

# A Meta-Analysis Study About the Relationship Between Knowledge Management Strategy and Business Performance

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**Abstract:** The application of knowledge management strategies, such as knowledge codification and personalization strategy, influences business performance because appropriate knowledge management strategies align with firms' strategies and support knowledge management activities. However, the findings of previous empirical studies regarding the relationship between knowledge codification strategy versus knowledge personalization strategy and business performance are inconclusive. This study aims to adopt a meta-analysis approach to investigate the relationships between knowledge codification strategy versus knowledge personalization strategy and business performance. It reveals that the knowledge codification strategy was positively related to the overall business and financial performance, while the knowledge personalization strategy was positively associated with overall business performance. To the best of the authors' knowledge, this is the first meta-analysis research that clarifies the knowledge management strategy—business performance relationship.

**Keywords:** Knowledge codification strategy, Knowledge personalization strategy, Business performance, Meta-analysis, National culture

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## 1. Introduction

Knowledge management (KM) initiatives are difficult to be implemented without an appropriate management strategy (Liu, Farzad, et al., 2022; Oluikpe, 2012). Hansen et al. (1999) proposed two KM strategies, namely, knowledge codification and personalization (Sánchez et al., 2015). A knowledge codification strategy focuses on the capturing, codification, and retention of explicit knowledge with the support of technologies (Choi & Lee, 2012), whereas a knowledge personalization strategy is concerned with enhancing tacit knowledge communication through people's social networks interaction (Oluikpe, 2012).

The different choices of KM strategies, such as knowledge codification and personalization, influence the firm performance because clearly defined KM strategies align with business strategies (Liu et al., 2020) and support KM activities (Liu et al., 2022a). For example, the knowledge codification strategy emphasizes sharing, transferring, and storage of explicit knowledge. Organizations can easily use the codified knowledge they need; thus, the efficiency of knowledge application is improving, leading to better business performance. On the other hand, the knowledge personalization strategy complements the knowledge codification strategy by supporting employees to share, transfer and apply tacit knowledge. The tacit knowledge is extremely challenging to be transformed into documents. Once firms successfully establish methods for tacit knowledge sharing and application, firms can enhance their capability to receive more competitive advantages.

Previous review studies (Farooq, 2022; Inkinen, 2016) on KM and performance made no attempt to evaluate the effectiveness of the KM strategy (knowledge codification strategy and knowledge personalization strategy) on the business performance of firms. The effect size of the knowledge codification strategy—business performance relationships and the knowledge personalization strategy—business performance relationships remain unclear. A comprehensive understanding of the relationships between KM strategy and business performance is still obscure due to conflicted findings of previous studies. Thus, it is interesting to systematically examine previous KM strategies and performance studies through a meta-analysis, aiming to offer new insight into the KM strategies—business performance relationships.

## **2. Literature Review and Research Questions**

The majority of empirical studies on KM strategy and business performance adhered to the categorization of knowledge strategy by Hansen et al. (1999), but based on this classification, there are some conflicting findings from these empirical studies. According to Ling (2013), the knowledge codification strategy had a positive or negative effect on moderating the intellectual capital—business performance relationships depending on the dimensions of intellectual capital, whereas Liao (2011) discovered a significant negative association between knowledge codification strategy and overall business performance. Interestingly, Bavarsad et al. (2015) found that the knowledge codification strategy did not have any influence on the firm's internal performance. On the contrary, several studies have shown a positive correlation between knowledge codification strategy and the financial performance of firms (Chen & Huang, 2014; Cohen & Olsen, 2015; Payal et al., 2016). In addition, Hasan et al. (2015), Shehata (2015) and Shahzad et al. (2016) concluded that the knowledge codification strategy had a positive impact on the firm's overall business performance. A significant positive relationship between the knowledge codification strategy and the non-financial performance of the firm was revealed by Cohen and Olsen (2015), while Kim et al. (2014) believed that the validation of the effectiveness of knowledge codification on non-financial performance depended on the availability of high maturity information systems and intensity of environmental knowledge. Despite there are possible reasons to explain these contradicted findings, however, such findings fail to provide a clear theoretical understanding of the knowledge codification—business performance relationship, therefore, the first research question is as follows: What is the relationship between knowledge codification strategy and business performance?

Likewise, earlier studies on the relationship between knowledge personalization strategy and business performance remain ambiguous. Ling (2013) and Payal et al. (2016) found that the relationship between the knowledge personalization strategy and the financial performance of firms was insignificant or even negative (Hartono et al., 2018). It has also been claimed that the relationship between knowledge personalization strategy and overall business performance is insignificant (Shahzad et al., 2016). However, it was argued that the relationship between the knowledge personalization strategy and financial performance (Chen & Huang, 2014) and the knowledge personalization strategy—overall business performance relationship was positive (Hasan et al., 2015). Due to such mixed findings, the second research question is as follows: What is the relationship between knowledge personalization strategy and business performance?

National culture is the collective code of the minds of a nation's people in a way that differentiates them from others (Hofstede, 2001). Hofstede et al. (2010) propose a framework including six dimensions —power distance (PD), individualism versus collectivism (IC), masculinity versus femininity (MF), uncertainty avoidance (UA), long-term orientated versus short-term orientated (LS) culture, and indulgence-oriented versus restraint-oriented (IR) culture —to evaluate the differences that exist between national cultures. All these six dimensions affect KM practices and activities (Liu, Tsui, et al., 2022). In addition, national culture, as an important moderator, is frequently applied in organizational research (Tsui et al., 2016).

Recently, many meta-analytic studies, adopting national culture as a moderator to inspect the influences of national culture on the knowledge-friendly organizational culture—performance relationship (Liu et al., 2021), the KM leadership—performance relationship (Liu et al., 2022c), the KM technology—performance relationship (Liu et al., 2023), and the organizational learning—performance relationship (Liu et al., 2022b). However, the moderating effects of national culture on the relationship between KM strategies and business performance remain unknown. Therefore, the third research question is as follows: Does national culture moderate the knowledge codification strategy versus knowledge personalization strategy—business performance relationships?

## **3. Methodology**

### **3.1 Meta-Analysis**

Meta-analysis offers a statistical examination based on many empirical findings from previous individual studies to integrate the empirical evidence (Hartung et al., 2008; Hempel, 2020) by amending errors and bias of the quantitative studies (Schmidt & Hunter, 2015) which is widely used in many fields, such as in educational, social, and medical sciences (Cheung, 2015). This research tries to investigate the relationship between KM strategies (knowledge codification strategy and knowledge personalization strategy) and business performance across empirical scholarly works; thus, the meta-analysis method was adopted to integrate the findings of the earlier studies. Group analysis for categorical moderators (Noel & Todd, 2012) was also applied to examine whether national culture is related to the effect sizes. The statistical analysis was carried out by using CMA3.0.

## 3.2 Coding of Variables

### 3.2.1 Primary variables

#### *Business performance*

Followed by Liu et al. (2021), the business performance was mainly measured in three different dimensions as follows. The first category used financial indicators, such as return on equity (ROE), return on investment (ROI), cash flow, sales growth, profitability, and market share to measure financial performance. The financial performance was coded as 'F'. The second category emphasized non-financial measurement which was coded as 'NF'. The second category included the following influencing factors such as the satisfaction of stakeholders, time to market, cost reduction, organizational reputation, personnel development, research and development, etc. The last category combined both financial and non-financial indicators which were coded as 'OBP' to evaluate overall business performance in this research.

### 3.2.2 Moderators

#### *National cultures*

Six dimensions of Hofstede et al.'s (2010) national culture framework, namely, power distance (PD), individualism vs. collectivism (IC), masculinity vs. femininity (MF), uncertainty avoidance (UA), long-term orientation vs. short-term orientation (LS), and indulgence vs. restrained (IR) culture were coded based on the regions where the data of the selected research was collected. We followed the approach of Gang Liu et al. (2021) to divide these dimensions of national culture mentioned above into two groups to evaluate the moderating effects of national culture on the KM strategy—business performance relationships (More details can be found on page 113 of Liu (2021)).

## 3.3 Search Strategy and Results

This research adopted the Scopus database to search relative research papers since more knowledge management journals are indexed in this database compared with the Web of Science. Additionally, the paper selection criteria are crucial to implementing meta-analysis (Cooper, 1998). *Knowledge management and performance* were selected to locate the papers if these keywords appear in the article's title, abstract, or keywords from 1975 to 2018 in this study. In accordance with the criteria above, 32,496 papers were retrieved and 31,526 were English-written articles. Limited to the studied topics, 24,663 remaining articles were examined by the contents of the abstracts and keywords. After excluding the unexpected papers, such as irrelevant papers, non-empirical papers, papers without reporting correlation coefficients, and inappropriate papers on measurement, finally, fourteen studies regarding the relationship between the knowledge codification strategy and business performance, eleven studies scrutinized the relationship between the knowledge personalization strategy and business performance were used in this study.

## 4. Results

It is apparent that the knowledge codification strategy had a positive relationship with overall business performance ( $r = 0.305$ , 95% CI: 0.132, 0.460, Z-value= 3.390,  $p = 0.001 < 0.01$ ) and financial performance ( $r = 0.274$ , 95% CI: 0.174, 0.369 Z-value= 5.210,  $p < 0.001$ ) In addition, the knowledge codification strategy—overall business performance relationship was affected by different degrees of indulgence ( $Q_{\text{between}}: 28.538$ ;  $df(Q):1$ ; p-value:  $0.000^{***} < 0.001$ ) of national culture. Furthermore, comparisons between collectivism and individualism ( $Q_{\text{between}}: 3.568$ ;  $df(Q):1$ ; p-value:  $0.059^* < 0.1$ ) on the knowledge codification strategy—financial performance relationship were significantly different according to the categorical moderator test.

The empirical finding indicated that the knowledge personalization strategy was correlated with overall business performance ( $r = 0.208$ , 95% CI: 0.036, 0.368, Z-value= 2.362,  $p = 0.018 < 0.1$ ). No significant differences were found between national culture in influencing knowledge personalization strategy and overall business performance. Unfortunately, due to the limited number of research samples, studies on the relationship between knowledge codification strategy and non-financial performance, knowledge personalization strategy and financial performance, and knowledge personalization strategy and non-financial performance were not evaluated.

## 5. Discussion

The results of this study show that there was a significant positive correlation between the knowledge codification strategy and overall business performance. The finding agrees with the previous studies (Hasan et

al., 2015; Shahzad et al., 2016; Shehata, 2015). A positive correlation was also found between the knowledge codification strategy and financial performance. The findings corroborate with the ideas of others (Chen & Huang, 2014; Cohen & Olsen, 2015; Payal et al., 2016), who suggested that there is a linkage between the codification strategy and financial performance. Strong evidence showing the knowledge personalization strategy had a positive association with overall business performance when there was a significantly positive overall effect size. Similarly, this result matches those observed in earlier studies (Hasan et al., 2015; Shahzad et al., 2016) as well.

The study concluded that appropriate knowledge management strategies are an essential predictor of business performance since organizations can fill knowledge gaps through well-defined knowledge management strategies. First, it was analyzed that knowledge codification strategy was positively correlated with overall business performance and financial performance. For instance, if an organization's knowledge relies heavily on being stored in the brains of its employees, then, codification strategy is of vital importance in this case, especially, when the employee turnover rate is high or when leaders who were born after World War II (baby boomers) are retiring from the organization. With this strategy, the organization can still utilize this codified knowledge when employees leave, which indicates that the more knowledge codified, the less the influence on organizational performance induced by knowledge loss. Second, there was a pronounced positive relationship between knowledge personalization and overall business performance. The knowledge personalization strategy emphasizes knowledge exchange, knowledge sharing, and transfer between employees within an organization. Employees have access to relevant knowledge within the organization's employee network about the problems they encounter in their work. Such effective knowledge transfer and application can be easily transformed into organizational value and lead to better organizational performance for the organization. However, since the number of studies on the knowledge codification strategy—non-financial performance relationship, the knowledge personalization strategy—financial performance relationship, and the personalization strategy—non-financial performance relationship is quite small, no specific effect sizes of these relationships have been provided at present, future research should continue to examine these relationships in depth. This study analyzed the effect of national culture on the knowledge codification strategy—overall business performance relationship and the knowledge codification strategy—financial performance relationship, based on the analysis, first, it concluded that the knowledge codification strategy—overall business performance relationship was stronger in restrained culture. One factual explanation for this finding is that in restrained culture, people are more likely to rely on books or other forms of codified knowledge, as used in classroom learning, and they do not interact well with others, especially, those who try to avoid interacting with strangers, and such behavior hinders their access to tacit knowledge. Second, it was found that the knowledge codification strategy—financial performance relationship was strengthened in collective societies. This result may be explained by the fact that people who work or live in collective societies are more likely to feel responsible for the development of the group, and therefore, they are keener to codifying and sharing knowledge with fellow members within the group, whereas people who work or live in individualistic societies are somewhat more independent and do not need and are less likely to codify knowledge for others. In addition, the empirical evidence could not validly specify the impacts of national culture on the knowledge personalization strategy—business performance relationship due to ambiguous comparisons of this study in terms of the knowledge personalization strategy—overall business performance relationship and an inadequate sample size of the studies regarding the knowledge personalization strategy—financial performance relationship and the knowledge personalization strategy—non-financial performance relationship.

## **6. Conclusion**

### **6.1 Theoretical Contributions**

This is the first comprehensive meta-analytic study that comprehensively investigated and clarified the KM strategies—firm performance relationships. It contributes to KM theory by providing a clear interpretation of the magnitudes of the relationship between the knowledge codification strategy and overall business performance, the relationship between the knowledge codification strategy—financial performance, and the relationship between the knowledge personalization strategy and overall business performance based on 1,084 subjects in six studies, 740 subjects in five studies, and 994 subjects in five studies, respectively. Our knowledge from previous studies, such as Inkinen (2016) and Farooq (2022) on the strategic KM—business performance issues, has been supplemented and expanded. The generalizability of these findings is more persuasive than in individual studies.

This is one of few studies that address national culture when investigating KM strategies and business performance simultaneously, and as such, this work makes a valuable contribution to both KM theory and international business research. It creates new knowledge and new research directions on the role of national culture in influencing KM strategies by demonstrating that the knowledge codification strategy—overall business performance relationship was strengthened in a restrained culture and the knowledge codification strategy—financial performance relationship was strengthened in collective societies by using meta-analysis.

## **6.2 Managerial Implications**

This study helps scholars and practitioners to better understand the knowledge-based theory from the perspective of the strategic application of KM and provides feasible recommendations at the level of management implications. This combination of findings provides some support for the conceptual premise that managers need to select appropriate KM strategies that meet their business development needs as their organizations evolve. For example, the knowledge codification strategy should be prioritized if the employee turnover rate is high in an organization, whereas the knowledge personalization strategy should be deployed when employees greatly depend on others' tacit knowledge to accomplish their tasks. Such two complementary strategies, knowledge codification strategy and knowledge personalization strategy provide managers with strategic management approaches that can be combined. Therefore, managers should also assess their internal business requirements and external contexts.

These findings are of vital importance to managers as our research findings provide further instructive support for them. Managers should be aware that in addition to internal obstructions, external factors, such as national culture, might boost or impede KM activities. Those managers working in multinational companies should understand that the benefits of KM may be realized in very different ways in different cultural contexts and external circumstances. For instance, emphasizing on collective knowledge codification strategy might be less effective in individualistic societies but more likely to be easily accepted in collective societies. Furthermore, the knowledge codification strategy might be not undesirable if the knowledge codification process is tedious in indulgence-oriented societies, but it might be not a concern in restrained cultures where leisure is less valued.

## **6.3 Limitations and Future Research**

First, the papers obtained in English written from 1975 to 2018 from the Scopus database in this study might suffer from a language bias and database bias, although such biases were considered limited, according to Livingston et al. (2008). Second, another limitation that could have affected the moderating effects of national culture on KM practices—performance relationships was the binary classification of national culture based on Hofstede's national culture scores. Differences in the national culture adjustment test might be related to the national culture group assignment, as some values close to the threshold were classified into two different groups. Third, the knowledge codification—non-financial performance relationship, the knowledge personalization—financial performance relationship, and the personalization—non-financial performance relationship still remain unclear due to the limited sample size. More studies regarding KM strategies and performance can be conducted in the future. In addition, this study only focused on knowledge codification verse personalization strategy, further research can examine knowledge exploration verse exploitation strategy—performance relationships. Finally, different types of performance, such as innovative performance, sustainable performance, team performance, and employee performance can be used to take further research on KM—performance relationships by using the meta-analysis.

### *Note*

- 1 No publication bias was found after testing the sample through the fail-safe N test.
2. Details of the dataset can be obtained from the first author.

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