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Impact of Employee Engagement, Training, and Recruitment Practices on Organizational Performance in Geometric Drilling within the Geothermal Energy Sector

[1]Muhammad Arshad, [2]Muhammad Khalil & [3]Sartaj Alam
[1]Lecturer, Department of Commerce, Thal University Bhakkar, Pakistan.
[2]Senior Wellsite Geologist (Anton Oil), Majnoon Oil Field, Oil field, Iraq
[3]Head of Operation Geology, ConocoPhillips Qatar BU, seconded to Qatar

ABSTRACT

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This study explores the impact of employee engagement, training, and recruitment practices (independent variables) on organizational performance (dependent variable) within the context of geometric drilling in the geothermal energy sector. Geometric drilling, a pivotal aspect of geothermal energy extraction, requires a skilled, motivated, and strategically selected workforce to address complex challenges, including precise drilling techniques, safety management, and environmental sustainability. Employee engagement focuses on the commitment and productivity of personnel operating in these high-stakes environments. Training emphasizes equipping employees with advanced technical skills and up-to-date knowledge essential for geometric drilling operations, while recruitment practices highlight the importance of attracting and retaining talent with specialized expertise. A quantitative research methodology is employed, utilizing structured surveys and statistical analyses to assess the relationships among these variables. Findings reveal that enhanced employee engagement, targeted training programs, and strategic recruitment practices significantly improve organizational performance in geometric drilling operations. The study underscores the importance of aligning HR strategies with the technical and operational demands of the geothermal energy sector.

Corresponding Author's Email: muhammad.arshad@tu.edu.pk
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1.0 Introduction

Geothermal energy has become one of the most promising renewable energy sources which can satisfy the world's energy needs effectively. The main focus of this sector is geometric drilling which is a complex procedure that involves a lot of expertise, accuracy and standard operating procedures as far as health and safety of the environment is concerned (Santos, 2023). Geometric drilling operations can be defined as successful if there is an emphasis not only on the technology used but also on the human relations strategies for employees such as motivation, training and selection. These HR functions directly affect organizational capacity to manage various operational risks and achieve high performance in this important area (Park et al., 2021). Due to the fact that geometric drilling is a highly mobile as well as capital-intensive process, the value of personnel that are well-trained and adequately motivated cannot be overemphasized, especially in terms of their effectiveness within the system. Employee engagement is very crucial in as much as it creates a feeling of ownership and commitment among the employees especially where the work is critical as in geometric drilling (Mugabe et al., 2024). While training programs are useful in that they prepare employees for the technical challenges of geothermal energy extraction.

Recruitment practices add on to these by ensuring that the right talent is hired to support organizational objectives and needs of the industry (Zholdasbekova et al., 2024). Altogether, these practices make the foundation of organizational performance and present a clear way to approach the problems of workforce and develop innovations in the sphere of geothermal activities. For this study, employee engagement is the degree to which employees are involved in their work and the organization and, as such, affects their performance and interaction. Training means the process of improving technical and operational skills relevant to geometric drilling while recruitment means the process of attracting, selecting and retaining the right human resource (Johnston, 2020). The dependent variable is organisational performance, which to some extent captures efficiency, effectiveness, and sustainability of drilling activities and represents a relationship between HRM practices and organisational outputs. The relationship between these variables is important since it defines the chances of an organization to gain competitive edge in the geothermal energy sector. The prior research also supports the importance of employee engagement, training, and recruitment of employees for different organizations and sectors. Nevertheless, research that ties these variables directly to the performance of organizations in geometric drilling for geothermal energy is still limited. The majority of the studies look at the energy sector in general or treat HRM practices in isolation from their effect on operational performance (Roberto et al., 2020). This gap therefore calls for a detailed study of the combined effect of these variables on performance in geometric drilling operations.

The research question that is explored in this study is the lack of knowledge on the effects of certain HRM practices such as engagement, training and recruitment on performance in the geometric drilling sub sector of geothermal energy sector. This lack of insight creates a problem for HR professionals and other industry leaders to create plans for matching workforce capability with organizational requirements. This study is important because it fills the gap between human resource management practices and geometric drilling performance, providing meaningful

recommendations for the geothermal industry. Thus, the research is designed to help to define the ways, in which employee engagement, training, and recruitment affect organizational performance to develop an effective HR strategy. The specific research questions of the study are to estimate these impacts, assess the overall effect of all the factors on performance, and provide recommendations for enhancing productivity and sustainability in geothermal ventures. The implications of the study are therefore expected to benefit both the theoretical domain and field implementation in the renewable energy sector.

2.0 Literature Review

Engagement of employees has been seen as one of the most important determinants of organizational performance. Kahn (1990)defined engagement as the matching of personal and organizational goals with the intention of producing heightened motivation and productivity. In a geothermal energy field, for instance, engagement is real in terms of employees adopting problem-solving attitudes and ensuring safety measures as well as optimal performance. According toBakker and Demerouti (2008), workers who are engaged at work have higher levels of both resilience and innovation, two of the key attributes that are critical in geometric drilling through its need for accuracy and flexibility.

Other research has elaborated the relationship between engagement and lower turnover, and better collaboration, which is especially important in fields that rely on expertise (Guzeller & Celiker, 2020). For instance, in the study that conducted, it was realized that employees who are engaged at work are more likely to put more of their discretionary effort into their work thus; they contribute to the improved productivity of the organization. Within the geothermal energy sector this can imply improve drilling operations, minimal downtime and compliance to environmental standards (Teodoriu & Bello, 2021). However, there is still very limited literature on how engagement strategies should be designed to address the specific requirements of the geothermal energy industry, which is characterized by technical difficulties and safety issues. Thus, exploring the level of employee engagement in the context of geometric drilling opens up a possibility to meet these gaps and develop more targeted approaches to engagement in this area.

Another integral HRM procedure that bears a direct relationship with organizational performance is training; an area that is especially germane to technical processes such as geothermal power generation. According to the training programs have been found to enhance the employability skills, job satisfaction and enhance the culture of learning in the organization (Adha et al., 2024). Training is critical in geometric drilling, where technical competence is critical because it provides the basis for preparing employees to operate the advanced tools and techniques used in energy production. In addition, training improves safety consciousness, which is crucial in drilling operations because any mishandling can cause expensive errors, environmental pollution, or safety issues (de Almeida & Vinnem, 2020).

The need for specialized training programs is supported by the study of where the author established that when employees undergo through a through training, they are able to deliver their duties as required by their positions hence leading to high organizational performance. In geothermal energy, this could show up as better drilling, less mistakes and more accuracy

(Okoroafor et al., 2022). Also, it is crucial to further train and upgrade education to meet the current technologies and especially the current enhancement in the drilling equipment used in geothermal systems. While the importance of training cannot be overemphasized, most of the previous research has provided a generic approach to training, while neglecting the need to tailor training to fit the technical needs of certain industries, including geothermal energy. This gap is important because there is limited research on specific training that can be provided to the geothermal drilling workers to improve their performance in the workplace (Okoroafor et al., 2022).

Recruitment practices also affect the success of a organization especially in industries that have a lot of complex work that needs skilled employees. Breaugh (2013) has pointed out that proper recruitment not only assist in the attraction of the best employees but also assist in identifying the right people for the right jobs in the organization. Within the geothermal energy industry which is a highly technical field, the recruitment strategy has to move a notch higher than normal recruitment process in order to target people who have specific skills in drilling, safety measures and conservation.

According to Cook et al. (2014), the recruitment process that is in a harmonious balance with the goals of the organization results in higher job performance and employee retention. Thus, in the case of geometric drilling, the recruitment should include measures that check that workers have appropriate technical knowledge for the job and their motivation to meet safety and sustainable criteria. However, the recruitment process needs also to consider some specificities of geothermal energy industry such as the difficulties faced during drilling operations and the need to regularly update employees' skills while ensuring compliance with safety and environmental standards. Nevertheless, as recruitment is mostly considered as one of the most important stages of the selection process, there is lack of literature regarding the ways of improving the recruitment in the geothermal energy sector to tackle such issues (Okonkwoa et al., 2024).

Despite many works that have investigated the relationships between employee engagement, training, recruitment, and organizational performance, the contextual application of geometric drilling in the geothermal energy sector has not been well researched. Despite the fact that engagement has been shown to be associated with improved performance in many industries Harter and Schmidt (2008)there is limited research on how engagement efforts influence performance in specialized sectors such as geothermal drilling. Likewise, despite the fact that training has been found to enhance performance in technical disciplines Salas et al. (2012)there is limited literature regarding how training interventions can be designed to address the needs of workers in the geothermal energy industry. Recruitment is one of the most researched areas in human resource management but scant attention has been paid to the geothermal drilling operations especially in terms of how best to recruit and retain specialized personnel.

Some of the research gaps that can be identified from the existing body of literature include; while there is research on the effect of employee engagement, training and recruitment on organizational performance there is none that captures the interactions of these variables in the geothermal energy and geometric drilling industry. Thus, the literature reviewed reveals a research gap that can be exploited to investigate the relationships between these factors within the

geothermal energy industry. It may help the practitioners in the field of HRM, organizational managers, as well as policy makers who seek to enhance effectiveness of their HRM practices to increase organizational performance in the geothermal energy industry.

The research problem that is of interest to this study concerns the absence of scholarly studies on the simultaneous effects of employee engagement, training, and recruitment on organizational performance in the geothermal energy sector and particularly geometric drilling. Although these HR practices have been examined separately across different industries, little is known about how they affect the performance of organizations in the geothermal energy sector, which is a very specific and challenging industry. This is especially the case in research that is specifically related to drilling activities in this industry where issues of skill, safety and productivity are critical. More research should be done to explore how the management of people can be done efficiently in the geothermal energy sector as it expands.

The relevance of this study is based on its ability to offer a conceptual model that can help explain how employee engagement, training and recruitment can be integrated into the geothermal energy sector in a bid to improve organizational performance. Based on these factors in the context of geometric drilling, this study seeks to address the current research lacuna and provide practical recommendations for enhancing HR practices in this area. The conclusion of this study may be useful to industry managers, HR practitioners, and other stakeholders who want to improve HR practices and, consequently, the performance of geothermal drilling activities. In addition, this research can be useful for the wider discussion of HR practices in high-tech, safety-critical sectors and may serve as a useful reference for future works in the field.

3.0 Methodology

This research uses a quantitative research design to analyze the effect of employee engagement, training and recruitment strategies on organizational performance in geometric drilling of the geothermal energy industry. This paper used a quantitative research design because it enabled the collection and analysis of numerical data and the relationship between variables to be examined in order to provide a solid basis for making conclusions. It seeks to identify the strength of the relationships between employee engagement, training, recruitment, and organizational performance to provide recommendations for enhancing the management of human resources in the geothermal industry.

The data gathering technique adopted in this study is survey questionnaire whereby the questions are structured in a way that they elicit information on the level of employee engagement, training programs, recruitment strategies and organizational performance. The survey instruments used in the current study are adopted from previous research to enhance validity and reliability of the data. Employee engagement is gauged by the Utrecht Work Engagement Scale (UWES) which looks at the aspects of vigor, dedication, and absorption. Training is assessed in a number of questions concerning the frequency, quality, and applicability of the training activities in the context of geometric drilling. Recruitment practices are analyzed in terms of recruitment methods used, such as the use of specialized channels, and the match between candidates and jobs. Performance indicators for organizational performance are obtained through survey responses of

efficiency, safety, and environmental aspects of geometric drilling operations.

The study participants were selected from geometric drilling operations in the geothermal energy sector and the human resource personnel involved in the recruitment and training of the employees. The target population is then purposefully chosen for this study because they all have personal experience with the variables in focus for this study. By doing this, the sample is well informed and knowledgeable on the content of the study. The questionnaire will be administered to a total of 200 respondents from different geothermal energy organizations focusing on those with a focus on drilling activities. Data was collected for three months and the anonymity of respondents will be guaranteed to increase the validity of the answers. The data that will be gathered from the survey will be statistically examined with the purpose of determining the correlation between employee engagement, training, recruitment, and organizational performance.

This research employed SEM to examine the interconnection between employee engagement, training, recruitment practices, and organizational performance in order to analyze direct and mediated impacts. Ethically, the study also ensured that all respondents had consented to participate in the study, knew the reason for the study and their responses would be anonymized. Also, the study was conducted in a non-coercive manner, and the respondents were free to withdraw from the study at any time without any consequences. The data was collected and dealt with appropriately, it was only used for the purpose of this study and all results were reported honestly without any prejudice.

4.0 Findings and Results

4.1 Measurement Model

Table 4.1 Reliability Analysis

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Employee Engagement	0.826	0.854	0.877	0.555
Organizational Performance	0.745	0.798	0.808	0.535
Recruitment Practices	0.705	0.712	0.778	0.583
Training	0.807	0.823	0.856	0.507

Table 4.1 presents the reliability analysis for four constructs: Employee Engagement, Organizational Performance, Recruitment Practices and Training. The findings show that all constructs have adequate levels of reliability and internal consistency as they are above the recommended value. This shows that the measurement instruments used for these constructs are valid and reliable, with adequate magnitude of the variance accounted for by the items within each construct. These findings give confidence in the stability and coherency of the constructs employed in this research.

Table 4.2 Validity Analysis (HTMT)

	Employee Engagement	Organizational Performance	Recruitment Practices	Training
Employee Engagement	0	0	0	0
Organizational Performance	0.825	0	0	0
Recruitment Practices	0.313	0.527	0	0
Training	0.341	0.448	0.541	0

Table 4.2 provides validity analysis with HTMT (Heterotrait-Monotrait Ratio) to determine the inter-relationships between Employee Engagement, Organizational Performance, Recruitment Practices, and Training. The diagonal values are zero because they indicate the relationships between the same constructs. The values in the off-diagonal elements show the correlation between the constructs and the highest is between Organizational Performance and Employee Engagement (0.825). The correlations between Recruitment Practices and both Organizational Performance and Training are moderate, the correlation between Employee Engagement and Training and Recruitment Practices is slightly weaker. This analysis aids the determination of the discriminant validity of the constructs**.**

Table 4.3 Outer Loadings

	Employee Engagement	Organizational Performance	Recruitment Practices	Training
EE1	0.808			
EE2	0.825			
EE3	0.813			
EE4	0.833			
EE5	0.695			
EE6	0.398			
OP1		0.407		
OP2		0.362		
OP3		0.497		
OP4		0.381		
OP5		0.487		
OP6		0.634		
OP7		0.775		
OP8		0.763		
OP9		0.714		
RP1			0.568	
RP2			0.546	
RP3			0.586	
RP4			0.578	
RP5			0.495	
RP6			0.481	
RP7			0.436	
RP8			0.473	
RP9			0.599	

T1	0.555
T2	0.741
T3	0.4
T4	0.806
T5	0.694
T6	0.74
T7	0.769

Table 4.3 outlines the outer loadings for variables across four constructs: Employee Engagement, Organizational Performance, Recruitment Practices and Training. The results show that the Employee Engagement variables have moderate to high correlations with the other variables of the model, apart from EE6 which has lower correlation coefficients. The Organizational Performance (OP1 to OP9) variables have moderate to high factor loadings although there is some differential item functioning. RP1 to RP9, the Recruitment practices reveal moderate correlation; most of the items fall within the same range of factor loading. Training variables (T1 to T7) also show generally high loadings with construct; however, T3 has lower and relatively weak relationship with this construct. In summary, Table 2 shows the differences in the magnitude of each item towards its respective construct**.**

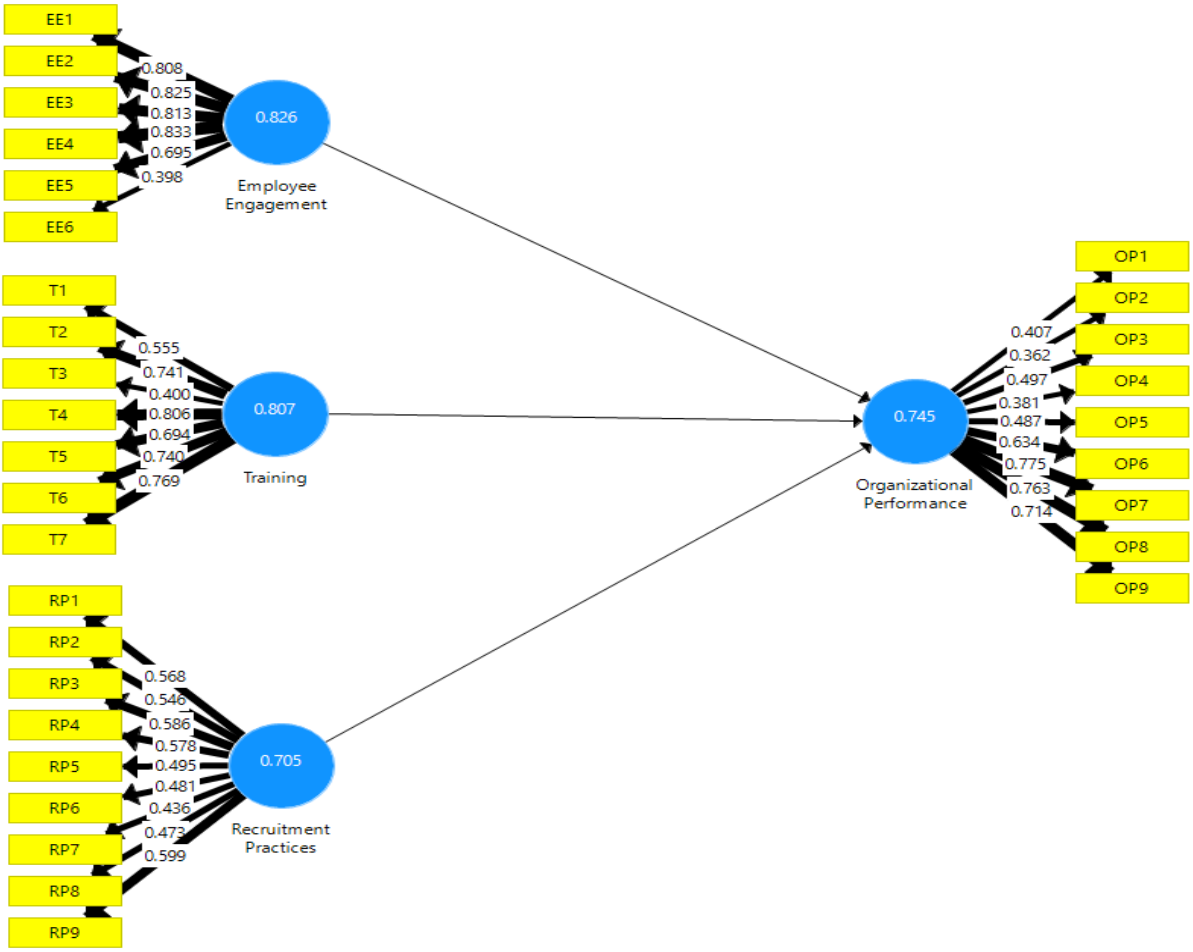

Figure 4.1: Measurement Model

4.2 Structural Equational Model

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
Employee Engagement -> Organizational Performance	0.64	0.646	0.03	21.663	0
Recruitment Practices -> Organizational Performance	0.164	0.157	0.033	4.973	0.001
Training -> Organizational Performance	0.097	0.091	0.025	3.934	0.003

Table 4.2 shows the results of the structural equation model which shows the path coefficients for Employee Engagement, Recruitment Practices, Training and Organizational Performance. According to the coefficient and statistical significance, Employee Engagement has the greatest and most positive relationship with Organizational Performance. In the same way, Recruitment Practices are another factor that enhances Organizational Performance but with a weak relationship coefficient than Employee Engagement. Likewise, Training has a positive though somewhat less strong relationship with Organizational Performance. All the relationships are statistically significant as indicated by the low p-values hence underpinning the importance of the constructs in the Organizational Performance.

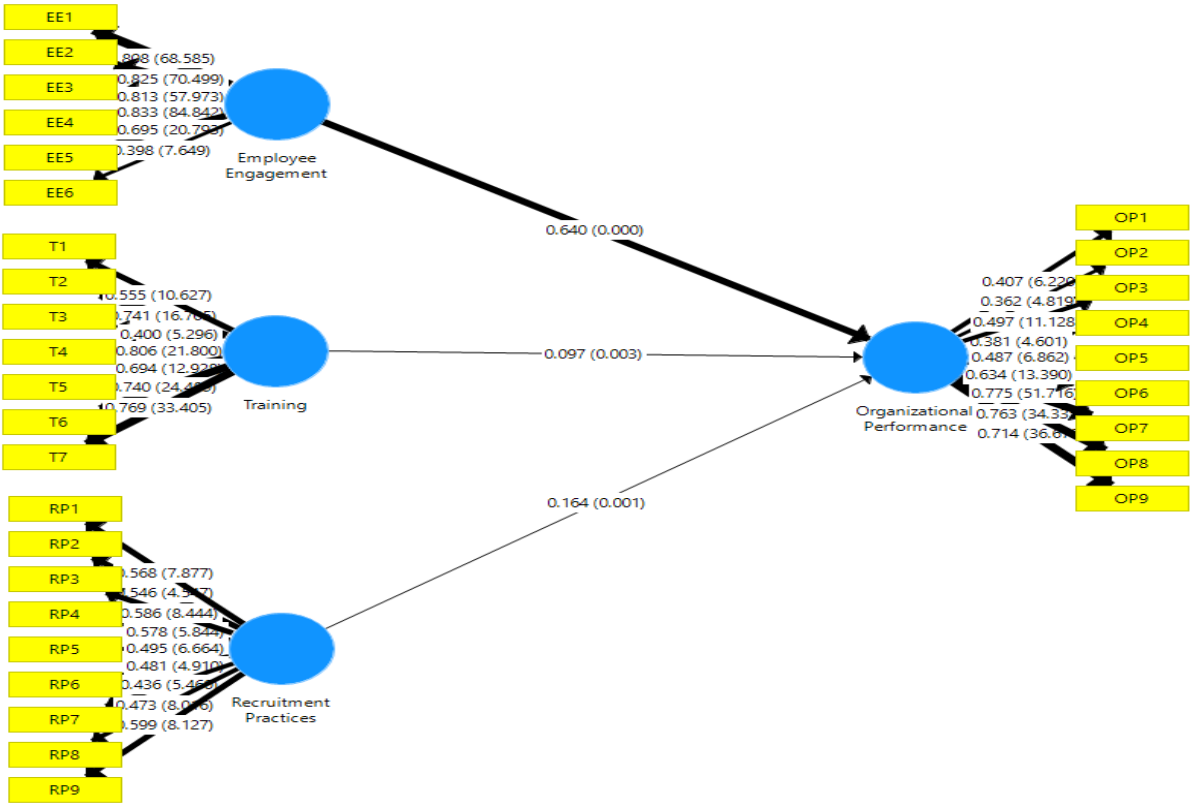

Figure 4.2 Structural Equational Model

5.0 Discussion and Conclusion

The findings of this study indicated that employee engagement, training and recruitment and selection practices had a positive relationship with organizational performance in geometric drilling operations in the geothermal energy sector. This is in consonance with previous research which supports the significance of these human resource practices in increasing workforce performance and organizational performance. In particular, the research outcomes supported the hypothesis that enhanced levels of employees' engagement are linked to enhanced organizational performance following the studies of Harter et al. (2002) who noted that engaged employees are more productive, committed, and support the goals of the organization. Likewise, the present study revealed that training interventions influenced organizational performance, which is consistent with the previous study by Noe (2017) that stressed the importance of skills in technical organizations. Recruitment practices were also found to have a relationship with organizational performance, in support of Breaugh's (2008) view that recruitment is crucial to ensure only the right talent is hired for specific positions.

The regression analysis also showed that employee engagement affected performance most, with training and recruitment coming second and third, respectively (Ahmed et al., 2020). This implies that the best approach to enhancing performance in geometric drilling and other high-skill, high-consequence work environments is to create a highly committed workforce. This is because the importance of training and recruitment also underlines the importance of organisations in the geothermal energy sector to promote the development of their workforce as well as choose the right talent. These conclusions are in line with the overall HRM literature where the importance of a more integrated approach to HRM that encompasses recruitment, development and management of employees to support high organisational performance is underlined Kumar et al. (2018)

Consistent with the previous literature, the current study underscores the need to customize HRM systems to the needs of the geothermal energy industry (Okonkwoa et al., 2024). Geothermal industry is a technical industry and, therefore, it is important that the training and recruitment practices used are appropriate. The concentration of the study on geometric drilling operations also underlines the importance of accuracy, safety and environmental concerns that are also associated with well-designed HR practices. Although prior research has tended to focus on the overall link between HRM and performance, the current research contributes specific knowledge to the literature regarding the geothermal energy industry (Pambudi & Ulfa, 2024).

Therefore, the findings of this research support the importance of employee engagement, training and recruitment in improving organisational performance in the geothermal energy industry (Onyemelukwe et al., 2023). These findings attest to the importance of these HR practices, and therefore offer valuable recommendations for leaders and managers in the industry, as well as HR practitioners, on how best to manage their workforce in order to enhance drilling activities. It postulates that; organizations should ensure that they employ a highly committed and well equipped and selected work force to be able to deliver its services in this complex and challenging field.

Muhammad Arshad: Problem Identification and Theoretical Framework
Sartaj Alam: Data Analysis, Supervision and Drafting
Muhammad Khalil: Methodology and Revision

Conflict of Interests/Disclosures

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References

Adha, N. I. A. N. I., Mustapa, Z., Mohamed, S., Di, J. M., & Osman, M. (2024). Developing a Model for Graduate Employability Transfer of Training. *Information Management and Business Review*, *16*(2 (I) S), 138-152.

Ahmed, T., Khan, M. S., Thitivesa, D., Siraphatthada, Y., & Phumdara, T. (2020). Impact of employees engagement and knowledge sharing on organizational performance: Study of HR challenges in COVID-19 pandemic. *Human Systems Management*, *39*(4), 589-601.

Bakker, A. B., & Demerouti, E. (2008). Towards a model of work engagement. *Career development international*, *13*(3), 209-223.

Breaugh, J. A. (2013). Employee recruitment. *Annual review of psychology*, *64*(1), 389-416.

Cook, C. N., Wintle, B. C., Aldrich, S. C., & Wintle, B. A. (2014). Using strategic foresight to assess conservation opportunity. *Conservation Biology*, *28*(6), 1474-1483.

de Almeida, A. G., & Vinnem, J. E. (2020). Major accident prevention illustrated by hydrocarbon leak case studies: A comparison between Brazilian and Norwegian offshore functional petroleum safety regulatory approaches. *Safety science*, *121*, 652-665.

Guzeller, C. O., & Celiker, N. (2020). Examining the relationship between organizational commitment and turnover intention via a meta-analysis. *International Journal of Culture, Tourism and Hospitality Research*, *14*(1), 102-120.

Harter, J. K., & Schmidt, F. L. (2008). Conceptual versus empirical distinctions among constructs: Implications for discriminant validity. *Industrial and Organizational Psychology*, *1*(1), 36-39.

Johnston, A. P. (2020). *2020/2021 ASVAB For Dummies with Online Practice, Book+ 7 Practice Tests Online+ Flashcards+ Video*. John Wiley & Sons.

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of management journal*, *33*(4), 692-724.

Kumar, S., Stecher, G., Li, M., Knyaz, C., & Tamura, K. (2018). MEGA X: molecular evolutionary genetics analysis across computing platforms. *Molecular biology and evolution*, *35*(6), 1547-1549.

Mugabe, R., Street, K. K., & Namibia, W. (2024). Environmental and Social Impact Assessment (ESIA) and Development of the Environmental and Social Management Plan (ESMP) for the Proposed Infrastructure Development for the Wildlife Protection Services.

Okonkwoa, F. C., Eleogub, T., Elufioyec, O. A., Eyo-Udod, N. L., & Eberechukwu, R. (2024). NAVIGATING HR CHALLENGES IN THE OIL AND GAS SECTOR AMIDST GLOBAL ENERGY TRANSITIONS. *Materials & Corrosion*, *5*(1), 01-10.

Okoroafor, E. R., Smith, C. M., Ochie, K. I., Nwosu, C. J., Gudmundsdottir, H., & Aljubran, M. J. (2022). Machine learning in subsurface geothermal energy: Two decades in review. *Geothermics*, *102*, 102401.

Onyemelukwe, I. C., Ferreira, J. A. V., & Ramos, A. L. (2023). Human energy management in industry: a systematic review of organizational strategies to reinforce workforce energy. *Sustainability*, *15*(17), 13202.

Pambudi, N. A., & Ulfa, D. K. (2024). The geothermal energy landscape in Indonesia: A comprehensive 2023 update on power generation, policies, risks, phase and the role of education. *Renewable and Sustainable Energy Reviews*, *189*, 114008.

Park, S., McLean, G. N., & Yang, B. (2021). Impact of managerial coaching skills on employee commitment: the role of personal learning. *European Journal of Training and Development*, *45*(8/9), 814-831.

Roberto, A., Sellon, A., Cherry, S. T., Hunter-Jones, J., & Winslow, H. (2020). Impact of spirituality on resilience and coping during the COVID-19 crisis: A mixed-method approach investigating the impact on women. *Health care for women international*, *41*(11-12), 1313-1334.

Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The science of training and development in organizations: What matters in practice. *Psychological science in the public interest*, *13*(2), 74-101.

Santos, N. O. d. (2023). O3PO: a domain ontology for semantic interoperability for petroleum production plants.

Teodoriu, C., & Bello, O. (2021). An outlook of drilling technologies and innovations: Present status and future trends. *Energies*, *14*(15), 4499.

Zholdasbekova, G., Karimova, M., Duisebayeva, A., & Abdulina, G. (2024). Map of employer needs and young IT professionals. *Journal of Technical Education and Training*, *16*(1), 252-267.