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Developing an Integrated Adaptive Health Human Resource Management (AHHRM) Model to Enhance Healthcare Worker Performance in Primary Healthcare Centers: The Mediating Role of Resilience and Task-Fit, Southeast Sulawesi Province, Indonesia

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ABSTRACT: The administration of human resources is becoming more intricate for Primary Healthcare Centers (PHCs) due to the continuous evolution of the healthcare system, workforce deficits, unequal personnel allocation, and the rising demand for healthcare services. The need of developing efficient human resource management techniques that enhance the resilience, flexibility, and productivity of healthcare personnel is highlighted by these conditions. Nevertheless, the use of resilience and person-job alignment within a flexible human resource management paradigm to enhance the efficacy of healthcare professionals, especially in primary care environments, has not been well explored. This disparity requires a flexible and cohesive human resource management strategy that bolsters individual resilience and ensures that workers' skills align with job specifications. The findings revealed that AHHRM did not have a statistically significant direct influence on the performance of healthcare professionals ($\beta = 0.096$; $t = 1.666$; $p = 0.096$). Nonetheless, resilience ($\beta = 0.863$; $t = 42.886$; $p < 0.001$) and task fit ($\beta = 0.876$; $t = 42.541$; $p < 0.001$) were both substantially and favourably influenced by AHHRM. Furthermore, task fit ($\beta = 0.438$; $t = 7.367$; $p < 0.001$) and resilience ($\beta = 0.439$; $t = 6.846$; $p < 0.001$) shown substantial and affirmative impacts on the performance of healthcare professionals. Task fit ($\beta = 0.383$; $t = 7.157$; $p < 0.001$) and resilience ($\beta = 0.378$; $t = 6.885$; $p < 0.001$) represented statistically significant indirect effects of AHHRM on performance. These findings indicate that resilience and task alignment are essential mediating factors linking healthcare professionals' performance to adaptive human resource management. Although AHHRM does not directly improve performance, it facilitates this by bolstering individual resilience and matching workplace demands with employee capabilities. Thus, including job appropriateness and resilience cultivation into adaptive human resource management approaches might provide a vital basis for improving and sustaining the performance of healthcare professionals in primary care environments.

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INTRODUCTION

Intricate issues in human resource management within the healthcare sector arise from transformations in the health service framework, technology innovations, shifts in disease epidemiology, and the increasing public expectation for high-quality health services amidst globalisation [1]. Especially in basic healthcare establishments, such primary health care centers (PHCs), these challenges increase the intricacy of health professionals' responsibilities [2]. These conditions indicate that skilled, flexible, and robust healthcare professionals are essential for the efficacy of contemporary health systems [3,4].

The worldwide health Human Resources (HR) problem continues to be a significant issue in the global health framework. The anticipated deficit of healthcare professionals worldwide is 18 million by the year 2030 [5]. Nonetheless, the latest WHO report forecasts a deficit of health professionals around 10-11 million by 2030, dependent on the estimating techniques, indicators of fundamental service needs, and health worker data from WHO member states [6,7]. Conversely, Southeast Asia persists in facing a significant inequality, with Indonesia notably grappling with uneven distribution, especially between urban and rural areas [8] [9]. Rural and distant regions are facing a more acute deficiency of healthcare personnel than metropolitan locales, attributable to disproportionate allocation, poor retention rates, insufficient facilities, and inadequate health service assistance. This has led to a deterioration in service quality, a rise in public health inequities, and a decrease in health metrics. [10].

Healthcare facilities in Indonesia persist in facing a deficit of around 15% of medical personnel, including doctors, nurses, and various other healthcare workers. Physicians are missing from 4.0% of healthcare facilities, which includes Southeast Sulawesi Province [11]. The city of Kendari, the capital of Southeast Sulawesi Province, has a disproportionate allocation of healthcare professionals, highlighted by the absence of many health workers in various basic healthcare establishments [12]. The efficacy of health services in primary health care facilities is affected by this phenomena [13,14]. This is corroborated by only a little segment of the performance accomplishments of health professionals in Kendari City who have managed to fulfilll the national benchmark of 80%, including maternity and child health as well as Tuberculosis (TB) services [12].

The World Health Organization emphasised that the principal challenge facing the contemporary global health system is not only the shortage of healthcare personnel; it also encompasses the ability of organisations to retain skilled health professionals who can adjust to shifts within the health system. Thus, it is essential to implement adaptive health human resource management to improve the quality of health services, the preparedness of health workers, and organisational agility sustainably [15].

The need for an innovative strategy in the administration of health human resources is driven by the increasing intricacy of the health system and the evolving nature of its challenges. This methodology must be adept at tackling the obstacles inside health services, including the capacity of healthcare professionals to manage intense and fluctuating workloads, innovation, and rapid decision-making [16] . Health organisations should bolster the resilience of both persons and institutions amid health service demands, improve communication frameworks, and adjust the responsibilities and allocation of healthcare personnel according to their competences (task-fit) [17].

Adaptive Human Resources Management is a conceptual framework for HR management that emphasises an organization's ability to modify HR strategies, policies, and practices in reaction to changes in internal and external environments. The approach is based on Dynamic Capability Theory, which asserts that companies must have the ability to assimilate, develop, and reorganise capabilities in reaction to rapid environmental changes [18] . The Job Demands-Resources Theory emphasises the need of sustaining the performance and well-being of healthcare professionals via the equilibrium of work demands and resources, hence endorsing this methodology [19]. This approach is essential within the realm of healthcare services, as health organisations face legislative shifts, technology innovations, digital transformation, and heightened demand for services.

Methods

Design and Paticipant

This research utilises a quantitative methodology including a cross-sectional design and explanatory techniques to investigate the influence of adaptive health human resource management, resilience, and task alignment on the performance of health personnel in primary health centers. The population of this research consists of up to 1,080 healthcare practitioners employed in the PHCs. The Slovin method was used to ascertain the sample size, represented as follows: $n = N/1 + Ne^2 = 1,080/1 + 1,080 \times (0.05)^2 = 1,080/3.7 = 292$ respondents when rounded. To augment the efficacy of statistical analysis inside the Structural Equation Modelling (SEM) framework, account for any data incompleteness, and bolster data representativeness, the participant count in

this research was elevated to 302. To ensure that the sample adequately reflected the many professional classifications of healthcare personnel throughout the PHCs, a proportionate stratified random sampling method was used. The sampling technique consisted of two main steps. At first, the population was divided into strata based on the qualifications of healthcare practitioners, including dental professionals, physicians, nurses, midwives, pharmacy staff, nutritionists, public health workers, environmental health specialists, medical laboratory technicians, and medical and biomedical technologists. Secondly, the ratio of participants from each occupational category was established based on its presence among the overall population. Ultimately, participants from each stratum were chosen at random to guarantee that all qualified healthcare professionals may engage in the research. The aim of this sampling approach was to minimise the likelihood of sampling bias and ensure that the final sample accurately represented diverse groups of healthcare professionals. Consequently, the 302 participants included a variety of healthcare professionals working at permanent health centers (PHCs) around Kendari City. The qualifications for participants are as follows: 1) employment as a healthcare professional at the Kendari City PHCs; 2) professional designation of health workers within the Health Center; 3) a minimum of one year of employment; and 4) readiness to provide written consent to partake in the study (informed consent).

Research Instruments

The validated structured questionnaire functions as the research tool. The instrument assesses factors using definitive statements on a five-point Likert scale ranging from "strongly disagree" to "strongly agree. A total of thirty participants engaged in the questionnaire activity. An efficiency threshold of ≥ 0.30 and a significance level of $\alpha < 0.05$ were used to assess the validity of the instrument by Pearson's Product Moment correlation. The internal consistency of the instrument was evaluated by Cronbach's Alpha and Composite reliability, with a threshold of >= 0.70 deemed satisfactory. The instrument was considered suitable for this investigation since all items and constructs met the standards of validity and reliability, as shown by the test outcomes

Data Collection

Data gathering was executed both in person (via paper) and digitally through a questionnaire distributed via Google Form at the link https://bit.ly/Kuesioner_PenelitianInternalFKMUHO_2026, subsequent to obtaining informed consent from participants and authorisation from the pertinent institution. The use of Google Forms was implemented to enhance the efficacy of data gathering, minimise inaccuracies in the data documentation process, and streamline the dissemination of surveys. The tenets of research ethics, including anonymity, confidentiality of participant data, and voluntary involvement, were rigorously followed and executed throughout the data collecting phase in alignment with applicable research ethical standards.

Statistical Analysis

The SmartPLS 4.0 software is used for data analysis using the Structural Equation Modelling Partial Least Squares (SEM-PLS) methodology. The model testing procedure has two phases: 1) assessing the measurement model (outer model) to determine the construct's reliability, convergent validity, and discriminant validity of the research tool. The causal connection between components will be examined by structural models (inner models), including the assessment of mediation effects as per the suggested hypothesis

Results

1. Respondent Characteristics

Table 1. Characteristics of respondents at the Kendari City Health Center, Southeast Sulawesi Province, Indonesia

Respondent Characteristics	Categories	Quantity (n)	Percentage (%)
Gender	Male	22	7,3
	Women	280	92,7
	Total	**302**	**100**
Age (Years)	≤ 29	48	15,9
	30–39	168	55,6
	40–49	67	22,2
	≥ 50	19	6,3

Respondent Characteristics	Categories	Quantity (n)	Percentage (%)
	Total	**302**	**100**
Marital Status	Unmarried	73	24,2
	Divorce life	9	3,0
	Divorce	4	1,3
	Married	216	71,5
	Total	**302**	**100**
Final Education	D1–D3	111	36,7
	D4/S1	109	36,1
	Profession	60	19,9
	S2	22	7,3
	Total	**302**	**100**
Departments	Head of Health Center	4	1,3
	Midwives	85	28,1
	Doctor	15	5,0
	Pharmacy	23	7,6
	Nutrition	16	5,3
	Environmental Health	11	3,6
	Public Health	47	15,6
	Nurse	71	23,5
	Administrative Officer	19	6,3
	Technical Personnel	11	3,6
	Total	**302**	**100**
Length of Work	1–5 years	113	37,4
	6–10 years	77	25,5
	>10 years	112	37,1
	Total	**302**	**100**
Employment Status	PNS	127	42,1
	PPPK	175	57,9
	Total	**302**	**100**
Puskesmas Class	Stay	73	24,2
	Non-inpatient	229	75,8
	Total	**302**	**100**

The attributes of 302 participants, as shown in table 1, reveal that a predominant number of health professionals are female, with 280 persons (92.7%) belonging to the 30-39 age bracket and 168 individuals (55.6%) also within the 30-39 age range. A total of 216 participants (71.5%) are wed, whilst 111 people (36.7%) own a Diploma qualification (D1-D3) and 109 individuals (36.1%) have a D4/S1 degree. The predominant group of participants consists of midwives, totalling 85 (28.1%), while nurses account for 71 (23.5%). According to the duration of employment, the 1-5 year cohort comprises the largest segment with 113 persons (37.4%), while 112 individuals (37.1%) have been employed for over a decade. The two groups are very equally

allocated. The predominant portion of the sample, about 175 persons (57.9%), is engaged in PPPK. The predominant portion of the sample, about 229 persons (75.8%), is engaged in non-inpatient healthcare facilities. Consequently, most participants reported that the healthcare professionals engaged in this research were mostly female, belonged to the reproductive age demographic, and were working as midwives, nurses, or in outpatient health facilities.

2. Outer Model

Outer model evaluation was conducted to determine the instrument's dependability and accuracy in quantifying latent constructs. The assessment of the convergence validity concerning the loading factor parameter, Average Variance Extracted (AVE), and the construct's reliability via Cronbach's Alpha and Composite Reliability values was included in this work.

Table 2. Mean, Standard Deviation, *Outer loading, Cronbach's alpha, Composite Reliability & Average Variance Extracted (AVE)*

Construct	Item	SD Mean ±	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
AHHRM	A1.1	3,901 ±1,005	0.899	0.954	0.963	0.814
	A1.2	3.821±0.984	0.913			
	A2.1	3,788±1,046	0.854			
	A2.2	3,940±1,037	0.917			
	A3.1	3,795±1,031	0.909			
	A3.2	3,914±1,032	0.918			
Resilience	R1.1	3.927±0.994	0.925	0.933	0.951	0.771
	R1.2	3,858± 1,008	0.924			
	R2.1	3,844±1,032	0.945			
	R2.2	3,404± 1,323	0.481			
	R3.1	3.861±0.973	0.952			
	R3.2	3.874±0.989	0.942			
Task Fit	KT1.1	3,977± 1,031	0.922	0.958	0.966	0.825
	KT1.2	4,017±1,040	0.925			
	KT2.1	3,937± 1,079	0.914			
	KT2.2	3,788±1,062	0.873			
	KT3.1	3,818±1,031	0.895			
	KT3.2	3,801±1,013	0.920			
Performance	K1.1	3,904±1,000	0.936	0.984	0.986	0.911
	K1.2	3.887±0.997	0.940			
	K2.1	4,046±1,063	0.965			
	K2.2	4,063±1,067	0.963			
	K2.3	4,043±1,030	0.953			
	K3.1	4,066±1,030	0.963			
	K3.2	4,076± 1,060	0.960			

The assessed construct garnered a notably elevated evaluation from participants, as seen by the mean value of the metric in Table 1, which spans from 3.44 to 4.08. The standard deviation, varying from 0.884 to 1.323, indicated that the participants' replies remained within permissible boundaries, notwithstanding the fluctuations. The external loading values of all indicators above the suggested threshold of 0.70, except for the R2.2 indicator, which has a loading value of 0.481, falling short of the limit. Nonetheless, the Composite Reliability and Average Variance Extracted (AVE) metrics demonstrate that the associated concept maintains a satisfactory degree of validity and reliability. Cronbach's Alpha ratings span from 0.933 to 0.984, while

Composite Reliability values extend from 0.951 to 0.986. These figures above the minimal benchmark of 0.70, indicating remarkable internal consistency. Moreover, the Average Variance Extracted (AVE) metric surpasses the minimal threshold of 0.50, varying between 0.771 and 0.911. These results confirm that the measurement model meets the standards of validity and convergent reliability. As a result, the measurement methodology used in this study is considered both valid and dependable.

Table 3. F-Square

Leave variable	**Performance**	**Remarks**
Adaptive Health HRM -> Performance	0.017	Very small
Adaptive Health HRM -> Resilience	2.905	Large
Adaptive Health HRM -> Task-fit	3.297	Large
Resilience -> Performance	0.278	Medium
Task Fit -> Resilience	0.252	Medium

Description: f2 < 0.02 (very small), 0.02 ≤ f2 <0.15 (small effect), 0.15 ≤ f2 <0.35 (medium effect), $f^2 \geq 0.35$ (large effect) (Hair *et al.,* 2019).

Table 3. The f-square test findings revealed that the influence of Adaptive Health HRM on Performance was minimal (0.017). In contrast, the influence of Adaptive Health HRM on Task-fit (3.297) and Resilience (2.905) was notably significant. Simultaneously, the influence of Task-fit on Resilience (0.252) and Resilience on Performance (0.278) was deemed moderate. The findings of these investigations suggest that Adaptive Health HRM significantly influences Task-fit and Resilience, whilst Resilience has a minor influence on Performance.

Table 4. Model Fit Test Results

Parameters	**Rule of Thumb**	**Parameter values**	**Remarks**
SRMR	< 0.10	0.060	Fit
d_ULS	> 0.05	1.172	Fit
d_G	> 0.05	0.840	Fit
Chi-square	X2 statistics ≥ X2table	1234,359 ≥ 36,415	Fit
NFI	Close to value 1	0.896	Fit
Q2 Predictive Relevance	• Q2 > 0, has predictive relevance • Q2 < 0, lacking predictive relevance • 0.02 (Weak), 0.15 (Moderate), 0.35 (Strong)	• Q2 Performance 0.737 > 0 • Q2 Resilience 0.743 > 0 • Q2 Task fit 0.767 > 0	Fit

The model fit assessment shown in table 4 indicates that the SRMR value of 0.060 and the NFI value of 0.896 meet the requirements for model fit. The d_ULS measurement of 1.172, d_G measurement of 0.840, and Chi-square statistic of 1,234.359 conform to the standards outlined in the sources used in this research. As a result, the model is considered appropriate for further investigation. Furthermore, the evaluation of predictive relevance reveals that the Q^2 values for the dimensions of Performance, Resilience, and Task-fit are 0.737, 0.743, and 0.767, respectively. The predictive significance of all values is strong, since they surpass 0.35. These findings suggest that the model has a strong predictive ability for all internal characteristics examined in the study.

Table 5. Determination Coefficient (R2) test results

Endogenous Variable	R-square (R2)	Variance Explained (%)	Residual Variance (%)
Performance	0.886	88,5%	11,5%
Resilience	0.744	74,3%	25,7%
Task-Fit	0.767	76,7%	23,3%

The built structural model has a strong prediction ability, as shown by the determination coefficient (R2) test results presented in table 5. The performance metric of healthcare professionals had the greatest determination coefficient of 0.885 (88.5%), followed by task-fit at 0.767 (76.7%) and resilience at 0.743 (74.3%). This indicates that the suggested model may account for a substantial amount of the variation in the endogenous construct, with little effect from external influences outside the study's scope.

3. Inner Model

Table 6. Direct Effect Coefficient Test Results

Structural Relationships (Pathways)	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	ρ Values
AHHRM -> Performance	0.096	0.096	0.058	1.666	0.096
AHHRM -> Resilience	0.863	0.863	0.020	42.886	0.000
AHHRM -> Task Fit	0.876	0.876	0.021	42.541	0.000
Resilience -> Performance	0.439	0.440	0.064	6.846	0.000
Task Fit -> Performance	0.438	0.437	0.059	7.367	0.000

The findings from the structural model assessment in Table 6 reveal that AHHRM does not have a significant direct influence on health worker performance (β = 0.096; t = 1.666; p = 0.096). Nevertheless, AHHRM had a markedly significant positive effect on task fit (β = 0.876; t = 42.541; p = 0.000) and resilience (β = 0.863; t = 42.886; p = 0.000). Moreover, the efficacy of healthcare professionals was shown to be favourably and substantially affected by task alignment (β = 0.438; t = 7.367; p = 0.000) and resilience (β = 0.439; t = 6.846; p = 0.000). The findings indicate that the effect of AHHRM on performance is mostly facilitated by the enhancement of personal and work resources, namely resilience and task alignment, rather than via direct influence pathways.

Furthermore, indirect impact analysis was conducted to determine the degree to which task-fit and resilience served as mediators of health professionals' performance. The bootstrapping method in SEM-PLS was used to perform mediation analysis, assessing the coefficient of the indirect effects pathway (specific indirect effects), t-statistic, and p-value. The findings are shown in Table 7:

Table 7. Results Indirect Mediation Effect

Structural Relationships (Mediation Pathways)	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	ρ Values
AHHRM -> Task Fit -> Performance	0.383	0.383	0.054	7.157	0.000
AHHRM -> Resilience -> Performance	0.378	0.379	0.055	6.885	0.000

Table 7. The findings of the indirect effect study demonstrate that AHHRM positively and significantly influences health professionals' performance by improving task fit (β = 0.383; t = 7.157; □ = 0.000) and resilience (β = 0.378; t = 6.885; □ = 0.000). These findings indicate that AHHRM improves health workers' performance by better aligning personal skills with professional demands and strengthening their psychological resilience

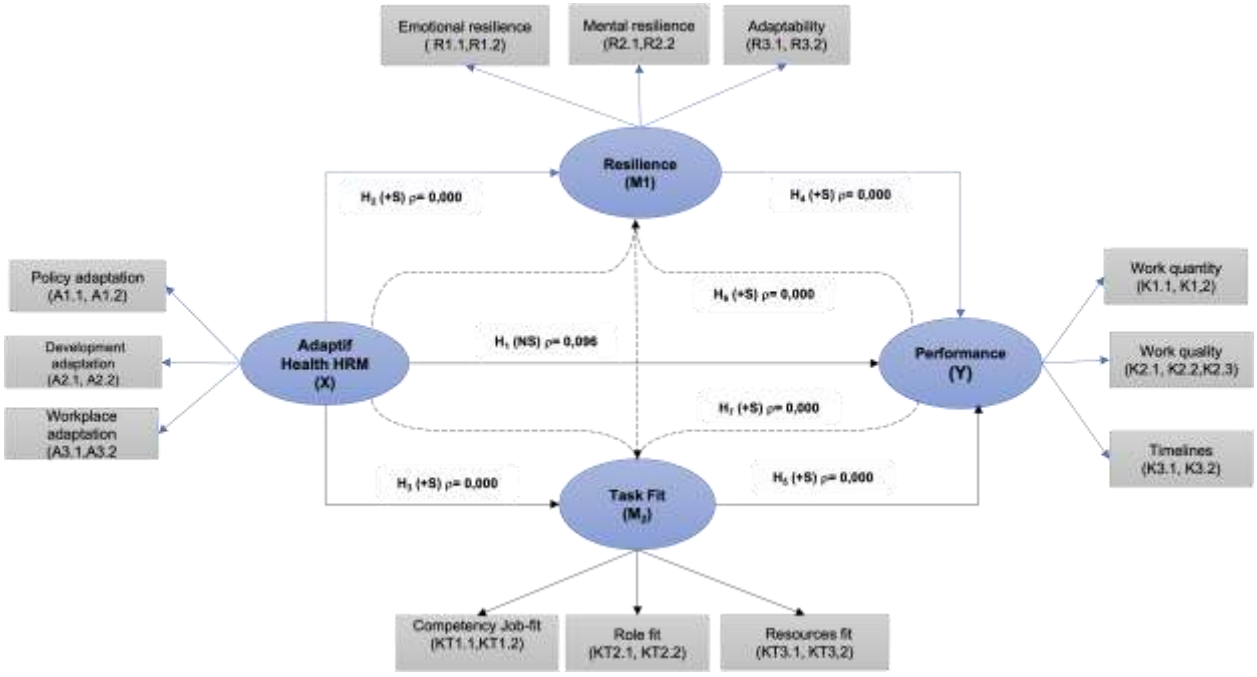

Figure 1. Research Results Model

This research has effectively developed and presented an innovative framework referred to as the HEART Model (Health HRM, Emotional-mental resilience, Adaptability, Role-resources fit, and Task performance) derived from the comprehensive outcomes of the structural model evaluation. This model presents a groundbreaking empirical paradigm that clarifies how the efficacy of health professionals is affected by the amalgamation of management strategies, psychological capabilities, and operational coherence. The model is based on unique findings on the influence of complete mediation on structural systems. Health HRM and Adaptability: AHHRM (X) is evaluated based on policy, development, and workplace adaption as the core basis of the model, although it does not have a direct impact on Performance (Y). Adaptive HRM policies can only enhance performance if they are effectively transformed into two mediating components: the psychological aspect (resilience) and the operational aspect (Task-Fit). The innovation of the HEART Model is focused on Resilience and Task-Fit. The HEART Model emphasises that to attain peak health service efficacy, policymakers should focus on improving regulations (HRM) while also preserving the organization's "heartbeat," which entails balancing staff mental health (resilience) with work capacity preparedness (Task-Fit).

DISCUSSION

The assessment of the structural model in this research uncovers an intriguing occurrence linked to the efficacy of health professionals and AHHRM. The findings of this analysis reveal that the direct channel from AHHRM to performance is statistically

negligible. This empirical data challenges the traditional beliefs in strategic human resource management (SHRM) that often oversimplify the idea that the adoption of flexible HR policies would promptly enhance organisational performance [20] . Conversely, these findings indicate that changes to HR administrative procedures do not possess the "independent capability" to directly affect the performance outcomes of health professionals in facility environments.

The statistical parameters experience a significant alteration when the mediating mechanism is included into a model, as seen by AHHRM. This alteration has a profound and favourable influence on both the meditator (full meditation), notably resilience and task fit. The empirical underpinning of the suggested innovative model, the HEART Model (Health HRM, Emotional-mental resilience, Adaptability, Role-resource fit, and Task performance), is this ideal mediation mechanism. The ultimate value of AHHRM is predicated upon the effective translation of the policy into personal resources (resilience) and work resources (task fit alignment). It serves as a latent structural catalyst.

In principle, the HEART Model's ideal mediation mechanism efficiently includes and bridges two organisational theories: the Task-Technology Fit (TTF) framework and the Job Demands-Resources (JD-R) theory.

Initially, the transmission of HRM practices through the resilience variable is consistent with the motivational process outlined in the JD-R theory, which posits that adaptive HRM policies serve as external organisational resources that are internalised by individuals into resilient personal resources [21]. The healthcare industry is naturally high-stress, typified by substantial cognitive workloads, variable service needs, and quick regulatory changes. An AHHRM system that is implemented via flexible policies and workplace development acts as an organisational resource that supports the development of workers' internal personal resources. Strategic human resource adaptation, as supported by the most current research, gives the vital safety net to foster emotional and mental resilience, hence minimising burnout phenomena and maintaining the stability of the quality of work of medical people under pressure [22–24].

Second, the structural bridge to Task-Fit underlines the importance of psychological capability living alongside operational alignment. A dissonance between the everyday resources at hand and the essential skills of healthcare professionals will lead to diminished production, regardless of their great resilience. Organisations may attain ideal alignment among tasks, personnel, and resources (task-person-resource alignment) by the execution of job role modifications, flexible training, and resource allocation, which are characteristic of adaptive human resource management. This operational synergy is directly linked to heightened work volumes, enhanced precision, and rigorous compliance with clinical schedules [25–27].

Ultimately, the HEART model framework illustrates that the essence of healthcare sustainability relies on a dual-engine structure. Management cannot simply amend regulations from a hierarchical perspective; instead, they must create policies that systematically enhance the internal psychological resilience of their employees and dismantle structural obstacles to the performance of everyday activities in the workplace.

CONCLUSION

AHHRM (Adaptive Health Human Resources Management) does not enhance the performance of health professionals directly; nevertheless, it significantly impacts resilience and task-fit, hence exerting an indirect influence via these factors. Resilience and task alignment have been shown to be crucial elements in improving the efficacy of healthcare professionals and mediating the impact of AHHRM. These results confirm a strong theoretical connection between the Task-Technology Fit (TTF) framework and the Job Demands-Resources (JD-R) theory, highlighting the need of protecting employees' mental resilience and structural coherence to sustain performance. Thus, to attain sustainable performance, businesses must emphasise adaptive HRM strategies that improve task appropriateness and strengthen resilience. Future investigations should use a longitudinal methodology and include adaptive leadership, regulatory influences, and incentives to expand the predictive and generalised scope of the suggested HEART Model.

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AUTHOR CONTRIBUTIONS

Rahman: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing—Original Draft Preparation.

Suhadi: Supervision, Methodology, Writing—Review & Editing.

Nurul Syahriani Salahuddin: Data Validation, Writing—Review & Editing.

Dian Mawarni: Data Curation, Writing—Review & Editing.

Jumakil: Formal Analysis, Validation, Writing—Review & Editing.

Agnes Mersatika Hartoyo: Supervision, Validation, Project Administration.

Conflict of interest

The authors declare no conflict of interest.

ETHICS STATEMENT

This study was approved by the Health Research Ethics Committee of the Indonesian Public Health Association (IAKMI), Southeast Sulawesi Province, Indonesia (Approval No. 51/KEPK-IAKMI/V/2026, dated May 31, 2026). The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Informed consent was obtained from all participants prior to data collection.

DATA AVAILABILITY STATEMENT

The data supporting the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to confidentiality and privacy considerations concerning the participating healthcare workers and healthcare institutions.

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