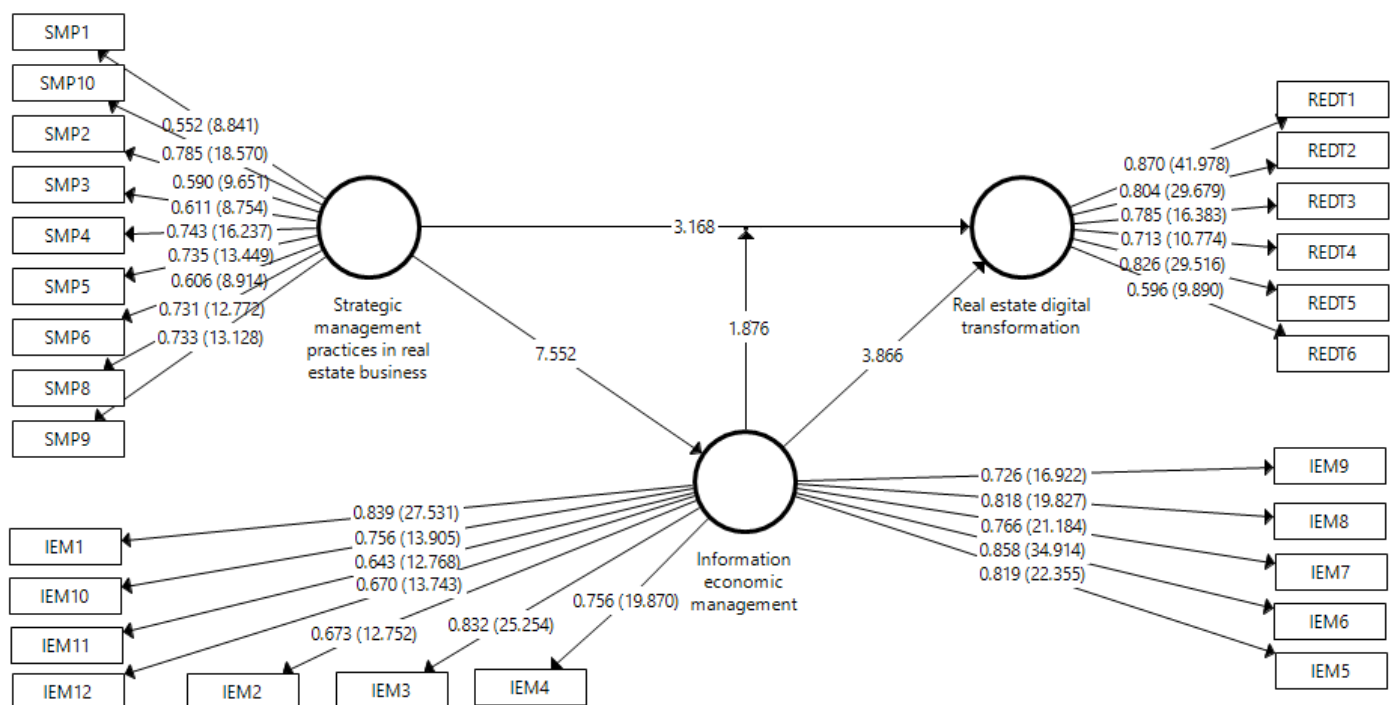


Figure 2: Structural Model

The third hypothesis examined the moderating effect of information economic management on the relationship between strategic real estate management practices and real estate digital transformation. The outcomes indicate a positive coefficient of 0.080 and a standard deviation 0.043. The relationship is significant at the 0.05 level, as noted in the t-statistic of 1.877 and the p-value of 0.031. In conclusion, information economic management moderates the relationship

between strategic management practices in the real estate industry and real estate digital transformation.

In conclusion, Table 6 indicates that all tested hypotheses in this study are supported, suggesting that a strategic transformation of digital real estate operations is required from the perspective of information economic management.

Table 6: Data Coefficient for Hypotheses

	Beta	S.D.	T Statistics	P Values
Information economic management -> Real estate digital transformation	0.384	0.099	3.866	0.000
Strategic management practices in real estate business -> Information economic management -> Real estate digital transformation	0.211	0.066	3.184	0.001
Information economic management * Strategic management practices in real estate business -> Real estate digital transformation	0.080	0.043	1.876	0.031

6. Discussions

This study examined the significance of the strategic transformation of digital real estate operations from the perspective of information economic management. The purpose of this study was to investigate the relationship between strategic management practices in the real estate industry, real estate digital transformation, and the function of information economic management as a moderator and mediator of this relationship. The study's findings are discussed in greater detail below.

The study's first hypothesis suggested a positive correlation between strategic real estate management practices and digital transformation. The investigation revealed a positive correlation between strategic management practices and the digital transformation of real estate. This finding corroborates prior research indicating that strategic management practices are essential for successfully implementing digital transformation in real estate companies (Akter et al., 2016). Effective planning, resource allocation, and continuous monitoring are examples of strategic management practices that can aid real estate companies in overcoming digital transformation obstacles and realizing digitalization's benefits.

The study's second hypothesis proposed that information economic management mediates the association between strategic management practices and real estate digital transformation. The study's findings demonstrated that financial information management partially mediates the relationship between strategic management practices and real estate digital transformation. This finding supports earlier research (Brynjolfsson & Hitt, 2000) that information economic management is a key factor in successfully implementing digital transformation in real estate enterprises. Data collection, analysis, and utilization are examples of information financial management practices that can aid real estate firms in identifying the opportunities and obstacles associated with digital transformation and making informed decisions.

The third research hypothesis postulated that information economic management moderates the relationship between strategic management practices and real estate digital transformation. According to the study, financial information management mediates the relationship between strategic management practices and the digital transformation of real estate. This finding supports earlier research indicating that information economic management practices can help real estate firms overcome digital transformation challenges and maximize digitalization's benefits (Dethine et al., 2020). For example, data security, privacy, and ethical considerations can help real estate companies mitigate the risks associated with

digital transformation and ensure the sustainability of digitalization.

The implications of the study's findings for Chinese real estate businesses are significant. According to the research, strategic management practices are crucial to successfully implementing digital transformation in the real estate industry. In addition, the research highlights the vital role of information economic management in the relationship between strategic management practices and digital transformation in real estate. According to the study's findings, real estate firms should implement effective information economic management practices to recognize the opportunities and challenges associated with digital transformation and make informed decisions.

Lastly, the current study examined the significance of the strategic transformation of digital real estate operations from the perspective of information economic management. According to the study results, strategic management practices in the real estate industry have a strong positive correlation with real estate digital transformation. The study also found that information economic management mediates and moderates the relationship between strategic management practices and real estate digital transformation. The findings of this study have significant ramifications for the real estate industry in China, and they suggest that to reap the benefits of digitalization, the real estate industry should employ effective strategic management and information economic management practices.

7. Theoretical and Practical Implications

The results of this study have significant practical and theoretical implications. The study's practical implications are discussed in greater detail below. Initially, the research found that strategic management practices in the real estate industry positively and substantially affect real estate digital transformation. Real estate firms must enhance their strategic management practices for effective digital transformation. Doing so can improve their competitiveness, reduce expenses, and increase customer satisfaction. The second finding was that information economic management links strategic management practices and real estate digital transformation. This indicates that information management is crucial to the success of digital transformation initiatives in the real estate industry. Real estate companies must implement effective information management practices to facilitate digital transformation and ensure that it achieves the desired results.

Thirdly, the study found that information economic management moderates the connection between strategic management practices and digital transformation in real estate. This implies that strategic management practices'

effect on digital transformation depends on the extent of information economic management within an organization. To support digital transformation, real estate companies must have the resources, technology, and capabilities to manage information effectively. This study has numerous theoretical ramifications, which will be discussed below. The study contributes to the corpus of knowledge on strategic management practices by demonstrating their relevance in the context of digital transformation in the real estate industry. This study shows the significance of strategic management practices in attaining effective digital transformation. It highlights the need for further research into the role of strategic management practices in digital transformation in other industries.

Second, the study contributes to the literature on digital transformation by highlighting the role of information economic management as a mediator and moderator of the relationship between strategic management practices and real estate digital transformation. This study demonstrates the significance of information management to the success of digital transformation initiatives. It highlights the need for further research into the role of information management in digital transformation in other industries. In addition, the study contributes to the literature on information economic management by demonstrating the mediating and moderating function of financial information management in the relationship between strategic management practices and real estate digital transformation. This study indicates that information economic management is crucial to the success of digital transformation initiatives and emphasizes the need for further research into the role of financial information management in the digital transformation of other industries.

The findings of this investigation have significant practical and theoretical implications for the real estate industry and beyond. According to the results, real estate companies must improve their strategic management practices and implement effective information management practices to achieve successful digital transformation. In addition, this study illuminates the role of strategic management practices and information management in digital transformation, highlighting the need for further research in this area.

8. Limitations and Future Directions

Even though the study's findings provide beneficial insights into the relationship between strategic management practices, digital transformation of real estate, and information economic management, it is necessary to acknowledge several limitations. This study was conducted in a singular country, China, which may limit the applicability of the findings to other contexts. More research should be conducted in other nations to determine the applicability of these findings in various cultural and institutional settings. This study relied on self-reported information, susceptible to bias and inaccuracy. Future research should investigate using other data sources, such as archival data or observation, to corroborate these findings.

Thirdly, the sample size of the survey was relatively small. Even though the results were statistically significant, a larger sample size would increase confidence in the results and permit more nuanced analyses. Despite these limitations, this study contributes to the literature on strategic management practices, real estate digital transformation, and information economic management by highlighting the importance of these variables and their interactions within the real estate industry. Future research could build on these findings by investigating other mediating or moderating variables influencing the association between strategic management practices and real

estate digital transformation. Future research could also examine the impact of digital change in the real estate industry on other sectors, such as property management and brokerage services.

Overall, this study demonstrates that strategic management practices are essential for facilitating the digital transformation of real estate and that information economic management is a crucial mediator of this relationship. Real estate firms that wish to remain competitive in a digitally and technologically driven market should consider the implications of these findings. By understanding the significance of these variables and their interrelationships, businesses can develop more effective digital transformation strategies and maximize the financial returns on their information technology investments.

9. Conclusion

This study investigated the significance of the strategic transformation of digital real estate operations in China from the perspective of information economic management. After analyzing the survey data, it was determined that strategic management practices have a positive and statistically significant effect on real estate digital transformation and that information economic management mediates this relationship. In addition, it was discovered that financial information management moderates the relationship between strategic management practices and real estate digital transformation.

These results have both practical and theoretical implications. Real estate companies should focus on enhancing their strategic management practices to promote digital transformation while implementing information economic management practices to facilitate this process. In addition, this study highlights the significance of policymakers and industry associations promoting the development and implementation of information financial management practices in the real estate industry.

This study contributes theoretically to the literature on the relationship between strategic management practices and digital transformation in the real estate industry, as well as the role of information economic management as a mediator and moderator. The findings of this study indicate that financial information management is a significant factor influencing the relationship between strategic management practices and digital transformation in the real estate industry, providing a novel angle for future research.

However, this study has some limitations. To begin with, the sample size was tiny, which may have affected the generalizability of the results. Second, because this study focused exclusively on the Chinese real estate industry, its findings may not apply to other nations or industries. Future research can overcome these limitations by undertaking a larger-scale survey and examining the relationship between strategic management practices and digital transformation in different industries and regions.

In conclusion, this study expands our understanding of the role of strategic management practices and information economic management in promoting digital transformation in the real estate industry. The results have practical and theoretical implications for real estate companies, policymakers, and researchers.

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