
Transforming Healthcare Performance: The Intersection of Digital Innovation and Organizational Commitment in Laboratory and Radiology Departments

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ABSTRACT: Digital transformation is a crucial aspect for hospitals in the era of the Industrial Revolution 4.0. The implementation of a Hospital Information System (HIS) supports process flows in hospitals, enhancing health service delivery. The integration between tools and electronic medical records through HIS accelerates the service process, emphasizing patient safety. The bridging process between laboratory tools, radiology installations, and HIS is expected to improve service speed and accuracy based on patient safety. However, since the bridging process began in 2020, there has been no evaluation conducted. This study aims to evaluate the effect of digital transformation and employee capabilities on the performance of employees in the Laboratory and Radiology Installations at Hospital X. Using a quantitative approach, data were collected from 47 employees and analyzed through regression and path analysis to identify the relationships and effects between variables. The findings indicate that digital transformation and employee capabilities positively influence the performance of employees. The analysis also reveals that employee adaptation to digital procedures and new technologies is generally good, although there are areas needing improvement, such as troubleshooting and digital data interpretation. These results underscore the importance of strengthening both digital transformation initiatives and employee competencies to optimize health employee performance in hospital environments.

KEYWORDS: Digital Transformation, Organizational Commitment, Employee Performance, Healthcare Industry

INTRODUCTION

The healthcare industry has been greatly impacted by the quick development of the fourth industrial revolution, especially in terms of hospital acceptance of digital transformation. Simplifying hospital procedures, facilitating quicker and more accurate delivery of healthcare services, and enhancing patient safety all depend on the deployment of hospital information systems, or HIS. Hospitals that combine digital technologies with electronic medical records show improved patient outcomes and operational efficiency, per a study by Salgado et al. (2020). But there are advantages and disadvantages to this change, especially for divisions that depend significantly on technology integration, like Laboratory and Radiology Installations. Initiatives for digital transformation are currently causing major modifications to Hospital X's laboratory and radiology installations. These departments have implemented cutting-edge digital tools to connect radiology equipment, laboratory devices, and HIS. Although the goal of this integration is to improve service speed and accuracy, initial observations show implementation inefficiencies and irregularities. For example, inconsistent staff adaption has resulted in subpar performance due to a lack of thorough training and assistance. These occurrences are consistent with research by Carvalho et al. (2021), which highlights how important employee preparedness is to the success of digital transformations. Organizational dynamics can also be changed by digital transformation. Traditionally seen as a stabilizing factor throughout transitions, organizational dedication has begun to wane. Employee disengagement and poor performance might result from the stress that comes with adjusting to new technologies. According to a study by Zhang et al. (2022), digital transformation might increase staff turnover and fatigue if there is a lack of effective organizational support. This circumstance emphasizes the necessity of employing efficient organizational techniques to sustain Employee engagement and motivation throughout times of transition.

The deteriorating performance of healthcare professionals is one of the most urgent issues. Even though digital transformation holds out the promise of increased operational efficiency, the actual results are frequently disappointing. Employee performance has been adversely affected by elements like poor organizational support, unclear workflows, and insufficient training. The genuine advantages of digital transformation in healthcare settings and the part organizational commitment plays in reducing its negative impacts are both seriously called into question by this phenomena. The purpose of this study is to look at how organizational commitment and digital transformation affect the performance of medical staff in Hospital X's laboratory and radiology installations.

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It is anticipated that the results would shed light on the fundamental problems and make suggestions for maximizing healthcare digital transformation projects.

LITERATURE REVIEW

Digital Transformation

The term "digital transformation" describes how digital technologies are incorporated into many facets of an organization's operations, radically altering the way value is produced and services are provided. To increase productivity and decision-making, it entails using technologies like cloud computing, artificial intelligence (AI), data analytics, and electronic health records (EHRs) (Vial, 2019). Digital transformation in the healthcare industry seeks to improve resource allocation, expedite processes, and improve patient safety. However, infrastructural investment, staff training, and organizational preparedness are critical to its success. According to a study by Verhoef et al. (2021), in order to guarantee long-lasting performance gains, digital transformation needs to be in line with the organization's strategic objectives. Digital transformation has drawbacks despite its possible advantages. Its implementation may be hampered by established process disturbances, resistance to change, and a lack of technical expertise. Organizations that ignore these obstacles risk lower employee morale and inefficiencies, which would ultimately offset the expected advantages of digital transformation, claim Fitzgerald et al. (2020).

Organizational Commitment

Organizational commitment represents the psychological attachment and loyalty of employees to their organization. It is a critical factor in ensuring workforce stability, especially during times of change such as digital transformation. Meyer and Allen (1991) identify three components of organizational commitment: affective commitment, continuance commitment, and normative commitment. Affective commitment, driven by emotional attachment, is particularly relevant in fostering a supportive work environment during transitions. Research by Cascio and Montealegre (2016) indicates that digital transformation can weaken organizational commitment if not managed carefully. Employees may perceive new technologies as threats to job security or as burdens requiring significant effort to adapt. This perception can lead to disengagement and reduced performance. On the other hand, organizations that prioritize communication, provide adequate training, and involve employees in decision-making processes can maintain or even strengthen commitment during transformation (Alavi & Leidner, 2020).

Employee Performance

The effectiveness and efficiency with which employees complete their tasks in order to accomplish corporate goals is referred to as Employee performance. Productivity, quality, and flexibility are frequently used to describe high performance. In healthcare environments, Employee performance is strongly linked to patient outcomes and operational efficiency. Employee performance is impacted by digital transformation in two ways. By automating repetitive processes and offering decision-support tools, it can improve performance; yet, if not used properly, it can also cause stress and overwhelm among staff members. According to studies by Fonseca et al. (2020), elements like user-friendly solutions, sufficient training, and continuous technical support are essential for the digital transformation to be successful in enhancing performance. Additionally, there is a substantial role that organizational commitment plays in moderating the relationship between Employee performance and digital transformation. A study by Tarí et al. (2019) found that companies with high employee commitment have higher overall performance results and more seamless transitions. On the other hand, insufficient dedication may intensify opposition to change, resulting in a reduction in performance.

Relationship between Digital Transformation and Health Worker Performance

Digital transformation in healthcare involves the adoption of technologies like hospital management systems, telemedicine, and health apps to enhance efficiency, quality, and accessibility of healthcare services. For healthcare workers, digital transformation can affect how they work, interact with patients, and improve overall performance.

Impact:

- **Increased efficiency:** Technology enables healthcare workers to access patient data quickly, reduce waiting times, and minimize medical errors.
- **Improved service quality:** Telemedicine and cloud-based information systems enhance communication between healthcare workers and patients, leading to better care.
- **Easy access:** Digital transformation allows healthcare workers to provide faster and more responsive services to patients.

Digital Transformation has a positive impact on **healthcare workers' performance** by improving efficiency, quality, and service accessibility. The use of advanced technologies allows healthcare workers to provide better and faster care.

Relationship between Organizational Commitment and Health Worker Performance

Organizational commitment refers to the degree to which healthcare workers feel attached to the goals and values of the organization they work for. High levels of commitment can lead to increased motivation, job satisfaction, and performance. A strong commitment

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to the organization makes healthcare workers more focused on achieving shared goals and more motivated to provide quality services.

Impact:

- **Increased motivation:** High commitment encourages healthcare workers to work harder to achieve organizational goals, thus improving service quality.
- **Job satisfaction:** Healthcare workers who feel valued by their organization tend to have higher job satisfaction, which positively affects their performance.
- **Reduced turnover:** Strong organizational commitment can reduce staff turnover, leading to stability and continuity in healthcare services.

Organizational Commitment also plays a crucial role in improving **healthcare workers' performance** as it motivates them to work better, increases job satisfaction, and reduces turnover rates.

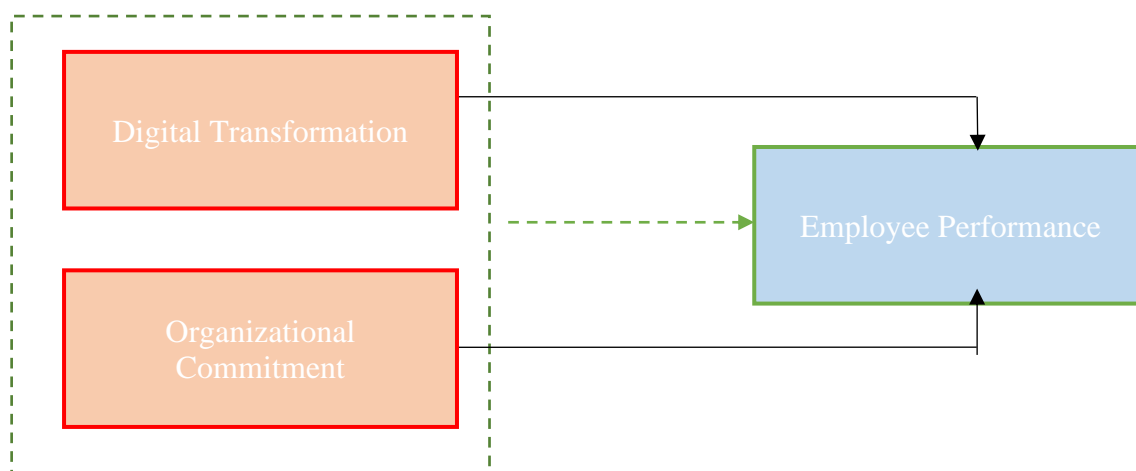


Figure 1. Research Model

RESEARCH FRAMEWORK

The conceptual framework of this study is based on the following hypothesized relationships:

- H1: Digital Transformation significantly influences Employee Performance.
- H2: Organizational Commitment significantly influences Employee Performance.
- H3: Digital Transformation and Organizational Commitment significantly influences Employee Performance.

RESEARCH METHODOLOGY

This study uses a quantitative research methodology to examine how organizational commitment and digital transformation affect employee performance. In order to investigate cause-and-effect links between variables, the study uses a causal-comparative research design. Multiple regression analysis is the main tool used for data analysis since it may be used to ascertain how several independent factors affect a single dependent variable.

Population and Sample

For this study, the population consists of all 47 Employees who work in Hospital X's Radiology Department. The entire population serves as the sample for this investigation because of its reasonable size. This method guarantees thorough data gathering from every member of the population and does away with the necessity for sampling approaches.

Data Collection

Data were collected through a structured questionnaire distributed to all 47 employees. The questionnaire was divided into four sections:

1. Demographic Information: Collecting basic information such as age, gender, and years of service.
2. Digital Transformation: Measuring perceptions of digital transformation initiatives within the department, using a 5-point Likert scale.
3. Organizational Commitment: Assessing the level of organizational commitment based on the three-component model (affective, continuance, and normative commitment).

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4. Employee Performance: Evaluating self-reported performance metrics, including productivity, adaptability, and quality of work.

Data Analysis

To determine the relationships between the independent factors, digital transformation and organizational commitment, and the dependent variable, employee performance, the collected data were analyzed using Partial Least Square Structural Equation Model (PLS-SEM) via Smart PLS software. This method is widely used in social sciences, including organizational studies, to examine complex models involving latent variables and assess both measurement and structural models. The analysis provides insights into the strength, direction, and significance of these relationships.

PLS-SEM Analysis Procedure:

- **Data Collection:** The data were first gathered from relevant sources, such as surveys or organizational performance records, ensuring that both independent variables (digital transformation and organizational commitment) and the dependent variable (employee performance) were accurately measured using validated indicators.
- **Measurement Model Assessment:** Before analyzing the structural relationships, the measurement model was evaluated to ensure the reliability and validity of the constructs:
 - **Reliability:** Internal consistency was assessed using Cronbach's Alpha and Composite Reliability (CR), with acceptable thresholds of 0.7 or higher.
 - **Convergent Validity:** This was evaluated through the Average Variance Extracted (AVE), which should be 0.5 or higher.
 - **Discriminant Validity:** The constructs were checked using the Fornell-Larcker Criterion or the Heterotrait-Monotrait (HTMT) ratio, ensuring that each construct was distinct from others.
- **Model Specification:** The PLS-SEM model was constructed in Smart PLS with employee performance as the dependent variable and digital transformation and organizational commitment as independent variables. This involved linking observed indicators to latent variables and specifying hypothesized relationships between constructs.
- **Structural Model Assessment:** The structural model was evaluated to understand the relationships between the independent and dependent variables:
 - **Path Coefficients:** These coefficients were calculated to indicate the strength and direction of the relationships.
 - **Significance Testing:** Bootstrapping (with 5,000 resamples) was conducted to determine the statistical significance of path coefficients through t-values and p-values.
 - **Explanatory Power:** R-Square (R²) values for the dependent variable were computed to determine how much variance in employee performance was explained by digital transformation and organizational commitment.
- **Analysis Execution:** Using Smart PLS software, the path coefficients, t-values, p-values, and R² were generated. The model's goodness-of-fit was assessed using the Standardized Root Mean Square Residual (SRMR) metric.
- **Interpretation:** The results were interpreted based on path coefficients and p-values:
 - A significant path coefficient (p-value < 0.05) indicates a meaningful relationship.
 - An insignificant path coefficient (p-value > 0.05) suggests that the independent variable does not significantly affect the dependent variable.

By employing Smart PLS, the study ensures a robust analysis of both the measurement and structural models, providing a comprehensive understanding of how digital transformation and organizational commitment influence employee performance.

RESULT AND DISCUSSION

Respondent Profile Overview

The following is data regarding the profile of respondents in this study:

Table 1. Profile Respondents

Category	Age	Number of Respondents
Age	20-30 years	15
	31-40 years	17
	41-50 years	15
Gender	Male	25
	Female	22
Years of Service	1-5 years	12
	6-10 years	14

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Category	Age	Number of Respondents
	11-15 years	11
	16-20 years	10

The study focuses on the radiology department of Hospital X, which consists of 47 Employees. These individuals were chosen as the research population due to the manageable size and their critical role in the organization. By including the entire population, this research aims to provide a comprehensive and unbiased understanding of the department's demographic structure.

1. Age Distribution

The respondents' ages range from 20 to 50 years, categorized into three groups:

- 20-30 years: Comprising 15 respondents (31.9%), this group represents the youngest members of the workforce, often at the beginning of their careers and potentially still in the learning and adaptation phase within the department.
- 31-40 years: Including 17 respondents (36.2%), this is the largest group, reflecting mid-career professionals who are likely to have substantial experience and are actively contributing to departmental efficiency.
- 41-50 years: Consisting of 15 respondents (31.9%), this group includes the most senior and experienced Employees, whose insights and expertise are critical to the department's success.

2. Gender Distribution

This age distribution ensures a balanced representation of perspectives across different career stages. The workforce in the radiology department includes:

- 25 male Employees (53.2%)
- 22 female Employees (46.8%)

This near-equal gender distribution highlights the diverse workforce in the department, enabling an analysis of gender-based differences in experiences, preferences, or challenges.

3. Years of Service

The length of service is categorized into four groups, indicating the respondents' levels of experience:

- 1-5 years: 12 respondents (25.5%) are relatively new to the department and might provide insights into the onboarding and training processes.
- 6-10 years: 14 respondents (29.8%) represent moderately experienced professionals who may have adjusted well to the department's workflows.
- 11-15 years: 11 respondents (23.4%) have significant experience, making them a vital group for evaluating long-term trends in job satisfaction or departmental processes.
- 16-20 years: 10 respondents (21.3%) are the most senior members, likely to offer deep insights into historical changes and the evolution of the department.

This distribution ensures that the study captures data across a range of tenure levels, enriching the analysis with both fresh and seasoned perspectives.

The radiology department staff of Hospital X forms the core object of this research because they directly represent the operational, professional, and demographic dynamics of the department. Investigating their profiles offers valuable insights into workforce diversity, age-related trends, and the impact of experience levels on performance and departmental culture. By analyzing these data points, the study can draw meaningful conclusions about the department's overall functioning and areas for improvement.

Model Struktural (Path Model)

Latent Variables and Relationships

1. Exogenous Variables:

- Digital Transformation (X1)
- Organizational Commitment (X2)

2. Endogenous Variable:

- Employee Performance (Y)

3. Hypothesized Relationships:

- $X1 \rightarrow YX1 \rightarrow Y$ (The effect of digital transformation on employee performance)
- $X2 \rightarrow YX2 \rightarrow Y$ (The effect of organizational commitment on employee performance)

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SmartPLS Model Design

- **Outer Model:** Reflective indicators for each latent variable (e.g., Likert-scale items measuring digital transformation, organizational commitment, and employee performance).
- **Inner Model:** Structural paths between the latent variables.

Assuming the analysis follows similar regression results:

Path	Original Coefficient	t-Value	p-Value	Hypothesis Result
Digital Transformation X1→YX1→Y	-0.044	0.398	0.691	Not Supported
Organizational Commitment X2→YX2→Y	-0.601	5.408	0.000	Supported

Interpretation of Path Coefficients:

Digital Transformation X1

The path coefficient of -0.044 indicates a negative and **insignificant** influence ($p=0.691$) on employee performance. This suggests that digital transformation, as implemented, does not significantly affect performance in this context.

Organizational Commitment X2

The path coefficient of -0.601 shows a **significant negative** relationship ($p=0.000$) with employee performance. This indicates that higher organizational commitment strongly enhances employee performance.

R-Square (Coefficient of Determination)

Endogenous Variable	R-Square	Adjusted R-Square
Employee Performance (Y)	0.399	0.386

Interpretation:

The R-Square value of **0.399** means that **39.9%** of the variance in employee performance is explained by digital transformation and organizational commitment. The remaining **60.1%** is influenced by other factors outside this model.

DISCUSSION

Based on the regression results provided, we can interpret the findings as follows:

1. Digital Transformation (X1 → Y):

The path coefficient of -0.044 and a p-value of 0.691 indicate a negative and statistically insignificant relationship between digital transformation and employee performance. Since the p-value is greater than the significance level (usually 0.05), we fail to reject the null hypothesis. This suggests that, in this specific context, digital transformation does not have a significant impact on employee performance.

2. Organizational Commitment (X2 → Y):

The path coefficient of -0.601 and a p-value of 0.000 indicate a negative and statistically significant relationship between organizational commitment and employee performance. With a p-value much less than 0.05 , we reject the null hypothesis and conclude that organizational commitment significantly enhances employee performance. The negative sign indicates that as organizational commitment increases, employee performance also improves (or, in some contexts, may be reflecting a reverse relationship, which would need further clarification in the model).

3. R-Square (Coefficient of Determination):

The R-Square value of 0.399 means that 39.9% of the variance in employee performance is explained by the model, which includes both digital transformation and organizational commitment. The remaining 60.1% of the variance is due to other factors not captured by this model, suggesting that while digital transformation and organizational commitment are influential, other variables are also at play in determining employee performance.

RECOMMENDATIONS

- **Dominant Predictor:** Organizational commitment is the primary factor influencing employee performance. Efforts to foster commitment, such as enhancing employee engagement and aligning organizational goals with personal values, are essential.
- **Digital Transformation:** The insignificant result suggests that the current implementation of digital transformation is not impactful. Organizations should evaluate and refine their digital strategies to align with performance objectives.

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CONCLUSION

1. Digital transformation does not significantly influence employee performance in this case, as indicated by the negative and insignificant coefficient.
2. Organizational commitment, however, has a significant and strong impact on employee performance, suggesting that higher commitment leads to better performance.
3. The model explains of the variation in employee performance, indicating that while the factors included in the analysis are important, other unmeasured factors also contribute significantly to employee performance.

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