Integrating Sustainable Human Resource Management for Sustainable Development in Post COVID-19 Era: Strategies for Building Resilience in Organisations

Asamoah-Appiah, Willian[1], Kumi, Ernest[2] and Ampah, Kofi David[3]

1Department of Management and Administration, Cape Coast Technical University
william.asamoah-appiah@cctu.edu.gh/ asamoahappiah3@gmail.com
ORCID ID: 0000-0003-4122-0125
2Department of Secretaryship and Management Studies, Sunyani Technical University
ernest.kumi@stu.edu.gh
3Department of Management and Administration, Cape Coast Technical University
david.ampah@cctu.edu.gh

ABSTRACT

The vulnerabilities of Human Resource Management Systems Sustainability were made clear by the COVID-19 Pandemic. The study investigates the impact of COVID-19 on sustainable human resource management. The survey's population consists of 620 workers from Ghanaian multinational corporations. The research design was explanatory and cross-sectional, with a sample size of 237. The data was self-administered, and stratification was used as the sampling technique. Data was gathered using a structured questionnaire, and PLS-SEM software was used for analysis. The key findings were that the most effective sustainable HRM strategies were work-life balance, flexible work schedules, and sustainable training and development. The SHRM strategies include teleworking, contemporary communication networks, virtue training techniques, and the application of ICT. Sustainable performance, COVID-19, and sustainable human system management were all positively correlated; however, COVID-19, sustainable performance, and SHRMP were negatively correlated. It was suggested that management should make investments in Cutting-Edge Technology, teach and train staff members about environmental sustainability, create quantifiable metrics to track staff members' advancement towards sustainability objectives, and tie reward plans to sustainable performance. Further suggestions are to integrate sustainability into HR policies and procedures, and match SHSM plans to the organisation's human capital strategies to develop the competencies and abilities necessary to handle future crisis.

Keywords: *Sustainable Human Resource Management, COVID-19, Sustainable Development, Social Sustainability, Economic Sustainability, Environmental Sustainability*

1.0 INTRODUCTION

According to Guterres (2020), "COVID-19 is not only a wake-up call; it is a dress rehearsal for the world of challenges." COVID-19, also known as SARS-CoV-2, was first detected in Wuhan, China, on November 16, 2019. The most frequent symptoms of COVID-19 were fever, chills, and sore throat. The primary mechanism of transmission was contact with human respiratory droplets and contact routes (direct touch, fomites, aerosol (airborne), oral (ingestion), and vector-borne). To reduce worldwide infection, the WHO directed governments to institute

lockdowns, mandated mask-wearing at public gatherings, social distancing, and grounding of airlines. The World Health Organisation (WHO) declared COVID-19, a pandemic on March 11, 2020. The total confirmed global cases of COVID-19 as of November 5, 2023, were 771,820,937 cases, 6,978,175 deaths, and 13,534,474,309 people received the COVID-19 vaccine (WHO, 2023). On May 4, 2023, the WHO declared that the COVID-19 pandemic no longer constituted a Public Health Emergency of International Concern due to the decreasing trend in COVID-19 deaths, the decline in COVID-19-related hospitalisations and intensive care unit admissions, and the high levels of population immunity to SARS-CoV-2 due to the discovery of vaccines. Although the development and approval of vaccines (Pfizer-BioNTech, Moderna, Novavax, J&J/Janssen, AstraZeneca, etc.) has raised the hope of a turnaround in the pandemic later this year, renewed waves and new variants of the virus pose concerns for the world.

The pandemic has had profound repercussions on various facets of human society in terms of social and economic growth and healthcare (Priya et al., 2021). The IMF, Worldwide Economic Outlook (2021), forecasts a worldwide growth contraction of -3.5 percent for 2020. The virus, per estimates, hindered the growth of the world economy by almost 3.2 percent in 2020. 2020 is predicted to see a 5.3% decline in global commerce, but 2021 will see an 8.0% increase. According to data from the International Monetary Fund (IMF), the global GDP contracted by 3.9 per cent in 2020, marking the biggest loss since the Financial Crisis. Global growth is predicted to decrease from 5.5 percent in 2021 to 4.1 percent in 2022, 3.2 percent in 2023, and 3 percent in 2024. Until the worldwide reduction of fiscal and monetary assistance occurs, pent-up consumption begins to fade (World Bank, 2021). The WTO updates in October 2020 indicate a 9.2 percent decline in global merchandise trade. The impact of COVID-19 has ramifications on social interaction due to policies such as Social Distancing and Lockdowns (Kumar, Malla, et al., 2023). Economically, it disrupted and shrank global funding for the realisation of UN sustainable development goals.

The pandemic has taught us the urgent need for the adoption of sustainable practices to withstand future unforeseen shocks (Sharma, Luthra, Joshi, and Kumar, 2022). To buttress this, Schwab and Zahidi (2020) stated that the devasting effect of COVID-19 calls for a 'road to recovery' and 'a rebuilding', therefore, there is an urgent need to shift from traditional HRM to sustainable human system management (Jewell et al., 2022; Collins, 2021). The HRM functions were also affected since apparently it became extremely difficult to track and measure sustainable development programs (Gu et al., 2023; Wu, Kao, and Chang, 2022). The pandemic altered working from the organisation's premises to working from home, teleworking, flexible work arrangements, limiting human interaction, and the implementation of new policies (Avsajanishvili, 2022). The uniqueness of an organisation's best practices and best fit provides an urge to competitiveness and recovery from the negative impact of COVID (Ulrich, 2020; Mefi & Asoba, 2021).

The concept of Sustainable Human Resource Management is still limited, and organisations are less aware of its benefits. The link between sustainability and HRM has assumed an alarming proportion that has attracted the attention of international, national, and academic scholars, and HR practitioners. The EU, the UN SDGs goal for the 2030 Agenda for Sustainable Development, and the World Commission on Environment and Development (the Brundtland Commission) are key international bodies that have advocated for the preservation of the environment to forestall environmental degradation and prevent social

inequities for the betterment of future generations. The 'three pillars' of sustainability are economic, social, and environmental developments, and they are the pivot of sustainable HRM (Kramar, 2021). The SDGs are relevant to HRM practitioners such as the goals for decent work and economic growth, gender equality, good health and well-being, reducing inequalities, and developing partnerships for the achievement of these goals (SDGs, 2030). According to Stankeviciute and Savaneviciene (2018), sustainability and HRM have a link through a multi-stakeholder, multi-layered, collaborative approach. By using a sustainable development approach, this study aims to add to the body of research on sustainable HRM methods that might strengthen organisational resilience in the post-COVID era.

1.1 Concept of Sustainable Development

Sustainable development is a UN dream that gave birth to the objective of encouraging economic growth, social progress, and environmental protection globally. In 1987, the United Nation's Brundtland Commission defined sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." The World Commission for Environment and Development defines sustainable development as meeting the needs of the present without compromising the abilities of future generations. The principles of sustainability revolve around the Triple Bottom Line known as "Environmental Integrity (ecosystem), Social Equity (right of stakeholders to access resources, transparency in wealth distribution), and Economic Prosperity (productive capacity and quality of human life)." Environmental integrity refers to the ecosystem. To achieve this, organisations need to adopt sustainable practices in all aspects of their operations, including human resource management. Sustainable development refers to the process of meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. The pandemic has exerted profound repercussions on various facets of human society, in terms of social and economic growth and healthcare (Priya et al., 2021).

1.2 COVID-19 and Social Sustainability

Social sustainability focuses on the welfare of current and future generations. To achieve these objectives, organisations focus on providing good standard of living by reducing social inequality. Social sustainability occurs when formal and informal processes, systems, structures, and relationships actively support the capacity of current and future generations to create healthy communities. The main social sustainability indicators of SHSM are social infrastructure, career opportunities, fulfilment of psychological needs, social justice, social sustainability design, and corporate social responsibility. The main social impacts are public health and well-being, education, and digital transformation (UNESCO, 2021). The pandemic has exposed and exacerbated existing social inequalities and disproportionately affected marginalised communities, leading to increased poverty rates, food insecurity, and limited access to healthcare. The COVID-19 pandemic has had profound impacts on social sustainability, affecting various aspects of society including health, education, employment, and social cohesion (Raifman & Raifman, 2020); isolation, stress, anxiety, and sadness; and the closure of schools (UNESCO, 2021; ILO, 2021; Holmes et al., 2020).

1.3 Impact of COVID-19 on Economic Sustainability

The pandemic has had economic repercussions by disrupting global supply chains, the decline in demand for goods and services, (Statista, 2021), the cessation of international capital outflows and inflows, unemployment, financial instability, and economic growth leading to severe economic downturns in many sectors. Instead, it was estimated that the US GDP declined by 20.3% equivalent to $4.3 trillion over three months and the dedicated funds to combat the pandemic was $2.14 trillion. (Walmsley and Rose 2021; Makridis and Hartley 2020). Economic contraction and recession – a sharp decline in GDPs (Hale, Webster, Petherick, Phillips, and Kira, 2021); job losses and unemployment (Servais, 2021); rising income inequalities (Hevia, & Neumeyer, 2020); disruptions in global supply chain and change in consumption patterns (WTO, 2021); increase in national **debt and fiscal challenges, especially, emerging economies (IMF, 2021).**

According to International Monetary Fund forecasts (IMF, 2022), the global economic growth rate in 2022 will decrease from 6.1% to 3.2%. As a result, global economic growth will probably decrease to approximately 2.6% by the end of 2022 and 2.0% by 2023, which is the lowest growth rate since 1970. According to ILO (2020), global working hours fell by 8.8% in 2020, which is equivalent to 255 million full-time jobs. According to the International Monetary Fund forecasts (IMF, 2022), the global economic growth rate in 2022 will slow down from 6.1% to 3.2%. As a result, the global economic growth will probably decrease to approximately 2.6% at the end of 2022, and to 2.0% in 2023, which is the lowest growth rate since 1970.

1.4 *COVID-19 and Environmental Sustainability*

Environmental sustainability focuses on creating a safe environment, reducing negative impacts, and solving environmental issues. Literature has shown that there are some positive aspects about the environment. There was a reduction in air pollution due to the lockdown and a few transportation activities, resulting in lower carbon dioxide emissions. (Le Quéré et al. 2020). The impact of COVID-19 on the environment could be said to be positive because of the reduction in greenhouse gas emissions and air pollution, as global CO2 emissions dropped by 5.8% in 2020, the largest annual decrease ever recorded (IEA, 2021). However, CO2 emissions in 2021 will increase to 180 megatonnes owing to the rapid economic recovery. (IEA, 2021). However, there was a shift in investment in waste management, renewable energy, and conservation measures (Prata et al., 2020; Bonaccorsi et al., 2020); biodiversity conservation efforts increased the risk to ecosystems (Di Marco et al., 2020). Organisations are concentrating on green management to improve environmental performance. Studies have shown that green training and involvement, green performance, and green compensation have significantly positive effects on environmental performance (Udokporo et al., 2020; Guerci, Longoni, and Luzzini, 2016).

1.5 COVID-19 Impact on Sustainable Human Systems Management

The COVID-19 pandemic has exposed the vulnerability of organisations and had a profound impact on sustainable human systems management, the environment, social and economic sustainability. (Klimczuk et al., 2022). Sustainable Human System Management is defined as the holistic and integrated management of human activities and systems to achieve long-term ecological, social, and economic sustainability. Thus, *Ehnert (2009b) defines*

SHRM as "the pattern of planned or emerging human resource deployments and activities intended to enable a balance of organisational goal achievement and reproduction of the human resource base over a long-lasting calendar time and to control for negative impact on the human resource base." SHSM emphasises nurturing employee growth and well-being, motivating employees, and seeking to create an organisational environment that promotes engagement and performance (Guest, 2017). SHRM focuses on the effective management of human resources in a way that promotes employee well-being, organisational success, and environmental sustainability. COVID-19 has enabled organisations to put in place new HRM policies such as workplace guidelines and support, access to financial benefits (Elsafty & Ragheb, 2020) as well as remote work, safe working conditions, performance management, and compensation adjustments, suspension of dismissals, online HR practices, emotional and mental support (Gigauri, 2020; Ławrynowicz, Marcinkowska, 2020), which, in turn, positively influence employee retention and employee well-being (Vaiman, Cascio, Collings, and Swider, 2021). Again, controlling employee performance, identifying training needs, training and empowerment, job redesigning, reorganising work schedules, paying reductions, tying promotion to performance evaluation, and lacking recruitment or extensive selection process were the primary HRM practices (O'Rourkem, 2021; Deloitte, 2020).

1.6 COVID-19 & HRM Resilience Strategies

The literature suggests that COVID-19 has exposed vulnerabilities and weaknesses in many businesses, highlighting the need for organisations to be prepared for future crises by instituting a resilient approach to achieve sustainability. Resilient organisations are those that can adapt and recover quickly from disruptions, ensuring sustainability and long-term success. By building resilience, organisations can effectively navigate uncertainties and mitigate risks. This requires developing crisis management plan, enhancing organisational flexibility and agility, strengthening supply chains and partnerships, and investing in employee well-being and engagement. The uniqueness of an organisation's best practices and best fit gives an urge for competitiveness and recovery from the negative impact of COVID (Ulrich, 2020; Mefi and Asoba, 2021). Some of the recommended SHRM strategies include the provision of support, orientation on how to manage shift systems, involvement and participation in decision-making, employee development, establishment of strategic collaborations, and planning the adjustment of rewards and benefits; implementation of IT infrastructure to aid virtual learning and work collaboration; consultation of employee input and education; and investing in employees' well-being and mental health (Bharadwaj et al., 2022).

Based on the literature reviewed, the following hypothesis are posited:

H_1 There is a negative relationship between COVID-19 and sustainable HRM.

H_2 There is a negative relationship between COVID-19 and sustainable performance.

H_3 There is a positive relationship between sustainable HRM and sustainable performance.

Based on the literature the following conceptual framework was formulated

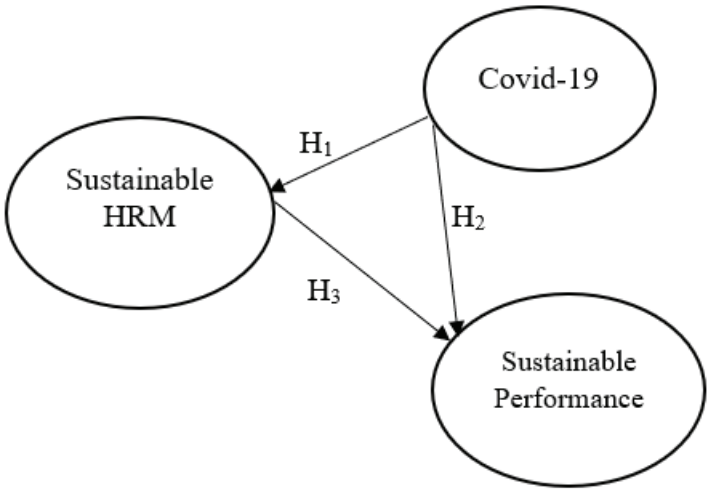

Figure 1: Conceptual Framework

2.0 MATERIALS AND METHODS

2.1 Research Design, Population,

Research design is defined as the overall strategy for carrying out the process of data collection and analysis (Snyder, 2019). Data was collected quantitatively (Leavy, 2017). The study adopted a cross-sectional and explanatory research design approach (Creswell & Creswell, 2017). With in-depth data interpretation supported by graphics and tables (Bloomfield & Fisher, 2019), the empirical data was collected from three multinational companies and a service organisation. These companies were selected because they operate strategic human management systems and were affected by the COVID-19 pandemic. A structured questionnaire with a validated scale was adapted for the survey. The merit of the survey method is that it allows for data to be collected from a large sample, at least at a comparative cost (Saunders, Lewis, and Thornhill, 2019). The population of the study was made up of managerial and non-managerial employees. They were made up of six hundred and twenty (N = 620). The sample size was determined using Krejcie and Morgan's (1970) sample size determination formula, as stated below:

$$S = \frac{\chi^2 NP(1-P)}{\delta^2 (N-1)} + 2P(1-P)$$

N = Population size (N=620)

P = Population proportion (0.5)

∂ = degree of accuracy/ Margin of error (0.05)

χ^2= Chi-square for, 1 degree of freedom (3.841)

$$n = \frac{3.841 \times 620 \times 0.5 \times 0.5}{[(0.05)^2 \times (620-1) + 3.841 \times 0.5 \times 0.5]}$$

$$n = \frac{595.355}{2.50775} = 237.40$$

2.2 Measurement Scale and Instrumentation

During this investigation, a structured questionnaire with closed-ended questions was used to collect data. It is easier as compared with open-ended; data interpretation is difficult (Palinkas et al., 2015). The nominal, ordinal, and interval scales were used (Goertzen, 2017). The nominal scale was used for gender, the interval scale was used for data on age, and the ordinal scale was used to collect data on COVID-19 and sustainable HRM. The questionnaire was constructed in a five-point Likert-scale style. A total of 236 questionnaires were distributed, but only 230 were retrieved, which represents an 89% return rate. This study is an explanatory, cross-sectional, deductive approach, and the research philosophy is positivism. The questionnaire was made up of four sections: Section A: sustainable HRM practices, which was measured using sustainable recruitment and selection (8 items); Training and development (8-items); sustainable performance appraisal (8-items); sustainable rewards (7-items); sustainable promotion (7-items) sustainable employee empowerment and involvement (7 items) and sustainable discipline management (8 items). Section B comprises sustainable performance, which is made up of environment performance (6 items), economic performance (4 items), and social performance (97 items). Section C dealt with the impact of COVID-19, and Section D consisted of demographic characteristics. All the measuring instruments for the underlying constructs were adapted from a validated questionnaire. The humanistic sustainability HRM practices questionnaire study adapted a validated questionnaire from (Al Mamun, 2019; UDDIN, 2020; Nagarajan, 2020; Asis-Castro AL, Edralin, 2018; Dumont, Shen, & Deng, 2017; Jabbour, 2011; Tang et al., 2017; Longoni et. al., 2016) for sustainable performance, and the scale for the impact of COVID-19 was adapted from (Ann-Kristina & Marie Freia, 2023).

2.3 Sampling and Sampling Technique

The sampling technique used for the study was stratification. It is appropriate to sample a population with teratogenous elements, thereby, giving each stratum an equal opportunity to be representative in the survey (Bell, Bryman, & Harley, 2022). The proportional stratification was used to determine the number of respondents to be selected from each stratum. This gives a fair representation (Kothari, 2019) (refer to Table 1).

Table 1: Population stratification

	Population	Stratification	Response rate
TOPP	355	136	**235 (99%)**
MTN	195	74	
Tata Motors	45	17	
NIB	25	10	
Total	620	237	

2.4 Data Collection & Analysis

Data was collected using a structured questionnaire, which was self-administered and accounted for the high response rate of 235 (99%). The data was quantitative and therefore suitable for partial least squares structural equation modelling (PLS-SEM, version 3.0) analysis. The PLS-SEM was used because of its popularity in recent times and robustness (Hair et al., 2022; Hair et al., 2018; Ringle et al., 2020; Sarstedt et al., 2022a). suitable for small

sample sizes, nonnormal data, high complex models, exploratory research, and predictive power (Magno, Cassia, & Ringle, 2022; Hair et al., 2019a; Sarstedt et al., 2022b). The PLS-SEM is analysed from two main perspectives: the measurement model and the structural model. The content of each of them is stated below:

Table 2: SEM-PLS Analysis

Measurement Model	**Structural Model**
Indicator Loadings	Collinearity
Internal Consistency Reliability	Path Coefficient
Convergent Validity	Coefficient Determination (R^2)
Discriminant Validity	Predictive Relevance (Q^2)
	Effect Size (F^2)

Source: (Hair, Hult, Ringle, & Sarstedt, 2017)

3.0 RESULTS

The demographics were analysed using descriptive analysis.

Table 3: Demographic Characteristics of the Respondents

	Respondents	**%**
Demographic		
Gender:		
Male	166	71
Female	69	29
Total	235	100
Age (in years):		
21 -30	73	31
18 – 20	12	5
31 – 40	89	38
41 – 50	52	22
51+	9	4
Total	**235**	**100**
Educational Level:		
SHS	35	15
Diploma/HND	69	29
Bachelors	113	48
Masters	14	6
PhD	4	2
Total	**235**	**100**

Working Experience (in years):		
1 – 5	77	33
6 – 10	108	46
11 – 15	38	16
16 – 25	12	5
Total	**235**	**100**

The demographic characteristics were analysed using descriptive tools. The main demographics were gender, age, educational level, and working experience (see Table 3).

3.1 Sustainable Human Resource Strategies in Post-COVID-19

As part of the study's objective, the study sought to determine the main sustainable human resource strategies which were IT usage (28%), teleworking (26%), effective communication (24%), and employee well-being (22%). (See Figure 1)

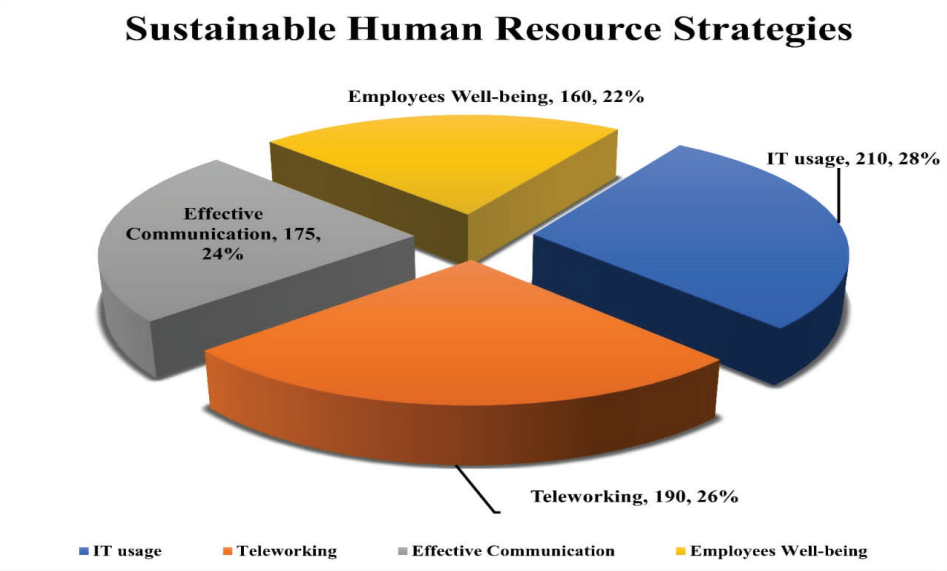

Figure 2: Sustainable HRM Strategies

3.2 Sustainable Human Resource Management Practices

Another objective of the study was to identify the main sustainable human resource management practices use in post COVID-19 era. It was revealed the most prominent among them are work-life balance (23%); flexible work arrangements (22%); employees' engagement and participation (20%); sustainable training and development (19%) and sustainable discipline management (16%). (see figure 2).

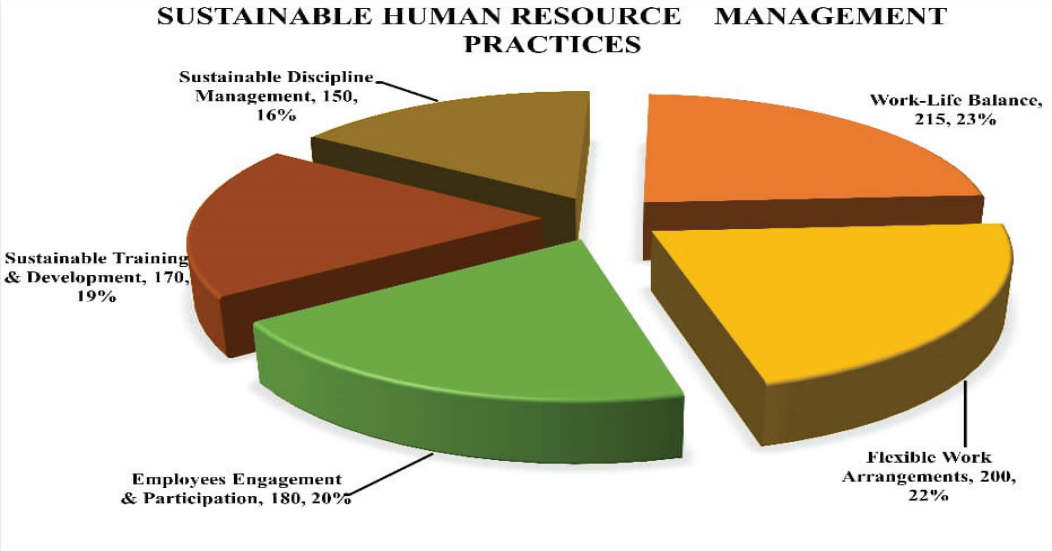

Figure 3: Sustainable Human Systems Management Practices

3.3 Measurement Model Assessment

The Measurement Model Evaluation criteria include reliability, internal consistency, convergent validity and discriminant validity.

Cross-Loadings, Reliability, and Validity

Reliability refers to the consistency, stability, and precision of measurement. It is measured using Cronbach's alpha (Hair Jr., Sarstedt, & Ringle, 2019). Cronbach's alpha, composite reliability, and average variance extracted (AVE) are used to test for reliability (Bjekic et al., 2020). The rule of thumb is that a Cronbach's alpha coefficient greater than 0.70 indicates acceptable internal validity and reliability of the data (Hair et al., 2014:7). In SEM-PLS analysis, a CR value Cross-loadings, reliability, and validity higher than 70% is considered acceptable for internal consistency (Jöreskog, 1971). The results of Cronbach Alpha and the composite reliability are above 0.70, which is an indication that all constructs measure what they are supposed to measure (Bagozzi and Edwards, 1998) (see Table). Furthermore, the value of average variance extracted at 50% shows acceptable and robust convergent validity, as this means that more than 50% variation in a specific construct is enlightened by the stipulated indicators. The values of Cronbach's alpha (α), composite reliability (CR), and average variance extracted (AVE), which are presented in Table 3, were above the threshold of 0.70 and 0.50, respectively (Anderson and Gerbing, 1988). This confirmed that reliability and convergent validity are reliable and valid (Hair et al. 2019).

Table 4: Cross Loadings, Reliability & Validity

	Items	Cross Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CI	CI1	0.844	0.791	0.796	0.878	0.706
	CI2	0.883				
	CI3	0.791				
CWL	CWL1	0.704	0.882	0.884	0.908	0.587
	CWL2	0.757				
	CWL3	0.770				
	CWL4	0.804				
	CWL5	0.790				
	CWL6	0.732				
	CWL7	0.801				
SEP	SDM1	0.723	0.876	0.881	0.907	0.619
	SDM2	0.762				
	SDM3	0.744				
	SDM4	0.775				
	SDM5	0.778				
	SDM6	0.743				
	SDM7	0.822				
SRS	SEEI1	0.770	0.891	0.892	0.913	0.569
	SEEI3	0.773				
	SEEI6	0.705				
	SEEI7	0.670				
SR	SR1	0.726	0.858	0.861	0.894	0.584
	SR2	0.770				
	SR3	0.740				
	SR4	0.784				
	SR5	0.777				
	SR6	0.788				
STD	STD2	0.742	0.857	0.858	0.893	0.584
	STD3	0.720				
	STD4	0.812				
	STD5	0.819				
	STD6	0.747				
	STD8	0.739				
SDM	SDM1	0.723	0.881	0.886	0.908	0.585
	SDM2	0.762				
	SDM3	0.744				
	SDM4	0.775				

	SDM5	0.778				
	SDM6	0.743				
	SDM7	0.822				
SEEI	SEEI1	0.770	0.707	0.709	0.820	0.534
	SEEI3	0.773				
	SEEI6	0.705				
	SEEI7	0.670				
SPA	SPA3	0.788	0.830	0.832	0.880	0.595
	SPA4	0.790				
	SPA5	0.787				
	SPA6	0.742				
	SPA7	0.748				
SSP	SSP1	0.929	0.917	0.930	0.939	0.757
	SSP2	0.930				
	SSP3	0.934				
	SSP4	0.817				
	SSP5	0.719				

Source: Field Data (2023)

Discriminant Validity

Discriminant Validity measures the degree to which the measures are not highly correlated with each other and are actually distinct (Hair Jr., Howard, and Nitzl, 2020). The discriminant validity can be measured using cross-loading, the Fornell-Larcker criterion, and HTMT. However, Henseler, Ringle, and Sarstedt (2015) criticised the Fornell-Larcker criterion for being less sensitive and suggested HTMT. Using the cross-loadings, there was no issue with discriminant validity since the items loaded substantially better in their parent construct than the others. (See Table 4.). The HTMT was also used to assess discriminant validity. (See Table 4.)

Heterotrait-Monotrait (HTMT) Ratio

According to Henseler, Ringle, and Sarstedt (2015), the Fornell-Larcker criterion as a means of assessing discriminant validity by using the Fornell-Larcker criterion is less sensitive and suggests HTMT. Hence, Discriminant Validity was assessed by HTMT. The threshold is that the values should be between 0.85 and 0.90, or less than one (1). (Gold, Malhotra, & Segars, 2001).

Table 5: Heterotrait-Monotrait (HTMT) Ratio

	CI	CWL	SEP	SHRM	SRS	S R	S TD	SDM	SECP	SEEI	SPA	SP	S Pr	SSSP
CI	0.897													
C WL	0.780	0.850												
S EP	0.780	0.801	0.778											
S HRM	0.714	0.723	0.724	0.818										
S RS	0.803	0.801	0.824	0.767	0.796									
S R	0.581	0.618	0.558	0.563	0.651	0.461								
S TD	0.725	0.748	0.719	0.809	0.839	0.900	0.542							
S DM	0.714	0.718	0.727	0.879	0.793	0.669	0.434	0.664						
S ECP	0.657	0.620	0.710	0.812	0.651	0.636	0.450	0.670	0.679					
S EEI	0.510	0.509	0.525	0.711	0.933	0.525	0.344	0.558	0.881	0.513				
S PA	0.712	0.727	0.714	0.703	0.758	0.676	0.755	0.658	0.534	0.640	0.495			
S P	0.749	0.722	0.794	0.973	0.746	0.733	0.524	0.751	0.793	0.950	0.596	0.690		
S Pr	0.136	0.136	0.157	0.232	0.614	0.188	0.198	0.236	0.270	0.116	0.876	0.312	0.172	
SSSP	0.781	0.717	0.864	0.922	0.733	0.752	0.520	0.744	0.783	0.949	0.555	0.716	0.976	0.136

Source: Field Data (2023)

From Table 8, all the values between constructs and within constructs are below 0.90. (see table 7); therefore, there is no issue with Discriminant Validity. According to Hair et al. (2019), when the HTMT raids value is less than 0.9, it signifies that the identified components exhibit significant differences from one another, indicating that they capture distinct occurrences.

Structural Model

After establishing the outer model, the subsequent stage is the Structural Model Analysis. The structure model measures collinearity, path coefficient, R2, and Q2 and the f2.

Collinearity

Variance Inflation Factor (VIF) is used to measure the amount of multicollinearity in the analysis (Kock, 2015). It exists when there is a correlation between multiple independent variables. The threshold of 3–5 is acceptable, but values above 5 are indicative of multicollinearity (Mukarram, 2020; Becker, Ringle, Sarstedt, & Völckner, 2015; Hair et al., 2019).

Table 6: Collinearity

Items	VIF	Items	VIF	Items	VIF	Items	VIF
CI1	1.731	SECP1	2.405	SPA3	1.716	SRS8	2.294
CI2	2.006	SECP2	2.229	SPA4	1.965	SSP1	5.912
CI3	1.520	SECP4	2.366	SPA5	1.945	SSP4	2.273
CWL1	1.611	SEEI1	2.228	SPA6	1.533	SSP5	1.796
CWL2	1.886	SEEI3	2.246	SPA7	1.640	STD2	2.188
CWL3	1.957	SEEI6	1.399	SR1	1.510	STD3	2.116
CWL4	2.185	SEEI7	1.383	SR2	1.850	STD4	2.433
CWL5	2.143	SEP1	2.953	SR3	1.710	STD5	2.444
CWL6	1.826	SEP2	3.287	SR4	2.003	STD6	1.859
CWL7	2.128	SEP3	2.868	SR5	1.930	STD8	1.882
SDM1	1.939	SEP4	2.919	SR6	1.976		
SDM2	2.099	SEP5	2.397	SRS2	1.851		
SDM3	2.028	SEP6	2.538	SRS3	1.591		
SDM4	2.275	SP1	3.223	SRS4	1.948		
SDM5	2.248	SP2	2.705	SRS5	1.769		
SDM6	2.032	SP3	3.553	SRS6	2.417		
SDM7	2.438	SP5	2.927	SRS7	2.265		

Source: Field Data (2023)

From Table 6, all the independent variables were below 5, the VIF values for all the predictors were less than 3 or 5, as suggested by Hair et al. (2011), so it could be said that there was no issue regarding multicollinearity.

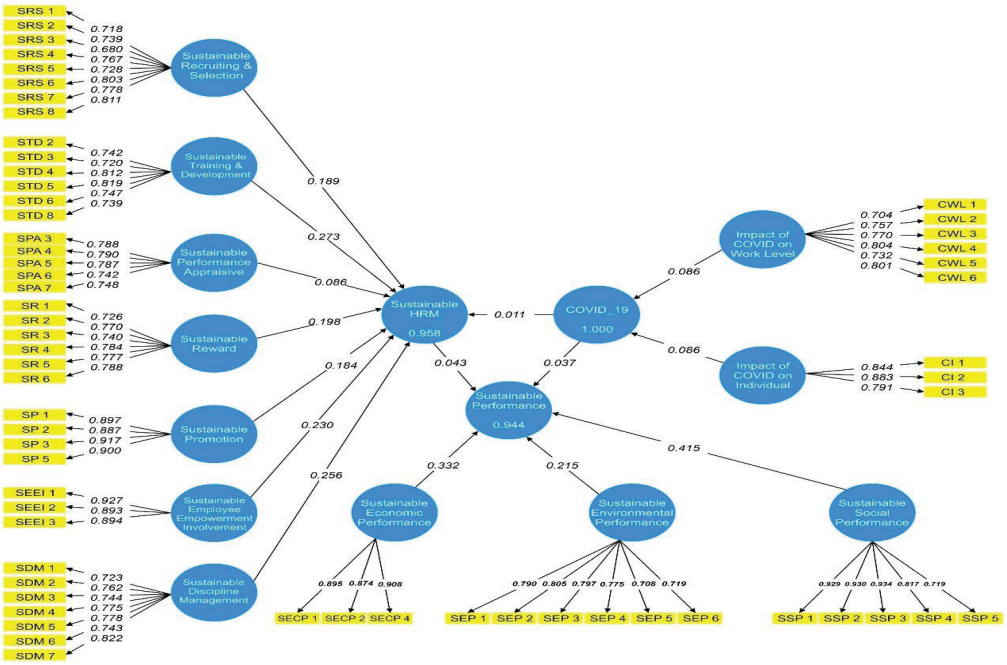

Figure 3: Structural Equation Path Coefficient Model

The factor loading demonstrates how, accurately. an item represents the underlying concept. It indicates how the item is represented in the construct. The loading value ought to be greater than 0.70 in order for the representation to be sufficient. It is evident from Figure 3 that the loading of all variables was higher than the 0.70 threshold. The degree to which one variable impact another and its weight are determined by the path coefficient, also known as beta values. Sustainable HRM was impacted by COVID-19 by 0.011 and sustainable performance by 0.037. Once more, figure 3 illustrates how sustainable HRM affects sustainable performance by 0.043.

Hypotheses Testing

The hypotheses were tested using the beta, t-value, p-value and the coefficient determination (R^2).

Table 7: Hypotheses Testing

	Original Sample (O)	Sample Mean (M)	SD	T Stat.	P Values	2.5	97.5	Decision
COVID-19 -> SHRM	1.000	0.999	0.000	30.63	0.000	0.999	1.000	Accepted
COVID-19 -> SP	0.944	0.946	0.031	30.88	0.000	0.857	0.986	Accepted
SHRMP -> SP	0.958	0.959	0.017	56,42	0.000	0.916	0.984	Accepted

Source: Field Data (2023)

$H_{1:}$ There is a negative relationship between COVID-19 and sustainable human resource management. The result revealed that ($\beta = 1.000$; $M = 0.717$; $t = 30.63$; $p<0.05$); the coefficient of determination (R^2) contributed significantly; the t-value was above the threshold of 1.96 and the p-value was ($p<0.05$). Hence, the null hypothesis (H_1) which states that there is a

negative relationship between COVID-19 and sustainable HRM, is maintained (refer to Table 10).

H_2 states that there is a negative relationship between COVID-19 and sustainable performance. The result indicated that (β=0.944; M=0.946; t=30.88; $p<0.05$). The difference between the lower and upper boundary of the confidence interval is not zero (0.857 - 0.986); the t-value (t = 30.88) is above 1,96, and the p-value is less than 0.06 ($p<0.05$). Therefore, the null hypothesis, which states that there is a negative relationship between COVID-19 and sustainable performance, is maintained.

H_3: There is a positive relationship between sustainable HRMP and sustainable performance. The outcome revealed (β = 0.938; M = 0.959; t = 56.42; $p<0.05$) and confidence interval (CI = 0.916 -0.984). The null hypothesis is maintained.

Table 8: R^2, Adj R^2, Q^2 & F^2

Construct	R^2	Adj R^2	Q^2 (=1-SSE/SSO)	F^2
COIVD-19	1.000	1.000		
Sustainable HRM	0.957	0.955	0.931	0.021
Sustainable Performance	0.944	0.943	0.942	0.010

The R2 (coefficient of determination) statistic explains the variance in the endogenous variable explained by the exogenous variables. Thus, how much change in the dependent variable can be accounted for by one of the more independent variables? From Table 8, the effect of COVID-19 can have a 95.7% change in sustainable human resource management practices. Again, COVID-19 can negatively impact 94.4% of sustainable performance (environmental, economic, and social sustainability). The R2 is an explanatory power, and values of 0.75, 0.50, and 0.25 are interpreted as substantial, moderate, and weak (Hair et al., 2011; Henseler et. al., 2009) (refer to table 8). The effect size (f2) indicates that the effect of each exogenous construct on the endogenous construct Cohen (1988) asserted that the f2 values of 0.02, 0.15, and 0.35, are considered small, medium, and large. From the study, the effect size (f2) for sustainable human resource management practice was (f2=0.021) and that of sustainable performance was (f2=0.010) which means the effect size was small. The Q2 value is an indicator of the model's predictive power or relevance (Geisser, 1974; Stone, 1974). The threshold is that any value larger than zero (0) suggests that the model has predictive relevance for a particular endogenous construct. The Q2 values of the study indicate that the model has predictive power.

Model Fit

Model Fit determines whether the model fits the empirical data collected. The rule of thumb is that an SRMR less than 0.08 is an indication of a model fit. From table 10, the SRMR is not more than 0.08 and the normal fit index (NFI) is 0.45 (refer to table 9).

Table 9: Model Fit

	Saturated Model	Estimated Model
SRMR	0.084	0.084
d_ULS	16.203	16.210
d_G	109.461	109.548
Chi-Square	13401.344	13414.435
NFI	0.450	0.449

5.0 DISCUSSIONS

$H_{1:}$ There is a negative relationship between COVID-19 and sustainable human resource management. The result revealed that (β = 1.000; M = 0.717; t = 30.63; p<0.05). The coefficient of determination (R^2) contributed significantly; the t-value was above the threshold of 1.96 and the p-value was (p<0.05). Hence, the null hypothesis (H_1) which states that there is a negative relationship between COVID-19 and sustainable HRM, is maintained (refer to Table 10)**.** COVID-19 exposes the vulnerability of SHRMP, which conforms to the studies of Klimczuk et al. (2022). And view of this (Elsafty and Ragheb, 2020), suggested the adoption of new HRM policies such as work-life balance, flexible work arrangements, employee well-being, and employee control job redesign (O'Rourkem, 2021; Deloitte, 2020). The studies of Lee and Kang (2020; Barbier and Burgess, 2023) indicate a negative relationship between SHRM and COVID-19.

H_2 states that there is a negative relationship between COVID-19 and sustainable performance. The result indicated that (β=0.944; M=0.946; t=30.88; p<0.05). The difference between the lower and upper boundary of the confidence interval is not zero (0.857 - 0.986); the t-value (t = 30.88) is above 1,96, and the p-value is less than 0.06 (p<0.05). Therefore, the null hypothesis, which states that there is a negative relationship between COVID-19 and sustainable performance, is maintained. The findings confirm the UNESCO (2021). report that COVID-19 affected human society. The studies by Priya et al. (2021) confirm that COVID-19 had an impact on social sustainability in terms of health, education, employment, and social cohesion. The findings of Raifman & Raifman (2020) and Holmes et al. (2020) indicate an impact of COVID-19 on social sustainability because of isolation, stress, anxiety, and sadness caused by the closure of schools. The studies of Barbier and Burgess (2023) indicated a negative relationship between COVID-19 and sustainable performance. However, the current studies do not confirm the literature**.** Economic contraction and recession: sharp decline in GDPs (Hale, Webster, Petherick, Phillips, and Kira, 2021); job losses and unemployment (ILO, 2021); rising income inequalities (UNDP, 2020); disruptions in the global supply chain and change in consumption patterns (WTO, 2021); increase in national **debt and fiscal challenges, especially emerging economies (IMF, 2021).**

H_3: There is a positive relationship between sustainable HRMP and sustainable performance. The outcome revealed (β = 0.938; M = 0.959; t = 56.42; p<0.05) and confidence interval (CI = 0.916–0.984). The null hypothesis is maintained. Table 10 indicates that sustainable human resources management contributes to sustainable performance (74.6%). This means, if sustainable human resource management increases by 1 value, the organisation's sustainable performance is affected by 74.6%. This study confirms the findings of Lee and Kang (2020);

Barbier and Burgess, (2023). The β value indicates that when SHRM is increased by 1 value, the organisation's sustainable performance is affected by 74.6%.

6.0 CONCLUSION

The COVID-19 pandemic has a statistically significant relationship with sustainable human resource management and sustainable performance. The result poses challenges for organisations worldwide. However, it has also provided an opportunity for organisations to adapt and innovate their economic, social, and environmental HRM practices. The main types of sustainable human management strategies were IT usage (28%), teleworking (26%), effective communication (24%), and employee well-being (22%). Again, the main sustainable human resource management practices used in the post-COVID-19 era are work-life balance (23%); flexible work arrangements (22%); employees' engagement and participation (20%); sustainable training and development (19%); and sustainable discipline management (16%). The result confirmed the hypothesis that there is a negative relationship between COVID-19 and sustainable human resource management ($\beta = 1.000$; $M = 0.717$; $t = 30.63$; $p<0.05$); and the second hypothesis, which states that there is a negative relationship between COVID-19 and sustainable performance, was maintained ($\beta = 0.944$; $M = 0.946$; $t = 30.88$; $p<0.05$). The third hypothesis, which states that there is a negative relationship between COVID-19 and sustainable performance, was maintained ($\beta = 0.944$; $M = 0.946$; $t = 30.88$; $p<0.05$). The results indicate that the coefficient of determination () explained the endogenous variable by the exogenous variable. Again, the model had a small effect size and low predictive relevance (Q^2).

Managerial Implication

The findings of the study indicate a statistically significant relationship between COVID-19, sustainable human resource management, and sustainable performance. Again, there was a positive relationship between sustainable human resource management and sustainable performance. The post-COVID era is a strong signal to management to prepare for unforeseen future national or global crises by investing in technology and developing human capital. The implementation of sustainable human resource practices will boost sustainable performance (economic sustainability, social sustainability, and environmental sustainability).

Recommendations

Based on the major findings, the following recommendations were made:

- It is recommended that management invest in modern technology, train, and educate employees on the promotion of environmental and sustainability literacy to foster a culture of sustainability by raising awareness about the interconnectedness of social, economic, and environmental issues.
- Management should develop measurable indicators to monitor employee progress towards sustainability goals and link incentive packages to sustainable performance.
- Management should align SHSM strategies with the organisation's human capital strategies to build competencies and skills to manage any future crisis.
- Management should integrate sustainability into HR policies and practices such as recruitment, training, performance management, and reward systems.

Directions for Future Research

The limitation of the study was a sample taken from four manufacturing companies and three service industries, and it was cross-sectional. Again, nine green human resource management practices were used. Future studies may consider adding more manufacturing industries and expanding the green human resource management practice to give it a multi-dimensional construct. Sustainable human system management can be geared towards building human capital and employee well-being.

Author Contributions:

Authors names	Conceptual	Methodology	Data Collection & Analysis	Original Writings	Editing & Final writing
Dr Asamoah-Appiah William	√	√	√	√	√
Dr Kumi Ernest		√	√		√
Dr Ampah Kofi David		√		√	√

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REFERENCES

Al Mamun M. A (2019). An analysis of employee awareness on green human resource management practices: Evidence from Bangladesh. *Human Resource Management Research*. *9*(1): 14-21. doi: 10.5923/j.hrmr.20190901.03.

Ann-Kristina L. & Marie Freia W. (2023)."Human Resource Management in Times of the Pandemic: Clustering HR Managers' Use of High-Performance Work Systems," Springer Books, in: Svein Bergum & Pascale Peters & Tone Vold (ed.), Virtual Management and the New Normal, 8,141- 160. DOI: 10.1007/978-3-031-06813-3_8.

Asis-Castro AL, Edralin DM. (2018). Predictors of humanistic sustainability HRM practices. Dlsu Bus. Econ. Rev. 27: 130-46.

Avsajanishvili, E. (2022). Challenges of Conflict Management during the Covid Pandemic. *VI Internationa*l, 34.

Barbier E. B, Burgess J. C. (2023). Natural Capital, Institutional Quality and SDG Progress in Emerging Market and Developing Economies, Sustainability. 15(4), 3055. doi:10.3390/ su15043055.

Barbier EB, Burgess JC. Natural Capital, Institutional Quality and SDG Progress in Emerging Market and Developing Economies, Sustain*ability. 2023; 15(4), 3055. doi:10.3390/*

su15043055.

*Bell, E, Bryma*n A, Harley B. (2019). Business research methods. 6th ed. Oxford university press; 2022. ISBN (13): ISBN: 9780198869443 [61] Kothari, C.R. Research Methodology: Met*hods and Techniques. 4th ed*. *Ne*w Age International Publishers, New Delhi.

Bloomfield, J., & Fisher, M. J. (2019). Quantitative Research Design. Journal of the Australasian Rehabilitation Nurses Association, 22, 27. https://doi.org/10.33235/jarna.22.2.27-30

Collins, C., Landivar, L. C., Ruppanner, L., & Scarborough, W. J. (2021). COVID-19 and the gender gap in work hours. Gender, Work & Organization, 28, 101-112.

Creswell, J. W., & Creswell, J. D. (2017). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. *Sage Publications*

*Deloitte. (20*20). Workforce strategies for covid recovery. https://www2.deloitte.com/content/ dam/Deloitte/us/Documents/about-deloitte/workforce-strategi*es-for-post-covid-19-recovery.pdf*

Dumont J, Shen J, Deng X. (2017). Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values. Human resource management. 56(4):613-27. doi: *10.1002/hrm.217*92. Ehnert I. Sustainability and human resource management: reasoning and applications on corporate websites. European Journal of International Management 3(4):419-38. doi:10.1504/EJIM.2009.028848.

Elsafty, A.S.; Ragheb, M. (2020). The role of human resource management towards emplo*yee's retention during COVID*-19 *pa*ndemic in medical supplies sector-Egypt. Bus. Manag. Stud. 2020, 6, 5059.

Gu, R., Li, C., Yang, Y., & Zhang, J. (2023). The impact of industrial digita*l transformation on green development efficiency considerin*g the threshold effect of regional collaborative innovation: Evidence from the Beijing-Tianjin-Hebei urban agglomeration in China. Journal of Cleane Production, 420, 138345.

Guerci M, Longon*i A, Luzzini D. Translating stakeholder pressures into env*ironmental performance– the mediating role of green HRM practices. The International Journal of Human Resource Management. 27(2):262-89. Doi.10.1*080/09585192.2015.1065431.*

*Guerci M, L*ongoni A, Luzzini D. Translating stakeholder pressures into environmental performance– the mediating role of green HRM practices. The International Journal of Human Resource *Management; 27(2):262-89. Doi.10.1080/09585192.2015.1*0654 31. 30

Guest D. E. Human resource management and employee well- being: Towards a new analytic framework. Human Resource Management Journal (1):22-38. doi: 10.1111/1748-8583.12139.

Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. Re*search Methods in Applied Linguistics,* 1(*3*), 100027.

Hair, J. F.; Risher, J. J.; Sarstedt, M.; Ringle, C.M. (2019). When to use and how to report the results of PLS-SEM. Eur. Bus. Rev.; 31, 2–24: doi:10.1108/EBR-11-2018-0203.

Hair Jr, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. International Journal of Multivariate Data Analysis, *1(2), 107-123.*

*Hale T, Angrist N, Goldszmid*t R, Kira B, Anna Petherick, A et al., "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)." Nature Human Behaviour. 2021; doi.org/10.1038/s41562-021-01079-8.

Hevia, C., & Neumeyer, A. (2020*). A conceptual frame*work for analyzing the economi c impa ct of C OVID -19 an d i ts pol icy impl icat ions. U NDP Lac CO VID-19 Pol icy Dœuments Series, 1, 29.

Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., ... & Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: a call for action for mental health science. The Lancet Psychiatry, 7(6), 547-560.

ILO, (2020). COVID I9 and the World of Work: Impacts and Policy Responses. Available from: ilo.org/global/topics/coronavirus.

International Energy Agency (IEA, 2022). Global Energy Review 2021: CO2 Emissions. Available from: https://www.iea.org/reports/global-energy-review-2021/co2-emissions. License: CC BY 4.0.

International Energy Agency (IEA, 2021). Global Energy Review: CO2 Emissions. Available from: https://www.ie*a.org/reports/global-energy-review-2*021/co2-emissions. License: CC BY 4.0.

Jewell, D.O., Jewell, S.F. and Kaufman, B.E. (202*2), "Designing and* implementing high-performance work systems: insights from consulting practice for academic researchers", Human Resource Management Review, 32 (1), 100749.

Jöreskog K.G. (1971). Simultaneous factor analysis in several populations. P*sychometrika.; 36(4): 409- 26. doi:10.1007/BF02291366.* 36

Kothari, C.R. Research Methodology: Methods and Techniques. 4th ed. New Age International Publishers, New Delhi. 2019

Krejcie RV, Morgan DW. Determining sample size for research activities. Educational And Psychological Measurement. 19*70; 30*(3)*:*607-10. Doi:10.1177/001316447003000308.

Kumar, A., Kumari, S., Saroj, U., Verma, A., Kiran, K. A., Prasad, M. K., ... & Prasad, M. (2023). Impact of the COVID-19 Pandemic on Blood Donation Patterns: A Systematic Review and Meta-Analysis. Cureus, 15(8).

Leavy, P. (2017). Research Design: Quantitative, Qualitative, Mixed Methods, Arts-Based, and Community-Based Participatory Research Approaches. Guilford Publications

Lee M, Kang BA, You M. Association Between Knowledge, Attitudes and Practices (KAP) Towards The COVID-19: A Cross-Sectional Study in South Korea. BMC Public Health 2020; 21, 295. doi.10.1186/s12889-021-10285-y.

Lee M, Kang BA, You M. Association Between Knowledge, Attitudes and Practices (KAP) Towards The COVID-19: A Cross-Sectional Study in South Korea. BMC Public Health 2020; 21, 295. doi.10.1186/s12889-021-10285-y.

Le Quéré C, Jackson RB, Jones MW, Smith AJ, Abernethy S, Andrew RM, De-Gol AJ, Willis DR, Shan Y, Canadell JG, Friedlingstein P. Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement. Nature climate change. 2020; 10(7):

647-53. Doi: 10.1038/s41558-020-0797-x.

Magno, F., Cassia, F., & Ringle, C. M. (2022). A brief review of partial least squares structural equation modeling (PLS-SEM) uses in quality management studies. The TQM Journal, (ahead-of-print).

Mefi NP, Asoba SN. Sustainable human resource practices for organizational competitiveness post the COVID-19 pandemic. Academy of Entrepreneurship Journal 27(2): 1-7. 1528-2686

Mousa S. K, Othman M. (2020). The impact of green human resource management pra*ctices on susta*inable performance in healthcare organisations: A conceptual framework. Journal of Cleaner Production. 10(243):118595. doi:10.1016/j.jclepro*.2019.118595*

Priya, S., Meena, M. S., Sangumani, J., Rathinam, P., Priyadharshini, C. B., & Anand, V. V. (2021). Factors influencing the outcome of COVID-19 patients admitted in a tertiary care hospital, Madurai-a cross-sec*tional study. Clinical Epidemiolog*y and Global Health, 10, 100705.

Raifman M. A, Raifman J. R. (2020). Disparities in the population at risk of severe illness from COVID-19 by race/ethnicity and income. American Journal of Preventive Medicine. 59(1):137-9. doi: 10.1016/j.amepre.2020.04.003.

Raifman MA, Raifman JR. (2020). Disparities in the population at risk of severe illness from COVID-19 by race/ethnicity and income. American Journal of Preventive *Medicine.; 59(1):137-9. doi: 10.1016/j.ame*pre.2020.04.003.

Ringle, C. M., Sarstedt, M., Mitchell, R., & Gudergan, S. P. (2020). Partial least squares structural equation model ing in HRM r *esearch. The Inte rnational Journal of Human Resource* Management, 31(12), 1617-1643.

Sarstedt, M., Hair, J. F., Pick, M., Liengaard, B. D., Radomir, L., & Ringle, C. M. (2022). Progress in partial least squares structural equation *modeling use in marketing research in the last* decade. Psychology & Marketing, 39(5), 1035-1064.

Saunders, M.N. K., Lewis, P. and Thornhill, A. (2019). Research Methods for Business Students, 8th ed. New York: Pearson; 127 – 17*1. 34*

*Schwab, K., & Zahidi, S. (2020). The global com*peti*t*iveness report: How countries are performing on the road to recovery. In World Economic Forum. Available from: www.weforum.org. ISBN 978- 2-940631-17-9.

Servais, J. M. (2021). The ILO and the social consequences of t*he Covid-19. Roczniki* Ad*mi*nistracji i Prawa, (XXI), 63-78.

Sharma, M., Luthra, S., Joshi, S., & Kumar, A. (2022). Developing a framework for enhancing survivability of sustainable supply chains during and post-COVID-19 pandemic. International Journal of Logistics Research and Applications, 25(4-5), 433-453.

Stankevičiūtė, Ž., & Savanevičienė, A. (2018). Designing sustainable HRM: The core characteristics of emerging field. Sustainability, 10(12), 4798.

Udokp*oro C. K, Anosike A, Lim M, Na*deem SP, Garza-Reyes JA, Ogbuka CP. Impact of Lean, Agile and Green (LAG) on business competitiveness: An empirical study of fast-moving consumer goods businesses. Resources, Conservatio*n and Recycling. 2020; 156:104714. DOI: 10.1016/j.resconrec.*2020.104714.

Ullrich, A., Schranz, M., Rexroth, U., Hamouda, O., Schaade, L., Diercke, M., & Boender,

T. S. (2021). Impact of the COVID-19 *pandemic and* associated non-pharmaceutical interventions on other notifiable infectious diseases in Germany: An analysis of national surveillance data during week 1–2016–week 32–2020. The Lancet Regional Health–Europe, 6.

UNDP. (2020). Financing Sustainable Development Goals in the Face of COVID-19. Retrieved from https://www.undp.org/content/undp/en/home/librarypage/sustainable-development-goals/financing-sustainable-development-goals-in-the-face-of-Covid-19.html

UNESCO. (2021). "COVID-19 and education: One year into the pandemic." Accessed from https://en.unesco.org/covid19/educationresponse.

Vaiman, V.; Cascio, W.F.; Collings, *D.G.; Swider, B.W. The shift*ing boundaries of talent management. Hum. Resour. Manag. 2021, 60, 253–257

Walmsley, T., Rose, A., John, R., Wei, D., Hlávka, J. P., Machado, J., & Byrd, K. (2023). Macroeconomic consequences of the COVID-19 pandemic. Economic Modelling, 120, 106147.

Wu, C., Kao, S. C., & Chang, C. C. (2022). A knowledge elicitation approach to traffic accident analysis in open data: comparing periods before and after the Covid-19 outbreak. Heliyon, 8(9).

Ławrynowicz, M.; Marcinkowska, M. (2020). COVID-19 and the HR response of banks: The employee perspective. Hum. Resour. Manag. /Zarz. Zasobami Ludzkimi, 137, 129–144

ILO (2020). COVID I9 and the World of Work: Impacts and Policy Responses Available from: ilo.org/global/topics/coronavirus.

Mukarram M. Impa*ct of COVID-19 on* the *U*N sustainable development goals (SDGs). Strategic Analysis. 2020; 44(3): 253-258. doi:10.1080/09700161.2020.1788363.

UNESCO (2021). "COVID-19 and education: One year into the pandemic." *Accesse*d *f*rom