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Learning culture, trust culture and knowledge application: the mediating effect of transformational leadership

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Abstract

Purpose – The purpose of this paper is to analyze the influence of learning culture, culture of trust and transformational leadership in the application of knowledge in a school context. Mediation analysis is used to quantify the effects that the learning culture and trust culture have on the application of leadership, mediated by transformational leadership.

Design/methodology/approach – The method involves two samples of subjects – school managers and teaching staff – of 17 educational organizations. This study used the method of partial least square or PLS with SmartPLS v. 3.2.6.

Findings – The purpose of this study is to determine the effect of leadership in the application of knowledge as one phase of knowledge management. The results of this study explain that: there is a significant and direct role of learning culture in the application of knowledge, there is a significant direct role of culture of trust in the application of knowledge and there is a significant mediating effect of leadership among learning cultures and application of knowledge.

Practical implications – This study has proven that leadership behaves as a mediating instrument. This situation is critical in organizations because it makes it possible to obtain synergies in human capital and the development of knowledge. Bernard Bass believes that there are four main factors of transformational leadership, namely, idealized influence, inspirational motivation, individualized considerations and intellectual stimulation.

Originality/value – This study deepens the authors' understanding of enablers that affect the application of knowledge in schools, specifically about leadership.

Keywords Transformational leadership, Knowledge management, School, Learning culture, Trust culture

Paper type Research paper

1. Introduction

Benito Olalla and Merino (2019) state that it is very important in the development of educational organizations if school knowledge management (KM) is involved in the process of transformation, acquisition, application of knowledge and exchange. In line with Connelly *et al.* (2012), because teaching is identified with teacher practice, specifically the application of knowledge is a highlighted process. In the realm of education, scholars (Spear *et al.*, 2018) are useful for applying knowledge to students and coworkers to advance in improving teaching and also in the learning process.

Two important processes in the school context that influence the application of knowledge are culture and leadership (Cunningham and Ladd, 2018). Specifically in secondary schools and in the development of educational organizations, these two processes are very basic (Vervae *et al.*, 2018). Problems that arise as a form of identification of how



this process affect the application of knowledge. In Kruse and Johnson (2017), to create improved school practices, an analysis of the effect of the three processes that can help understand the learning process and the development of interventions in secondary schools is done.

In secondary schools, the application of knowledge aims to determine the culture of belief, transformational leadership and learning culture (Klein and Shapira-Lishchinsky, 2016).

This research is very pertinent for schools because the KA from scholars (Mei Kin, 2018) is a key to improving the organizational climates, school development and administrative processes. Therefore, analyzing the application of the knowledge leadership role will help educational organizations develop effectiveness in KM. Testing was conducted empirically, using data from 186 teaching staff. The analytical tool used is PLS SEM, the results of the modeling are partially.

An examination of these concepts is presented in the following section, and an exploration of the potential relationships between them.

2. Literature frameworks

2.1 Approach to the concept of applications of knowledge

The application of knowledge developed in the phase is obtained and transferred that can be used to improve organizational practices and processes as a result of what was learned in the previous two phases. Nesheim (2011) states that apparently not enough to spread or share knowledge; it is about using practices, techniques and methods, to change the behavior of organizations and people.

The application of knowledge is when decisions are based on transmission, the initial situation is improved and the knowledge generated. Chen and Huang (2011) state that in the education sector, implementation of knowledge regarding practice learning and improving the environment are created from knowledge generation.

2.2 The relationship of learning culture with the application of knowledge

Murphy *et al.* (2013) state that organizational culture can be explained by a number of meanings and assumptions held by several people in the organization, hence emphasizing values, common assumptions and beliefs of organizational member (Bates and Khasawneh, 2005). Culture in learning is a collection of attitudes and values that support the learning process (Gil and Mataveli, 2017). Related to this, a learning culture builds a combination of teachers and administrators in the promotion of climate, which is beneficial for performance (Tichnor-Wagner *et al.*, 2016).

In studying the application of knowledge in academic settings, it is necessary to consider the contextual role of school culture. According to Demirkasimoglu (2018), the culture of academic institutions can be a facilitator or an obstacle to sharing knowledge. Lee (2004) stated that the culture of learning presents good opportunity to solve problems related to competitive pressures and to look beyond self-interest. In addition, in line with Julien-Chinn and Lietz (2019), KM and learning culture help educational organizations in improving and developing learning.

Learning cultures influence the application of knowledge and generation through learning facilitation because it produces conditions that provide development facilities for organizational learnings (Chatterjee *et al.*, 2018). Conditions for knowledge transfer and creation are provided. Thus, this study uses a hypothesis:

- H1. There is a positive relationship between the application of knowledge (KA) and learning culture (LC).

2.3 Mediating the effect of transformational leaderships on the relationship between knowledge application and learning culture

Defined in this study are the ability to perform as “leadership” and the action of leading a group of teachers. Leadership influences organizational performance (Prasad and Junni, 2016; Mahmood *et al.*, 2019); in particular, it is demonstrated that KM is facilitated by leadership (Dominguez Gonzalez and Massaroli de Melo, 2018).

More specifically, having transformational leadership experience has the positive impact on KM at educational organizations (Al-husseini and Elbeltagi, 2018). Transformational leadership has an effect in organizations it can be directly that the leader creates the conditions (Valaei and Javan, 2017) for the application of knowledge to occur involving (Hater and Bass, 1988) the vision of the leader with the person who is active with. Transformational leadership involves employees to be committed to the company’s vision and mission. Companies challenge them to solve problems, innovate and develop leadership skills by providing coaching (Bass and Riggio, 2006). Transformational leaders share a vision of the future that is realistic and articulate and take account of differences and stimulate subordinates intellectually (Yammarino and Bass, 1990) in the context of schools (Collins-Camargo and Royse, 2010) having a direct impact on the culture of learning.

In these favorable learning conditions and in the find that the organization produces a culture of learning, to promotes applications of knowledge intervened by leadership which must show that leadership power encourages value that identifying a learning cultures to apply knowledge thus to produce change promotes by learnings (Xue *et al.*, 2013). Works such as Bouwmans *et al.* (2017) have explained the positive influence of transformational leadership on group learning in education.

In addition, other works have analyzed the relationship of leadership mediation with follower behavior and have proven the mediating effect they have in this type of relationship (Groves, 2016). Based on these findings, a second hypothesis was formulated:

H2. Transformational leaderships (TL) mediate the influence between LC and KA.

2.4 Linking trust culture with knowledge application

In the knowledge economy, trust has an important influence on the culture of sharing knowledge (Bakker *et al.*, 2006) because an employee needs trust to respond to and exchange knowledge (Gruenfeld *et al.*, 1996). A culture of trust is needed to encourage the development and application of knowledge in organizations. Based on the results of research by Abrams *et al.* (2003), cultural belief leads to an increase in the overall knowledge:

H3. There is a positive relationship between the KA and culture of trust (TC).

2.5 The effect of mediation on transformational leadership in culture of trust and knowledge application relations

Lee *et al.* (2010) found that transformational leadership mediates knowledge by increasing members’ trust in leaders. Jung and Avolio (2000) showed in their research the role of transactional and transformational leadership and the influence of mediating the value of conformity and trust in member performance:

H4. TL mediates the relationship of TC with KA.

A general analysis model that summarizes the five proposed hypotheses is shown by Figure 1.

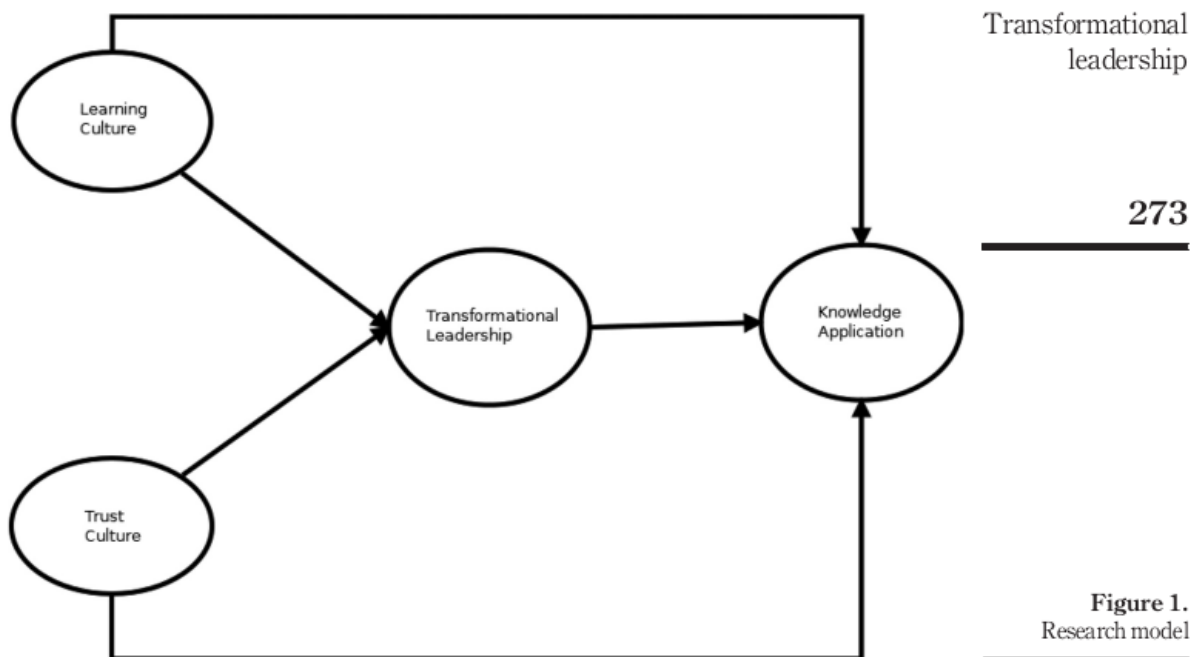


Figure 1.
Research model

3. Research method

3.1 Data collection and sample

This study aims to analyze the application of knowledge as a phase of KM. It investigates the effectivity of leaderships in organizations involving knowing both the perception of leaders who carry out formal leadership and followers to examine possible similarities or differences between follower and leader appreciation. Data collection from 17 secondary school in East Java, Indonesia, came from teaching staff and school managers.

We describe two questionnaires to collect data, the first of which is submitted to the management team and department heads who respond as education center managers and, in this case, have formal leadership status. For teaching staff, we gave a second questionnaire who answered as the first person about their leadership status. The questions from each of the two questionnaires have the same content, but with the right words for each who received a questionnaire. In each group of people (teachers and managers), we sent questionnaires separately.

School managers as a sample, consisting of 33.6% or 116 subjects were the management team and 66.4% were department heads. Regards the education, 6.9% have postgraduate degrees from universities, 79.3% have a bachelor's degree, 12.1% have doctorate degree from universities and 1.7% have other qualifications.

The teaching staff sample consisted of 186 teachers. Regarding the education, 10.2% have a postgraduate degree from universities, 81.7% had a bachelor's degree, 4.8% have a doctorate degree from universities and 3.2% have other qualifications. Regarding its size, 79.5% work at the institute consisting of 50 or more teachers, and 20.5% belong to the institute with less than 50 teachers.

3.1.1 Measures. We analyzed the literature, which were institutes of secondary educations in Indonesia, to consider the context of studies.

3.1.2 *Knowledge application.* According to Li (2018), KA is measured through a five-item scale. The item set includes five characteristics that identify the KA in schools: systematic collection of information, communication of change, analysis of different perspectives, communication of critical knowledge, definition and analysis of solutions. In this study, respondents responded to the items using a Likert scale with seven points.

3.1.3 *Learnings culture.* Marsick and Watkins (2003) highlight the traits that identify LC or organizational culture. LC is based on value that influences learning. The scale that measures LC consists of five items, organizations with an LC are characterized mainly by five principles: gathering information and learning (Dominguez Gonzalez and Massaroli de Melo, 2018), providing learnings opportunity (Tlaiss and Dirani, 2015), learning from practice (Hartman, 2006), learn from mistakes (Cattaneo and Boldrini, 2017; Clarke, 2011) and open gathering of various opinions from the teacher. In this study, respondents responded to items using a Likert scale with seven points.

3.1.4 *Transformational leaderships.* TL is able to inspire followers to achieve extraordinary results by providing meaning and understanding and developing their abilities and leadership, as well as helping grow and develop followers to become a leader, by empowering and aligning individual goals, group goals and company goals (Bass and Riggio, 2006). TL is measured using a four-item global scale that corresponds to leadership types that identified four main characteristics, namely: individual consideration, influence, inspirational motivation and intellectual stimulation (Bass and Avolio, 1997). By using a scale ranging from 1–7. Bernard–Bass believes that there are four TL factors. According to Bass, 2008 there are four transformational leadership styles, including: inspirational motivation, individual consideration, ideal influence and intellectual stimulation. These four styles are called “Four I” TL.

3.1.5 *Trust culture.* Mayer *et al.* (1995) argue that factors that shape a person’s trust in others are three, namely, the ability (ability), kindness (benevolence) and integrity (integrity). Respondents used a seven-point Likert scale as a response.

Transformational leaders who have ideal attributes explain that a person’s sense of strength and confidence can convince others that the person can overcome various problems. Organizational team members often imitate leaders; they see leaders as charismatic people with organizational values and mission. The influence of ideal leadership includes behavior that instills pride in followers because they are associated with leaders who are synonymous with charisma. This shows that a leader will not highlight each other’s personal interests for the greater good of the group and make personal sacrifices for the common good. An ideal leader emphasizes collective mission and notes the importance of having strong goals. They tend to talk about the importance of values, beliefs and mutual trust.

Individual consideration is one of the factors of transformational leadership. Transformational leaders shows individual consideration spend their time to teach and guide their members, they promote self-development (Table 1).

3.2 Data analysis

Firstly, we compare the response of the school management team and teaching staff with regard to four items that identified transformational leadership through arithmetic average analysis. Second, we analyze follower behavior using teachers’ responses.

Based on Roldán and Sánchez-Franco (2012), we use the PLS method to test the model because:

- the sample ($N = 186$) is not too large;
- the focus of this study is to explain and predict the main dependent variable;

		Transformational leadership
Idealized influence	Charismatic or an instinctual pride Not be selfish for the good organization Show self-confidence and are not weak Values and trust as the main thing Collective missions are emphasized	
Inspirational motivation	Optimistic about the future Create an interesting vision for the future Make a target of what needs to be achieved Make interesting images for important things to consider Enthusiastic and encouraging	275
Intellectual stimulation	Look for alternative perspectives that are unique and different Allows others to see things from a different perspective Encourage modern and non-traditional thinking Suggestions for completing assignments in new and other ways Recheck critical assumptions	
Individualized consideration	Set aside time to practice and learn with followers Increased self-development Treat all members as individuals Identify different needs, aspirations and abilities for team members Listen to other people's complaints Assist others in developing strength	Table 1. The components of TL by bass

- according to the type of relationship, this research model is complex (moderation, mediation and direct); and
- the nature of the construction is arranged with a reflective design approach (Mode A), which means that indicators and dimensions represent different aspects where there is a correlation between them (Henseler, 2017).

4. Analysis result

The first univariate comparative analysis was carried out from the teaching staff and school manager responses. We analyzed structural equations with PLS regression based on the responses of the teaching staff.

4.1 Comparative analysis

Figure 2 presents a comparative analysis of the responses of the school managers and the teaching staff. The statistical averages of the responses of the school managers and the teachers to the four items that identify the transformational leadership were compared.

The results in Figure 2, the responses of the two groups to the four items were having similarity, especially with regard to the influence (4.13 teachers and 4.42 managers), consideration (5.11 teachers and 5.26 managers) and motivations (4.86 teachers and 4.37 managers). Certain differences were observed only in items that refer to the contribution of resources to the development of professional activities, which have a higher score in the case of school managers (4.24) compared to the cases of teachers (3.61).

To analyze with greater accuracy, we use comparative analysis for the differences between responses of the two types of respondents; an analysis of variance (one-way ANOVA) is performed for each item according to the type of subject (Table 2).

As the results in Table 2 show, no significant difference was found between variables, which helped explain the similarity of responses between teachers and school managers.

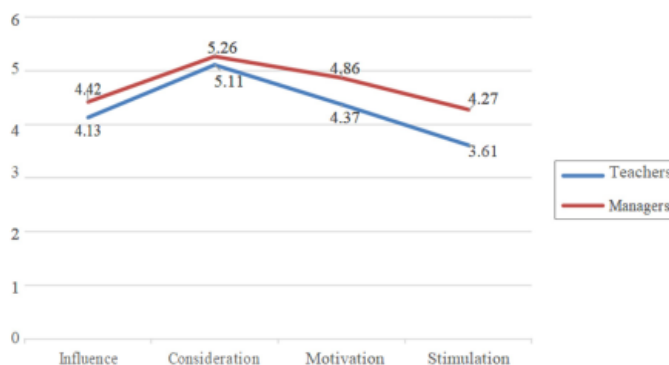
4.2 Partial least squares analysis

4.2.1 Measurements model. As observed in Table 3, the reliability of the construction was also verified, because Nunnally (1978) states that in all cases, 0.70 value of Cronbach's α is superior (Nunnally and Bernstein, 1994). In addition, all construction and multidimensional dimensions meet the construction reliability requirements, because the composite reliability (CR) is more than 0.80.

Furthermore (Fornell and Larcker, 1981), Table 4 shows that all variables have validity that distinguishes the Fornell-Larcker criteria, which compares the average variance extracted (AVE) between the estimated correlation square with each pair of factors, and from the heterotrait-monotrait (HTMT) ratio (Henseler et al., 2015).

4.2.2 Structural models. Table 5 shows the main parameters obtaining to the study models related to structural evaluations. The total-effect Model 1 presents of LC in KA, which proved to be significant ($c = 0.708$ ***). Model 2 shows how the effect of LC on KA is no longer significant when TL intervenes ($c' = 0.060$). The total-effect Model 3 shows TC in KA to be significant ($d = 0.717$ ***). Model 4 shows how the TC effect on KA is not significant when TL intervenes ($d' = 0.230$).

We obtained the value of indirect effects as 0.642 *** from SmartPLS ($a \times b1$) (Table 6), which has been proven significant, which allowed H2 to be compared. Therefore, the sum mediation of TL found the relationship between KA and LC because the direct effect is no longer significant ($H1 = c'$) and the indirect effect ($H2 = a \times b1$) is significant. Then, the indirect value is obtained from Smart PLS ($e \times b1 = 0.701$ ***), which has a significance that can be seen in Table 6, which allows H4 to be different. Therefore, the total mediation of TL



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Figure 2.
Comparison of
answers teachers and
managers

	DF	F	P
Idealised influence	6	0.655	0.686
Individual consideration	6	0.636	0.702
Inspirational motivation	6	0.936	0.473
Intellectual stimulation	6	0.793	0.578

Note: DF: degrees of freedom

Table 2.
One-way ANOVA
(comparison of
groups – teachers
and managers)

Construct/dimension	Loading	Cronbach's α	CR	AVE	Transformational leadership
<i>KA</i>		0.889	0.918	0.693	277
Communication of organizational changes	0.814				
Communication of critical knowledge	0.858				
Critical analysis of perspectives	0.866				
Analysis of key assumptions	0.866				
Systematic collection of key information	0.753				
<i>LC</i>		0.895	0.920	0.659	
Learning opportunities	0.745				
Learning by the best practices	0.702				
Learning from mistakes	0.866				
Information and learning	0.804				
Openness to opinions	0.871				
Assessment to opinions	0.866				
<i>TC</i>		0.826	0.903	0.669	
Ability	0.723				
Benevolence	0.711				
Integrity	0.796				
<i>TL</i>		0.897	0.929	0.797	
Intellectual stimulation	0.922				
Individual consideration	0.885				
Inspirational motivation	0.924				
Idealized influence	0.763				

Table 3.
Measurement model results

Notes: CR: composite reliability; AVE: average variance extracted

	Fornell-Larcker criterion					HTMT		TC	TL
	KA	LC	TC	TL		KA	LC		
KA	0.833				KA				
LC	0.703	0.812			LC	0.727			
TC	0.693	0.801	0.806		TC	0.704	0.82		
TL	0.686	0.807	0.717	0.876	TL	0.672	0.819	0.73	

Table 4.
Measurement model. Discriminant validity

Notes: KA: knowledge application; LC: learning culture; TC: trust culture; TL: transformational leadership

Total effect on KC (Model 1)	BCCI		Total effect on KC (Model 2)	BCCI		
	Path	<i>t</i>		Path	<i>t</i>	
LC (c) 0.708***	17.359	0.648 0.782	H1: LC (c')	0.060 0.557	-0.158 0.268	Table 5. Summary of mediating effect tests
Total effect on KC (Model 3)	BCCI		Total effect on KC (Model 4)	BCCI		
Path	<i>t</i>	Lower Upper		Path	<i>t</i>	
TC (d) 0.743***	20.519	0.704 0.912	H3: TC (d')	0.230 0.631	-0.216 0.392	

was found in the relationship between TC and KA because the direct effect is no longer significant ($H3 = d'$) and the indirect effect ($H4 = e \times b1$) is significant (Baron and Kenny, 1986).

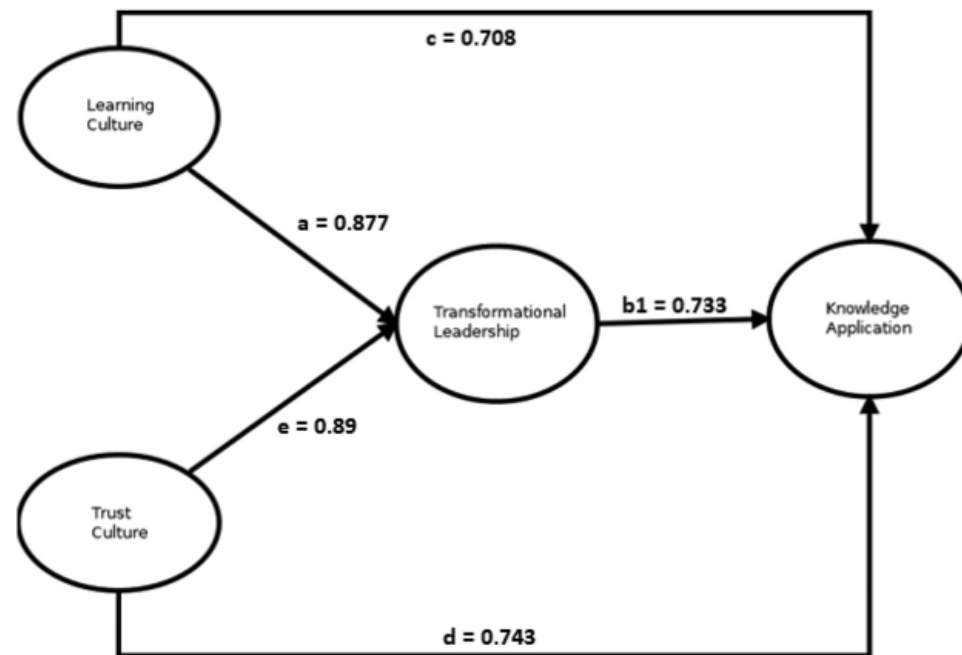
This study provides a standard root mean square residual (SRMR) (Hu and Bentler, 1999) as the root measure of the difference between model correlations and observed correlations for models with total effects and models with indirect effects in Figure 3. Determining the SRMR for the composite factor model produced confirmatory composite analysis (Henseler et al., 2014). Model 1 (total effect) has a combination factor model of SRMR of 0.079 (Hu and Bentler, 1999), which corresponds to assuming an ordinary cut of 0.08; the indirect effect

Indirect effect on KC (Model 2 (H2) and Model 4 (H4))

	Point estimate	t	BCCI Lower	Upper	Sig	VAF (%)
H2: $a \times b1$ (via TF)	0.642***	8.18	0.493	0.802	Yes	91.45
H4: $e \times b1$ (via TF)	0.701***	10.18	0.213	1.27	Yes	93.50

Table 6.
Structural model results: Models 1, 2, 3 and 4 (continuation)

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; not significant (based on $t(4,999)$, two-tailed test); $(0.05; 4,999) = 1.960$, $t(0.01; 4,999) = 2.577$; $t(0.001; 4,999) = 3.292$; LC: learning culture; TL: transformational leadership; TC: trust culture; KA: knowledge application. BCCI: bias-corrected confidence interval. Bootstrapping based on $n = 5,000$ subsamples. VAF: variance accounted for



SRMR Composite Factor:

- Model 1 = 0.079
- Model 2 = 0.082
- Model 3 = 0.072
- Model 4 = 0.091

Figure 3.
Structural model results

Model 2 has value 0.082, very close to value 0.08; the total effect of Model 3 has a composite factors model of SRMR of 0.072 (Hu and Bentler, 1999), which corresponds to assuming an ordinary cut of 0.08; similar with the indirect effect Model 4, 0.093 can be considered very close to 0.09.

5. Discussion

In connection with the study of leaderships, this study has analyzed TL as a phenomenon in secondary schools of perception of leaders and followers, which enables more open analysis of leadership effectiveness. The responses of managers of educational organizations (i.e. formal leaders) and teaching staff (i.e. follower) are similar, which can be the first indicator of leadership effectiveness.

This explanation proves that (Al-husseini and Elbeltagi, 2018) a good leadership can provide certainly no differences outside the valid range in the relationships between educational teachers and managers. This result also offers more assurance to overcome the causal model that has been proposed for teachers, knowing that there are no differences in the responses of teachers and managers of educational organizations.

This study also provides empirical data about the effects that LC has on the application of leadership, mediated by TL. Regarding H1, the results support the relationship between LC and KA. This finding is consistent with the literature of Zhao (2010), with results that have a positive direct effect not only on learning cultures on the KA, but also the peripheral vision can be indirectly influenced through TL. This is in line with the authors' conclusions, which state that LC impacts learning, which in turn impacts KM.

Vanblaere and Devos (2016), regarding H2, through TL, everyday norms are produced, which facilitate commitment and communication of teaching staff. Leadership intervenes in value that identifies LC, to expand knowledge in schools and increase commitment (Kim and Shin, 2019).

H3 concerns the application of trust and knowledge. Trust has an important role in the culture of knowledge sharing (Bakker *et al.*, 2006) because employees need the trust to respond openly and share knowledge (Gruenfeld *et al.*, 1996). A culture of trust seems necessary to encourage the application and development of knowledge in an organization. Based on the results of research by Abrams *et al.* (2003), cultural belief leads to an increase in overall knowledge sharing.

5.1 Limitations and recommendation

This work limitation refers to LC, TC and KA. Measurements have been adjusted to the empirical framework, namely, secondary schools in Indonesia. Therefore, this type of research can be replicating in organizational contexts such as public and corporate organizations, which will make it possible to know the suitability of this construction, if it has the similarity of the results.

Further investigations can analyze other types of leadership, such as inclusive leadership, empowerment leadership, servant leadership, authentic leadership and leader-member exchange (Randel *et al.*, 2018). This study has influence on the importance of TL. This will make it possible to find out what type of leadership is most suitable in KA.

It has been demonstrated in this study the relationships between cultures (trust and learning), knowledge and leadership. Further research (Flor *et al.*, 2018) can analyze the relationship between innovation and knowledge and, specifically, Turulja and Bajgoric (2018) examining the implementation of knowledge influences on the effectiveness of innovation in education.

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