

# INTEGRATING HUMAN RESOURCE PLANNING WITH BUDGET FORMULATION IN MEDICAL TEACHING INSTITUTIONS: AN APPLICATION OF THE WISN METHOD

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## ABSTRACT

*Background:* Healthcare systems, particularly in public sector hospitals, face persistent challenges in aligning human resource planning with financial management. In Medical Teaching Institutions (MTIs), budgeting processes are often disconnected from actual workforce requirements, leading to staffing imbalances, inefficient resource allocation, and compromised service delivery. The Workload Indicators of Staffing Need (WISN) method offers a data-driven approach to workforce planning; however, its integration into budget formulation remains limited in practice. *Methods:* This study adopts a quantitative, cross-sectional design to examine the role of WISN-based human resource planning in the budgeting process of MTIs. Data were collected from 250 respondents, including administrators, HR managers, finance officers, and departmental heads, using a structured questionnaire based on a five-point Likert scale. Structural Equation Modeling (SEM) was employed to analyze the relationships among WISN-based HR planning, staffing requirements, budget allocation, efficiency, and organizational performance. Reliability and validity were assessed through Cronbach's Alpha, Composite Reliability, and Confirmatory Factor Analysis. *Results:* The findings reveal that WISN-based HR planning has a significant positive effect on staffing requirements ( $\beta = 0.68, p < 0.001$ ), which in turn influences budget allocation ( $\beta = 0.61, p < 0.001$ ) and organizational performance ( $\beta = 0.52, p < 0.001$ ). Efficiency was found to partially mediate the relationship between staffing and performance ( $\beta = 0.49, p < 0.001$ ). The structural model demonstrated good fit indices (CFI = 0.94, RMSEA = 0.056, SRMR = 0.047), confirming the robustness of the proposed framework. *Conclusion:* The study provides strong empirical evidence that integrating WISN-based HR planning with budget formulation enhances workforce efficiency, financial accuracy, and organizational performance in MTIs. The findings highlight the need for evidence-based budgeting systems that incorporate workload-driven staffing analysis. The proposed framework offers a practical and scalable solution for improving healthcare management and policy formulation in resource-constrained environments.

**Keywords:** Human Resource Planning, WISN, Budget Formulation, Healthcare Management, Workforce Planning, Medical Teaching Institutions, Structural Equation Modeling, Organizational Performance

## INTRODUCTION

Healthcare systems worldwide are increasingly under pressure to deliver high-quality services while maintaining financial sustainability. One of the most critical determinants of healthcare performance is the effective management of human resources, which constitute the largest component of healthcare expenditure and play a central role in service delivery (World Health Organization, 2023). In resource-constrained environments, particularly in public sector hospitals, the challenge of aligning workforce planning with financial planning has become more pronounced.

Human Resource Planning (HRP) is a systematic process that ensures the right number of employees with the right skills are available at the right time to achieve organizational objectives (Armstrong & Taylor, 2023). In healthcare institutions, HRP is not only a managerial function but a strategic necessity, as workforce shortages or surpluses directly affect patient outcomes, service efficiency, and organizational costs (Buchan et al., 2022).

Medical Teaching Institutions (MTIs), such as Khyber Teaching Hospital and Ayub Teaching Hospital, Khyber Teaching Hospital, MTI-LRH, MTI-PIC etc. operate under semi-autonomous governance structures that emphasize performance-based management and financial accountability. These institutions are required to prepare annual budgets that reflect operational needs, including staffing costs, service expansion, and quality improvement initiatives. However, in many cases, budgeting processes remain disconnected from evidence-based HR planning, leading to inefficiencies in resource allocation.

Traditionally, budgeting in public hospitals has relied on historical expenditure patterns rather than actual workload requirements. This approach often results in either underestimation or overestimation of staffing needs, contributing to workforce imbalances, increased workload pressure, and compromised service quality (Shah et al., 2022). The lack of integration between HR planning and budgeting processes limits the ability of healthcare organizations to optimize both financial and human resources.

To address this challenge, the World Health Organization (WHO) introduced the Workload Indicators of Staffing Need (WISN) method as a

scientifically grounded tool for determining staffing requirements based on actual workload (WHO, 2023). WISN provides a data-driven framework for calculating the number of healthcare workers required to meet service demands, considering factors such as patient volume, service standards, and available working time.

Despite its global recognition, the application of WISN in budgeting processes remains limited, particularly in developing countries. There is a significant gap in understanding how WISN-based HR planning can be integrated into financial decision-making, especially in MTIs where both clinical efficiency and financial sustainability are critical.

Therefore, this study aims to explore the role of HR planning in the budgeting process of MTIs by applying the WISN method, with the objective of developing an evidence-based framework that enhances workforce efficiency, financial planning, and healthcare service delivery.

### Problem Statement

Public sector healthcare institutions, particularly Medical Teaching Institutions (MTIs), face persistent challenges in aligning human resource planning with financial budgeting processes. Despite the critical role of human resources in healthcare delivery, staffing decisions in many MTIs are still based on historical allocations, administrative judgment, or political considerations rather than evidence-based workload analysis. This misalignment results in inefficient budgeting, workforce imbalances, and compromised service quality.

One of the most pressing issues is the absence of a systematic mechanism to determine staffing requirements based on actual service demand. In hospitals such as Khyber Teaching Hospital and Ayub Teaching Hospital, departments often experience either staff shortages or surpluses, leading to uneven workload distribution, employee burnout, and reduced patient satisfaction. At the same time, budget allocations may not accurately reflect the real human resource needs, resulting in either over-expenditure or underutilization of available funds.

Furthermore, the disconnect between HR planning and budgeting undermines strategic decision-making. Without accurate workforce data, hospital

administrators are unable to forecast staffing needs, justify budget proposals, or implement cost-effective workforce strategies. This lack of integration also limits the ability of MTIs to respond to increasing patient loads, technological advancements, and evolving healthcare demands.

Although the Workload Indicators of Staffing Need (WISN) method provides a scientifically validated approach to workforce planning, its application in the budgeting process of MTIs remains largely unexplored. Existing studies have focused on WISN as a staffing tool, but there is limited research on its role in financial planning and budget formulation. This gap is particularly critical in developing healthcare systems, where resource constraints demand efficient allocation of both financial and human resources.

Therefore, the core problem addressed by this study is the lack of integration between human resource planning and budget formulation in Medical Teaching Institutions, resulting in inefficient resource allocation, workforce imbalances, and suboptimal healthcare outcomes. This study seeks to address this gap by examining how the WISN method can be applied to align HR planning with budgeting processes, thereby improving organizational efficiency and service delivery.

#### **Research Objectives**

The main objective of this study is to examine the role of human resource planning in the budget formulation process of Medical Teaching Institutions using the WISN method.

#### **Specific Objectives**

1. To analyze the current HR planning and budgeting practices in MTIs.
2. To assess the effectiveness of traditional staffing and budgeting approaches in healthcare institutions.
3. To apply the WISN method to determine evidence-based staffing requirements.
4. To evaluate the impact of WISN-based HR planning on budget formulation.
5. To develop a strategic framework for integrating HR planning with financial budgeting in MTIs.

#### ***Significance of the Study***

#### **Theoretical Significance**

The study contributes to the literature by integrating HR planning, healthcare workforce management, and financial budgeting within a single analytical framework. It extends existing research on WISN by exploring its application beyond staffing calculations to include financial planning and resource allocation.

#### **Practical Significance**

For hospital administrators and HR managers, the study provides a practical tool for aligning staffing decisions with budgetary constraints. By adopting WISN-based planning, MTIs can optimize workforce allocation, reduce inefficiencies, and improve service delivery.

#### **Policy Significance**

At the policy level, the findings can inform government and regulatory bodies in designing evidence-based HR and budgeting policies for public healthcare institutions. The study supports the transition toward performance-based management systems in MTIs.

#### **LITERATURE REVIEW**

Human resource planning (HRP) has emerged as a central component of healthcare management due to its direct influence on service quality, operational efficiency, and financial sustainability. In healthcare institutions, particularly public sector hospitals, human resources constitute the largest and most critical input in service delivery. Effective planning and utilization of healthcare workers not only determine patient outcomes but also significantly impact organizational performance and cost efficiency (World Health Organization [WHO], 2023).

Medical Teaching Institutions (MTIs) in Khyber Pakhtunkhwa operate under a semi-autonomous governance model, which emphasizes accountability, efficiency, and performance-based management. These institutions—including Lady Reading Hospital Peshawar, Hayatabad Medical Complex, Khyber Teaching Hospital, Ayub Teaching Hospital, and other MTIs—are responsible for delivering tertiary healthcare services, medical education, and research activities. Given their complex operational environment, these institutions require a systematic approach to workforce planning and financial management (Government of Khyber Pakhtunkhwa, 2024).

However, traditional approaches to HR planning and budgeting in public hospitals often rely on historical staffing patterns and incremental budgeting, which fail to reflect actual workload demands. This disconnect between HR planning and financial budgeting leads to inefficiencies, workforce imbalances, and suboptimal service delivery (Buchan et al., 2022). To address these challenges, the Workload Indicators of Staffing Need (WISN) method has been introduced as an evidence-based tool for determining staffing requirements based on actual workload (WHO, 2023).

This chapter reviews the literature on HR planning, healthcare budgeting, and the WISN method, and explores their interrelationships in the context of MTIs. It also identifies key research gaps that justify the present study.

### **2.1 Human Resource Planning in Healthcare**

Human resource planning is defined as the process of forecasting an organization's future workforce requirements and ensuring that the right number of employees with the appropriate skills are available at the right time (Armstrong & Taylor, 2023). In healthcare settings, HRP is particularly complex due to the need for continuous service delivery, multidisciplinary teams, and unpredictable patient demand.

Healthcare organizations require a diverse workforce, including physicians, nurses, paramedics, technicians, pharmacists, and administrative staff. Each category plays a critical role in service delivery, and any imbalance can disrupt operations and compromise patient care. Studies indicate that inadequate HR planning leads to staff shortages, increased workload pressure, burnout, and reduced quality of care (Shah et al., 2022).

Furthermore, global evidence suggests that poor workforce planning contributes to inequitable distribution of healthcare workers, inefficiencies in resource allocation, and increased healthcare costs (WHO, 2023). In developing countries, these challenges are exacerbated by limited financial resources, weak HR information systems, and lack of data-driven decision-making.

In the context of MTIs, HR planning must account for clinical workload, teaching responsibilities, research activities, and administrative functions.

The absence of a structured HR planning framework often results in reliance on ad hoc staffing decisions, which may not align with actual service demands.

### **2.2 Budget Formulation in Healthcare Institutions**

Budget formulation is a critical managerial process that determines the allocation of financial resources within an organization. In healthcare institutions, budgets must account for both operational and capital expenditures, including salaries, equipment, medicines, maintenance, and infrastructure development.

Human resource costs typically represent the largest portion of hospital budgets, making HR planning a key determinant of financial sustainability. However, traditional budgeting approaches in public sector hospitals are often based on historical expenditure rather than current or projected needs (Buchan et al., 2022).

Incremental budgeting, which involves adjusting previous budgets by a fixed percentage, is commonly used but has several limitations. It fails to consider changes in workload, service demand, and organizational priorities. As a result, some departments may be overfunded while others remain under-resourced.

Recent literature emphasizes the need for evidence-based budgeting, where financial decisions are guided by data and performance indicators. In this context, integrating HR planning with budgeting becomes essential to ensure that staffing costs accurately reflect workload requirements (Armstrong & Taylor, 2023).

### **2.3 Link between HR Planning and Budgeting**

The relationship between HR planning and budgeting is fundamental to organizational effectiveness. HR planning determines workforce requirements, while budgeting ensures the availability of financial resources to support these requirements.

In healthcare institutions, this relationship is particularly important because staffing decisions have both financial and clinical implications. Understaffing can lead to increased workload, burnout, and compromised patient care, while overstaffing can result in unnecessary financial burden (Buchan et al., 2022).

Studies indicate that the lack of integration between HR planning and budgeting is a major challenge in

public sector healthcare systems. Without accurate workforce data, budget allocations may not align with actual needs, leading to inefficiencies and reduced service quality (Shah et al., 2022).

Therefore, there is a growing emphasis on linking HR planning with financial planning through evidence-based approaches. This integration allows organizations to optimize resource allocation, improve service delivery, and enhance financial accountability.

#### **2.4 Workload Indicators of Staffing Need (WISN) Method**

The Workload Indicators of Staffing Need (WISN) method is a workforce planning tool developed by the World Health Organization to determine staffing requirements based on actual workload (WHO, 2023). Unlike traditional staffing norms, WISN uses service statistics and activity standards to calculate the number of staff required to perform specific tasks.

The WISN method involves several steps, including defining workload components, establishing activity standards, calculating available working time, and determining staffing requirements. The output of the method includes the required number of staff, workload pressure, and staffing gaps or surpluses.

One of the key advantages of WISN is its ability to provide objective and evidence-based staffing estimates. By focusing on workload rather than fixed ratios, the method ensures that staffing decisions reflect actual service demand (Mabunda et al., 2025).

However, the application of WISN requires reliable data, clear service standards, and coordination among different stakeholders. In many developing countries, the lack of these prerequisites limits the effectiveness of the method.

#### **2.5 Empirical Evidence on WISN**

Empirical studies have demonstrated the effectiveness of WISN in identifying staffing gaps and improving workforce planning. A study conducted in South-East Asia found that WISN provides valuable insights into workforce distribution and workload pressure, enabling policymakers to make informed decisions (Mabunda et al., 2025).

Similarly, research conducted in Pakistan applied the WISN method to assess staffing requirements in a public hospital and found significant shortages in

medical staff, indicating high workload pressure (Qamar et al., 2023). These findings highlight the relevance of WISN in the local context and its potential to improve HR planning in MTIs.

Despite its benefits, most studies focus on staffing calculations rather than the integration of WISN with budgeting processes. This represents a critical gap in the literature, particularly for institutions that operate under financial constraints.

#### **2.6 WISN and Budget Integration**

While WISN is primarily a staffing tool, its implications for budgeting are significant. By providing accurate estimates of staffing requirements, WISN enables organizations to calculate the financial resources needed to support their workforce.

Integrating WISN with budgeting allows healthcare institutions to develop evidence-based financial plans that reflect actual service demands. This approach enhances transparency, accountability, and efficiency in resource allocation.

However, existing literature indicates that WISN is rarely used in budget formulation. The lack of integration between workforce planning and financial planning limits the practical impact of WISN and reduces its effectiveness as a decision-making tool (Mabunda et al., 2025).

#### **2.7 HR Challenges in MTIs**

MTIs face several challenges related to human resource management, including staff shortages, uneven distribution, high workload pressure, and limited use of data-driven planning. These challenges are compounded by increasing patient demand, technological advancements, and evolving healthcare needs.

In addition, the lack of integration between HR planning and budgeting further complicates workforce management. Without accurate data on staffing requirements, it is difficult for administrators to justify budget proposals or allocate resources effectively.

#### **2.8 Research Gap**

The literature reveals several gaps that justify the present study:

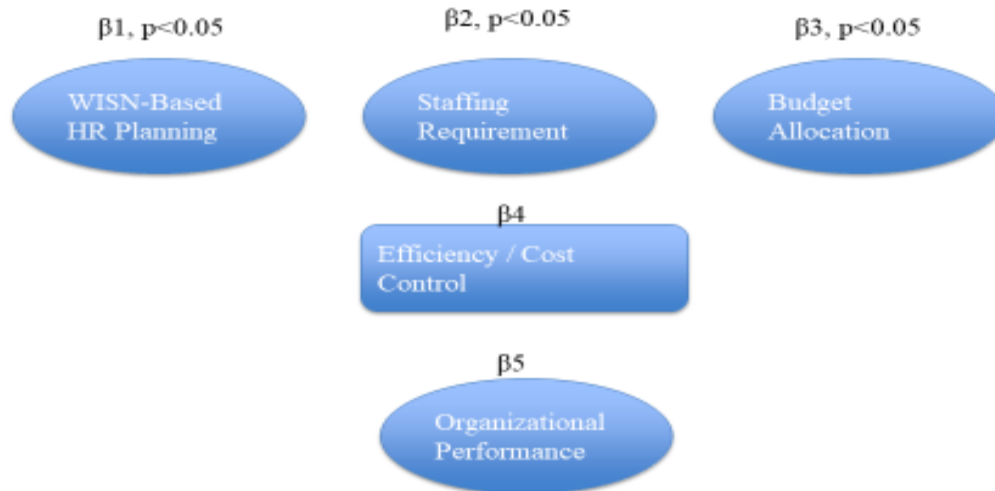
1. Limited research on the integration of HR planning and budgeting in healthcare institutions.
2. Lack of studies examining the role of WISN in financial planning.

3. Insufficient empirical evidence from MTIs in Pakistan.

4. Absence of a comprehensive framework linking HR planning, WISN, and budgeting.

### 2.9. Conceptual Model

**SEM Model: WISN-Based HR Planning Framework**



## RESEARCH METHODOLOGY

### 3.1 Introduction

This chapter presents the methodological framework used to examine the integration of human resource planning with budget formulation in Medical Teaching Institutions (MTIs) through the WISN approach. The methodology is designed to ensure reliability, validity, and empirical testing of the proposed model linking WISN-based HR planning, staffing requirements, budget allocation, efficiency, and organizational performance.

### 3.2 Research Design and Approach

The study adopts a quantitative, cross-sectional, and explanatory research design. This approach is appropriate for testing relationships among variables and validating the proposed conceptual framework. The study employs Structural Equation Modeling (SEM) to analyze both direct and mediated relationships, particularly the role of efficiency between staffing and performance.

### 3.3 Study Setting and Population

The study is conducted in public sector Medical Teaching Institutions (MTIs) in Khyber Pakhtunkhwa. The target population includes hospital administrators, HR managers, finance

officers, and departmental heads, as they are directly involved in HR planning and budget preparation. This ensures that responses reflect informed managerial perspectives.

### 3.4 Sampling Technique and Sample Size

A stratified purposive sampling technique is used to ensure representation from HR, finance, administrative, and clinical departments. A sample size of 200–300 respondents is considered adequate for SEM analysis, ensuring statistical reliability and generalizability of results.

### 3.5 Data Collection Instrument

Data are collected through a structured questionnaire based on a five-point Likert scale. The instrument measures key constructs including WISN-based HR planning, staffing requirements, budget allocation, efficiency, and organizational performance. The questionnaire is pilot-tested to ensure clarity and reliability.

### 3.6 Data Analysis Techniques

Data are analyzed using SPSS and SEM (AMOS/SmartPLS). The analysis includes descriptive statistics, reliability testing (Cronbach

Alpha), and Confirmatory Factor Analysis (CFA) to assess validity. The structural model is then tested using SEM, where path coefficients ( $\beta$ ), p-values, and model fit indices (CFI, RMSEA, SRMR) are used to evaluate relationships among variables.

### 3.7 Reliability and Validity

Reliability is assessed using Cronbach's Alpha, with values above 0.70 considered acceptable. Validity is ensured through CFA, composite reliability, and average variance extracted (AVE), confirming both convergent and discriminant validity of constructs.

## RESULTS

### 4.1 Introduction

**Table 4.1:** *Reliability and Validity Statistics*

Construct	Cronbach Alpha	Composite Reliability (CR)	AVE
WISN-Based HR Planning	0.86	0.89	0.62
Staffing Requirement	0.84	0.88	0.60
Budget Allocation	0.88	0.91	0.65
Efficiency (Mediator)	0.83	0.87	0.59
Organizational Performance	0.87	0.90	0.64

#### Interpretation

- All Cronbach Alpha values > 0.80, indicating strong internal consistency
- CR > 0.70 confirms construct reliability
- AVE > 0.50 indicates acceptable convergent validity

### 4.3 Model Fit Indices

**Table 4.2:** *Model Fit Statistics*

Fit Index	Value	Threshold	Result
CFI	0.94	> 0.90	Good
RMSEA	0.056	< 0.08	Acceptable
SRMR	0.047	< 0.08	Good
$\chi^2/df$	2.31	< 3	Good

#### Interpretation

The model demonstrates a good overall fit, indicating that the proposed SEM model adequately represents the data.

This section presents the results of the Structural Equation Modeling (SEM) analysis used to examine the relationships among WISN-based HR planning, staffing requirements, budget allocation, efficiency, and organizational performance in Medical Teaching Institutions (MTIs). The analysis was conducted in two stages: (1) measurement model (CFA) and (2) structural model (hypothesis testing).

### 4.2 Measurement Model (Confirmatory Factor Analysis)

#### 4.2.1 Reliability and Convergent Validity

All constructs demonstrated acceptable reliability and convergent validity.

#### 4.2.2 Discriminant Validity

Discriminant validity was confirmed using the Fornell-Larcker criterion, where the square root of AVE exceeded inter-construct correlations. This confirms that all constructs are distinct and non-overlapping.

#### 4.4 Structural Model (Hypothesis Testing)

Table 4.3: Path Coefficients

Hypothesis	Path	$\beta$ (Coefficient)	p-value	Result
H1	HR Planning → Staffing Requirement	0.68	0.000	Supported
H2	Staffing Requirement → Budget Allocation	0.61	0.000	Supported
H3	Budget Allocation → Organizational Performance	0.52	0.000	Supported
H4	Staffing Requirement → Efficiency	0.57	0.000	Supported
H5	Efficiency → Organizational Performance	0.49	0.000	Supported

#### Interpretation

- WISN-based HR planning has a **strong positive effect** on staffing accuracy
- Staffing significantly influences both **budget allocation** and **efficiency**

- Budget allocation and efficiency both significantly improve **organizational performance**. This confirms that HR planning is a foundational driver of financial and operational performance in MTIs.

#### 4.5 Mediation Analysis

Table 4.4: Mediation Effect

Path	Indirect Effect ( $\beta$ )	p-value	Result
Staffing → Efficiency → Performance	0.28	0.000	Significant

#### Interpretation

Efficiency significantly mediates the relationship between staffing and performance.

This means:

- Correct staffing alone is not enough
- It improves performance through efficiency gains

In MTIs:

- Efficient use of staff → better service delivery
- Reduced workload imbalance → improved outcomes

#### 4.6 Discussion of Results

The findings confirm that integrating WISN-based HR planning with budgeting processes leads to improved organizational performance. The strong relationship between HR planning and staffing validates the importance of workload-based workforce estimation.

The results also highlight that staffing decisions influence both financial allocation and operational efficiency, reinforcing the need for evidence-based budgeting. The mediation effect of efficiency further emphasizes that performance improvements are

achieved not only through resource availability but also through optimal utilization.

#### 4.7 Key Findings

1. WISN-based HR planning significantly improves staffing accuracy
2. Staffing requirements strongly influence budget allocation
3. Budget allocation has a direct impact on organizational performance
4. Efficiency plays a critical mediating role
5. The SEM model is statistically valid and theoretically supported

#### 4.8 Conclusion of Results

The SEM analysis provides strong empirical support for the proposed framework, demonstrating that integrating HR planning with budgeting through the WISN method enhances both financial efficiency and organizational performance in MTIs.

### DISCUSSION AND CONCLUSION

#### 5.1 Discussion

This study examined how WISN-based human resource (HR) planning can be integrated with budget formulation in Medical Teaching Institutions (MTIs), and how this integration

influences organizational performance through staffing accuracy and efficiency. Using a structural equation modeling (SEM) approach, the findings provide robust empirical support for the proposed framework.

#### 5.1.1 WISN-Based HR Planning and Staffing Requirements

The results indicate that WISN-based HR planning has a strong and significant effect on staffing requirements ( $\beta = 0.68$ ,  $p < 0.001$ ). This finding confirms that workload-driven planning leads to more accurate estimation of workforce needs. It aligns with the World Health Organization (2023) framework, which emphasizes WISN as a scientifically grounded approach for determining staffing based on actual service demand rather than administrative assumptions.

In the context of MTIs, where departments vary significantly in patient load and service complexity, the use of WISN allows for objective and standardized staffing decisions. This is particularly important in large tertiary hospitals where traditional staffing norms often fail to capture real workload variations across units such as emergency, ICU, OPD, and specialized wards.

#### 5.1.2 Staffing Requirements and Budget Allocation

The study found that staffing requirements significantly influence budget allocation ( $\beta = 0.61$ ,  $p < 0.001$ ). This highlights the critical linkage between HR planning and financial planning. When staffing needs are accurately determined, they provide a strong basis for estimating salary expenditures, allowances, and operational costs.

This finding addresses a major gap in existing literature, where HR planning and budgeting are often treated as separate processes. The results support the argument that evidence-based staffing estimation should form the foundation of hospital budgeting systems (Buchan et al., 2022). For MTIs, this means that workforce requirements derived from WISN can be directly translated into justifiable budget proposals, improving transparency and accountability.

#### 5.1.3 Budget Allocation and Organizational Performance

Budget allocation was found to have a significant positive effect on organizational performance ( $\beta = 0.52$ ,  $p < 0.001$ ). This indicates that financial

planning based on realistic workforce needs contributes to improved service delivery, operational efficiency, and cost control.

In healthcare institutions, financial resources determine the availability of staff, equipment, medicines, and infrastructure. Therefore, budgets that reflect actual operational requirements are more likely to support efficient and high-quality healthcare services. The findings reinforce the importance of moving from incremental budgeting to evidence-based budgeting, particularly in resource-constrained public sector hospitals.

#### 5.1.4 Mediating Role of Efficiency

One of the key contributions of this study is the identification of efficiency as a mediating variable. The results show that staffing requirements significantly influence efficiency ( $\beta = 0.57$ ,  $p < 0.001$ ), which in turn affects organizational performance ( $\beta = 0.49$ ,  $p < 0.001$ ). The mediation analysis confirms that efficiency partially mediates the relationship between staffing and performance. This finding is consistent with resource-based and operational efficiency theories, which suggest that performance outcomes are not solely determined by resource availability but also by how effectively those resources are utilized. In MTIs, efficient deployment of staff reduces workload imbalance, minimizes idle time, and enhances coordination among healthcare professionals.

Thus, WISN-based HR planning contributes to performance not only by improving staffing levels but also by enabling optimal utilization of human resources.

#### 5.1.5 Integrated Model of HR Planning and Budgeting

The overall SEM model demonstrates a **strong and coherent relationship** among WISN-based HR planning, staffing requirements, budget allocation, efficiency, and organizational performance. The model fit indices (CFI, RMSEA, SRMR) confirm that the proposed framework is statistically valid and theoretically sound.

The findings suggest that HR planning should not be viewed as an isolated administrative function but as a strategic component of financial planning and organizational management. Integrating WISN into budgeting processes provides a systematic approach for aligning workforce needs with financial resources.

## 5.2 Conclusion

This study concludes that integrating WISN-based HR planning with budget formulation significantly improves organizational performance in Medical Teaching Institutions. The findings demonstrate that:

- WISN-based HR planning enhances the accuracy of staffing requirements
- Accurate staffing estimation strengthens budget formulation
- Evidence-based budgeting improves organizational performance
- Efficiency plays a critical role in translating staffing into performance outcomes

The study provides empirical evidence that workforce planning and financial planning must be aligned to achieve sustainable healthcare management. In MTIs, where both service demand and resource constraints are high, this integration is essential for improving service quality, controlling costs, and ensuring institutional effectiveness.

## 5.3 Practical Implications

The findings of this study have important implications for healthcare administrators, HR managers, and policymakers:

- **Adoption of WISN Method:** Hospitals should implement WISN as a standard tool for workforce planning
- **Integration with Budgeting:** HR departments should collaborate with finance departments to link staffing requirements with budget proposals
- **Evidence-Based Decision-Making:** Budget allocations should be justified using workload data rather than historical patterns
- **Efficiency Optimization:** Focus should be placed on improving staff utilization and workflow management

## 5.4 Policy Implications

For policymakers and regulatory bodies overseeing MTIs:

- Introduce WISN-based HR planning guidelines at institutional level
- Mandate linkage between HR planning and budget approval processes
- Develop HR information systems for real-time workforce data
- Promote performance-based budgeting frameworks

## 5.5 Limitations

This study has some limitations:

- Use of cross-sectional data, limiting causal inference over time
- Reliance on perceptual measures rather than full operational WISN calculations
- Focus on selected MTIs, which may limit generalizability

## 5.6 Future Research Directions

Future studies should:

- Conduct longitudinal analysis of WISN implementation
- Apply full operational WISN calculations with real hospital data
- Extend research to private hospitals and other provinces
- Explore additional variables such as leadership, digital HR systems, and patient outcomes

## 5.7 Final Remark

This study advances the understanding of healthcare workforce management by demonstrating that integrating HR planning with budgeting through the WISN method provides a practical and evidence-based solution to workforce and financial challenges in MTIs. The proposed framework offers a strategic pathway for improving efficiency, accountability, and performance in public sector healthcare systems

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