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PLANNING FOR COMMUNITY DEVELOPMENT: EFFECT OF KNOWLEDGE MANAGEMENT, SOCIAL CAPITAL AND COMMUNITY LEADERSHIP

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Abstract

The main focus of the study is to evaluate the perspective of strengthening social capital resources of rural communities for rural development in Terengganu. Utilizing a convenient sampling procedure, participants for this study were taken from one hundred and seventy leaders in rural Terengganu. This study employed a self-administered online survey to gather primary data. The data were analysed using the Partial Least Square Structural Equation Modelling (PLS-SEM). The research findings unveiled that social capital and community leadership are germane and indispensable traits in rural development. Ubiquitously, this is true regardless of the stages of development any country is going through at the time. It is therefore the responsibility of the community and its leaders to create their social capital and make efficient use of it to advance rural development in Terengganu and refine the state's local policy.

Keywords: knowledge management, leadership, rural development, social capital, sustainable development

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INTRODUCTION

The process of rural development is not without difficulty, even on the global scale, and its philosophy has changed throughout time in unison with broader rural development ideology. Currently, it is to promote sustainable livelihoods as a means of reducing poverty and enhancing employment opportunities. Initially, rural areas are defined differently in different countries, and are frequently imprecise, particularly in many developing countries (Li et al, 2019; Asmawi Ibrahim et al, 2023). In the words of Ajayi and Otuya (2006), rural development as a social process is very pertinent to the progress of humans in that it enables people to conform and cope with changing environment and exert some leverage over local conditions. Rural areas are undergoing significant and sweeping changes which have created a sense of insecurity. However, there are a variety of concerns, ranging from decline to rapid growth (Beaulieu, 2019). Thus, effective rural community leadership is necessary for the organizing of community activities, promoting social well-being, and enhancing community sustainability, especially through government rural development programs.

Undoubtedly, Malaysia has implemented multiple initiatives and programs to improve rural leaders' critical thinking, integrity, power of authority, and many more. Over the past decade, the government has implemented various programs under the Malaysia plan. Among the programs and development plans specific to rural areas are the New Rural Economic Model (NREM), Rural Transformation Program (RTP), Rural Development Master Plan (RDMP), National Blue Ocean Strategy (NBOS), and Government Transformation Program (GTP, GTP 2.0). These programs and plans prioritize social and economic development, infrastructure development, and human well-being initiatives that have no doubt the potential towards improving and fixing the condition and standard of living of rural communities (Rami, et al 2021).

However, the absence of an effective implementation mechanism for programs designated for rural leaders has resulted in inefficient resource utilization. The question, therefore, lies in what strategies should be implemented by local leaders to strengthen their leadership with the presence of knowledge management and social capital components in their respective areas? Determining the answer to this question will help identify and provide an outlook from the perspective of more dynamic rural development reached through the strengthening of social capital resources among rural communities in Malaysia.

LITERATURE REVIEW

Theoretical Background and Hypotheses Development

Leadership is an art which encompasses convincing and controlling people's obedience, spirit, morale, and loyal cooperation to actualize a community of interest and a common goal (Gandolfi & Stone, 2016). Reports have shown that

the leadership pattern and styles often played significant roles in acclaimed successful societies which then accord them the opportunity to attain their desired goals (Xu et al., 2017; Zikhali & Smit, 2019). According to Seoketsa (2014), KM fundamentally concerns the organization of community understanding and intellectual resources which can improve a number of structural and community performance characteristics and generate value by enabling the creative process to operate with greater knowledge. To adopt this notion, we would like to explore the benefits of KM towards leadership in rural areas and expand it by applying social capital bridging and linking as moderators. To do so, we developed several hypotheses to inform our research.

Knowledge Management (KM)

People's lives are dependent on their ability to manage their knowledge. The success of an organisation is more likely to occur when excellent knowledge management practices are implemented (Shujahat et al., 2019). The ultimate objective for development of rural areas is to uplift the well-being of rural communities by transforming their leaders into knowledge-creating and knowledge-management individuals who use leadership styles that rural communities had in the past (Rianto et al., 2021). In this study, the strength of knowledge management may be found in its capacity to harness knowledge for the benefit of leaders and the community.

H₁.Knowledge management positively affects leadership. Social Capital Bridging and Linking

Social capital is assumed as the "contextual complement" to human capital". Putnam (2000) referred to social capital as the relationship between individuals to form social networks, norms of reciprocity, and trustworthiness in helping one another. Social capital is described as a strong relationship and interaction among participants in a group (bonding), outside the group (bridging), or with authorities such as government, non-governmental organizations (NGOs), or institutions (linking) that catalyze community development programs. Bordering on this study, social capital bridging exemplifies strong relationships between community leaders who help each other improve their leadership style(s) through sharing information and exchanging ideas between them. Accordingly, the following hypotheses were proposed:

H₂. Bridging positively affects Leadership. H₃. Linking positively affects Leadership.

Rural communities with a high level of social capital have the abilities to mobilise internal and external resources to carry out locally initiated activities and adjustments in response to external developments (Li, et al 2019; Wan Nor et al

2023). Thus, while leadership development systems that are solely focused on human capital may produce the most knowledgeable and talented leaders, if they do not include the necessary social capital (bridging & linking), there is a risk that these resources and capabilities will stay stalled and unable to be utilised. Moreover, in the context of the study, an incidental relationship that may subsist between knowledge management and leadership was analysed. Thus, within the purview of the literature, the under-listed hypotheses were formulated:

H4.Bridging positively moderates the relationship between Knowledge Management and Leadership.

H5.Linking positively moderates the relationship between Knowledge Management and Leadership.

The underneath conceptual framework was construed based on the literature and the formulated hypotheses of the study.

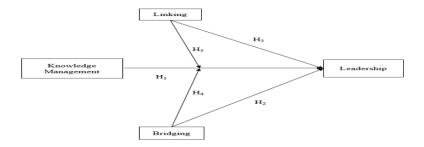


Figure 1: Conceptual framework

MATERIAL AND METHODS

Design and Procedures

This study employed quantitative research design by conducting a cross-sectional survey using a set of self-administered questionnaires. The unit of analysis was rural leaders in Terengganu. The study population numbered at about 412 rural leaders in Terengganu from eight (8) districts. The list of rural leaders was provided by the Institute for Rural Advancement (INFRA) and Terengganu State Government (2021). Using a convenient sampling technique, the researchers collect data from almost 170 respondents. An online self-administered survey was utilized for data collection spanning between November and December 2021 amid the COVID-19 pandemic lockdown period. Cohen power analysis and G.Power 3.1.9 instruments were used to determine the alpha which then shows that the sample size is substantial and adequate to achieve a level of significance at less than or equal to 0.05 and power greater than or equal to 80%.

Study area

The investigation was carried out in Terengganu, a fast-growing social-economic state in Malaysia. The study area is located in the northeast of Peninsular Malaysia, with a population analysis of about 1.0 million people of which 49% reside in the rural areas (Siwar et al., 2014).

Data Analysis

The research proposed hypotheses were analysed using Partial least squares structural equation modelling (PLS-SEM). The statistical package objective is to estimate the covariance matrix in a sample dataset and to simplify variance in endogenous variables when investigating a proposed theoretical model (Hair et al., 2013). As a result, this approach was chosen for the present research.

RESULTS

Measurement Model

In the current study, the measurement model assessment included composite reliability (CR) and average variance extracted (AVE). The Cronbach Alpha (CA) and composite reliability were used to measure reliability. Table 1 shows the results of the CA and CR index for Knowledge Management to be 0.912, 0.923, Leadership as 0.961, 0.962, LK equal 0.890, 0.889, and BG to be 0.839, 0.845 correspondingly. Adopting the CA and CR threshold value higher than or equal to 0.70 as suggested by Hair et al. (2011), make the above values to be suitable for analysis for the study. To measure discriminant validity, we utilized the Heterotrait-Monotrait (HTMT) and Fornell-Larcker ratio. The results of the discriminant validity of Fornell-Larcker presented in Table 2 show the values of the variables to be greater than the correlations index. Likewise, the results of the HTMT ratio are below the 0.090 thresholds. We further examined the convergent validity by computing the AVE values, and all values (KM= 0.501; LDRSHP= 0.562; LK= 0.539; BG= 0.526) were beyond the 0.50 threshold as recommended by Henseler et al. (2015) (look up to Table 2). Additionally, in this study, the variance inflation factor (VIF) was assessed. The values gotten are less than 10 (the suggested range) exhibiting that the data is devoid of multicollinearity issues (see Table 3).

Table 1: Measurement model

Construct	Loading	α	Rho A	CR	AVE
KNOWLEDGE MANAGEMENT (KM)		0.908	0.912	0.923	0.501
1. When I share my knowledge, I bond	0.700	0.500	019 ==	0.5 _0	0.00
with my community members.	0.798				
2. When I help my community members,	0.622				
they help me, and vice versa.	0.623				
3. I feel content when I share my	0.607				
knowledge with community members.	0.697				
4. When I know something is useful for	0.706				
my community members, I inform them.	0.700				
5. I participate in seminars because I like					
knowledge, even if I would not receive	0.625				
credit or a certificate of participation.					
6. Knowledge acquisition gives me	0.642				
power.	0.012				
7. Knowledge is shared during group	0.791				
meetings.	J.,, J.				
8. Knowledge is shared using electronic	0.622				
means (websites, WhatsApp, forums).					
9. I share knowledge with leaders of other	0.683				
communities.					
10. Most community members share their	0.690				
knowledge freely.					
11. Knowledge is created during group	0.812				
meetings.					
12. Knowledge is created during group seminars.	0.758				
LEADERSHIP (LDRSHP)		0.958	0.961	0.962	0.562
1. I tell community members what to do		0.736	0.701	0.702	0.302
if they want to be rewarded for their work.	0.774				
2. I provide recognition/rewards when					
community members reach their goals.	0.555				
3. I call attention to what community					
members can get for what they	0.751				
accomplish.					
4. I am satisfied when community	0.740				
members meet agreed-upon standards.	0.740				
6. I keep track of all mistakes.	0.691				
7. I make community members feel good					
to be around me.	0.600				
8. Community members have complete	0.772				
faith in me.	0.772				

Construct	Loading	α	Rho_A	CR	AVE
9. Community members are proud to be	0.816				
associated with me.	0.010				
10. I enable community members to think	0.863				
about old problems in new ways.	0.002				
11. I provide community members with	0.710				
new ways of looking at puzzling things.	***				
12. I get community members to rethink	0.011				
ideas that they had never questioned	0.811				
before.					
13. I help community members develop	0.797				
themselves.					
14. I let community members know how	0.696				
I think they are doing.					
15. I give personal attention to	0.686				
community members who seem rejected.					
16. I give all my attention to dealing with	0.776				
mistakes/ complaints/failure.					
17. I tell community members the	0.702				
standards they have to know to carry out their work.	0.782				
18. I seek a different perspective in problem solving.	0.773				
	0.844				
19. I spend time on training and coaching.	0.844				
20. I display a sense of power and confidence.	0.718				
21. I express confidence in goal achievement.	0.758				
BRIDGING (BG)		0.778	0.839	0.845	0.526
1. In the past 12 months, I have been		0.778	0.037	0.043	0.320
involved in community/ volunteer	0.662				
activities outside of this community.	0.002				
2. I liaise with other community leaders					
for funding/donations.	0.611				
3. I liaise with other community leaders					
on technical issues.	0.681				
4. I visit outside communities for my	0 =0.				
community development efforts.	0.790				
5. I share my interests and responsibilities					
as a community leader with other	0.854				
community leaders.					
LINKING (LK)		0.857	0.890	0.889	0.539
1. I have attended a course provided by	0.550				
the government.	0.558				

Construct	Loading	α	Rho_A	CR	AVE
2. I have been involved in community programs organized by a State Legislative Assembly Member (ADUN).	0.587				
3. I work with the government/NGOs/stakeholders to address community problems (drugs/theft/poverty etc.).	0.758				
4. I work with the government/NGOs/stakeholders in developing my community's infrastructure.	0.814				
5. The government/ NGOs/ stakeholders guide me if I am not skilled/competent in something.	0.779				
6. I get information directly from the government and channel it to the local community.	0.785				
7. I have good relationships with government agencies, private agencies and NGOs.	0.811				

Table 2: Fornell-Larcker criterion

	Fornell-Larcker Criterion						Heterotrait-Monotrait Ratio (HTMT)					
Construct	1	2	3	4	5	6	1	2	3	4	5	6
BG	0.725											
KM	0.551	0.707					0.630					
KMxBG	-0.163	-0.387	1.000				0.171	0.405				
KMxLK	-0.283	-0.410	0.610	1.000			0.327	0.429	0.610			
LDRSHP	0.645	0.783	0.363	-0.434	1.000		0.697	0.830	0.370	0.438		
LK	0.548	0.536	0.301	-0.336	0.594	1.0	0.603	0.572	0.333	0.344	0.615	

NB: BG = Bridging; KM = Knowledge Management; LDRSHP = Leadership; LK = Linking

Table 3: Variance inflation factors (VIF) for all constructs

Variance Inflation Factor (VIF)							
KM	1.805						
BG	1.687						
LK	1.655						

Structural Model

To determine the significance (path coefficient) of relationships between the variables, we used the Smart PLS software which made use of the 5000bootstrapping technique. As shown in Table 4, KM significantly affects LDRSHP $(\beta = 0.526, t = 9.089, p = 0.000)$. Hence, H1 is supported. The results also revealed that LDRSHP is impacted by LK ($\beta = 0.138$, t = 2.337, p = 0.020) and BG ($\beta =$ 0.251, t = 4.421, p = 0.000) significantly, supporting H2 and H3. However, the findings exhibit a non-significant effect of LK and BG as moderators, where KMxLK ($\beta = -0.083$, t = 1.369, p = 0.171) and KMxBG ($\beta = -0.027$, t = 0.362, p = 0.717), implying that the results fail to support H4 and H5. According to Chin (1998), the values of coefficient (R²) should be >0.1. This study found that 70.2% of the variance that occurs in LDRSHP can be explained by KM, LK and BG. Moreover, the value of Q² should be higher than zero. Hence, this study's results are shown to be within significance level, and the study model's predictive relevance was achieved (see Table 5). According to Cohen (2013), the guidelines for assessing f² are the values of 0.02, 0.15, and 0.35 representing the small, medium, and large effects of the exogenous latent variable, respectively. Hence, this study revealed that KM has a large effect on LDRSHP with f2 recorded at 0.515. Meanwhile, LK and BG have an effect size of 0.038 and 0.126 on LDRSHP respectively, which values fall in the small effect size (see Table 4). The Q² also confirms the endogenous constructs' predictive validity. A Q² value greater than 0 indicates that the model is predictively relevant. The findings demonstrate that there is significance in the prediction of the constructs (see Table 4).

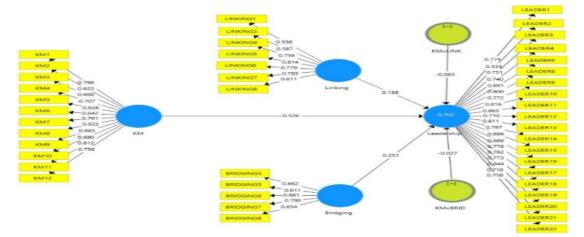


Figure 2: Structural Model Results

Table 4: Hypotheses testing results

Hypothesis	Relationship	В	р	t	Result	R ²	Adj. R ²	f²	Q^2
H1	KM -> LDRSHP	0.526	0.000	9.089	Supported			0.515	
H2	BG -> LDRSHP	0.251	0.000	4.421	Supported			0.038	
Н3	LK -> LDRSHP	0.138	0.020	2.337	Supported	0.702	0.693	0.126	0.381
H4	KMxBG -> LDRSHP	-0.027	0.717	0.362	Not Supported			0.014	
Н5	KMxLK -> LDRSHP	-0.083	0.171	1.369	Not Supported			0.001	

Note: KM = Knowledge Management; LDRSHP = Leadership; BG = Bridging; LK = Linking

Figure 2 indicates the results of the structural model with the interaction terms of bridging and linking social capital in the relationship between knowledge management and leadership. As shown in Figure 2 below, it is clearly indicated that bridging and linking social capital does not signify the relationship between knowledge management and leadership.

DISCUSSION

The purpose of this research is to explore the direct and indirect effects of predictors of leadership. Very few studies have identified the links between Knowledge Management and Leadership in Malaysian rural areas. The first observation made from this research is the relationship between knowledge management and leadership of Terengganu's rural leaders which implies that knowledge-oriented leaders in rural areas are able to contribute to the development of rural communities' infrastructure by influencing the culture. This finding is equivalent with past study by Naqshbandi & Jasimuddin (2018) which mentioned that the dimensions of knowledge management practices were found to be significantly associated with leadership. Therefore, this study managed to address the deficiencies in addressing the issue of knowledge-oriented leaders among rural communities.

The second observation is the aforementioned chain of variables showing the effect of social capital bridging on leadership among rural leaders in Terengganu. Undoubtedly, bridging social capital has been shown to have a positive effect on bringing together disparate elements (Engbers, et al, 2017), as it was claimed that providing people with a sense of belonging to a community and the opportunity to engage with others who come from a variety of socioeconomic backgrounds.

Subsequently, this study also discovered that Terengganu's rural leaders' leadership is significantly influenced by linking social capital. A possible explanation for this relationship has been mentioned in a previous study by Reiche et al (2020) which highlighted that leaders have the responsibility to be

mindful of the social capital that exists not only within their own units and institutions, but also beyond those boundaries in a variety of other contexts.

Nevertheless, if they do not include the necessary social capital linking, there is a risk that these resources and capabilities will stay stalled and unable to be utilised. The fourth and fifth hypotheses were rejected as insignificant relationships between the interactions of bridging and linking social capital with knowledge management towards leadership among rural leaders in Terengganu were found. The results revealed that bridging and linking social capital are still not sturdy enough to become moderators for the relationship between knowledge management and leadership among the leaders. Hence, modification of character to adjust to current needs has to be enforced among leaders in rural Terengganu to enable them to execute their roles as agents for rural transformation and development.

CONCLUSION

The current research indicates that social capital and leadership in the community are fundamental characteristics that are universal in nature; this is true regardless of the development stages of a state or a country. Furthermore, effective leadership is essential for rural communities to achieve sustainable development through the expansion and intensification of the social capital role in leadership. It is crucial to possess proper and adequate leadership skills as transformational leadership motivates followers to act (Hoch et al., 2018).

Measures should be done to develop policies and promote stakeholder participation in order to improve social cohesion and unity governance. Thus, leaders must put aside their differences and foster mutual understanding in order to build a strong, united, and wealthy society. This current research demonstrates that social capital and leadership in the community are fundamental characteristics that are universal in nature; this is true regardless of the stages of development that a country is going through at the time. Recognize, maintain or conserve, and invest are the three behaviours that Uphoff (2003) outlined as necessary for social capital. With these actions, communities will intervene in "mutually advantageous collective actions" and "shared thinking". Additional research in this area will shed light on the growing significance of social capital in today's world and will assist us in better appreciating its role. It is up to the community and its leaders to build their social capital and make efficient use of it in order to further promote rural development in the state of Terengganu and refine its local policy.

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REFERENCES

- Ajayi, R., & Otuya, N. (2006). Women's participation in self-help community development projects in Ndokwa agricultural zone of Delta State, Nigeria. *Community Development Journal*, 41(2), 189-209.
- Asmawi Ibrahim, Ramle Abdullah, Wan Nor Jazmina, Wan Nor Azilawanie Tun Ismail, Ahmed Olaitan. (2023). Strategy Formulation to Empower Indigenous Community Involvement In Cultural Ecological Tourism Of Kuala Tahan National Park. *Journal of the Malaysian Institute of Planners*. 21(1), 36-47.
- Beaulieu, L. J. (2019). The rural South in crisis: Challenges for the future. Routledge.
- Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2), 295-336.
- Cohen, J. (2013). Statistical power analysis for the behavioral sciences. Routledge.
- Engbers, T. A., Thompson, M. F., & Slaper, T. F. (2017). Theory and measurement in social capital research. *Social Indicators Research*, 132(2), 537-558.
- Gandolfi, F., & Stone, S. (2016). Clarifying leadership: High-impact leaders in a time of leadership crisis. *Revista de Management Comparat International*, 17(3), 212.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing theory and Practice*, 19(2), 139-152.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long range planning*, 46(1-2), 1-12.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135.
- Hoch, J. E., Bommer, W. H., Dulebohn, J. H., & Wu, D. (2018). Do ethical, authentic, and servant leadership explain variance above and beyond transformational leadership? A meta-analysis. *Journal of management*, 44(2), 501-529.
- Li, Y., Westlund, H., & Liu, Y. (2019). Why some rural areas decline while some others not: An overview of rural evolution in the world. *Journal of Rural Studies*, 68, 135-143.
- Naqshbandi, M. M., & Jasimuddin, S. M. (2018). Knowledge-oriented leadership and open innovation: Role of knowledge management capability in France-based multinationals. *International Business Review*, 27(3), 701-713.
- Putnam, R. (1993). The prosperous community: Social capital and public life. *The american prospect*, 13(4).
- Rami, A. M., Aziz, F., Zaremohzzabieh, Z., & Ibrahim, A. (2021). Assessing the Challenges of Local Leaders in Rural Community Development: A Qualitative Study in Malaysia. Pertanika Journal of Social Sciences & Humanities, 29(1), 1-18.
- Ramle Abdullah, Hafis Amat Simin, Amran Ahmed, Asmawi Ibrahim, Asmariah Mahammed. 2016. Empowerment of Orang Asli Education in Terengganu Through Knowledge Transfer. Man in India. 96(12), 5391-5403
- Reiche, B. S., Mendenhall, M. E., Szkudlarek, B., & Osland, J. S. (2020). At the heart and beyond: What can global leadership researchers learn from perspectives on

- the Covid-19 pandemic?. In *Advances in global leadership*. Emerald Publishing Limited.
- Rianto, M. R., Jasfar, F., & Arafah, W. (2021). Mediating effect of organization learning on the relationship between strategic change, knowledge management and transformational leadership: Case of Indonesian Islamic Banks. *Journal of Economic Development, Environment and People*, 10(3), 26-49.
- Seoketsa, L. M. (2014). Applying Knowledge Management Approach for Improved Community Development. *Asian Journal of Humanities and Social Studies*, 2(6).
- Shujahat, M., Sousa, M. J., Hussain, S., Nawaz, F., Wang, M., & Umer, M. (2019). Translating the impact of knowledge management processes into knowledge-based innovation: The neglected and mediating role of knowledge-worker productivity. *Journal of Business Research*, 94, 450
- Siwar, C., Idris, N. D. M., Yasar, M., & Morshed, G. (2014). Issues and challenges facing rice production and food security in the granary areas in the East Coast Economic Region (ECER), Malaysia. *Research Journal of Applied Sciences, Engineering and Technology*, 7(4), 711-722.
- Uphoff, N. (2003). Social capital and development. Personal Communication.
- Xu, K., Zhang, J., & Tian, F. (2017). Community leadership in rural tourism development: A tale of two ancient Chinese villages. *Sustainability*, 9(12), 2344.
- Wan Nor Azilawanie Tun Ismail, Aziz Amin, Mohd Khairul Amri Kamarudin, Asmawi Ibrahim & Nik Sarina Nik Md Salleh (2023). Community Concerns of River Pollution Spatial Model Using Geographic Information System (GIS) In Ibai River, Terengganu. *PLANNING MALAYSIA: Journal of the Malaysian Institute of Planners*. 21(1), 89-100
- WN Jazmina W. Ariffin, Normah Awang Noh, Muaz Azinuddin, Asmawi
- Ibrahim, Farah Syazrah Ghazalli, Emma Marini Abd Rahim. (2023). Citizen Engagement in Tangible Heritage Conservation Strategies in Terengganu. *Journal of the Malaysian Institute of Planners*. 21(1), 24-35
- Zikhali, J. T., & Smit, B. (2019). Women Leaving Leadership: Learnings from Female School Principals in Gauteng Province, South Africa. *Pertanika Journal of Social Sciences & Humanities*, 27(1), 475 489

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