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Revealing deeper relationships between knowledge management leadership and organisational performance: A meta-analytic study

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Abstract

Many empirical studies have tried to investigate the relationship between knowledge management (KM) leadership and organisational performance; however, the findings of such studies have been inconsistent. In response to this, we apply a meta-analysis technique to systematically assess the existing pool of empirical research results and derive conclusions. We also examine the impacts of contextual moderators, such as national culture, economy, and industry, on the KM leadership–organisational performance relationships. The findings, stemming from 6,272 research subjects making up 22 studies, demonstrate that KM leadership is positively associated with the overall (financial and non-financial) performance of firms. Specifically, it was found that the KM leadership–non-financial performance relationship is strengthened in collective cultures, developing economies, and the manufacturing industry. This paper is the first meta-analytic study concerning KM leadership and organisational performance, producing new understanding of contextual factors in the KM field.

Keywords: knowledge management leadership; organisational performance; national culture; meta-analysis

1. Introduction

It is a widely held belief that successful knowledge management (KM) can benefit organisations (Grant, 1996; Nonaka & Takeuchi, 1995); however, successful KM cannot be achieved without a set of KM practices (enablers), such as KM leadership, a knowledge-friendly organisational culture, an information technology infrastructure, strategic KM, and a knowledge-based organisational structure (Davenport et al., 1998; Heisig, 2009; Mousavizade & Shakibazad, 2019). KM leadership plays a significant role in the effectiveness of KM implementation (Liu et al., 2018), because senior managers make decisions regarding KM initiatives and investments (Mousavizade & Shakibazad, 2019) of the firms and affect employees' activities, such as their knowledge-sharing behaviours (Yin et al., 2019). Without sufficient senior management support, the KM efforts of organisations will not be realised (Rivière & Calabrese, 2016; Rivière & Sitar, 2003).

In the last two decades, many empirical studies have been conducted to examine the relationships between KM leadership and organisational performance. However, findings concerning such relationships are complex and inconsistent. For example, Inkinen and Kianto (2014) reported that KM leadership did not influence the market performance of Finnish firms, whereas García-Morales et al. (2008) found that KM leadership positively impacted the financial performance of firms. Such contradictions in the literature make the generalisability of the KM leadership–organisational performance relationship difficult. Therefore, a systematic assessment of previous research results using meta-analysis is needed to derive conclusions concerning the existing body of research.

Despite the studies of Inkinen (2016) and Gupta and Chopra (2018) adopting a systemic literature review approach to investigate the relationship between KM practices (including KM leadership)

and organisational performance, such studies have not addressed the question of to what extent KM leadership affects organisational performance. While earlier meta-analysis studies have only examined the impacts of board structure (Dalton et al., 1998), leadership structure (Dalton et al., 1998; Rhoades et al., 2001), and charismatic leadership (Degroot et al., 2000) on the financial performance of firms or the relationship between strategic KM and firm performance (G. Liu et al., 2020)—as well as the knowledge-friendly organisational culture—organisational performance relationship (Liu et al., 2021)—there is no conclusive evidence concerning the role of KM leadership in enhancing organisational performance.

Furthermore, significant empirical evidence from an individual research study. may not be generalisable to other economic and social contexts (Gupta & Chopra, 2018). In addition, the effectiveness of leadership depends on the balance between leaders' behaviour, needs, and contexts (Vroom & Jago, 2007), but current KM leadership research has overlooked the role of the context (Archanjo de Souza et al., 2020), such as national culture, economy, and type of industry, in affecting KM leadership and its benefits (Gupta & Chopra, 2018; Inkinen, 2016).

To address the above issues, this study aims to first investigate to what extent KM leadership is related to organisational performance and then determine the moderating effects of contextual factors, such as national culture, economy, and industry type, on KM leadership—organisational performance relationships. This study clarifies the mixed relationships between KM leadership and organisational performance and thereby deepens the understanding of this relationship. Indeed, this is the first meta-analytical study on this important topic. Second, using a large amount of empirical evidence, this study contributes to behavioural theory by showing which specific KM behaviours of leaders affect organisational performance. Lastly, it expands contingency theory by

demonstrating the role of contexts, such as national culture, economy, and industry type, in affecting the KM leadership–organisational performance relationships.

2.Literature review

2.1 KM leadership

Leadership commonly refers to ‘the ability to elicit extraordinary performance from ordinary people’ (Tracy, 2014, p. 6); however, a widely accepted definition of KM leadership does not exist thus far. Various terms have been used in the literature, such as ‘top management support’ (Lee et al., 2012), ‘senior management support’ (Davenport et al., 1998), ‘senior management commitment’ (Kim and Hancer, 2010), ‘knowledge-oriented leadership’ (Donate & Sánchez de Pablo, 2015), and ‘supervisory work’ (Inkinen et al., 2015). Characteristics and behaviours associated with this term include the support provided to KM projects by senior executives (Boumarafi & Jabnoun, 2008; Tang & Lai, 2016), the provision of sufficient resources for KM (Boumarafi & Jabnoun, 2008; Kamhawi, 2012; Mousavizadeh et al., 2015), active participation in KM activities (Lee & Choi, 2010; Pee et al., 2010), and managerial encouragement of KM activities (Mageswari et al., 2017), such as knowledge-sharing (Rezaei et al., 2017), continuous learning (Boumarafi & Jabnoun, 2008; Jain & Moreno, 2015), and innovation (Akgün et al., 2014; Samson et al., 2017). Based on such studies, we define KM leadership as the capability of leaders to influence their subordinates in KM activities to achieve organisational objectives through their positive KM behaviour.

2.2 KM leadership and organisational performance

KM leadership, characterised by a positive attitude and supportive KM behaviour by top management executives, is a critical factor for effective KM (Davenport et al., 1998; Heisig, 2009). In knowledge-based theory, it is argued that firms can achieve better performance if they effectively and efficiently create (Nonaka & Toyama, 2002) and integrate (Grant, 1996) knowledge. KM leadership facilitates KM activities, such as knowledge creation, sharing, integration, and application (Heisig, 2009), and it is a popular predictor of organisational performance (Gupta & Chopra, 2018; Inkinen, 2016). If managers exhibit a KM leadership style, employees can fully understand and accept the importance of KM, especially when organisations need to make their culture more knowledge-friendly organisational culture and launch KM initiatives (Rivière & Calabrese, 2016). With the endorsement of managers for KM, knowledge resources are more effectively configured at the organisation. Therefore, organisations are more likely to achieve better performance if they are capable of KM leadership (Inkinen, 2016).

However, empirical findings concerning the KM leadership–organisational performance relationships remain ambiguous, since both significant and insignificant results have been revealed. For instance, Inkinen and Kianto (2014) reported that KM leadership did not influence the market performance of Finnish firms, and Tang and Lai (2016) claimed that this leadership style does not affect the non-financial performance of organisations. Likewise, Kim and Hancer (2010) found that the relationship between KM leadership and the non-financial performance of firms was insignificant. Despite such insignificant relationships revealed in earlier studies, a great amount of previous research has suggested the KM leadership positively impacts the firm's overall organisational performance (Hsu, 2008; Jain & Moreno, 2015; Kamhawi, 2012; Mageswari et al., 2017; Mousavizadeh et al., 2015; Noruzy et al., 2013; Pee et al., 2010; Samson et al., 2017) in

addition to its financial performance (García-Morales et al., 2008; Hartono et al., 2016; Lee & Choi, 2010) and non-financial performance (Gowen et al., 2009; Jain & Moreno, 2015; Lee et al., 2012; Mageswari et al., 2017; Mousavizadeh et al., 2015; Sucahyo et al., 2016; Tan & Wong, 2015). Positive in terms of evidence showing that there is a positive impact in this relationship, it can be assumed that:

H1a: KM leadership is positively related to overall organisational performance;

H1b: KM leadership is positively related to financial performance;

H1c: KM leadership is positively related to non-financial performance.

2.3 KM leadership and organisational performance in different contexts

KM is a socially embedded activity (Hussinki et al., 2017; Kim, 2020) that is differently manifested in different national cultures (Magnier-Watanabe et al., 2011). In addition, leadership is also affected by national culture, e.g., leadership-related characteristics (Bealer & Bhanugopan, 2013), traits, behaviours (Hanges et al., 2016; Koopman et al., 1999), and structures (Li & Harrison, 2008) (Gerstner & Day, 1994). There are six dimensions of national culture: 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 (Hofstede et al., 2010). Power distance refers to the tolerance degree of people concerning inequality in a society (Hofstede, 2001). In smaller power-distance societies, consultative leadership results in better organisational performance (Hofstede, 2001; Hofstede et al., 2010). Managers in small power-distance societies rely on their knowledge and experience, while managers in large power-distance societies depend on formal rules to function (Hofstede, 2001).

Flatten et al. (2015) argued that the effect of transformational leadership–knowledge acquisition and assimilation relationships was stronger in small power-distance societies than in greater power-distance societies. Therefore, managers in small power-distance societies are likely to embark on a KM journey more successfully than managers in large power-distance societies. Thus, the impact of knowledge management leadership on organisational performance could be much stronger in small power-distance societies than in large power-distance societies. Therefore, it can be assumed that:

H_{PD1-3}: The relationship between KM leadership and organisational performance¹ is stronger in small power-distance societies than in large power-distance societies.

Individualism and collectivism reflect the relationship between the individual and the group (Hofstede, 2001). The employer–employee relationship is expected to be intimate in collective societies, with managers being considered seniors who are more responsible for their subordinates in collective societies (Hofstede, 2001). Moreover, managers in collective societies are more open to sharing their knowledge with their subordinates when both are within a group as they define (Hofstede, 2001; Zhang et al., 2014). KM leadership emphasises the positive behaviour and attitude of managers on KM (Liu et al., 2018). For instance, managers spontaneously share knowledge with their subordinates. Following this approach, managers in collective societies are more likely to demonstrate KM leadership in the workplace. Thus, it can be assumed that:

¹ Organisational performance includes 1) overall organisational performance, 2) financial performance, and 3) non-financial performance.

H_{IC1-3}: The relationship between KM leadership and organisational performance is stronger in collective societies than in individualistic societies.

Femininity vs. masculinity reflects differences in gender in a society (Hofstede, 2001), with distinct leadership styles in feminine and masculine societies. Managers in feminine societies are more modest, while managers in masculine societies are more forceful in terms of their own career development (Hofstede, 2001). Modest managers are more likely to share knowledge with their subordinates, since, in such societies, managers and employees are considered the same status. On the other hand, managers in masculine societies are considered culture heroes (Hofstede, 2001) and tend to hide their knowledge to sustain their mysterious role in the organisation. Cegarra-Navarro et al. (2011) also found that knowledge transfer was easier in feminine societies than in masculine societies. Therefore, managers in feminine societies are more likely to demonstrate KM leadership in the workplace than managers in masculine societies. Then, it can be assumed that:

H_{FM1-3}: The relationship between KM leadership and organisational performance is stronger in feminine societies than in masculine societies.

Uncertainty avoidance mirrors the degree of ambiguity tolerance in a society (Hofstede, 2001), while the power of managers is affected by their control over uncertainty. Managers in a greater uncertainty-avoidance environment seek knowledge to make themselves more authoritative and powerful to avoid unpredictability (Hofstede, 2001); in addition, top managers are more involved in business operations in strong uncertainty-avoidance societies, while top managers like to participate in strategy development in weak uncertainty-avoidance environments (Hofstede, 2001). Kivrak et al. (2014) also found people had fewer problems with knowledge-sharing in weak uncertainty-avoidance societies than in strong uncertainty avoidance societies. Managers in weak

uncertainty-avoidance societies are more likely to demonstrate KM leadership than those in strong uncertainty-avoidance societies, as they are more likely to initiate strategic KM to provide KM business strategies and planning. Therefore, it can be assumed that:

H_{UA1-3}: The relationship between KM leadership and organisational performance is stronger in weak uncertainty-avoidance societies than in strong uncertainty avoidance societies.

Long-term vs. short-term orientation describes people's values and beliefs about the past, present, and future in a society (Hofstede et al., 2010). Managers in short-term societies tend to avoid deficits due to long-term investments, even though such investments could benefit the organisation later. In contrast, managers in long-term societies are more persistent and believe the future is better than today (Hofstede, 2001) and are given more time and resources to achieve their outcomes (Hofstede et al., 2010). It has also been revealed that knowledge-sharing is much easier in long-term oriented societies than in short-term oriented societies (Geppert, 2005). Managers are more likely to initiate long-term investment in KM activities, such as continuous research and development. Therefore, it can be assumed that:

H_{LS1-3}: The relationship between KM leadership and organisational performance is stronger in long-term oriented societies than in short-term oriented societies.

Indulgence-oriented vs. restraint-oriented culture demonstrates people's views of happiness and gratification in a society (Hofstede et al., 2010). Managers are more likely to support KM initiatives in indulgence-oriented societies, as such managers may need more time to communicate with their subordinates to demonstrate their positive attitudes toward KM. In contrast, managers in restrained cultures might be unwilling to frequently communicate with their subordinates. The

KM leadership of managers in indulgence-oriented societies might be more obviously demonstrated to their subordinates. Then, it can be assumed that:

H_{IRb1-3}: The relationship between KM leadership and organisational performance is stronger in indulgence-oriented societies than in restraint-oriented societies.

Most of the modern enterprise management theories, including KM, originated in developed countries. Managers in developed countries can access and apply these theories to guide their management practices more easily, having been professionally trained during the industrialisation of society for over two hundred years. On the other hand, western theories might be inapplicable in developing economies (Blunt & Jones, 1997; Easterby-Smith, 1998). It also takes time for managers in developing economies to participate in the latest effective managerial practices due to limitations of resources, technology, and individual capabilities. Therefore, managers better understand and implement KM in developed economies than in developing economies. Based on this fact, it can be assumed that:

H_{E1-3}: The relationship between KM leadership and organisational performance is stronger in developed economies than in developing economies.

Managers in service industries must demonstrate KM leadership to endorse KM activities because the values produced of firms are based on the routine knowledge interaction of knowledge workers (Jonsson & Kalling, 2007). In service industries, it is more difficult to obtain competitive advantage if managers lack support for KM. Therefore, managers in service industries more actively participate in KM and offer sufficient resources for KM than in the manufacturing industry (Chawla et al., 2010). Therefore, it can be assumed that:

H_{I1-3}: The relationship between KM leadership and organisational performance is stronger in service industries than in manufacturing industries.

The research framework is shown in Figure 1.

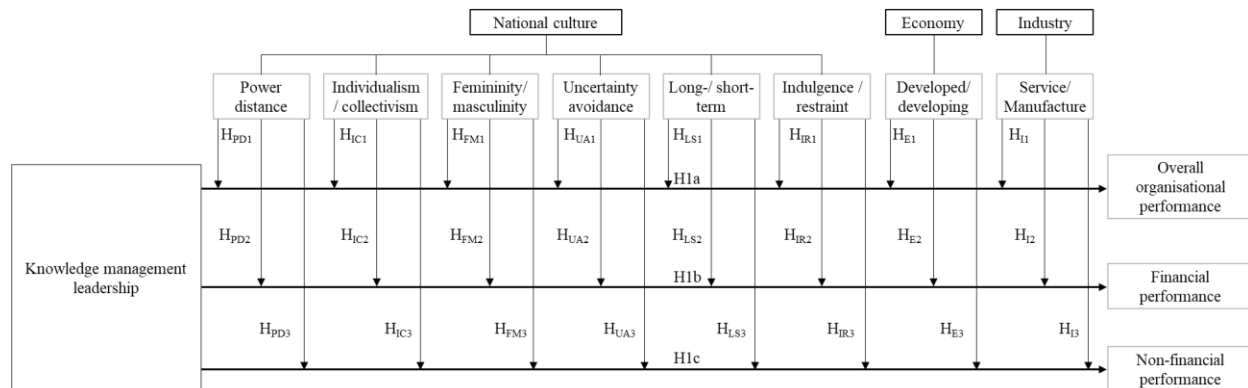


Figure 1: Research framework

3. Methodology

3.1 Meta-analysis technique

Meta-analysis provides a statistical analysis of a large number of empirical results from individual studies to combine the findings (Hartung et al., 2008; Hempel, 2020) by correcting errors and biases in the empirical studies (Schmidt & Hunter, 2015); this approach is widely applied in social, educational, and medical sciences (Cheung, 2015). When compared to narrative literature reviews, meta-analysis has significant advantages, as it focuses on synthesising disparate past empirical research by drawing holistic conclusions (generalisations) from a large number of individual studies that address similar or related hypotheses (Cooper, 2017). Meta-analysis, unlike narrative reviews, can therefore provide insights into the scale of the effect of the relationship being studied (Noel & Todd, 2012). By providing an integrative view of the research domain, this technique can also reduce any bias in developing a consensus of the studied relationship from analysing several

single studies (Livingston et al., 2008; Rosenthal & Dimatteo, 2001). Especially when the sample sizes of these combined single studies are small or insignificant, it can improve the statistical precision of the estimation and yield a definitive conclusion (Livingston et al., 2008; Matt & Cook, 2009). This study aims to evaluate the relationship between KM leadership and organisational performance across empirical studies; therefore, a meta-analysis technique was used to synthesise the findings of previous research. Group analysis for categorical moderators (Noel & Todd, 2012) was also adopted to investigate whether these moderators are related to the effect sizes.

3.2 Coding of variables

3.2.1 Primary variables

KM leadership

KM leadership is demonstrated by the following behaviour: Senior executives support KM projects (Boumarafi & Jabnoun, 2008; Tang & Lai, 2016), offer enough resources for KM (Boumarafi & Jabnoun, 2008; Kamhawi, 2012; Mousavizadeh et al., 2015), and actively participate in KM activities (Lee & Choi, 2010; Pee et al., 2010). Senior executives also encourage (Mageswari et al., 2017) KM activities, such as knowledge-sharing (Rezaei et al., 2017), continuous learning (Boumarafi & Jabnoun, 2008; Jain & Moreno, 2015), and innovation (Akgün et al., 2014; Samson et al., 2017). Therefore, in our study, measurements related to the positive attitudes and active KM participation of leaders are considered as measuring KM leadership.

Organisational performance

Organisational performance was mainly measured in three domains. The first domain applied financial indicators, such as returns on investment, sales growth, profitability, returns on equity,

cash flow, and market share, to measure financial performance of firms (coded as ‘F’). The second domain emphasised non-financial measurement (‘NF’), such as cost reduction, stakeholders’ satisfaction, time to market, organisational reputation, personnel development, and research and development. The last domain combined both financial and non-financial indicators to measure the overall organisational performance (‘OP’).

3.2.2 Moderators

National cultures

The seminal cultural values framework of Hofstede (Hofstede, 2001; Hofstede et al., 2010) provides the best available model for understanding differences in cross-cultural research on managerial issues (Kirkman et al., 2006). Despite Hofstede’s epistemology of national culture being criticised (Minkov, 2018), it is still a valid model for obtaining knowledge concerning the major differences between national-level cultures, especially in empirical studies (Beugelsdijk et al. 2017), such as Qin et al. (2017), Rao et al. (2021), and Liou et al. (2021). Therefore, this model has been applied to analyse the impacts of national culture on the KM leadership–organisational performance relationships.

The six dimensions of Hofstede et al.’s (2010) national culture framework—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 location of the selected studies’ data collection. Each dimension of national culture was classified into two categories, as per Liu et al. (2021).

Economies

Developed economies, economies in transition, and developing economies are three broad categories representing the economic status of countries and regions (UN, 2018). Economy was coded as ‘Developing’, ‘Transition’, or ‘Developed’ based on the geographic locations where the surveys were conducted. The codification of the economy in this study was based on the *World Economic Situation and Prospects 2018* published by the United Nations (2018).

Industry

This study identified three main industry types in the selected studies: manufacturing, service, and a combination of the two (multiple). The manufacturing industry makes tangible products, while service industries mainly offer financial services, consultancy services, and IT services, among others. Therefore, studies focusing on research models from the manufacturing industry were coded as ‘Manufacturing’, and studies selecting data from service industries were coded as ‘Service’. The third group, which conducted surveys in both the manufacturing and service industries, was coded as ‘Multiple’.

3.3 Search strategy and results

Paper selection standards are crucial to implementing meta-analysis (Cooper, 1998). As more KM journals are indexed in the Scopus databased rather than the Web of Science, we opted to use the former. In this study, the key terms ‘knowledge management’ and ‘performance’ were used to search papers based on appearance in the title, abstract, or keywords of studies published between 1975 and 2018, because (1) the term ‘KM leadership’ is inconsistently used in earlier empirical papers and (2) only adopting ‘leadership’ as a keyword in a search might produce too many irrelevant papers. Subsequently, 32,496 papers were found in the Scopus database, with 31,526 papers written in the English language. Limited to the subjects of computer science, business

management and accounting, engineering, social science, decision science, economics, econometrics and finance, psychology, arts and humanities, and multidisciplinary, 24,663 remained after reviewing the content of the abstracts and keywords of the papers. Then, 1,474 papers were examined for their full content. After excluding irrelevant papers (366 papers not on KM, 140 non-empirical papers, two non-English language papers, 164 papers not reporting correlation coefficients or other parameters that can be used to calculate correlation coefficients, 173 papers featuring inappropriate measurement, 43 papers measuring KM as one variable, eight sub-item correlation reporting papers, two incorrect correlation reporting papers, two duplicate papers, 34 unmatched methodical papers, two papers without measurements, 22 literature reviews, 79 papers on team performance, 47 papers on job performance, and 78 papers on innovation performance), 22 papers studying the relationship between KM leadership and organisational performance were chosen for the meta-analysis.

3.4 Information collection

The authors had rounds of discussions regarding the data-coding details and agreed on the list of data items for coding and the procedures. In this phase, the selected studies were coded, including authors' name, correlation coefficient (other parameters were transformed into correlation coefficients if possible; Appendix B shows the calculation in detail), sample size, regions and industries of the collected data, measurement of KM leadership, and organisational performance. Descriptive statistics details of the studies are shown in Appendix A.

4. Findings and discussion

As shown in Table 1, KM leadership is positively related to organisational performance and is supported by the cumulative results revealed in this study. First, consistent with the literature (Hsu,

2008; Jain and Moreno, 2015; Kamhawi, 2012; Mageswari et al., 2017; Mousavizadeh et al., 2015; Noruzy et al., 2013; Pee et al., 2010; Samson et al., 2017), KM leadership is strongly associated with overall organisational performance, as determined based on the significant comprehensive effect size ($r_{\text{KML-OOP}} = 0.420$, 95% CI: 0.367, 0.470, Z-value = 13.946, $p < 0.001$); thus, this supports H1a. Second, a positive relationship between KM leadership and the financial performance of firms was revealed with a significant integrative effect size ($r_{\text{KML-FP}} = 0.279$, 95% CI: 0.056, 0.475, Z-value = 2.439, $p < 0.001$), and this result is in line with the findings of earlier work (García-Morales et al., 2008; Hartono et al., 2016; Lee & Choi, 2010); thus, H1b was supported. Hypothesis H1c was also supported, with a positive overall effect size ($r_{\text{KML-NFP}} = 0.441$, 95% CI: 0.303, 0.561, Z-value = 5.784, $p < 0.001$) of the KM leadership–non-financial performance relationship. Earlier studies (Gowen *et al.*, 2009; Jain & Moreno, 2015; Lee et al., 2012; Mageswari et al., 2017; Mousavizadeh et al., 2015; Sucahyo et al., 2016; Tan & Wong, 2015) have matched this finding as well.

Table 1: Main effects of KM leadership–organisational performance relationships

Study	Sample size	Total subjects	Effect size	95% CI		Two-tailed test		Result
				Lower limited	Upper limited	Z-value	p-value	
KML–OOP	10	3,262	0.420	0.367	0.470	13.946	0.000	Supported H1a
KML–FP	5	1,166	0.279	0.056	0.475	2.439	0.015	Supported H1b
KML–NFP	10	1,933	0.441	0.303	0.561	5.784	0.000	Supported H1c

Note: KML: KM leadership; OOP: overall organisational performance; FP: financial performance; NFP: non-financial performance

These consolidated findings can be interpreted in the following ways. Top executives' commitment to KM increases employees' passion for active participation in KM. Mutual understanding of the importance of knowledge is the consensus of organisation through the influence of KM leadership. Employees can efficiently solve problems using the collective knowledge of the organisation because of adequate investment in KM of organisations. In addition, employees are motivated by their managers to continuously learn and absorb new knowledge to

enhance their capabilities. Such organisations tend to utilise and create knowledge more effectively than their competitors who lack KM leadership. Therefore, these organisations can achieve better performance when their management teams sustainably demonstrate strong KM leadership, because knowledge is being efficiently and effectively managed.

The significant Q_{between} value (Q_{between} : 13.563; $df(Q)$:1; p-value: 0.000*** < 0.01) revealed that only different degrees of individualism impacted the KM leadership–non-financial performance relationship, which supported H_{IC3} , as shown in Table 2. A possible interpretation might be because employees in collective societies tend to behave and imitate their leaders in showing that they belong to the group (Hofstede et al., 2010). Differences in other dimensions of national culture did not affect the KM leadership–organisational performance relationships. Surprisingly, the significance of the Q_{between} value for different economies (Q_{between} : 15.617; $df(Q)$:1; p-value: 0.000*** < 0.001) was found in the studies of the KM leadership–non-financial performance relationship, suggesting that economy affected the relationship between KM leadership and non-financial performance; this relationship was strengthened in developing economies, which rejected H_{E3} ($r_{\text{developing}} = 0.530*** > r_{\text{developed}} = 0.203**$), as shown in Table 3. These results are likely to be related to the unbalanced social development between developed and developing economies. For hundreds of years, developed economies have led the industrial revolution and devised management theories and practices to facilitate the industrialisation of their countries. The economies of developed countries are still growing, but this growth rate has been slowing down. Therefore, it is necessary for developed economies to devise more advanced KM theories and practices to their boost development. Nevertheless, KM practices, e.g., KM leadership, is still new in many developing economies, as management theories and practices in developing economies are far behind those in developed economies. Once these new KM practices are implemented in

developing economies, it will help these firms significantly improve their non-financial performance.

Table 2: Categorical moderator test of national culture (KM leadership–non-financial performance relationship)

National culture dimension	Sample size	Effect size	95% CI		Two-tailed test		Result
			Lower limited	Upper limited	Z-value	p-value	
Power distance (L)	4	0.544	0.365	0.684	5.249	0.000	Not supported H _{PD3}
Power distance (S)	6	0.366	0.205	0.509	4.270	0.000	
Total between	Q _{between} : 2.353; df(Q):1; p-value: 0.125						
Collectivism (C)	6	0.554	0.448	0.645	8.616	0.000	Supported H _{IC3}
Individualism (I)	4	0.253	0.126	0.373	3.822	0.000	
Total between	Q _{between} : 13.563; df(Q):1; p-value: 0.000***<0.001						
Femininity (F)	5	0.475	0.370	0.569	7.888	0.000	Not supported H _{FM3}
Masculinity (M)	5	0.409	0.137	0.623	2.868	0.004	
Total between	Q _{between} : 0.254; df(Q):1; p-value: 0.614						
Uncertainty avoidance (S)	4	0.426	0.233	0.586	4.108	0.000	Not supported H _{UA3}
Uncertainty avoidance (W)	6	0.452	0.250	0.616	4.131	0.000	
Total between	Q _{between} : 0.039; df(Q):1; p-value: 0.843						
Long-term orientation (L)	4	0.501	0.388	0.599	7.621	0.000	Not supported H _{LS3} ^[1]
Short-term orientation (S)	5	0.437	0.197	0.628	3.414	0.001	
Total between	Q _{between} : 0.279; df(Q):1; p-value: 0.597						
Indulgence (I)	5	0.472	0.239	0.654	3.739	0.000	Not supported H _{IR3} ^[1]
Restrained (R)	4	0.448	0.320	0.560	6.279	0.000	
Total between	Q _{between} : 0.038; df(Q):1; p-value: 0.846						

Note: ^[1] The study of Boumarafi and Jabnoun (2008) was dropped because they collected data in the UAE but the scores of long-term oriented and indulgence of the UAE are not available

Table 3: Categorical moderator test of economies (KM leadership–non-financial performance relationship)

Economies	Sample size	Effect size	95% CI		Two-tailed test		Result
			Lower limited	Upper limited	Z-value	p-value	
Developed economies	3	0.203	0.077	0.322	3.137	0.002	Rejected H _{E3}
Developing economies	7	0.530	0.421	0.624	8.209	0.000	
Total between	Q _{between} : 15.617; df(Q):1; p-value: 0.000***<0.001						

Industry type influenced the relationship between KM leadership and non-financial performance, as the significant Q_{between} values proved (Q_{between}: 9.957; df(Q):1; p-value: 0.002** < 0.01), but the overall effect size was larger in the manufacturing industry than in the service industries (r_{manufacturing} = 0.582*** > r_{service} = 0.203**); this thus rejected H_{I3}, as shown in Table 4. Several factors may have influenced this observation. The majority of frontline employees in the

manufacturing industry are blue-collar workers who work with machines and products rather than people. These blue-collar workers are more likely to follow their supervisors, seeking how to improve productivity and ensure product quality. Once the supervisors of the blue-collar workers show powerful KM leadership, the effectiveness and efficiency of knowledge application among the blue-collar workers improves. This is especially true in terms of the non-financial performance of firms, which is reflected by product quality improvement and production efficiency. Therefore, the KM leadership–non-financial performance relationship was stronger in the manufacturing industry. On the other hand, the moderating tests of national culture, economy, and industry for the KM leadership–overall organisational performance relationship and the KM leadership–financial performance relationship were insignificant. All insignificant results of the moderating tests can be found in Appendix E². A summary of the empirical results on the KM leadership–organisational performance relationships is shown in Figure 2.

Table 4: Categorical moderator test for industry (KM leadership–non-financial performance relationship)

Industry type	Sample size	Effect size	95% CI		Two-tailed test		Result
			Lower limited	Upper limited	Z-value	p-value	
Manufacturing	3	0.582	0.389	0.726	5.119	0.000	Rejected H ₁₃ ^[2]
Service	3	0.203	0.077	0.322	3.137	0.002	
Total between	Q _{between} : 9.957; df(Q):1; p-value: 0.002**<0.01						

Note: ^[2] The study of Tang and Lai (2016) and the studies that did not report industries or collected data from multiple industries were excluded for the moderating test for the type of industries.

² H₁₂ could not be tested, because there was only one study in each manufacturing and service industry category.

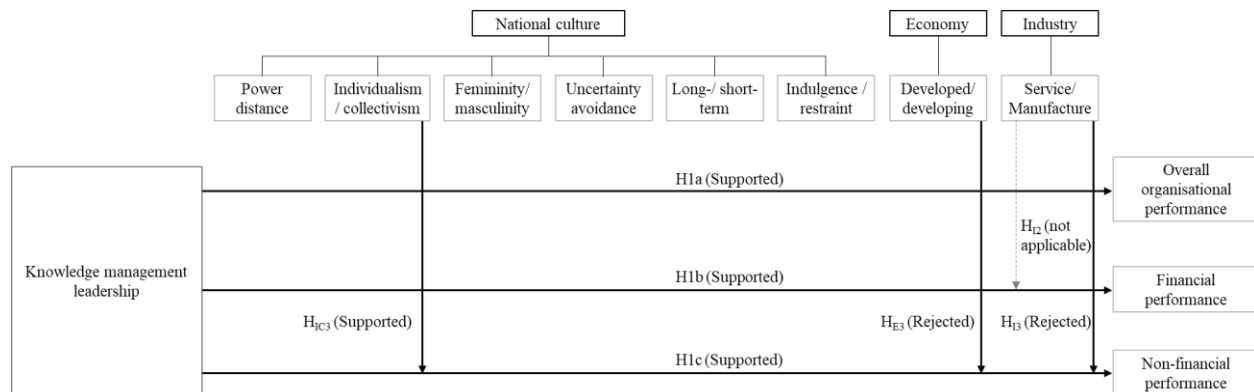


Figure 2: Empirical results

5. Conclusions

5.1 Theoretical contributions

This study contributes to KM theory and behavioural theory in the following aspects: It provides the first comprehensive assessment of the relationships between KM leadership and organisational performance, complementing the earlier review research of Inkinen (2016) and Gupta and Chopra (2018) by integrating a large number of research observations across different studies. The present study also expands our knowledge by establishing a specific accumulative effect size between KM leadership and overall organisational performance, KM leadership and financial performance, and KM leadership and non-financial performance. The knowledge-based view is supported by highlighting that KM leadership can enable knowledge to efficiently flow within organisations and thus improve their performance. Moreover, this study reveals more in-depth information regarding the effectiveness of behaviour—demonstrating in KM leadership, such as KM support, KM activity participation, motivation for KM, and innovation encouragement, on affecting organisational performance using a large number of subjects (3,262 research subjects from 10 studies on the KM leadership–overall organisational performance relationship, 1,166 research subjects from five studies on the KM leadership–financial performance relationship, and 1,933

research subjects from 10 studies on the KM leadership–non-financial performance relationship). In all, these findings significantly expand the generalisability of the positive effects of KM leadership on organisational performance and contribute to the current literature by giving more clarity to the mixed empirical evidence.

Second, it offers valuable insights for international business research by linking KM leadership and its benefits in cross-cultural and economic backgrounds, which responds to the suggestions of Archanjo de Souza et al. (2020). As one of few studies investigating KM leadership in multiple cultural backgrounds, the theoretical implications of this study expand our understanding about the effect of national culture on the KM leadership–organisational performance relationship. It also contributes to KM theory by confirming that the overall effect size of the KM leadership–non-financial performance relationship would be significantly strengthened in collective societies. This is one of the few studies that has investigated KM leadership and its benefits in different economies and extends prior studies, such as those by Inkinen (2016) and Gupta and Chopra (2018). Moreover, it assists in our understanding of the role of regional idiosyncrasies, such as national economies, in affecting the KM leadership–organisational performance relationship.

Finally, the industry differences that have been identified provide critical insights into the role of industry in the KM leadership–non-financial performance relationship, which contributes to KM theory by providing empirical evidence of the contextual factor: industry type, on the link between KM leadership–non-financial performance. As one of few studies exploring KM leadership and its benefits in different industries, this study responds to Inkinen’s (2016) appeal for examining KM in different industrial settings and adds new knowledge to the body of KM theory.

5.2 Practical implications

The findings from the research questions benefit a broad range of managers, especially those involved in a significant amount of knowledge-intensive activities or decision-making. First, this study provides strong empirical confirmation of the relationship between KM leadership and organisational performance, which can be used to persuade managers to alter their leadership style toward KM. Second, managers can learn to enhance their capability to influence their subordinates on KM activities through the following aspects: (1) they should support KM projects in their organisations; (2) they should not only demonstrate a positive attitude towards KM but also passionately participate in KM activities; (3) they should value knowledge for their business development; (4) they should allocate sufficient resources to implementing KM projects, e.g., deploying KM systems (Gang Liu et al., 2020); and (5) they should inspire employees toward positive knowledge-related behaviour and results, such as knowledge-sharing, learning, and innovation, using tangible and intangible rewards, such as bonuses, promotion, and organisational recognition.

On the other hand, despite our findings suggesting that the moderating impacts of contextual factors barely exist on the KM leadership–overall organisational performance and the KM leadership–financial performance relationship, while the KM leadership–non-financial performance relationship was affected by such contextual factors. Thus, managers should be aware of the impacts of institutional forces on KM. There is not a one-size-fits-all KM strategy, especially for multi-national companies with local subsidiaries. Senior management teams should focus on their leadership style, local societal culture, economy, and industrial type to tailor their KM strategy implementation to succeed and reap the benefits, especially in terms of non-financial improvement. Therefore, they should understand that the national culture has an impact on KM

and should differentiate KM initiatives based on different cultural backgrounds of employees to meet the underlying social norms of employees. For instance, demonstrating KM leadership to a group of people might be more effective in collective societies, but it might be more effective to individuals in individualistic societies. Managers should change their leadership styles to fit different situations. Thus, it is recommended that managers from different economies seriously consider the role of KM in their business as well. For managers in developed economies, their KM practices should be upgraded, including through chief knowledge officer appointment, to sustain their competitive advantage. For managers in developing economies, they should continue to learn from their counterparts in developed economies and exhibit more positive KM leadership to their subordinates. Finally, it is suggested that managers in the manufacturing industry should be more active in demonstrating KM leadership to their subordinates. To motivate frontline workers' participation in KM activities, these managers need to pay frequent visits to their plant and communicate with them.

5.3. Limitations and future studies

Although this study provides significant contributions to the KM literature, there are still some limitations that should be acknowledged. First, this study only selected papers written in English between 1975 to 2018 from the Scopus database and thus might suffer from a language bias and database bias, although such biases are considered limited according to past research (Livingston et al., 2008) as well as a publication bias test, as shown in Appendix C. The second limitation, which could have affected the moderating effects of national culture on the KM leadership–organisational performance relationships, was the binary classification of national culture based on Hofstede's national culture scores. Future studies may use other national culture frameworks to conduct a meta-analysis. Third, the coded industries were divided into two categories, and the

effect sizes for the service and manufacturing industries were compared. However, detailed differences in the KM leadership–organisational performance relationships between similar industries, such as banking and insurance, could not be examined and deserve investigation in the future. More contextual factors, such as national income and education level, and research-related moderators, such as the type of respondents and publications, might be taken into account to explain any variances in future studies. Fourth, this study only focused on the links between KM leadership and organisational performance, whereas further studies might examine the relationships between KM leadership and other types of performance, such as innovation, team, or individual performance. It would also be interesting to explore the relationships between other KM practices (e.g., KM-supportive IT, KM strategies, and organisational learning) or KM activities (e.g., knowledge-sharing, application, etc.) and different types of performance. Future examination of these relationships might be conducted via big data analytics and machine learning techniques. Finally, identical constructs were found to have different names in past publications; for instance, KM leadership was called various terms, including ‘knowledge-oriented leadership’ (Donate & Sánchez de Pablo, 2015), ‘supervisory work’ (Inkinen et al., 2015), and ‘senior management commitment’ (Kim and Hancer, 2010). These inconsistent terms in the KM vocabulary make it difficult to understand KM, especially for people new to KM. Future studies should aim to devise more widely accepted, standardised terms to help people better understand KM.

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Appendices

Appendix A: Descriptive statistics

Table A 1: Descriptive statistics (KM leadership–overall organisational performance relationship)

SN	Study name	Effect size	Sample size	Region	PD	IC	FM	UA	LS	IR	Economies	Industry
1	Boumarafi and Jabnoun, 2008-OP ^[2]	0.299	89	UAE	L	C	M	S	NA	NA	Developing	Multiple
2	Hsu, 2008-OP	0.460	256	Taiwan (China)	S	C	F	S	L	I	Developing	Multiple
3	Jain and Moreno, 2015-OP	0.450	205	Indian	L	I	M	W	L	R	Developing	Manufacturing
4	Kamhawi, 2012-OP ^[1]	0.340	167	Bahraini	NA	NA	NA	NA	NA	NA	Developing	Multiple
5	Mageswari <i>et al.</i> , 2017-OP	0.559	251	Malaysia	L	C	M	W	S	I	Developing	Manufacturing
6	Mousavizadeh <i>et al.</i> , 2015-OP	0.280	268	US	S	I	M	W	S	I	Developed	Multiple
7	Noruzy <i>et al.</i> , 2013-OP	0.530	106	Iran	S	I	F	W	S	R	Developing	Manufacturing
8	Pee <i>et al.</i> , 2010-OP	0.410	101	Singapore	L	C	M	W	L	R	Developing	Service
9	Rezaei <i>et al.</i> , 2017-OP	0.410	222	Iran	S	I	F	W	S	R	Developing	Manufacturing
10	Samson <i>et al.</i> , 2017-OP	0.410	1597	Australia	S	I	M	W	S	I	Developed	Multiple

Note: ^[1]The study of Kamhawi (2012) collected data in Bahrain where Hofstede national culture scores are not available; therefore, this study was excluded when the categorical moderating test of the industry was analysed. The study of Boumarafi and Jabnoun (2008) was dropped when analysing the moderating effects of long-term orientation and indulgence-centred culture because scores of UAE in these two national culture dimensions are not available.

Table A 2: Descriptive statistics (KM leadership–financial performance relationship)

SN	Study name	Effect size	Sample size	Region	PD	IC	FM	UA	LS	IR	Economy	Industry
1	Akgün <i>et al.</i> , 2014-F	0.230	193	Turkey	L	C	F	S	L	I	Developing	Manufacturing
2	García-Morales <i>et al.</i> , 2008-F	0.564	408	Spain	S	I	F	S	L	R	Developed	Multiple
3	Hartono <i>et al.</i> , 2016-F	0.270	117	Indonesia	L	C	F	W	L	R	Developing	Service
4	Inkinen and Kianto, 2014-F	0.245	261	Finland	S	I	F	W	S	I	Developed	Multiple
5	Lee and Choi, 2010-F	0.016	187	Korea	S	C	F	S	L	R	Developing	Multiple

Table A.3: Descriptive statistics (KM leadership–non-financial performance relationship)

SN	Study name	Effect size	Sample size	Region	PD	IC	FM	UA	LS	IR	Economies	Industry
1	Boumarafi and Jabnoun, 2008-NF ^[1]	0.217	89	UAE	L	C	M	S	NA	NA	Developing	Multiple
2	Gowen Iii <i>et al.</i> , 2009-NF	0.260	376	US	S	I	M	W	S	I	Developed	Service
3	Jiménez-Jiménez <i>et al.</i> , 2014-NF	0.270	81	Spain	S	I	F	S	L	R	Developed	Service
4	Kim and Hancer, 2010-NF	0.081	179	US	S	I	M	W	S	I	Developed	Service
5	Lee <i>et al.</i> , 2012-NF	0.573	105	Korea	S	C	F	S	L	R	Developing	Multiple
6	Mageswari <i>et al.</i> , 2017-NF	0.636	251	Malaysia	L	C	M	W	S	I	Developing	Manufacturing
7	Rezaei <i>et al.</i> , 2017-NF	0.385	222	Iran	S	I	F	W	S	R	Developing	Manufacturing
8	Sucahyo <i>et al.</i> 2016-NF	0.524	139	Indonesia	L	C	F	W	L	R	Developing	Multiple
9	Tan and Wong, 2015-NF	0.684	206	Malaysia	L	C	M	W	S	I	Developing	Manufacturing
10	Tang and Lai, 2016-NF ^[2]	0.556	285	Taiwan (China)	S	C	F	S	L	I	Developing	Government

Note: ^[1]They study of Boumarafi and Jabnoun (2008) was excluded when examining moderating effects of indulgence and long-term orientation culture because the score of indulgence and long-term orientation is unknown of the UAE. ^[2] The study of Tang and Lai (2016) collected data in a department of government; therefore, these two studies were excluded when moderating effects of industry were tested.

Appendix B: Effect size transformation

Please refer to Appendix B on page 748 of Liu et al. (2021)

Appendix C: Publication bias test

The bias analysis showed that, in this study, there were no ‘file-drawer’ problems.

Table C 1: Publication bias analysis

Studies	Failsafe N	k	N/5k+10	Result
KML–OOP	1,301	10	21.683	No publication bias
KML–FP	136	5	3.886	No publication bias
KML–NFP	1,070	10	17.833	No publication bias

Note: KML: KM leadership, OOP: overall organisational performance, FP: financial performance, NFP: non-financial performance

Appendix D: Homogeneity test

Table D 1: Homogeneity test

Studies	Sample size	Heterogeneity				Tau-square				Result
		Q	df(Q)	p	I ²	τ ²	SE	δ ²	τ	
KML–OOP	10	21.419	9	0.000	57.981	0.005	0.005	0.000	0.073	Heterogenous
KML–FP	5	60.010	4	0.000	93.334	0.064	0.051	0.003	0.252	Heterogenous
KML–NFP	10	109.919	9	0.000	91.812	0.060	0.034	0.001	0.246	Heterogenous

Note: KML: KM leadership, OOP: overall organisational performance, FP: financial performance, NFP: non-financial performance

Appendix E: Moderating tests of contextual factors

Table E 1: Categorical moderator test of the national culture (KM leadership–overall organisational performance relationship)

National culture dimension	Sample size	Effect size	95% CI		Two-tailed test		Result
			Lower limited	Upper limited	Z-value	p-value	
Power distance (L)	4	0.449	0.338	0.547	7.233	0.0000	Not supported H _{PD1} ^[1]
Power distance (S)	5	0.410	0.345	0.471	11.221	0.0000	
Total between	Q _{between} : 0.380; df(Q):1; p-value: 0.538						
Collectivism (C)	4	0.453	0.347	0.547	7.579	0.000	Not supported H _{IC1} ^[1]
Individualism (I)	5	0.407	0.342	0.468	11.185	0.000	
Total between	Q _{between} : 0.559; df(Q):1; p-value: 0.455						
Femininity (F)	3	0.455	0.387	0.517	11.760	0.000	Not supported H _{FM1} ^[1]
Masculinity (M)	6	0.412	0.331	0.486	9.207	0.000	
Total between	Q _{between} : 0.702; df(Q):1; p-value: 0.402						
Uncertainty avoidance (S)	2	0.400	0.238	0.540	4.588	0.000	

Uncertainty avoidance (W)	7	0.434	0.367	0.496	11.468	0.000	Not supported H _{UA1} ^[1]
Total between	Q _{between} : 0.166; df(Q):1; p-value: 0.683						
Long-term orientation (L)	3	0.448	0.379	0.512	11.329	0.000	Not supported H _{LS1} ^[1,2]
Short-term orientation (S)	5	0.435	0.347	0.516	8.723	0.000	
Total between	Q _{between} : 0.049; df(Q):1; p-value: 0.824						
Indulgence (I)	4	0.430	0.332	0.519	7.861	0.000	Not supported H _{IR1} ^[1,2]
Restrained (R)	4	0.444	0.379	0.505	11.900	0.000	
Total between	Q _{between} : 0.056; df(Q):1; p-value: 0.812						

Note: ^[1]The study of Kamhawi (2012) and ^[2]Boumarafi and Jabnoun (2008) were excluded.

Table E 2: Categorical moderator test of the national culture (KM leadership–financial performance relationship)

National culture dimension	Sample size	Effect size	95% CI		Two-tailed test		Result
			Lower limited	Upper limited	Z-value	p-value	
Power distance (L)	2	0.245	0.137	0.348	4.362	0.000	Not supported H _{PD2}
Power distance (S)	3	0.295	-0.061	0.585	1.631	0.103	
Total between	Q _{between} : 0.077; df(Q):1; p-value: 0.781						
Collectivism (C)	3	0.169	0.010	0.320	2.077	0.038	Not supported H _{IC2}
Individualism (I)	2	0.419	0.065	0.679	2.297	0.022	
Total between	Q _{between} : 1.706; df(Q):1; p-value: 0.192						
Femininity (F)	5	NA	NA	NA	NA	NA	Not applicable H _{FM2}
Masculinity (M)	0	NA	NA	NA	NA	NA	
Total between	NA						
Uncertainty avoidance (S)	3	0.291	-0.086	0.594	1.522	0.128	Not supported H _{UA2}
Uncertainty avoidance (W)	2	0.253	0.155	0.345	4.982	0.000	
Total between	Q _{between} : 0.040; df(Q):1; p-value: 0.841						
Long-term orientation (L)	4	0.286	-0.004	0.532	1.935	0.053	Not supported H _{LS2}
Short-term orientation (S)	1	0.245	0.127	0.356	4.017	0.000	
Total between	Q _{between} : 0.073; df(Q):1; p-value: 0.787						
Indulgence (I)	2	0.239	0.150	0.324	5.151	0.000	Not supported H _{IR2}
Restrained (R)	3	0.304	-0.093	0.617	1.512	0.131	
Total between	Q _{between} : 0.109; df(Q):1; p-value: 0.742						

Table E 3: Categorical moderator test of economies (KM leadership–overall organisational performance relationship)

Economies	Sample size	Effect size	95% CI		Two-tailed test		Result
			Lower limited	Upper limited	Z-value	p-value	
Developed economies	2	0.356	0.225	0.474	5.086	0.000	Not supported H _{E1}
Developing economies	8	0.443	0.383	0.500	12.799	0.000	
Total between	Q _{between} : 1.608; df(Q):1; p-value: 0.205						

Table E 4: Categorical moderator test of economies (KM leadership–financial performance relationship)

Economies	Sample size	Effect size	95% CI		Two-tailed test		Result
			Lower limited	Upper limited	Z-value	p-value	
Developed economies	2	0.419	0.065	0.679	2.297	0.022	Not supported H _{E2}
Developing economies	3	0.169	0.010	0.320	2.077	0.038	
Total between	Q _{between} : 1.706; df(Q):1; p-value: 0.192						

Table E 5: Categorical moderator test of industries (KM leadership–overall organisational performance relationship)

Industry type	Sample size	Effect size	95% CI		Two-tailed test		Result
			Lower limited	Upper limited	Z-value	p-value	
Manufacturing	4	0.487	0.411	0.556	10.980	0.000	Not supported H _{I1}
Service	1	0.410	0.233	0.561	4.312	0.000	
Total between	Q _{between} : 0.740; df(Q):1; p-value: 0.390						