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THE IMPACT OF KNOWLEDGE MANAGEMENT ON CORPORATE SUSTAINABLE DEVELOPMENT (CSD): THE MEDIATING ROLE OF GREEN INNOVATION

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Abstract: It is logical to assume that knowledge, as the most valuable resource in an organization, has an important role in achieving the goals of corporate sustainable development (CSD). However, not many studies have tried to uncover the true relationship between knowledge management practice and CSD. In that sense, this study aims to analyze the connection between these two variables. The study was conducted during the first quarter of 2024. The sample size used for the analysis consists of 84 managers from different hierarchical levels employed in Serbian companies which have already implemented knowledge management principles. The Partial Least Squares Structural Equation Modeling (PLS-SEM) technique is adopted to explore complex relationships among variables. In addition, the mediation analysis was performed to investigate the mediating role of green innovation practice in the relationship between knowledge management and CSD. The results suggest that the total effect of knowledge management on CSD is significant ($\beta = 0.670$, $p = 0.000$), indicating a positive relationship between these variables without considering the mediator. When mediator green innovation was included, the direct effect of knowledge management on CSD became very low and statistically insignificant ($\beta = 0.022$, $p = 0.934$), suggesting that the variable green innovation fully mediates the relationship between them.

Keywords: Knowledge Management, CSD, Green innovation, PLS-SEM.

1. INTRODUCTION

In today's globalized environment, with constant changes (social, economic, technological and environmental), in which the focus is on performance and success in the competitive advantage, organizations, in addition to focusing on the needs of customers, also

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focus their orientation on knowledge management and the development of employees' competencies. Furthermore, to meet customers' needs and achieve sustainable development (SD) goals, organizations adopt multiple strategies based on innovation and knowledge management (KM). Therefore, the success of an organization depends on the knowledge management (KM) infrastructure, which is the combination of people, processes and technology. Effective KM enables the company to be more innovative and effective (Yusr et al., 2017). For this reason, knowledge and KM have received significant attention in the business world and have been acknowledged as a vital element in designing strategies and developing new products and services (Mardani et al., 2018), which enables organizations to enhance customer satisfaction (Attia & Salama, 2018).

Nowadays, organizations adopt business practices which ensure sustainable development (SD) (Davenport et al., 2019) due to facing natural resource depletion and increasing global warming (Albort-Morant et al., 2018). According to Wijethilake (2017), SD has three aspects – environmental sustainability which place emphasis on the natural environment and resources, social sustainability relates to society and people, and economic sustainability focuses on the economic and financial aspects of firms (Guerrero-Villegas et al., 2018). For this purpose, for SD objectives to be achieved, firms must focus not only on technological innovation but also on green innovation. Green innovation is a concept that aims to help firms develop environmentally friendly products (Xie et al. 2019).

Mardani et al. (2018) and Davenport et al. (2019) highlighted the importance for more research on KM, green innovation and corporate sustainable development (CSD). Although many researchers have studied KM and SD from different perspectives, insufficient attention has been put to exploring the role of KM in achieving SD, particularly with the help of green innovation (Lim et al., 2017).

Therefore, this study will try to fill the gap in the literature by studying the relationship between KM practice and CSD in large- and medium-sized enterprises in the Republic of Serbia. In addition, the mediation analysis will be performed to investigate the mediating role of green innovation practice in the relationship between KM practice and CSD.

2. LITERATURE REVIEW AND HYPOTHESES

2.1. Knowledge Management (KM)

Knowledge is an intangible but valuable resource with two forms, explicit and tacit knowledge (Bolisani & Bratianu, 2018), which organizations use to compete successfully in the market (Mothe et al., 2018). Explicit knowledge is any knowledge that can be codified, transferred, and articulated (Ooi, 2014). Tacit knowledge is hidden and unwritten knowledge which exists in people's minds (Maravilhas & Martins, 2019). It is gained with experience, and it isn't easy to be shared among people (Johnson et al., 2019). According to Drucker (1995), knowledge is the most vital economic source for achieving a competitive advantage. Regarding that, KM is considerable in management circles because of its capability to provide organizations with strategic outcomes related to profitability, competitiveness, and capacity development (Oluikpe, 2012). The main objective of the KM process is to ensure vital information (knowledge) is properly identified, selected, organized, shared and used to help a firm perform its operations and achieve its objectives (Naicker et al., 2017). Bhatt (2001) defined KM as a process of creating, validating, presenting, distributing and applying knowledge. As for Ooi (2014), KM is a process through which organizations ensure their employees have the right information in the right format at the right time.

2.2. Sustainable Development (SD)

SD as a concept was first presented at the United Nations General Assembly in 1987 (Holden et al., 2014). In 1992, the third approach, social sustainability, was revised to SD (Munasinghe, 1992). Hence, the overall aim of CSD is to achieve economic, social, and environmental sustainability by integrating all approaches in the decision-making process. Therefore, the United Nations Global Compact (UNGC) has urged all businesses, particularly those in manufacturing, to follow environment-friendly processes and benefit from the latest technologies to utilize resources efficiently (UNGC, 2018). The environmental approach of SD focuses on preserving the natural environment, ensuring clean water and air, less consumption of natural resources, the production of environment-friendly products, and the reduction of dangerous gases and liquid emissions (Lucas, 2010). The social aspect of SD concentrates on enriching organizational relationships with human and society and promotes human well-being by understanding their needs (Guerrero-Villegas et al., 2018). It also aims to promote social and cultural life and ensure social development, social equity, human and labour rights, social support and justice. The economic approach of organizational SD relates to maximizing profit by increasing sales and reducing operational costs (Abbas & Sagsan, 2019).

2.3. Green innovation (GI)

Through green innovation, organizations eliminate or minimize the negative impact of their operations on the environment (Fernando et al., 2019). It represents the innovation in products, processes, technologies and management structures that aim to protect the natural environment (Li, et al., 2017) by minimizing resource consumption and controlling waste and pollution (Rossiter & Smith, 2018). Siva et al. (2016) and GY Qi et al. (2010) classified green innovation into two categories: green technology innovation (GTI) and green management innovation (GMI). GTI, helps firms to introduce new or improved existing products or processes that help to save raw materials, energy, and resources and develop harmony between the environment, economy, and production processes (Fernando et al., 2019). The GMI represents the firms' adoption of new management structures, systems and strategies to improve production processes (Li et al., 2018). Xie et al. (2019) further divided GTI into green process and green product innovation. Green process innovation aims to improve production processes by converting raw materials into a usable product (Albort-Morant, 2016). Green product innovation focuses on modifying existing product designs or developing new products that use renewable or non-toxic material in the production process so that energy efficiency can be achieved and the disposal impact on the environment can also be reduced (Zhang et al., 2019). Such management system enable firms to gain economic benefits and ensure minimization of environment hazardous activities (Siva, et al., 2016).

In the knowledge-based society, the relationship between KM and SD has become particularly important as, according to Maravilhas & Martins (2019), knowledge is the main driving force for individual, organizational, and national development. KM activities are the resources which enable firms to develop new technologies (Habib et al., 2019). Organizations use such technologies to develop new or improve existing products and processes so that organizational performance can be enhanced not only from economic perspectives but also from environmental and social perspectives (Stanovcic et al., 2015). Shahzad et al. (2020) said that organizational knowledge absorptive capacity significantly impacts their environmental performance.

KM is important in innovation processes as it provides a foundation for research and analysis (Sesay et al., 2018). Breznik (2018) analyzed the impact of KM on organizational

innovation and concluded that it triggers a firm's innovation activities. Several managers believe that innovation activities mediate the relationship between organizational social sustainability and organizational performance (Guerrero-Villegas et al., 2018). Abbas & Sagsan (2019) pointed out that KM and green innovation significantly impact CSD activities. Ghorbani (2023) found that companies which effectively manage their green knowledge can develop innovative solutions that address environmental challenges while achieving sustainable growth. Albloushi et al. (2023) showed a significant influence of TQM on CSD and green innovation. Also, green innovation positively affects CSD and fully mediates TQM and CSD relationships. Shahzad et al. (2020) found a significant positive impact of CSR on environmentally sustainable development.

Further, environmentally sustainable development positively enhances green innovation. The study revealed a positive influence of KM on GI and CSD. Rasheed et al. (2023) found a significant impact of KM practices on green innovation and sustainable growth. Koshelieva et al. (2023). emphasized the crucial role of KM in driving environmentally responsible practices and sustainable development.

Therefore, based on the previous literature review, the following hypotheses are proposed:

H1. KM has a positive and significant impact on CSD.
H2. KM has a positive and significant impact on green innovation (GI).
H3. Green innovation has a positive and significant impact on CSD.
H4. Green innovation as a mediating variable increases the effect of KM on CSD.

The empirical and conceptual evidence presented above suggests that the KM process can improve CSD directly or indirectly mediated by green innovation. Based on these arguments and according to the above-proposed hypotheses, the conceptual model was developed, as shown in Figure 1.

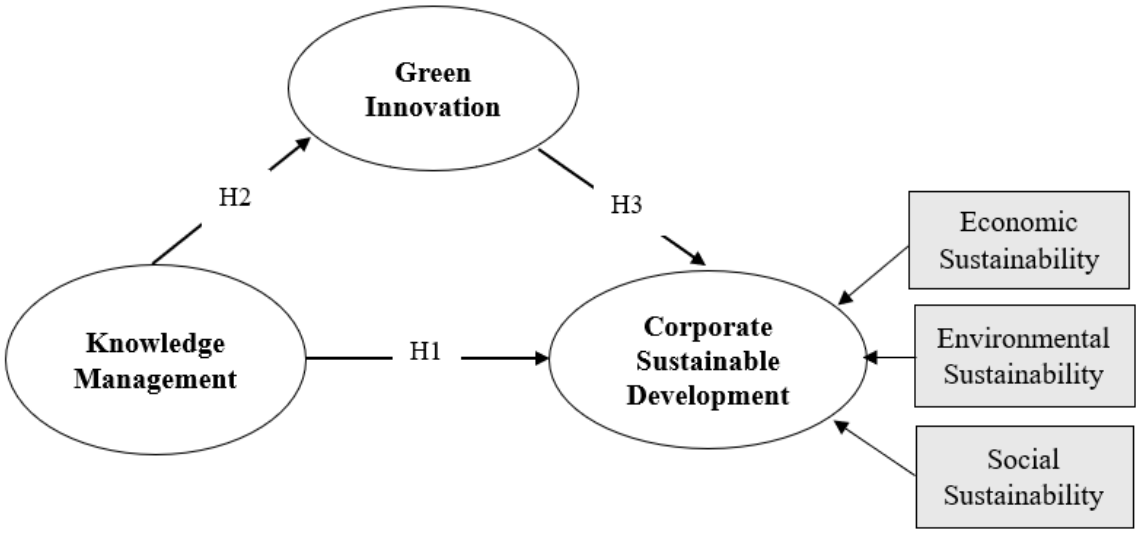

Figure 1. Conceptual model

3. DATA AND METHODOLOGY

The main purpose of this study was to analyze the impact of knowledge management (KM) practice on corporate sustainable development (CSD), with the mediating effect of green innovation (GI). The sample consists of managers on different hierarchical levels who work in organizations that have already implemented KM principles. Data were collected during the

first quarter of 2024 and included 84 managers. The authors conducted the research personally using online Google Forms.

Table 1. Socio-demographic characteristics of the sample (n=84)

Variables	Category	Frequency	Share (%)
Type of industry	Manufacture	62	73.8
	Service	22	26.2
Size of organization	Medium	34	40.5
	Large	50	59.5
Job position	Top management	35	41.7
	Middle management	32	38.1
	Operative level management	17	20.2
Gender	Male	55	65.5
	Female	29	34.5
Years of employment	≤5	13	15.5
	6-10	32	38.1
	11-15	18	21.4
	≥16	21	25.0

Demographic characteristics (Table 1) showed that the statistical population included mostly male top managers working in manufacturing large-sized organizations with 6 – 10 years of working experience.

The questionnaire was designed and modified based on the questionnaires from similar studies (Lee & Wong, 2015; Wong, 2013; Kam-sing Wong, 2012; Turker, 2009; Wang et al., 2008; Bansal, 2005; Darroch, 2003) and it contained 45 questions. The first 5 questions focused on the general characteristics of the organization (industry, size) and respondents (gender, position and working experience). The remaining 40 questions were divided into three groups: Knowledge management – 21 questions; Green Innovation – 7 questions; and Corporate Social Development – 12 questions. A five-point Likert scale was used to evaluate the respondents' answers, ranging from 1 (completely disagree) to 5 (completely agree).

The Partial Least Square (PLS) approach to Structural Equation Modelling (SEM) was used to analyze the relationship between the observed variables. One of the main reasons why PLS-SEM was chosen in this study is that PLS-SEM is very suitable for small sample analysis (Henseler et al., 2015). The modelling process is divided into two main stages: Stage 1 - Measurement Model Assessment and Stage 2 - Structural Model Assessment. The measurement model reflects the interactions between the observed data and the latent variable, whereas the structural model represents the relationships between latent variables. In addition, we have also analyzed the mediating role of the green innovation (GI) process in the relationship between KM practice and corporate social development (CSD).

4. RESULTS AND DISCUSSION

4.1. Measurement Model Assessment

Measurement model assessment included establishing construct reliability and validity of scale tools (Huang et al., 2021). The construct reliability and convergent validity of the measurement model are assessed using Cronbach's alpha (CA), rho A, Composite Reliability (CR), and Average Variance Extracted (AVE), which are presented in Table 2.

Table 2. Construct reliability and validity

Construct	Cronbach's alpha	rho_A	CR	AVE
CSD	0.962	0.966	0.963	0.684
GI	0.947	0.949	0.947	0.690
KM	0.960	0.963	0.959	0.531

According to Table 2, both Cronbach's Alpha and CR values exceed the recommended threshold of 0.70, as suggested by Hair et al. (2017). The obtained Cronbach's Alpha values ranged from 0.947 to 0.962, indicating satisfactory internal consistency for all the constructs. Furthermore, the CR ranged from 0.947 to 0.963, providing further support for the reliability of the constructs. Convergent validity is assessed using the Average Variance Extracted (AVE) statistic. As Fornell and Larcker (1981) recommended, an AVE value equal to or greater than 0.50 indicates that the items converge to measure the underlying construct, thus establishing convergent validity. In this study, the AVE value for the constructs was higher than 0.5, so convergent validity is also confirmed (Hair et al., 2017).

Besides convergent validity, the discriminant validity should also be checked before assessing the structural model. Henseler et al. (2015), suggested the usage of the Heterotrait-Monotrait ratio of correlations (HTMT) criterion for that purpose. According to Kline (2011), a threshold value needs to be 0.85 or less, while other authors, Franke and Sarstedt (2019), proposed a threshold of 0.90 or less.

Table 3. Discriminant validity—HTMT ratio

Construct	CSD	GI
CSD		
GI	0.891	
KM	0.661	0.726

Table 3 indicates that all HTMT ratios are lower than the suggested threshold of 0.9 (Franke and Sarstedt, 2019; Henseler et al., 2015), confirming the good discriminant validity of the model.

4.2. Structural Model Assessment

Since the reliability and validity of the measurement models are established, hypothesized causal relationships within the inner model can be evaluated using PLS-SEM. The hypotheses were tested in a two-tailed manner, specifically emphasizing the positive direction of the relationships. To assess the statistical significance of these relationships, the bootstrapping procedure in SmartPLS4 software (5000 bootstrap samples were generated) was employed (Ringler et al., 2022).

Table 4. Results of the structural model assessment – direct effect

Hypothesis	*β*	SD	*t*	*p*	Results
H1: KM -> CSD	0.022	0.270	0.083	0.934	Not confirmed
H2: KM -> GI	0.740	0.105	7.078	0.000*	Confirmed
H3: GI -> CSD	0.875	0.249	3.514	0.000*	Confirmed

β – path coefficient, SD – standard deviation, *p* – level of significance lower than 0.000

The obtained results (Table 4) show that the path coefficient indicating the relationship between KM practice and CSD is very low (*β*=0.022) and statistically insignificant (*p*=0.384), suggesting that hypothesis H_1 should be rejected. However, positive and statistically significant path coefficients between variables knowledge management and green innovation (*β*=0.740,

p=0.000), as well as between green innovation and CSD (*β*= 0.875, *p*=0.000), support hypotheses H_2 and H_3.

The mediation analysis is also performed to investigate the mediating role of green innovation in the relationship between KM practice and CSD in observed organizations. The results shown in Table 5 reveal that the total effect of KM on CSD is significant (*β* = 0.670, p = 0.000), indicating a positive relationship between these variables without considering the mediator. When mediator green innovation was included, the direct effect of KM on CSD became very low and statistically insignificant (*β* = 0.022, *p* = 0.934), suggesting that the relationship between them is fully mediated by the variable green innovation (GI), which confirms hypothesis H_4.

Table 5. Total effect, direct effect, and indirect effect for the model mediation

Construct	Total effects			Direct effects			Indirect effects				
KM > CSD	*β*	*t*	*p*	*β*	*t*	*p*	*β*	*t*	*p*	Percentile bootstrap 95% CI	
										Lower	Upper
	0.670	4.813	0.000*	0.022	0.083	0.934	0.648	4.010	0.000	0.217	0.815

β = Path Coefficient, *t* = t-Statistics, *p* = level of significance *$p < 0.05$.

Finally, the evaluation of obtained R^2 (the coefficient of determination) and f^2 (the effect sizes of the paths) supplement the previous analysis (Table 6).

Table 6. R^2 and f^2 values

Predictor	Outcome	R^2	f^2
Knowledge Management (KM)	Green Innovation (GI)	0.543	1.213
Knowledge Management (KM)	Corporate Social Development (CSD)	0.791	0,001
Green Innovation (GI)			1.694

R^2 has been used to determine the explained variance of the latent dependent variables in relation to the overall variance. The cutoff R^2 values suggested by Chin (2009) are as follows: 0.190 weak, 0.333 moderate, and 0.670 substantial. According to the results in Table 6, the overall model explained 79.1% of the variance in CSD. The model also explained 54.3% of the variance in variable green innovation, so it can be said that some other factors influence this variable, but the model has a good predictive value.

Value f^2 measures the strength of each predictor variable in explaining endogenous variables. An f^2 value from 0.02 to 0.149 is considered small, from 0.15 to 0.35 is considered medium, and higher than 0.35 is considered large, according to Cohen (1988). Considering these thresholds, a large effect was found in the relationship between KM and GI, as well as GI and CSD, 1.213 and 1.694, respectively. On the other hand, no effect was recorded in the relationship between KM and CSD.

4.3. Discussion

KM has gained considerable attention from the business sector in the last couple of decades. They understand very well the true value of knowledge in achieving and keeping a competitive advantage. In the meantime, considering the environmental challenges, dynamic

firms have expanded the KM scope and have started integrating the environment into it. Effective KM practice is expected to help organizations achieve green innovation concepts and sustainability goals.

The results obtained in this research indicate that knowledge management practice doesn't directly affect corporate sustainable development, which is opposite to other studies (Abbas & Sagsan, 2019; Lutchen, 2018; Chen et al., 2015). The positive and significant total effect between KM and CSD, as well as the positive and significant indirect effect between KM → GI → CSD, suggest that this relationship is fully mediated by green innovation.

Unfortunately, the obtained result indicates that the sampled firms in Serbia are not using their knowledge resources efficiently and that their management is not demonstrating a strong commitment to KM by motivating their employees to create, acquire, share and apply knowledge in their work to achieve SD objectives.

However, the positive impact of KM on GI suggests that studied organizations recognize the importance of green innovation practices, so they are using their knowledge to create products and processes which are more environmentally friendly. These could help them to achieve not just environmental goals but also economic and social goals by targeting those customers who are environmentally aware. Similar results were obtained by Wang et al. (2022); Song et al. (2022). They explained that the ability of organizations to manage green knowledge is directly related to their green innovation capabilities. However, the biggest problem is how to manage green knowledge.

The results also confirmed a positive relationship between green innovation (GI) and CSD. In their work, Ahmed et al. (2022), and Abbas and Sağsan (2019) reported the same results. According to them, green innovation significantly influences organizations' financial and environmental performance. By introducing green technologies and products, organizations could improve their chances of achieving sustainable development goals successfully. Ardito et al. (2019) stated that organizations that adopt green innovation practices have bigger chances to attract more consumers and, in that way, achieve their economic goals. Interestingly, some studies have analyzed the opposite direction of this relationship by investigating the impact of CSD on GI. Shahzad et al. (2021), and Saunila et al. (2018) recognized that the social dimension of sustainability positively influences green innovation exploitation and investment.

5. CONCLUSION

The concepts of KM and CSD are very well explained in the literature. However, not many studies regarding their relationship have been conducted in transition economies since their implementation is still in the beginning stages. The findings of this research shed light on the intricate relationship between KM, green innovation, and CSD. While some prior studies have suggested a direct link between KM and CSD, the results here indicate that this relationship is fully mediated by GI, highlighting the crucial role of green innovation in achieving sustainable development objectives.

In that sense, it can be said that the theoretical contribution of the research is in filling these gaps with the results for transition countries. The research highlights the evolving nature of KM practices, with organizations recognizing the importance of integrating environmental considerations into their KM strategies. This underscores the need for theoretical frameworks that incorporate environmental dimensions into traditional KM models. The practical implication for managers (especially in studied organizations) could be that they need to make more effort to create a culture that promotes and supports KM if they want to achieve sustainable development goals. Fostering a culture of knowledge sharing, enhancing green

innovation capabilities, and embracing sustainable practices can pave the way for achieving long-term corporate sustainability goals.

This research also has several limitations. The first limitation is reflected in the fact that only a few companies from Serbia were included in the study, so the results can't be generalized. The second CSD scale was based on respondents' perceptions and evaluations, which may be subject to bias and measurement error. Future research will try to expand the sample and cover all these limitations.

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REFERENCES

Abbas, J., & Sagsan, M. (2019). Impact of knowledge management practices on green innovation and corporate sustainable development: A structural analysis. *Journal of Cleaner Production,* 229, 611-620. https://doi.org/10.1016/j.jclepro.2019.05.024.

Ahmed, S., Naz, F., Abbas, Z., Batool K.H. (2022). Impact of green innovation on sustainable development with mediating effect of knowledge management. *Journal of Business Management Studies-JBMS*, 1(01), 1-16.

Albloushi, B., Alharmoodi, A., Jabeen, F., Mehmood, K., & Farouk, S. (2023). Total quality management practices and corporate sustainable development in manufacturing companies: the mediating role of green innovation. *Management Research Review*, 46(1), 20-45, https://doi.org/10.1108/MRR-03-2021-0194.

Albort-Morant, G., Leal-Millán, A., & Cepeda-Carrión, G. (2016). The antecedents of green innovation performance: a model of learning and capabilities. *Journal of Business Research,* 69, 4912 - 4917.

Albort-Morant, G., Leal-Rodríguez, A., & De Marchi, V. (2018). Absorptive capacity and relationship learning mechanisms as complementary drivers of green innovation performance. *Journal of Knowledge Management,* 22, 432-452.

Ardito, L., Petruzzelli, A. M., Pascucci, F., & Peruffo, E. (2019). Inter-firm R & D collaborations and green innovation value: The role of family firms' involvement and the moderating effects of proximity dimensions. *Business Strategy and the Environment*, 28, 185–197. https://doi.org/10.1002/bse.2248.

Attia, A., & Salama, I. (2018). Knowledge management capability and supply chain management practices in the Saudi food industry. *Business Process Management Journal,* 4, 459-477.

Bansal, P. (2005). Evolving sustainably: a longitudinal study of corporate sustainable development. *Strategic Management Journal,* 26, 197-218, https://doi.org/10.1002/smj.441.

Bhatt, G. (2001). Knowledge management in organizations: examining the interaction between technologies, techniques, and people. *Journal of Knowledge Management* 5(1), 68–75.

Bolisani, E., & Bratianu, C. (2018). The elusive definition of knowledge. In E. Bolisani, & C. Bratianu, Emergent knowledge strategies: Strategic thinking in knowledge management (pp. 1 - 22). Cham: *Springer International Publishing*, https://doi.org/10.1007/978-3-319-60656_1.

Breznik, K. (2018). Knowledge management-from its inception to the Innovation Linkage. In: Procedia - Social and Behavioral Sciences, Presented at the SIM 2017/14th *International Symposium in Management* (pp. 141 - 148). Slovenia: Elsevier.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. *Lawrence Erlbaum Associates.* Hillsdale, NJ, 20-26.

Chen, Y.S., Lin, Y.H., Lin, C.Y., & Chang, C.W. (2015). Enhancing green absorptive capacity, green dynamic capacities and green service innovation to improve firm performance: an analysis of Structural Equation Modeling (SEM). *Sustainability (Switzerland),* 7, 15674-15692. https://doi.org/10.3390/su71115674.

Chin, W. W. (2009). How to write up and report PLS analyses. In Handbook of partial least squares: Concepts, methods and applications (pp. 655-690). Berlin, Heidelberg: *Springer Berlin Heidelberg*.

Darroch, J. (2003). Developing a measure of knowledge management behaviors and practices. *Journal of Knowledge Management*, 7, 41-54, https://doi.org/10.1108/13673270310505377.

Davenport, M., Delport, M., Blignaut, J., Hichert, T., & van der Burgh, G. (2019). Combining theory and wisdom in pragmatic, scenario-based decision support for sustainable development. *Journal of Environmental Planning and Management*, https://doi.org/10.1080/09640568.2018.1428185.

Drucker, P. (1995). Managing in a Time of Great Change. New York: *Truman Talley Books*-Dutton.

Fernando, Y., Jabbour, C., & Wah, W. (2019). Pursuing green growth in technology firms through the connections between environmental innovation and sustainable business performance: does service capability matter? *Resources, conservation and recycling*, 141, 8 - 20.

Fornell, C., & Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, 39-50.

Franke, G., & Sarstedt, M. (2019). Heuristics versus statistics in discriminant validity testing: a comparison of four procedures. *Internet research*.

Ghorbani, M. (2023). Green Knowledge Management and Innovation for Sustainable Development: A Comprehensive Framework. *Proceedings of the 24th European Conference on Knowledge Management, ECKM*, 394-399.

Guerrero-Villegas, J., L.Sierra-García, & Palacios-Florencio, B. (2018). The role of sustainable development and innovation on firm performance. *Corporate Social Responsibility and Environmental Management*, 25, 1350 - 1362.

GY Qi, L.Y. Shen, S. X. Zeng, O. J. Jorge (2010). The drivers for contractors' green innovation: an industry perspective. *Journal of Cleaner Production*, 18, 1358 - 1365.

Habib, M., Abbas, J., & Noman, R. (2019). Are human capital, intellectual property rights, and research and development expenditures really important for total factor productivity? An empirical analysis. *International Journal of Social Economics*, https://doi.org/10.1108/IJSE-09-2018-0472.

Hair, J., Hult, G., Ringle, C., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). 2nd Edition.* Thousand Oaks, CA: Sage Publications Inc.

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. https://doi.org/10.1007/s11747-014-0403-8.

Huang, C. (2021). Using PLS-SEM Model to Explore the Influencing Factors of Learning Satisfaction in Blended Learning . *Education Sciences*, 11 (5), 249.

Holden, E., Linnerud, K., & Banister, D. (2014). Sustainable development: Our common future revisited. *Global Environmental Change*, 26, 130-139, https://doi.org/10.1016/j.gloenvcha.2014.04.006.

Johnson, T., Fletcher, S., Baker, W., & Charles, R. (2019). How and why we need to capture tacit knowledge in manufacturing: case studies of visual inspection. *Applied ergonomics,* 74, 1 - 9.

Kam-sing Wong, S. (2012). The influence of green product competitiveness on the success of green product innovation: empirical evidence from the Chinese electrical and electronics industry. *European Journal of Innovation Management* 15, 468-490. https://doi.org/10.1108/14601061211272385.

Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling.* Guilford Publications.

Koshelieva, O., Tsyselska, O., Kravchuk, O., I. Baida, V. M., & Miatenko, N. (2023). Knowledge Management as a New Strategy of Innovative Development. International *Journal of Professional Business Review*, 8 (5).

Lee, C.S., & Wong, K.Y. (2015). Development and validation of knowledge management performance measurement constructs for small and medium enterprises. *Journal of Knowledge Management*, 19, 711-734. https://doi.org/10.1108/JKM-10-2014-0398.

Li, D., Zhao, Y., Zhang, L., Chen, X., & Cao, C. (2018). Impact of quality management on green innovation. *Journal of Cleaner Production*, 170, 462 - 470.

Li, D., Zheng, M., Cao, C., Chen, X., Ren, S., & Huang, M. (2017). The impact of legitimacy pressure and corporate profitability on green innovation: evidence from China top 100. *Journal of Cleaner Production*, 141, 41 - 49.

Lim, M., Tseng, M., Tan, K., & Bui, T. (2017). Knowledge management in sustainable supply chain management: improving performance through an interpretive structural modelling approach. *Journal of Cleaner Production*, 162, 806 - 816.

Lucas, M. (2010). Understanding environmental management practices: integrating views from strategic management and ecological economics. *Business Strategy and the Environment*, 19, 543 - 556, https://doi.org/10.1002/bse.662.

Lutchen, K.R. (2018). Why Companies and Universities Should Forge Long-Term Collaborations [WWW Document]. *Harvard Business Review*, accessed 7.2.19. https://hbr.org/2018/01/why-companies-and-universities-should-forge-longterm-collaborations.

Maravilhas, S., & Martins, J. (2019). Strategic knowledge management a digital environment: Tacit and explicit knowledge in Fab Labs. *Journal of Business Research*, 94, 353 - 359, https://doi.org/10.1016/j.jbusres.2018.01.061.

Mardani, A., Nikoosokhan, S., Moradi, M., & Doustar, M. (2018). The relationship between knowledge management and innovation performance. *Journal of High Technology Management Research*, 29, 12-26.

Mothe, C., Nguyen-Thi, U., & Triguero, Á. (2018). Innovative products and services with environmental benefits: design of search strategies for external knowledge and absorptive capacity. *Journal of Environmental Planning and Management*, 61(11), 1934-1954.

Munasinghe, M. (1992). Environmental Economics and Sustainable Development. Washington DC: *World Bank*.

Naicker, V., Roux, S. L., Bruwer, J., & Bruwer, J. (2017). Knowledge Sharing as a Value-Adding Initiative for South African SMME Sustainability: A Literature Review. *Expert Journal of Business and Management,* 5(2), 51 - 60.

Oluikpe, P. (2012). Developing a corporate knowledge management strategy. *Journal of Knowledge Management,*16 (6), 862–878.

Ooi, K. B. (2014). TQM: a facilitator to enhance knowledge management? A structural analysis. *Expert Systems with Applications*, 41, 5167 - 5179.

Rasheed, M., Liu, J., & Ali, E. (2023). Incorporating sustainability in organizational strategy: a framework for enhancing sustainable knowledge management and green innovation. *Kybernetes*.

Ringle, C. M., Wende, S., &Becker, J.M. (2022). "SmartPLS 4." Oststeinbek: SmartPLS GmbH, http://www.smartpls.com.

Rossiter, W., & Smith, D. (2018). Green innovation and the development of sustainable communities: the case of Blueprint Regeneration's Trent Basin development. *The International Journal of Entrepreneurship and Innovation*, 19, 21 - 32.

Saunila, M., Ukko, J., & Rantala, T. (2018). Sustainability as a driver of green innovation investment and exploitation. *Journal of Cleaner Production*, 179, 631–641. https://doi.org/10.1016/j.jclepro.2017.11.211.

Sesay, B., Yulin, Z., & Wang, F. (2018). Does the national innovation system spur economic growth in Brazil, Russia, India, China and South Africa economies? Evidence from panel data. *South African Journal of Economic and Management Sciences*, 21, 1 - 12.

Song, M., Peng, L., Shang, Y., & Zhao X. (2022). Green technology progress and total factor productivity of resource-based enterprises: A perspective of technical compensation of environmental regulation. *Technological Forecasting and Social Change*, 174, https://doi.org/10.1016/j.techfore.2021.121276.

Shahzad, M., Qu, Y., Rehman, S. U., Zafar, A., Ding, X., & Abbas, J. (2020). Impact of knowledge absorptive capacity on corporate sustainability with mediating role of CSR: analysis from the asian context. *Journal of Environmental Planning and Management*, 148 - 174, https://doi.org/10.1080/09640568.2019.1575799.

Shahzad, M., Qu, Y., Zafar, A.U., & Appolloni, A. (2021). Does the interaction between the knowledge management process and sustainable development practices boost corporate green innovation? *Business Strategy and the Environment*, 30(8), 4206-4222 https://doi.org/10.1002/bse.2865.

Siva, V., Gremyr, I., Bergquist, B., Garvare, R., Zobel, T., & Isaksson, R. (2016). The support of Quality Management to sustainable development: a literature review. *Journal of Cleaner Production,*138, 148 - 157.

Stanovcic, T., Pekovic, S., & Bouziri, A. (2015). The effect of knowledge management on environmental innovation: the empirical evidence from France. *Baltic Journal of management*, 10, 413 - 431.

Turker, D. (2009). Measuring corporate social responsibility: a scale development study. *Journal of Busness Ethics* 85, 411-427. https://doi.org/10.1007/s10551-008-9780-6.

UNGC. (2018). United Nations Global Compact. New York: United Nations.

Wang, C.L., Ahmed, P.K., & Rafiq, M. (2008). Knowledge management orientation: construct development and empirical validation. *European Journal of Information Systems*, 17, 219-235. https://doi.org/10.1057/ejis.2008.12.

Wang, S., Abbas, J., Safdar Sial, M., Álvarez-Otero, S., & Cioca, L.I. (2022). Achieving green innovation and sustainable development goals through green knowledge management: Moderating role of organizational green culture. *Journal of Innovation & Knowledge*, 7(4), 100272, https://doi.org/10.1016/j.jik.2022.100272.

Wijethilake, C. (2017). Proactive sustainability strategy and corporate sustainability performance: the mediating effect of sustainability control systems. *Journal of environmental management*, 196, 569 - 582.

Wong, S.K.S. (2013). Environmental requirements, knowledge sharing and green innovation: empirical evidence from the electronics industry in China. *Business Strategy and Environment* 22, 321-338. https://doi.org/10.1002/bse.1746.

Xie, X., Huo, J., & Zou, H. (2019). Green process innovation, green product innovation, and corporate financial performance: A content analysis method. *Journal of Business Research,*101, 697 - 706, https://doi.org/10.1016/j.jbusres.2019.01.010.

Yusr, M., Mokhtar, S., Othman, A., & Sulaiman, Y. (2017). Does interaction between TQM practices and knowledge management processes enhance the innovation performance? *International Journal of Quality & Reliability Management*, 34, 955-974.

Zhang, D., Rong, Z., & Ji, Q. (2019). Green innovation and firm performance: evidence from listed companies in China. *Resources, conservation and recycling*, 144, 48 – 55.