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Structural Equation Modeling of Knowledge Management Practices and Firm Market Performance: Postprint

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Abstract

[Purpose / Significance] This study takes mainland Chinese enterprises as the research object and aims to investigate the relationship between knowledge management practices and the market performance of Chinese enterprises. [Method / Process] Data collection was conducted through questionnaire surveys, and hypothesis testing was performed using structural equation modeling. [Results / Conclusion] It is found that knowledge-oriented human resource management plays a significant role in enhancing employee satisfaction, customer value creation, and market performance.

Full Text

Preamble

Knowledge Management Practices and Firm Market Performance: A Structural Equation Modeling Approach

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Abstract

[Purpose/Significance] This study examines the relationship between knowledge management practices and the market performance of enterprises in mainland China. **[Method/Process]** Data were collected through questionnaire surveys and hypotheses were tested using structural equation modeling. **[Result/Conclusion]** The findings reveal that knowledge-oriented human resource

management plays a significant role in enhancing employee satisfaction, customer value creation, and market performance.

Keywords: knowledge management; firm market performance; customer value creation; employee job satisfaction; knowledge-oriented human resource management; structural equation modeling

1 Introduction

Since the reform and opening-up in 1978, China has experienced rapid economic development, becoming the world' s second-largest economy after the United States [1]. Some experts predict that China will surpass the U.S. to become the largest economy around 2020 [2]. However, China's growth over the past decades has relied primarily on labor-intensive industries rather than knowledge creation based on innovation and invention [3]. Today, the most fundamental production resources for enterprises are no longer capital, labor, or natural resources, but knowledge and knowledge workers [4], highlighting the importance of knowledge management in value creation and innovation [5-6].

Previous research suggests that knowledge management can promote employee development, enhance innovation capabilities, and improve customer satisfaction [7]. Other scholars argue that knowledge management can improve business processes, reduce errors, increase organizational efficiency, and ultimately achieve employee growth and corporate success [8]. Therefore, knowledge management holds significant practical importance for enhancing firm performance and creating social value.

On one hand, domestic enterprises such as COFCO, Alibaba, and Huawei have introduced knowledge management as a means to improve corporate management [9]. On the other hand, scholars worldwide have been diligently studying the relationship between knowledge management and firm performance [10-12]. However, knowledge management practice and research in China remain in their infancy. This study aims to fill the empirical research gap between knowledge management practices and firm performance by investigating their relationship with market performance among Chinese enterprises using structural equation modeling, thereby offering recommendations for Chinese firms to enhance their market performance.

2 Theoretical Foundation and Model Hypotheses

Although there is still no universally accepted definition of knowledge management, it is widely regarded as a critical "weapon"for effectively enhancing organizational innovation and performance. In this paper, knowledge management is defined as a series of activities through which organizations improve individual skills and organizational value via knowledge. Scholars both domestically and internationally [13-15] have proposed various critical success factors for knowledge management. Based on field research of Chinese enterprises, this study identifies

four key knowledge management practices: top management support, knowledge management strategy, information technology, and knowledge-oriented human resource management.

Without top management support, knowledge management initiatives are prone to failure. Managers should adopt a positive attitude toward knowledge management and provide necessary resources [16]. They should actively participate in knowledge management activities, continuously improve themselves to inspire employee engagement [17-18]. Furthermore, managers are responsible for building a knowledge management-oriented corporate culture that encourages knowledge sharing and skill development [19]. Managers can also use reward and punishment powers to motivate employees' knowledge management activities, such as providing bonuses and promotion opportunities [20]. Review of past knowledge management failures reveals that top management support should not be temporary; sustainable support is required for knowledge management success [21]. Empirical studies from various countries have demonstrated that top management support for knowledge management can improve firm performance [22-25]. Therefore, this study proposes hypothesis **H1**: Top management support for knowledge management (SMS) enhances customer value creation (CVC).

Knowledge management strategy refers to a competitive strategy through which organizations cultivate knowledge creation and transfer capabilities to maximize value while meeting stakeholder needs [26]. M.T. Hansen et al. [27] categorize knowledge management strategy into personalization and codification strategies, while K.M. Wiig [28] identifies five types: knowledge management as business strategy, intellectual asset strategy, individual knowledge asset responsibility strategy, knowledge creation strategy, and knowledge transfer strategy. In practice, knowledge management strategy should support and align with overall corporate strategy [29], transforming through strategic planning [30] into organizational and technical infrastructure to support knowledge management [31-32], while also considering corporate culture' s influence [33]. Based on a survey of 161 firms from Taiwan, Y.Y. Chen et al. [32] found that integrating knowledge management strategy with human resource management strategy and IT strategy can effectively enhance organizational performance. After studying 241 Brazilian firms, A.A. Ferraresi et al. [29] reached similar conclusions, finding that effective knowledge management strategy improves organizational performance. Therefore, this study proposes hypothesis **H2**: Organizational knowledge management strategy (KMS) enhances customer value creation (CVC).

In today' s knowledge-intensive economy, the important facilitating role of information technology in knowledge management is undeniable [34-35]. IT enhances knowledge workers' efficiency by enabling faster and smarter access to required knowledge [36-37]. Increasingly, IT applications such as internet-based knowledge management systems, real-time communication software, artificial intelligence systems, cloud computing, and big data analytics are being applied to enterprise management. However, IT has limitations; for instance, tacit

knowledge transfer requires mutual trust [38], and IT alone is insufficient—human connections are also necessary [39]. Empirical research suggests IT can improve organizational performance [12] and create customer value [40-41], though some studies find no significant relationship between IT and organizational performance [11,42]. Therefore, this study proposes hypothesis **H3**: Information technology (IT) enhances customer value (CVC).

In the 1980s, while adopting Japan' s total quality management strategies, the United States introduced human resource management into corporate management and recognized that employees are the most valuable resource [43]. Knowledge-oriented human resource management plays a crucial role in corporate knowledge management and value creation [44-45], such as identifying organizational knowledge gaps and planning organizational knowledge management strategy [46]. L.M. Whicker and K.M. Andrews [44] argue that HRM activities (recruitment, training, performance evaluation, compensation management) should integrate with knowledge management to form knowledge-oriented HRM for sustainable competitive advantage. Research shows that high-performance organizations often tightly integrate knowledge management strategy with recruitment, training, performance evaluation, and compensation management to achieve organizational goals [23,32]. Empirical studies have found positive correlations between HRM and organizational performance [23,47-48] and between HRM and employee satisfaction [49-51]. Therefore, this study proposes hypothesis **H4**: Knowledge-oriented human resource management (HRM) enhances customer value (CVC), and **H5**: Knowledge-oriented human resource management (HRM) enhances employee job satisfaction (EJS).

Customer value creation is considered a competitive advantage that distinguishes firms from rivals [52-53]. Creating value for customers—meeting actual needs, providing satisfactory products and services, and achieving win-win outcomes—is fundamental to contemporary business survival. Therefore, this study proposes hypothesis **H6**: Customer value creation (CVC) enhances firm market performance (MP).

The Hawthorne experiments of the 1920s-30s revealed the impact of employee job satisfaction on individual performance [54] and firm performance [55]. Therefore, this study proposes hypothesis **H7**: Employee job satisfaction (EJS) enhances customer value (CVC), and **H8**: Employee job satisfaction (EJS) enhances firm market performance (MP). All hypothesized relationships are shown in Figure 1 [Figure 1: see original paper].

3 Research Design

This study is part of a global collaborative research project led by Professor A. Kianto from Finland. The original English questionnaire was translated into Chinese and then back-translated into English to avoid ambiguity from language differences. Questionnaires were distributed through field surveys, email, and online platforms. Field surveys yielded 12 responses, email yielded 89, and the

online platform yielded 48. Ten questionnaires were eliminated due to incomplete information, resulting in 139 valid responses.

Regarding respondents' positions, 2% were company directors, 4% were HR managers, 28% were other department managers, 29% were other managers, and the remaining 37% held other positions. Geographically, 2% were from Beijing, 6% from Shanghai, 14% from Shenzhen, 66% from Ningbo, and 12% from other cities. In terms of firm size, large enterprises with over 1,000 employees and medium-sized firms with 300-1,000 employees each accounted for 22%, small firms with fewer than 300 employees accounted for 16%, and the remaining firm sizes were unknown due to anonymous survey design.

Structural equation modeling is a statistical technique that explains relationships among multiple variables through a series of equations [56]. Due to its powerful capabilities in modeling and explaining multiple variables [57], it is widely applied in sociology, psychology, and behavioral sciences. Therefore, structural equation modeling is used in this study. Numerous indices assess model fit, such as chi-square (2), RMSEA, SRMR, NFI, NNFI, CFI, GFI, and AGFI. However, due to redundancy among these indices, reporting 2 with degrees of freedom, CFI, and RMSEA is sufficient [56]. In addition, parsimony fit indices and SRMR should be examined as they are insensitive to sample size (except for 2) [58]. Therefore, 2, RMSEA, SRMR, CFI, and NNFI are used to evaluate model fit (parsimony fit indices are omitted as no clear cutoff values exist).

5 Research Results

For structural equation estimation, maximum likelihood estimation was employed, which requires multivariate variables to satisfy (approximate) normal distribution. If skewness values are between -1 and 1 [59] and kurtosis values are between -3 and 3 [60], multivariate normality can be assumed. Using AMOS (version 21) to test the variables, all skewness and kurtosis values fell within the required ranges (see Table 1), indicating that the sample data follow a normal distribution and maximum likelihood estimation is appropriate.

In quantitative analysis, results are unconvincing without reliable validity and reliability. Therefore, reliability and validity analyses were conducted before structural equation path analysis. Cronbach' s α [61] assesses reliability, with R.B. Kline [62] providing general guidelines: $\alpha > 0.9$ is excellent, $\alpha > 0.8$ is very good, and $\alpha > 0.7$ is acceptable. This study uses 0.7 as the cutoff value. Using SPSS (version 21), all variables showed Cronbach' s α values between 0.812 and 0.913 (see Table 2), indicating good reliability.

Construct validity comprises convergent and discriminant validity, assessed using composite reliability (CR) and average variance extracted (AVE) [63]. CR should be ≥ 0.6 [64] and AVE should be > 0.5 [65] (see Table 3). The data meet these requirements for both CR and AVE, confirming that the data are suitable for structural equation path analysis.

Structural equation fit indices (see Table 4) indicate that the research model is acceptable. Path analysis results (see Table 5 and Figure 2 [Figure 2: see original paper]) show that the relationships between top management support, knowledge management strategy, information technology, knowledge-oriented human resource management, and customer value creation are all non-significant. Therefore, hypotheses H1, H2, H3, and H4 are rejected. However, knowledge-oriented human resource management shows a significant positive correlation with employee satisfaction, supporting hypothesis H5. Additionally, customer value creation is positively related to market performance, supporting hypothesis H6. Employee job satisfaction shows significant positive relationships with both customer value creation and market performance, supporting hypotheses H7 and H8.

In terms of effect analysis, for every one-unit increase in human resource management, employee satisfaction increases by 0.62 units. Employee satisfaction mediates the relationship between knowledge-oriented human resource management and market performance (indirect effect = 0.338) and between knowledge-oriented human resource management and customer value creation (indirect effect = 0.204). Meanwhile, customer value creation has a more significant impact on market performance than employee satisfaction ($0.547 > 0.444$). In summary, among knowledge management practices, only knowledge-oriented human resource management has significant positive effects on employee satisfaction, customer value creation, and market performance. Both customer value creation and employee satisfaction are crucial for enhancing market performance, as shown in Table 6 .

5 Findings and Discussion

The study reveals that knowledge-oriented human resource management has direct positive effects on employee job satisfaction and customer value creation, and indirect effects on firm market performance. This finding explains why firms invest heavily in human resource management. In today' s knowledge economy, successful firms focus not only on traditional human resource management but also on managing employees as knowledge workers, providing comfortable work environments and competitive compensation and benefits to meet their needs and enhance job satisfaction. More importantly, firms emphasize employee training and development through various forms such as mentoring, coaching, classroom training, e-learning, and outdoor training to facilitate knowledge sharing and improve employee capabilities. Some firms also incorporate individual capability enhancement, knowledge creation (innovation), and knowledge summarization into performance evaluation metrics, linking knowledge management with employee benefits to motivate employees to explore their potential and share knowledge. These initiatives can enhance internal employee satisfaction and external customer satisfaction, creating customer value and serving as key to building competitive advantage.

Furthermore, the study finds that both employee job satisfaction and customer

value creation have significant direct effects on firm market performance. The view that higher employee satisfaction can improve firm efficiency [55] is reaffirmed in this study. The necessity of focusing on customer needs, quickly solving customer problems, and providing satisfactory products and services is also validated. Creating value for customers can effectively enhance firm profits and market share, achieving sustainable development. Therefore, firms should be customer-centric, providing products and services that meet customer needs, and can implement customer knowledge management [66] to respond quickly to customer demands and achieve win-win outcomes.

6 Conclusion

Based on research on knowledge management practices in domestic and international firms and the actual conditions of Chinese enterprises, this study proposes a conceptual model and theoretical hypotheses regarding the relationship between knowledge management practices and firm market performance. Data were obtained through questionnaire surveys, and the relationships among knowledge management practices, customer value creation, employee job satisfaction, and market performance were analyzed using 139 samples.

The study finds that knowledge-oriented human resource management plays an important role in enhancing employee job satisfaction, customer value creation, and market performance. Additionally, customer value creation and employee job satisfaction have significant direct effects on firm market performance.

Most survey data in this study came from enterprises in eastern China, without considering the situation in western China. Future research will incorporate data from both regions. Furthermore, this study did not examine the influence of firm capital structure, firm size, and industry on knowledge management. Subsequent research plans to segment these influencing factors to investigate knowledge management issues in different contexts.

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