International Journal of
Business & Economic Affairs

The Moderation-Mediation Effect of Learning Organization Culture, Environmental Knowledge Management on the Relationship between Green Intellectual Capital and Organizational Sustainability: A Case of Power Sector in Pakistan

Hassan Rashid[1]*, Muhammad Majid Mahmood Bagram[2]

[1,2] Department of Business Administration , Allama Iqbal Open University, Islamabad, Pakistan

Abstract: This study examined the relationship between Green Intellectual Capital (GIC) and organizational sustainability in Pakistan's power sector. It exclusively focuses on GIC within the context of the country's power sector organizations. This study presents a framework where organizational sustainable development is influenced by three dimensions of GIC: green human capital, green relational capital, and green structural capital, with the mediating role of environmental knowledge management. Despite the growing importance of knowledge management in sustainability and GIC, this area remains relatively unexplored, presenting opportunities for academic research. This paper also explored the moderating role of a learning organization culture. Out of 500 structured questionnaires distributed to employees at various levels, 400 usable responses were obtained. Results indicated significant effects of green intellectual capital, learning organization culture, and environmental knowledge management on the sustainable performance of organizations in Pakistan. The study recommends that power sector companies in Pakistan to integrate GIC, learning culture, and knowledge management to enhance organizational sustainability.

Keywords: Green intellectual capital, Organizational sustainability, Environmental Knowledge management, Learning organization

Check for updates

INTRODUCTION

Since the start of the last century, in the business world, great attention has been paid to the impact of organizational processes and activities on the environment of society and the country (Gadenne et al., 2009). Nowadays, companies' top issues that how to deal with environmental factors and how to satisfy sustainable performance to the stakeholders and shareholders (Gamero et al., 2009). Human resource strategies play an essential role in organizations dealing with environmental issues in business and implementing sustainable practices. Nowadays, organizational sustainability practices are a big challenge. Organizations need to implement sustainable practices, and quantifying intangible assets is another issue that organizations face. Intellectual capital is a significant contributor to the sustainable business organization.

Not only has organizational sustainability been recognized as the most essential element of organizational performance, but it is also a tool to achieve competitive advantage and value creation for organizations it is all stakeholders, and society (Bonini & Görner, 2011). However, in most organizations, sustainability has not been fully penetrated and integrated at the operational and strategic levels (Hong et al., 2012).

Sustainability is a critical factor in organizations focused by different businesses and stakeholders in the last few decades. It is based on the concept of green intellectual capital, that it can impact profits and create social and environmental benefits (McWilliams et al., 2016). The main focus of sustainability management in an organization is to analyze the organizational performance by achieving the triple bottom line, which are financial, environmental, and social outcomes (Gupta & Kumar, 2013).

Chang and Chen (2012) explained that to increase economic performance, besides intellectual capital, the surrounding environment and the environmental concerns of different organizational stakeholders are also important.

---

*Corresponding author: Hassan Rashid
†Email: raohassanrashid@yahoo.com

Companies must implement green intellectual capital to bring sustainability to their organizations and to bring more sustainable performances to them.

Green Intellectual capital is an emerging issue for today's business. Researchers are more focused on Green Intellectual capital due to environmental issues. In implementing intellectual capital, the critical aspect of the organization is HRM. Organizational employees should be the top priority for making the organization environment-friendly. Green intellectual capital consists of three dimensions. In this study, three dimensions, namely green human capital, green structural capital, and green relational capital, have been discussed.

Further two more demission have been investigated in this study. One is learning organization culture and environmental knowledge management. These two variables are very important to achieve organizational sustainability in the power sector of the organization. In this study, learning organization culture has been investigated as a moderator and environmental KM has been investigated as a meditator in this model. Further in this paper, the relationship between Green intellectual capital, learning organization culture, environmental KM, and organizational sustainability will be explored.

In this paper we tried to develop policies to achieve sustainable development goals. Sustainable development goals are very important for organizations and countries, especially incredibly underdeveloped countries like Pakistan. Sustainable development goals are very important for power sector organizations. In this context, environmental sustainability and a green economy are essential parts of the organization and for sustainable development goals. These goals affect and improve the dimensions of the economy and organizations. They include improving the organization's and economy's basic infrastructure and providing a clean and safe working environment for the organization's employees.

In this regard, the motivation behind this study is to concentrate on forerunners that will bolster the usage of an organization's human resources in the right direction, making the organization environment-friendly and sustainable for better outcomes in society.

It is a challenge for Pakistani companies to implement sustainable developmental measures. This study will try to find a framework for implementing the best sustainable practices in developing countries like Pakistan. In the end, all activities are related to sustainability in the organization. Organizations are developing strategies to ensure they earn long-term profit while maintaining the ecosystem in good condition. Sustainability basically considers three factors in the organization; one is economic sustainability. Second is environment, and third is social stability. Sustainable organizations focus on these three factors, which are now essential elements in researchers' and professionals' discussions.

In this paper, we developed a set of questions that will help Managers and organizations to understand the importance and way to implement the authentic practices of organizational sustainability in the power sector of Pakistan, and this will lead organizations to achieve sustainable development goals in Pakistan's power sector. The questions are as follows:

- How can green intellectual capital play a role in developing sustainability practices in Pakistan's organizations?
- How can green intellectual capital play its role in developing environmental KM practices in Pakistan's power sector?
- How can environmental KM practices affect sustainability practices in Pakistan's organizations?
- How learning organization culture moderates the relationship between GIC and environmental KM
- How does environmental KM mediate the relationship between GIC and sustainability practices in Pakistan's organizations?

LITERATURE REVIEW

The world faces the challenges of natural resource depletion and climate change. An ever-increasing rate of consumerism and population has put much effect on resources. As a result of this challenge, governments, organizations, societies, and offices are under pressure to fulfill this generation's ever-increasing wants and demands while focusing on preserving resources for coming generations (Seidel, 2010; Bansal, 2002). As a result of the above-mentioned challenges, we see a scarcity of resources such as food and water and destructive levels of poverty and natural disasters (Schlenker & Lobell, 2010; Rosenzweig et al., 2001). The managers are responsible for monitoring and implementing green HRM practices and sustainability strategies and conserving our limited natural

resources. Governments, organizations, and individuals all have a role to play in these critical factors.

An intangible asset like green intellectual capital is a vital parameter for companies in achieving competitive advantages over the competitors in the modern time of development and modern economy. Keeping in view that the organization's management is increasing its attention towards intangible assets like intellectual capital, The traditional and old system is inefficient in thoroughly evaluating the actual value of intangible assets (Johnson, 1999). The concept of green intellectual capital is anticipated to find the value and role of intangible assets of companies in the sustainability of organizations (Stewart, 1994).

Learning and development at the organizational level are essential, sustainable, and long-lasting advantages that every organization desires. Learning organization was first defined by Argyris & Schon (1978), who explained how an organization perceives, interprets, and implements its experience and how these experiences can be helpful for the organization's development. Lant & Mezias (1990) defined a learning organization as an adaptive system in which employees try to learn, and in case the employee learns, it will also benefit the organization, and the organization will achieve its objectives.

Companies and managers are implementing environmental strategies. It leads the company to a win-win approach, i.e., better environmental and good financial results for all organization stakeholders. CEOs of companies are more committed and engaged in sustainable practices to develop their brand and reputation nowadays. Top management ought to consider the environmental and social concerns in their long-term objectives for developing the organization. Environmental consciousness among leaders and managers plays a vital role in deciding companies' investment in sustainability strategies. Managers should follow the environmental laws and regulations implemented by the government. In a country like Pakistan, the environment should be a top priority of organizations. (Jing, 2022).

Since the start of the previous century, organizations have considered physical and human capital as essential resources. At that time, organizations considered these two resources to facilitate production and generate economic activity. However, knowledge and intellectual resources also started gaining attention from the organization. These resources have been recognized as valuable resources by economists. Marshall, in his work, suggests that capital consists of knowledge and intellectual capabilities for the organization. Knowledge resource is the most powerful tool for the organization.

Other researchers give their views on the adoption of green practices as a crucial purpose of organizational functioning, making it significant with the strength of human resources (Daily & Hung, 2001; Sarkis et al., 2010; Jackson et al., 2011). Rashid et al. (2006) stated that the active involvement of employees in decision-making can be helpful in implementing green practices in organizations.

This study is trying to identify the relevant role of knowledge management for environmentally sustainable strategies and resource-based view theory (Appelbaum et al., 2000). This study helps better understand the interplay between the employees, managers, and leadership in power sector companies and the eco-efficiency, employee empowerment, and environmental training by reckoning on experimental corroboration from an undeveloped economy (i.e., Pakistan). On the other hand, the researchers suggest that knowledge-related factors play a pivotal role in proactively achieving environmental (De Marchi & Grandinetti, 2013) and green innovation by companies. Many other researchers, like Malone and Yohe, point out that all those factors are related to knowledge and can be influential in acquiring the desired results. (Malone & Yohe, 2002). In addition to this, other viable topics for research encompass sustainable consumption and production and eco-efficiency, Which includes energy efficiency (Ayres et al., 1997; Dubey et al., 2017). The unique role of these topics cannot be denied in all those economies that are transitioning into developing economies. These economies have been facing a forceful change over the past years. (Dubey et al., 2017). Future research should focus on this area to identify the role of employees in ensuring the adoption of Green HRM in an organization. (Jing, 2019) ; (Asiaei & Bontis, 2020). A dearth of research exists on the determinants of Green Intellectual Capital adoption in the individual context. Future research should focus on this area to determine the role of employees in ensuring the adoption of Green Intellectual Capital in an organization. (Jing, 2020).
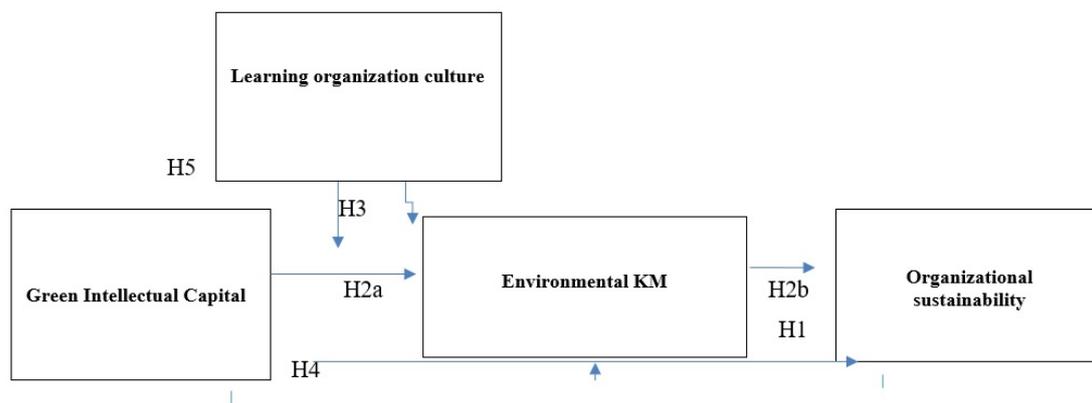
Figure 1: Conceptual Framework

Hypothesis 1

Green intellectual capital (GIC) can play a significant role in promoting sustainability practices in organizations in Pakistan.

Hypothesis 2(a)

Green intellectual capital can significantly contribute to the development and implementation of effective environmental knowledge management (KM) practices in Pakistan's power sector

Hypothesis 2(a)

Environmental knowledge management can significantly contribute to the development and implementation of effective sustainability practices in Pakistan's power sector

Hypothesis 3

Learning Organizational Culture has a significant and positive association with Knowledge Management.

Hypothesis 4

Environmental knowledge management (KM) is expected to play a mediating role in the relationship between GIC and sustainability practices in organizations in Pakistan.

Hypothesis 5

There is a positive moderating effect of learning organization culture on the relationship between GIC and environmental KM; a stronger learning organization culture will enhance this relationship.

RESEARCH DESIGN & METHODOLOGY

population for this study is the employees of the Power sector of Pakistan, including provincial capitals. In this case, implementing green practices in the power sector not only help to improve the environmental condition in Pakistan but also will try to implement organization sustainability practices in power sector companies of Pakistan.

The target respondents are employees of the power sector. The power sector is establishing new sustainability practices in organizations, so it will be interesting to see the impact of green intellectual capital on organization sustainability. Pakistan's power sector primarily comprises the government's management and three systems: generation, transmission, and distribution. I studied generation, transmission, and distribution companies, essential power sector stakeholders.

In multiple regression analysis, the sample size should be ten times or more than the number of variables in the study (Sekaran, 2003). He suggested that a sample of approximately 200 cases is typically enough for drawing results. Hair et al. (2010) suggested that between five to fifteen sample sizes per variable/ dimension is sufficient for making an analysis. If we implement this formula in this study in four variables consisting of 21 dimensions, which makes for this study 21Œ15= 315. Based on these recommendations, I have used a sample size of 350 to 400 employees, sufficient to finalize this study in the power sector. As Pakistan is a big country and the power sector is spread all over, the population of this study is spread all over Pakistan. I used random sampling for the population where I got details, and I used the non-probability sampling technique for the remaining population. In the non-probability sampling technique, I used Convenience sampling for the data collection process. The best way

of reducing bias in convenience sampling is to use it along with probability sampling.

The quantitative survey has been carried out using the close-ended questionnaire method. This method is used for confirmatory-based research, which is conducted for quantitative research.

The research instrument consists of four variables. For measuring the four variables of the study, 85 statements were designed by adapting the statements from published authentic research articles. Likert scale is used to measure the statements. The four main variables of the study are green intellectual capital, organizational sustainability, learning organization culture, and knowledge management capacity, along with the sub-variables used in this study. I have used correlation, Regression, and moderated mediation (Hayes Model) tests to analyze the data of this study.

DATA ANALYSIS

Demographic Analysis

The questionnaire is used in the study by administering a questionnaire to employees working in power sector organizations throughout Pakistan. Out of 500 structured questionnaires distributed to employees at various levels, 400 usable responses were obtained. Out of 400 sample size, 345 are male, and the remaining 45 are female. Regarding the education of the sample size, the details are as follows: out of 400 respondents, 258 are undergraduate (65%), and the remaining 142 have postgraduate degrees (35.8%).

Reliabilities of all scale

The reliability of all scales has been checked, and the values of all items are within the acceptable range. The ranges of 0.70 to 0.99 are acceptable. Table 1 shows the results of the reliability of scales.

Table 1: : Reliability of scales

Variable of Study	Items	Cron Alpha
Green Intellect Capital (GIC)	18	0.95
Environmental KM	11	0.93
Org. Sustainability(OS)	21	0.96
Learning Org. Culture(LO)	15	0.96

Confirmatory Factor Analysis was also carried out in this research to check the validity of the measurement model. Confirmatory Factor Analysis (CFA) is most widely used to check the validity of measurement model

Table 2: : Correlation analysis

Variable.	GIC	EKM	OS	OLC
Green Intellect Capital (GIC)	1			
Environmental K M	0.456**	1		
Org. Sustainability (OS)	0.399**	0.347**	1	
Learning Org. Culture(LO)	0.600**	0.415**	0.393**	1

**. Correlation is significant at 0.01 level (2-tailed)

The overall correlation analysis in this model has shown that the association between variables is the same as hypothesized in the model. The table displays the positive relationship between the variables. Correlation is checked at $p < .01$ level of significance. In this study, GIC has a positive relationship between (r = 0.456), learning organization culture (r = 0.399), and organization sustainability ((r =0.600). This means the above-explained variables have a positive relationship. Moreover, KM has a positive relationship with learning organization (r = 0.347). This means that environment KM also has a significant relationship with the learning organization's culture. Moreover, LO also has a positive and significant relationship with OS.

Table 3: : Regression Results Hypothesis 1

Model 1	Unstandardized Coefficients		Standardized Coefficients.,		
	B.	Std. Error	β	t	Sig.
Constant	.999	.194		5.160	.000
Green Intellect Capital(GIC)	.741	.049	.600	14.971	.000

Dep Variable: Org. Sustainability (OS)

The above table describes the association between green intellectual capital and org. sustainability, and through this table, it can be seen as a positive association between green intellectual capital and organizational sustainability. The result in the above table is significant (β= .600, $p < 0.01$), which accepts H1 and the relationship between green intellectual capital and org. sustainability is accepted.

Table 4: : Regression Results Hypothesis 2

Model 1	Unstandardized Coefficients		Standardized Coefficients.,		
	B.	Std. Error	β	t	Sig.
Constant	1.937	.182		10.662	.000
GIC	.475	.046	.456	10.232	.000

Dep Variable: Environmental KM

The above table describes the association between green intellectual capital and Environment KM, and through this table, it can be seen as a positive association between green intellectual capital and Environment KM. The result in the above table is significant (β= .456, $p < 0.01$), which accepts H2 and the relationship between green intellectual capital and org. sustainability is accepted.

Table 5: : Regression Results Hypothesis 2(a)

Model 1	Unstandardized Coefficients		Standardized Coefficients.,		
	B.	Std. Error	β	t	Sig.
Constant	2.00	.207		9.664	.000
Environmental KM	2.491	.054	.415	9.090	.000

Dependent Variable: Organizational. Sustainability

The above table describes the association between Environmental KM and org. sustainability, and through this table, it can be seen as a positive association between Environmental KM and organizational sustainability. The result in the above table is significant (β= .415, $p < 0.01$), which accepts H2a and shows a relationship between green intellectual capital and org. sustainability is accepted.

Table 6: : Regression Results Hypothesis 3

Model 1	Unstandardized Coefficients		Standardized Coefficients.,		
	B.	Std. Error	β	t	Sig.
Constant	2.443	.183		13.372	.000
Learning Org Culture(LO)	.336	.046	.347	7.380	.000

Dependent Variable: Environmental KM

The above table describes the association between Learning organization and environment KM, and through this table, it can be seen as a positive association between Learning organization and environment KM. The result in the above table is significant (β=.347, $p < 0.01$), which accepts H3 and environment learning org. and environment KM is accepted.

Mediation Hypothesis

<div align="center">Table 7: : Mediation Model Hypothesis 4</div>

Effects	Effect Sizes	SE	95% CI	
			(LLCI)	(ULCI)
Dir.Effect of GIC on OS.	0.64	0.05	0.53	0.75
IndirectEffect of GIC on OS.	0.1	0.03	0.05	0.16
(Total Effects)	0.74	0.05	0.64	0.84

Knowledge Management (KM) was also significant with reference to the above table. Further, the effects of GIC on Organizational sustainability OS were also sustained (β= 0.74, SE= 0.05). The above data and results have partial mediation. Hence, H4 is accepted.

MODERATION HYPOTHESIS

The graph below also shows the positive relationship between green intellect capital and environmental knowledge management, which is fortified when learning organizational culture when learning culture is high in the organization. When there is a positive relationship between green intellectual capital and environmental KM and when learning organizational culture is high and through interaction terms, it will bring sustainability in organizations. Graph of the relationship between green intellect capital and environmental knowledge
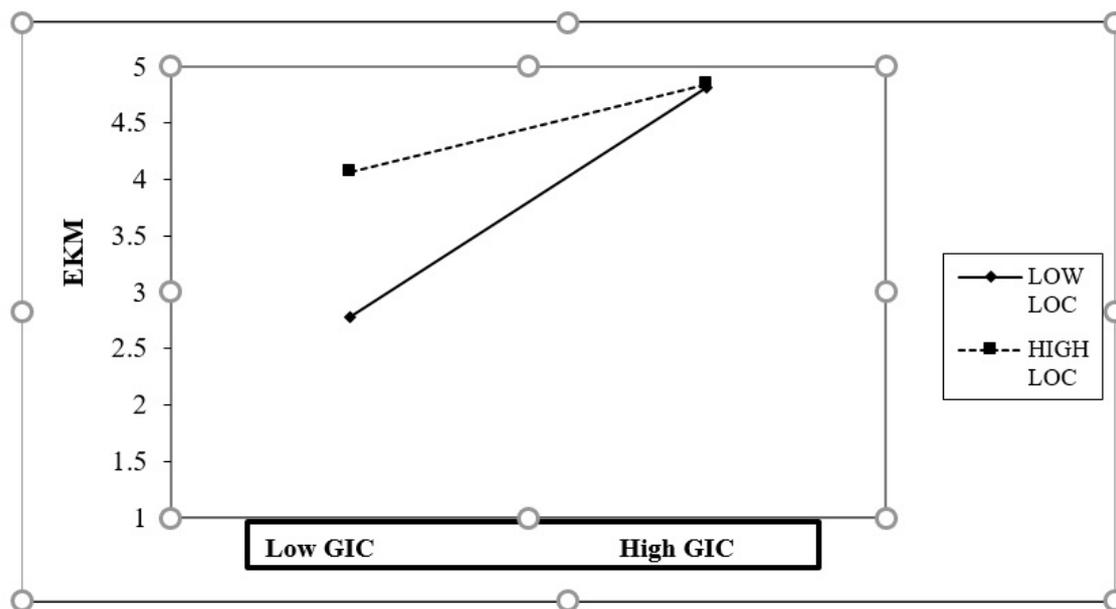

Figure 2: Graph of the relationship between green intellect capital and environmental knowledge

Results indicated significant effects of green intellectual capital, learning organization culture, and environmental knowledge management on the sustainable performance of organizations in Pakistan. It was also found that green intellectual capital positively influenced the economic, environmental, and social performance of the power sector organizations of Pakistan.

FINDINGS AND DISCUSSIONS

The studies by Nivlouei & Khass (2014) also showed that all three elements of GIC are essential factors in developing the organization's sustainability. In the present study, the relationship between green intellectual capital and organization sustainability is consistent with the previous result as more and more international laws are coming about the environment. In Pakistan, organizations understand the importance of green intellectual capital and organization sustainability. This Paper analyzed the role of environmental knowledge management implementation

in the power sector of Pakistan with reference to sustainability in organizations. Knowledge management is an essential tool and a significant effort of management to use tools to improve the transfer and application of knowledge and experience available in the organization. Power sector companies in Pakistan must understand that environmental knowledge management is a primary success factor to improve the organization's sustainability. Other studies support the results of this work. In this way, it is confirmed by the result of this study that there is a statistically significant difference that environmental knowledge management influences the organization's sustainability and this hypothesis is confirmed.

Learning at different organizational levels can act as a significant indicator for the development and creation of intellectual capital, which ultimately affects knowledge management and the organization's sustainability. Hence, my research result is consistent with previous research, and learning organization culture significantly influences the relationship between GIC and organizational sustainability. (Rahim, 2021).

Green intellectual capital with knowledge and information base in a company and organization achieve sustainability. Hence use of intellectual capital in an organization rose as leverage and requirement in the organization. Businesses have realized that they can gain sustainable development through intellectual capital and knowledge management. Companies in Pakistan's power sector are now focusing more and more on knowledge management practices to achieve sustainability in the organization. knowledge sharing in the power sector organization and it creates value creation and achieves sustainability in the organization. Knowledge management systems facilitate the learning that the green human, green structure, and relational capital develop. Hence, my research result is consistent with the previous research. (Ahmed, W., & Sarkar, B. 2018) and bases of arguments and research work we can conclude that Knowledge management system helps the power sector to achieve sustainability in power sector.

Sustainability is a big issue for organizations nowadays, and to solve the issues, green intellectual capital and knowledge management have been attained by researchers recently. The sustainability implications allow the managers to utilize and think about sustainability knowledge through green intellectual capital. When the employees are more knowledgeable about the organization's business, they know the responsibility of business, and they can understand environmental problems from different angles the employees can solve the problems of the organization and solve the problems in a better manner. Besides this, policymakers in the power sector should develop a strategy to implement green intellectual capital and knowledge management to achieve sustainability in the organization. The decision-makers should dialogue with all stakeholders to achieve sustainability goals by blending environmental knowledge through green intellectual capital and knowledge management strategies in power sector organizations. (Asiaei & Bontis, 2020).

Other researchers give their views on adopting green practices as a crucial purpose of organizational functioning to make it significant with the strength of human resources (Daily & Hung, 2001; Sarkis et al., 2010; Jackson et al., 2011). Rashid et al. (2006) stated that the active involvement of employees in decision-making can help implement green practices in organizations.

CONCLUSION

This study examines the relationship between Green intellectual capital and organization sustainability. Moreover, I used learning organization culture as a moderating variable and Knowledge management as the mediating variable. My study revealed that green intellectual capital is primary for determining organizational sustainability, and similar outcomes as IC are basic for an organization's sustainable performance, which can be found in many studies. Organizations have two primary factors, learning culture and Knowledge management capacity, which enhance the organization's sustainable performance. Learning culture and knowledge management are two critical organizational factors that improve sustainable performance. This assumption has been confirmed by many researchers in the field of intellectual capital. In today's business, where the environment is essential, green intellectual capital is increasingly recognized as a significant drive of corporate competitiveness and sustainability.

This paper corroborates earlier findings and expands the understanding of intellectual capital in enhancing sustainable growth, including two critical factors of organization: learning capacity and Knowledge management. Using data from managers of Pakistan power sector companies, we can conclude that Pakistan power companies with better green intellectual capital bring better sustainability to their organizations. All factors of green intellectual capital are significant to organization sustainability. Learning organization culture moderates the relationship

between Green intellectual capital and the knowledge management process, and learning organization culture impacts the organization. Knowledge management processes and better environmental knowledge management will bring sustainability to Pakistan's power sector. In conclusion, sustainability is a concept that needs to be explored in the organization and theories. The organization and researchers have already realized that organizations should focus on these management aspects to develop Pakistan's power sector. In my view, green intellectual capital is one of the potential solutions for implementing and promoting sustainability in the power sector of Pakistan with the support of two essential functions of the organization: culture and Knowledge management. Hence, in the present study, the role of three potential solutions, green intellectual capital, learning organization culture, and Knowledge management process, is evaluated for excelling the organizational operations toward organization sustainability and attaining competitive advantage in the power sector of Pakistan. With the assistance of different statistics tools, the outcomes reported significantly impact the sustainability practices of power sector organizations. This study provides potential solutions to organizations that are excelling in and enhancing organizational sustainability in the power sector of Pakistan.

LIMITATIONS AND FUTURE DIRECTION

The concept of green intellectual capital and organizational sustainability is very new and still in the development phase. Hence, employees' knowledge is limited, which can cause reporting errors due to employees' comprehension and general understanding of green intellectual capital. So, this can be one of the limitations of this study. Future scholars should consider other factors, such as the organization's resources, employee competency, green innovation, and green leadership in developing sustainability in power sector organizations of Pakistan.

REFERENCES

Aabdul Rahim, M. O., Sukoharsono, E. G., Saraswati, E., & Subekti, I. (2021). Revisiting the effect of organizational culture and GCG on sustainability performance: strategic posture as a moderating variable. *The International Journal of Accounting and Business Society, 29*(3), 99-138.

Abbas, J., & Sağsan, M. (2019). Impact of knowledge management practices on green innovation and corporate sustainable development: A structural analysis. *Journal of cleaner production, 229*, 611-620

Addison-WesleyBansal, P., & DesJardine, M. R. (2002). Business sustainability: It is about time. *Strategic organization, 12*(1), 70-78.

Ahmed, W., & Sarkar, B. (2018). Impact of carbon emissions in a sustainable supply chain management for a second generation biofuel. *Journal of cleaner production, 186*, 807-820

Appelbaum, E., Bailey, T., Berg, P. and Kalleberg, A. (2000), *Manufacturing Advantage: Why High Performance Work Systems Pay off*, ILR Press, New York, NY.

Argyris, C., & Schön, D. A. (1997). Organizational learning: A theory of action perspective. *Reis, (77/78)*, 345-348.

Asiaei, K., & Bontis, N. (2020). Translating knowledge management into performance: the role of performance measurement systems. *Management Research Review, 43*(1), 113-132.

Ayres, R., Ferrer, G., & Van Leynseele, T. (1997). Eco-efficiency, asset recovery and remanufacturing. European Management Journal, 15(5), 557-574.

Bonini, S., & Görner, S. (2011). The business of sustainability: Putting it into practice. *McKinsey Global Survey Results*.

Chang, C. H., & Chen, Y. S. (2012). The determinants of green intellectual capital. Management decision. *Strategic Management Journal,122-23*.

Daily, B. F., & Huang, S. C. (2001). Achieving sustainability through attention to human resource factors in environmental management. International *Journal of operations & production management, 21*(12), 1539-1552.

De Marchi, V., & Grandinetti, R. (2013). Knowledge strategies for environmental innovations: the case of Italian manufacturing firms. *Journal of knowledge management, 17*(4), 569-582

Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., & Wamba, S. F. (2017). World class sustainable supply chain management: Critical review and further research directions. The International Journal of Logistics Management, 28(2), 332-362.

Gadenne, D. L., Kennedy, J., & McKeiver, C. (2009). An empirical study of environmental awareness and practices in SMEs. *Journal of Business Ethics, 84*, 45-63

Gupta, S., & Kumar, V. (2013). Sustainability as corporate culture of a brand for superior performance. *Journal of World Business, 48*(3), 311–320.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). Multivariate data analysis. Edinburgh Gate. Harlow, Essex: Pearson Education.

Hong, P., Roh, J. J., & Rawski, G. (2012).Benchmarking sustainability practices: Evidence from manufacturing firms. *Benchmarking: An International Journal.*

Jackson, S Ren, S., Tang, G.,. (2011). Green human resource management research in emergence: A review and future directions. *Asia Pacific Journal of Management, 35*, 769-803.

Yong, J. Y., Yusliza, M. Y., Ramayah, T., Chiappetta Jabbour, C. J., Sehnem, S., & Mani, V. (2020). Pathways towards sustainability in manufacturing organizations: Empirical evidence on the role of green human resource management. *Business Strategy and the Environment, 29*(1), 212-228.

Johnson, D. W., & Johnson, R. T. (1999). Making cooperative learning work. Theory into practice, 38(2), 67-73

Lant, T. K., & Mezias, S. J. (1990). Managing discontinuous change: A simulation study of organizational learning and entrepreneurship. Strategic management journal, 147-179.

Liao, H. Y., Hsu, C. T., & Chiang, H. C. (2021). How does green intellectual capital influence employee pro-environmental behavior? The mediating role of corporate social responsibility. *International Journal of Management Studies, 28*(2), 27-47.

López-Gamero, M. D., Molina-Azorín, J. F., & Claver-Cortés, E. (2009). The whole relationship between environmental variables and firm performance: Competitive advantage and firm resources as mediator variables. Journal of environmental management, 90(10), 3110-3121.

Malone, T. F., & Yohe, G. W. (2002). Knowledge partnerships for a sustainable, equitable and stable society. Journal of Knowledge Management, 6(4), 368-378.

McWilliams, A., Siegel, D.S. and Wright, P.M. (2016) Corporate Social Responsibility: Strategic Implications. *Journal of Management Studies, 43*, 1-18.

Nivlouei, F. B., & Khass, E. D. (2014). The role of green intellectual capital management in acquiring green competitive advantage for companies. *International Journal of Management Research and Development (IJMRD), 4*(2).

Rashid, A., & Alam, W. (2006). The impact of green human resource management on organizational performance: a case of manufacturing industry. *City University Research Journal, 10*(2).

Rosenzweig, C., Iglesius, A., Yang, X. B., Epstein, P. R., & Chivian, E. (2001). Climate change and extreme weather events-Implications for food production, plant diseases, and pests.

Sarkis, J., Gonzalez-Torre, P., &Adenso-Diaz, B. (2010). Stakeholder pressure and the adoption of environmental practices: The mediating effect of training. *Journal of operations Management, 28*(2), 163-176.

Schlenker, W., & Lobell, D. B. (2010). Robust negative impacts of climate change on African agriculture. *Environmental Research Letters, 5*(1), 014010.

Seidel, E. M., Habel, U., Kirschner, M., Gur, R. C., & Derntl, B. (2010). The impact of facial emotional expressions on behavioral tendencies in women and men. *Journal of Experimental Psychology: Human Perception and Performance, 36*(2), 500.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. john wiley & sons.

Stewart, T. A. (1994). Your company's most valuable asset: intellectual capital. *Fortune, 130*(7), 68-74.

Yong, J. Y., Yusliza, M. Y., & Ahmad, N. H. (2022). Connecting Green Human Resource Management to Performance: Pathways Toward Sustainability. *In Green Human Resource Management Research: Issues, Trends, and Challenges* (pp. 53-78). Cham: Springer International Publishing.

Yong, J.Y., Yusliza, M.-.-Y. and Fawehinmi, O.O. (2020), "Green human resource management: A systematic literature review from 2007 to 2019", *Benchmarking: An International Journal, 27*(7) , pp. 2005-2027.