

Moderating role of trainee motivation on the relationship between trainee ability and transfer of training

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Abstract

Public healthcare institutions in developing economies face persistent challenges in translating employee professional development into measurable workplace performance due to poor post-training skill generalization. Despite significant investments in staff development at the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida, there remains a critical gap in understanding how individual capacities and psychological drives interact to ensure that acquired skills successfully "stick" on the hospital floor. The study applied the Baldwin and Ford's Transfer of Training Model and Vroom's Expectancy Theory. This study empirically investigated the relationship between Trainee Ability and Transfer of Training, with Trainee Motivation positioned as both a direct predictor and a moderating variable. Using a quantitative survey design, primary data was gathered from healthcare personnel in Bida, Niger State, and analysed using Variance-Based Structural Equation Modelling (VB-SEM) in SmartPLS. The bootstrapping algorithm (5,000 resamples) revealed that Trainee Ability has a significant positive direct effect on Transfer of Training ($\beta = 0.250$, $t = 2.521$, $p = 0.012$), while Trainee Motivation emerged as the dominant direct driver ($\beta = 0.551$, $t = 5.665$, $p = 0.000$). Furthermore, Trainee Motivation significantly moderated the relationship between Trainee Ability and Transfer of Training via a negative interaction ($\beta = -0.185$, $t = 2.695$, $p = 0.007$), demonstrating a non-linear dynamic where personal motivation plays a critical boosting role for lower-ability personnel but tends to level off for highly skilled, expert staff who rely primarily on standardized professional guidelines. Based on these findings, it is recommended that hospital management utilize pre-training assessments to elevate baseline Trainee Ability while implementing segmented motivational strategies such as direct performance incentives for lower-ability personnel and peer-mentoring roles for high-ability experts to optimize institutional training investments and public health delivery.

Keywords: Trainee Ability, Trainee Motivation, Transfer of Training, Public Healthcare.

1. Introduction

Transfer of training remains a vital pillar for organizational growth, especially within healthcare environments where the application of newly acquired clinical and administrative knowledge directly

influences service delivery. Transfer of training refers to the extent to which trainees effectively apply the knowledge, skills, and behaviours gained in a training context back to their actual job roles over

time (Ford et al., 2018). In medical institutions such as the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida, human resource development relies heavily on ensuring that professional updates do not merely stop at classroom learning but translate into enhanced workplace practices (Kuraoka, 2026). Without this successful translation of skills, investments in continuous professional development fail to yield the desired improvements in healthcare practice and operational quality (Nĩmante et al., 2025).

The dynamics of training transfer are multifaceted, encompassing the interplay of individual learner characteristics, training design, and the overarching work environment (Al-Zoubi et al., 2025). For transfer to successfully manifest, training interventions must be structured to ensure behavioural changes can "stick" and endure under real-world workplace constraints (Hamzah et al., 2025). Furthermore, context plays an essential role; the transfer process requires explicit systems of social and organizational support to flourish once the employee steps out of the training session and returns to their regular duties (Mehner et al., 2025). When health workers effectively transfer learning, it directly promotes continuous workplace improvements and bolsters overall institutional capability (Kuraoka, 2026).

Trainee ability constitutes a fundamental individual characteristic that directly dictates an employee's capacity to absorb, comprehend, and replicate complex training contents. Trainee ability broadly covers the intellectual, technical, and cognitive competencies that a participant possesses before and during a training program (Nunes, 2003). In complex clinical and administrative setups, the cognitive and technical readiness of the learner decides how deeply they grasp advanced professional frameworks

(Naseer et al., 2025). Without a baseline of trainee ability, the complex procedural frameworks introduced during professional development cannot be safely or efficiently operationalized into daily routines (Somerville et al., 2026).

The effect of learner characteristics like ability is a critical prerequisite for behavioural transformation within any institutional workforce (Chang & Chiang, 2013). When employees possess high cognitive or technical capabilities, their threshold for mastering adaptive training procedures increases, providing them with a stronger foundation to handle modern work demands (Ligale, 2026). Conversely, deficiencies in fundamental trainee abilities can act as a structural bottleneck, meaning that even the most meticulously designed programs will face limited application on the job because the trainees lack the basic capacity to process the instruction (Nunes, 2003). Therefore, understanding how baseline employee ability directly drives the eventual transfer of specialized training is essential for healthcare facilities seeking to optimize performance (Ford, S. E., 2026).

Trainee motivation represents another pivotal driver of training effectiveness, acting as the internal psychological force that compels an employee to direct their energy toward learning and applying new skills. Trainee motivation involves the learner's desire to participate in training, exert mental effort, and intentionally deploy new competencies to their daily professional tasks (Ouerdian, 2025). In demanding organizational settings, motivation acts as a mediator and direct predictor of engagement, dictating whether an individual will actively embrace or merely passively tolerate training interventions (Ligale, 2026). It bridges the gap between simply understanding a concept and choosing to actively use it to solve complex organizational tasks (Yang et al., 2025).

While trainee ability establishes whether an employee *can* transfer new knowledge, trainee motivation determines whether they *will* actually expend the effort to do so. In this study, trainee motivation is positioned as a moderator because the possession of ability alone does not automatically guarantee behavioural changes in the workplace, particularly when facing rigid routines or systemic work pressures (Silva & Pinto, 2024). High motivation can amplify the positive impact of high ability, encouraging skilled workers to aggressively overcome workplace hurdles to implement what they learned; conversely, low motivation can neutralize the benefits of high capability (Ouerdian, 2025). Justifying its inclusion as a moderator rests on the premise that the path from raw employee ability to active training transfer is conditional, fluctuating wildly based on the psychological readiness and motivational state of the individual employee (Nunes, 2003).

Public health facilities cannot rely on technical skills alone; staff also need the motivation to apply those skills on the job. This study examines how trainee ability and motivation interact to drive training effectiveness in Niger State public hospitals. By focusing on FMC Bida and Umar Sanda General Hospital, the findings provide hospital management with practical insights to better screen, motivate, and train staff for long-term operational success.

1.2 Statement of the Problem

Despite continuous investments in professional development within the public healthcare sector, the inability of employees to seamlessly translate acquired knowledge into daily clinical and administrative routines presents a major operational challenge. Transfer of training in medical institutions is frequently bottlenecked by systemic workplace constraints, meaning that valuable skills gained during instruction fail to "stick"

when employees return to their high-pressure duties (Hamzah et al., 2025). In public hospitals like the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida, this lack of effective transfer manifests as a stagnation in service quality, operational inefficiencies, and a recurring failure to meet modern patient care standards. When professional updates are not successfully institutionalized into practice, the ultimate goals of workforce readiness and medical excellence remain unachieved (Nīmante et al., 2025).

Practically, this failure to transfer training results in a severe disconnect between employee capacity and institutional performance. Healthcare delivery requires a dynamic environment where adaptive training approaches must directly translate into active employee engagement and observable behavioural changes on the ward (Ligale, 2026). However, hospital staff often struggle to implement updated protocols because the social and organizational support systems required to foster knowledge sharing and skill application are either weak or completely missing post-training (Mehner et al., 2025). This operational gap not only compromises patient outcomes but also leads to a massive waste of scarce public funds heavily invested in continuous clinical workshops and human resource development.

Furthermore, the persistent gap in training transfer within these hospitals is exacerbated by a lack of alignment between individual employee capabilities and the psychological triggers required to deploy those capabilities. While medical institutions routinely sponsor staff for pre-job and in-service training to support sustainable development and enhance institutional capability, the actual transfer process remains highly volatile (Al-Ali et al., 2026). Without a clear understanding of how individual characteristics like trainee ability interact with psychological

forces like motivation, hospital managements continue to implement one-size-fits-all training models (Chang & Chiang, 2013). This neglect of individual-level dynamics leaves a substantial gap in understanding why well-trained medical professionals frequently fall back on obsolete operational habits rather than executing newly learned, evidence-based practices (Kuraoka, 2026).

Several researchers have attempted to investigate the dynamics of training transfer and individual characteristics across various institutional frameworks. Ouerdian (2025) conducted a study to examine the effect of motivation on training transfer using a moderated moderation model. Utilizing partial least squares structural equation modelling (PLS-SEM) as the method of data analysis, the objective of the study was to analyse the impact of motivation on training transfer while considering the personal capacity for transfer and gender as moderators. The findings revealed that training motivation significantly and positively influences the transfer of training, and that personal capacity for transfer along with gender interacts to change the strength of this primary relationship. A critical review of this study reveals a distinct geographical gap, as the study was carried out within a European corporate and academic environment, which possesses vastly different institutional support structures, funding levels, and operational cultures compared to public healthcare facilities in north-central Nigeria. Additionally, a variable gap exists because the study focused on a complex moderated moderation model involving gender and personal capacity for transfer, completely omitting the direct interaction between raw trainee ability and motivation within a medical framework.

Silva and Pinto (2024) used hierarchical regression to examine how organizational support and adaptability influence training

motivation, transfer, and performance in extreme institutional environments. They found that while high-stress contexts create severe operational strain, strong organizational support and individual adaptability boost motivation to transfer learning, ultimately enhancing job performance. However, two key gaps remain. Geographically, their findings stem from Western crisis settings, which differ significantly from the routine yet resource-constrained operations of public hospitals in Bida, Niger State. Variable-wise, their model prioritized macro-level organizational factors, leaving the interaction between individual ability and trainee motivation unexamined.

Nunes (2003) used multiple regression to evaluate how baseline trainee ability and pre-training motivation affect training transfer in a South African corporate setting, finding both to be significant predictors dependent on environmental cues. However, two gaps emerge: geographically, findings from a two-decade-old South African corporate environment may not reflect contemporary Nigerian public health realities; conceptually, the study treated ability and motivation as parallel predictors rather than examining motivation as a moderator on the ability–transfer path. Chang and Chiang (2013) applied structural equation modelling (SEM) to examine how learner characteristics (cognitive ability and self-efficacy) impact training transfer in an Asian IT and educational context, demonstrating strong direct effects. Their work presents similar limitations: geographically, Asian IT workforce dynamics differ markedly from Nigerian clinical settings; conceptually, their model evaluated learner characteristics as a broad construct without testing motivation as a distinct moderating filter between ability and transfer.

This study directly fills these identified gaps by contextualizing the research

geographically within the Nigerian public health sector, specifically focusing on employees in the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida, Niger State. Strategically, it bridges the variable gaps by establishing a specialized framework where trainee motivation is explicitly tested as a moderator on the relationship between trainee ability and transfer of training. This addresses the limitations of prior studies by determining whether psychological drive can successfully unlock and maximize the technical and cognitive capacities of healthcare workers to ensure sustainable training effectiveness.

1.3 Aim and Objectives of the Study

The aim of this study is to investigate the Moderating Role of Trainee Motivation on the Relationship Between Trainee Ability and Transfer of Training Among employees in Federal Medical Centre, Bida and Umar Sanda General Hospital in Bida, Niger State, Nigeria. The specific objectives of the study are:

- i. To determine the effect of Trainee Ability on Transfer of Training Among employees in Federal Medical Centre, Bida and Umar Sanda General Hospital in Bida, Niger State, Nigeria.
- ii. To examine the effect of Trainee Motivation on Transfer of Training Among employees in Federal Medical Centre, Bida and Umar Sanda General Hospital in Bida, Niger State, Nigeria.
- iii. To investigate the Moderating Role of Trainee Motivation on the Relationship Between Trainee Ability and Transfer of Training Among employees in Federal Medical Centre, Bida and Umar Sanda General Hospital in Bida, Niger State, Nigeria.

1.4 Hypotheses of the Study

Ho₁: Trainee Ability has no significant effect on Transfer of Training Among employees in Federal Medical Centre, Bida and Umar Sanda General Hospital in Bida, Niger State, Nigeria.

Ho₂: Trainee Motivation has no significant effect on Transfer of Training Among employees in Federal Medical Centre, Bida and Umar Sanda General Hospital in Bida, Niger State, Nigeria.

Ho₃: Trainee Motivation has no significant moderating effect on the relationship between Trainee Ability and Transfer of Training Among employees in Federal Medical Centre, Bida and Umar Sanda General Hospital in Bida, Niger State, Nigeria.

2. Literature Review and Theoretical Framework

2.1 Concept of Transfer of Training

Scholarship conceptualizes transfer of training not as a fleeting reaction, but as an active, sustained transformation of learning into routine workplace practice. Ford, Baldwin, and Prasad (2018) establish that true transfer requires long-term behavioural retention over time, a perspective complemented by Nĩmante et al. (2025), who view it as the deliberate conversion of theoretical knowledge into daily operational habits. Rooted in behavioural science, Hamzah et al. (2025) emphasize skill durability, noting that transfer only occurs when psychological and environmental factors align to foster habit endurance and prevent regression to obsolete routines. Expanding this framework, Al-Zoubi et al. (2025) and Mehner et al. (2025) demonstrate that transfer is inherently collaborative and socio-technical, relying on peer networks, mentoring, and structural workplace channels to activate and sustain acquired capabilities.

Synthesizing these viewpoints underscores that training effectiveness in public health facilities hinges on habit maintenance, social support, and institutional design rather than mere workshop attendance. Grounded in this synthesis, Transfer of Training is operationally defined in this study as the measurable degree to which

medical, administrative, and technical employees at the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida, actively, correctly, and consistently apply recently acquired clinical protocols, administrative procedures, and modern healthcare skills directly to their daily patient care and hospital operations.

2.2 Concept of Trainee Ability

Scholarship conceptualizes trainee ability as the foundational cognitive and technical infrastructure that an individual brings into a learning environment. Nunes (2003) and Chang and Chiang (2013) define ability as baseline cognitive capacity, self-efficacy, and problem-solving readiness, positioning it as a structural gatekeeper that governs whether a learner can decode, process, and retain complex instructional content. Expanding this perspective to modern, dynamic environments, Naseer et al. (2025) and Ligale (2026) emphasize that trainee ability reflects adaptive capacity and technical readiness, setting the upper limit for learner engagement and mastery when acquiring innovative operational standards. Furthermore, Somerville et al. (2026) highlight the psychomotor and practical dimensions of ability, demonstrating that underlying technical familiarity is critical for translating theoretical concepts into error-free physical performance in high-stakes settings.

Synthesizing these definitions indicates that baseline cognitive and technical readiness directly dictates how effectively employees absorb and execute specialized training content. Grounded in this synthesis, Trainee Ability is operationally defined in this study as the pre-existing clinical competencies, technical medical knowledge, educational backgrounds, and cognitive problem-solving capacities possessed by the medical, nursing, and administrative staff at the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida, which dictate their

readiness to comprehend and master new healthcare protocols during professional development workshops.

2.3 Concept of Trainee Motivation

Scholarship conceptualizes trainee motivation as the core psychological energy, direction, and persistence driving an employee across the entire training lifecycle. Ouerdian (2025) and Silva and Pinto (2024) establish that motivation functions from pre-training expectations to post-training execution, acting as an adaptive psychological driver that enables staff to push past high-stress environments and resource constraints to apply new skills. Building on this, Ligale (2026) and Yang et al. (2025) highlight that motivation fuels cognitive endurance and active engagement, ensuring learners do not merely go through the motions of attendance but actively master complex competencies. Furthermore, Al-Ali et al. (2026) connect motivation to career aspirations and long-term professional self-interest, demonstrating that when trainees align instructional content with personal advancement, their commitment to achieving training outcomes increases significantly.

Synthesizing these definitions demonstrates that motivation is the vital psychological trigger converting technical readiness into active, persistent workplace performance. Grounded in this synthesis, Trainee Motivation is operationally defined in this study as the internal psychological drive, willingness, and desire of medical and administrative employees at the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida, to actively participate in professional development, exert cognitive effort to master new healthcare protocols, and intentionally overcome daily workplace pressures to implement those newly acquired skills on the hospital wards.

2.4 Conceptual Framework

The conceptual framework for this study is built upon the structural premise that the transfer of training the dependent variable is primarily driven by the baseline competencies and intellectual readiness of the employee, represented as trainee ability, which serves as the independent variable. However, within the high-pressure and complex operational environments of public healthcare institutions, this relationship is rarely a simple or direct linear path. Instead, the dependent variable (Transfer of training).

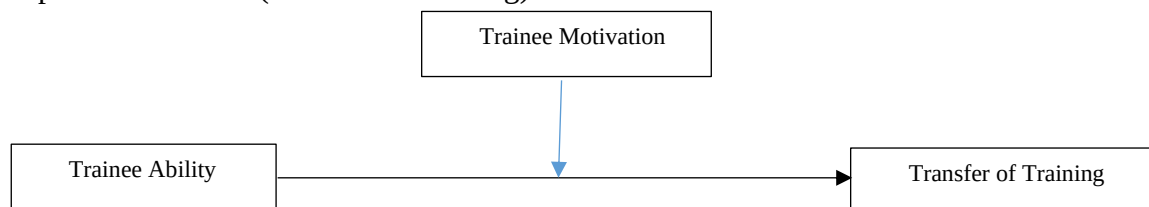


Figure 2.1: relationship between trainee motivation, trainee ability and transfer of training

Source: Researcher's Conceptualization

Under this conceptual configuration, trainee ability functions as the foundational exogenous force, representing the baseline technical, cognitive, and clinical competencies that healthcare professionals at FMC Bida and Umar Sanda General Hospital bring into any professional development intervention. This variable establishes the workforce's underlying capacity, dictating the upper limit of how much advanced instructional content an employee can comprehend, process, and master. In essence, trainee ability answers the structural question of whether hospital personnel possess the requisite mental and physical capabilities to execute new healthcare protocols safely and efficiently. Conversely, trainee motivation serves as the interacting moderator that governs whether this latent capacity is realized on the job. The framework posits that while ability provides the essential capacity to transfer, it remains a passive asset unless

framework posits that the path from raw capacity to actual workplace behavioural modification is highly conditional. Consequently, trainee motivation is introduced as the moderating variable, serving as the psychological filter that determines the strength, direction, and ultimate effectiveness of the relationship between trainee ability and the transfer of training. Figure 2.1 shows the direction of the relationship between the study independent variable (Trainee ability), the moderator (Trainee motivation) and the

activated by the employee's internal psychological drive. High motivation acts as an amplifier, enabling staff to navigate workplace bottlenecks and resource constraints to institutionalize newly acquired skills; conversely, low motivation acts as a dampener, neutralizing high technical capability and leading workers to fall back on obsolete routines. Ultimately, transfer of training emerges as the functional outcome of this dynamic interaction, demonstrating that post-training behavioural transformation in Bida public hospitals requires a deliberate alignment of both technical capability and psychological willingness.

2.5 Empirical Review

Ouerdian (2025) investigated the interactive boundary conditions governing human resource development in a study titled "Motivation on training transfer: a moderated moderation model of personal capacity for transfer and gender." Employing a cross-sectional research design to gather data from a sample of 257 Tunisian workers, the study utilized Hayes' (2018) PROCESS macro as the primary method of data analysis to test a

hypothesized three-way interaction model. The objective of the study was to examine whether the direct relationship between motivation to transfer and actual training transfer is significantly moderated by an individual's personal capacity for transfer, and whether this conditional path is further altered by gender. The empirical findings revealed that while motivation to transfer generally drives increased training transfer, its ultimate impact is highly conditional; specifically, the interaction effect between motivation and personal capacity for transfer was statistically significant for female workers but non-significant for male workers, demonstrating that motivation is most likely to predict training transfer among women who possess a high personal capacity for transfer.

Mehner, et al., (2025) explored the social and psychological mechanisms of corporate development in a study titled "How to maximize the impact of workplace training: a mixed-method analysis of social support, training transfer and knowledge sharing." Employing a mixed-method research design across two distinct studies the first using a structural joint model to survey 541 employees and the second analysing qualitative interviews and network mappings of 51 participants the objective of the investigation was to evaluate how social support networks affect training transfer and post-training knowledge sharing. The quantitative findings demonstrated that both training transfer and knowledge sharing significantly improve individual organizational outcomes, with individual motivation and volition acting as vital mediators, while supervisor and peer support serve as powerful direct antecedents. Additionally, the qualitative network analysis revealed that successful training transfer significantly predicts a positive change in the size and density of an employee's professional contacts within

the organization, confirming that transfer is deeply embedded in social and collaborative structures.

Ligale (2026) explored the behavioural dynamics of skill acquisition in a study titled "The Impact of Adaptive Training Approaches on Trainee Engagement in CBET: The Mediating Role of Trainee Motivation." Utilizing a correlational research design and mediation analysis as the primary methods of data analysis, the objective of the study was to determine the specific pathways through which trainee motivation mediates the relationship between four adaptive training strategies (problem-based learning, localized curriculum, gamification, and metacognition) and ultimate trainee engagement among a sample of 50 students exposed to an eight-week intervention at the Kenya School of TVET. The empirical findings revealed that trainee motivation partially mediates the relationship between trainee engagement and both problem-based learning and gamification. Crucially, the results demonstrated that trainee motivation fully mediates the impact of both metacognition and localized curriculum on engagement, establishing the novel insight that these adaptive approaches can only positively drive active learner engagement by first successfully enhancing the baseline level of internal trainee motivation.

2.6 Theoretical Framework

To establish a rigorous foundation for investigating the interactions within this study, the theoretical framework is anchored on two complementary models that balance structural capability with psychological drive: the Transfer of Training Model developed by Baldwin and Ford (1988) and the Expectancy Theory of Motivation developed by Victor H. Vroom (1964). These theories provide the conceptual lens necessary to analyse how the technical capacity of healthcare workers is activated by internal

motivational states to drive professional performance.

2.6.1 Baldwin and Ford's Transfer of Training Model (1988)

The primary structural framework guiding this study is the Transfer of Training Model, which was developed by Timothy T. Baldwin and J. Kevin Ford in 1988. Baldwin and Ford conceptualized the training process as an open systems model consisting of three core segments: training inputs, training outcomes, and conditions of transfer. Training inputs represent the baseline factors that exist before instruction begins and are divided into three distinct categories: training design, work environment, and trainee characteristics. Training outcomes capture the immediate learning and retention during the intervention, while the conditions of transfer focus on the generalization of skills to the job and their long-term maintenance over time.

Baldwin and Ford's model directly influences this study by shaping the selection and positioning of the independent variable (Trainee Ability) and the moderating variable (Trainee Motivation). The authors explicitly classified ability and motivation as primary components of "trainee characteristics" within the input phase. The theory establishes that the ultimate success of the dependent variable Transfer of Training is highly dependent on these individual entry traits. For medical and administrative employees within the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida, their baseline clinical acumen, technical intellect, and cognitive readiness (Trainee Ability), alongside their psychological drive (Trainee Motivation), represent the critical trainee inputs that dictate how effectively classroom knowledge translates into continuous workplace improvements on the hospital wards.

2.6.2 Vroom's Expectancy Theory (1964)

To explain the specific interactive mechanisms occurring within the trainee characteristics input domain, this study utilizes the Expectancy Theory of Motivation, which was developed by Victor H. Vroom in 1964. Vroom's cognitive theory posits that human motivation is a product of three perceptual variables: Expectancy (E, the belief that effort leads to performance), Instrumentality (I, the belief that performance leads to rewards), and Valence (V, the perceived value of those rewards). Crucially, Vroom's framework goes beyond explaining motivation alone; it outlines how individual performance is a functional, multiplicative product of an employee's capability and their psychological drive.

The interactive axiom directly influences the positioning of Trainee Motivation as a moderating variable in this study. Vroom's theory establishes that raw capability (Trainee Ability) remains a passive asset unless it is multiplied by an active psychological force (Trainee Motivation). When applied to the public health sector in Bida, Niger State, this theory explains why highly able clinical personnel may fail to display effective Transfer of Training if their motivation is low due to poor institutional rewards or environmental frustrations. Conversely, high trainee motivation acts as a psychological catalyst that amplifies and unlocks trainee ability, sustaining the behavioural energy required to successfully transfer and maintain new healthcare protocols despite demanding daily workplace constraints.

3. Methodology

This study adopts a quantitative, cross-sectional survey research design to examine the moderating role of trainee motivation on the relationship between trainee ability and transfer of training. The

target population comprises 1,606 permanent staff (1,177 from FMC Bida and 429 from Umar Sanda General Hospital, Bida) who regularly participate in clinical and administrative training programs. Applying Kreijcie and Morgan's (1970) formula, a representative sample of 310 respondents was determined. Using proportionate stratified systematic sampling ($k = 5$), participants were equitably allocated and selected across institutions 227 from FMC Bida (73.2%) and 83 from Umar Sanda General Hospital (26.8%) to eliminate selection bias and ensure departmental representation.

The study employs SmartPLS 4 for data processing. PLS-SEM is deployed to evaluate the significance of the effects at a 5% level. The research is governed by two primary models: a Direct Effect Model, which examines the linear relationship between the three dimensions of entrepreneurial orientation and SSE

4. Result and Discussion

4.1 Measurement (Outer) Model

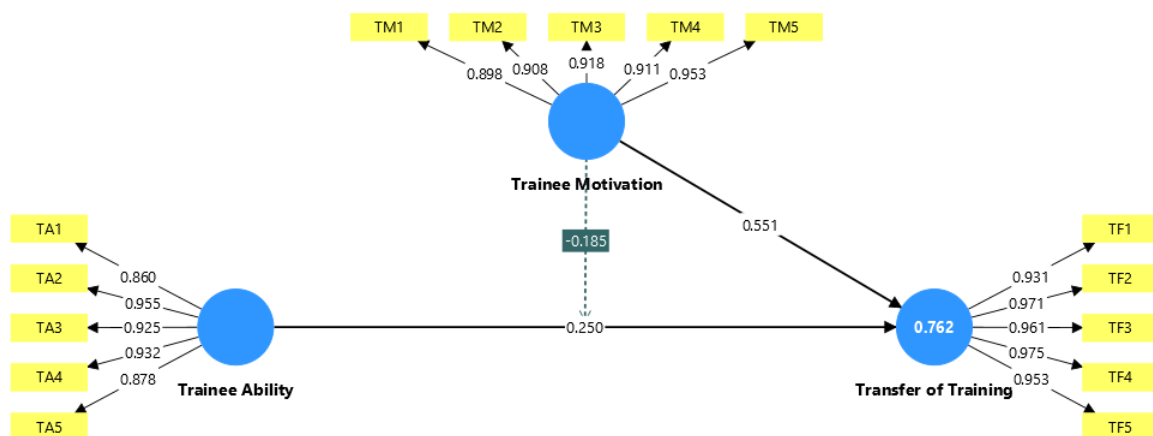


Figure 4.1: Path diagram

As illustrated in the structural output in Figure 4.1: Path diagram, the measurement model demonstrates exceptional psychometric strength, with each of the three core constructs measured by five scale items that comfortably exceed the

performance, and an interactive (Moderated) Effect Model.

$$TT_i = \beta_0 + \beta_1 TA_i + \varepsilon_{it} \dots \dots \dots \text{(Direct Effect Model)}$$

$$TT_i = \beta_{0i} + \beta_1 TA_i + \beta_2 TM_i + \beta_3 TMA_i * TA_i + \varepsilon_{it} \dots \dots \dots \text{(Moderated Effect Model)}$$

Where:

TT_i = Transfer of Training; $\beta_1 TA_i$ = Trainee Ability; $\beta_2 TM_i$ = Trainee Motivation;

β_0 = Constant Term; ε_{it} = error Term

conventional 0.50 threshold benchmark (Fornell & Larcker, 1981). For the independent variable, Trainee Ability, the factor loadings are highly robust, ranging from 0.860 (TA1) to 0.955 (TA2), indicating excellent indicator capture of

baseline staff competence. The moderating variable, Trainee Motivation, exhibits strong structural alignment with loadings stretching from 0.898 (TM1) up to 0.953 (TM5), while the dependent variable, Transfer of Training, records the highest overall convergence with loadings ranging from 0.931 (TF1) to an exceptional 0.975 (TF4). Because every single one of the fifteen indicators registers a factor loading far greater than the 0.50 baseline, the research scale achieves excellent indicator reliability and eliminates the need for any item deletion or modification before

Table 4.1: Model Fit

Model Fit Index	Saturated Model	Estimated Model
SRMR	0.069	0.069
d_ULS	0.570	0.566
d_G	0.818	0.832
Chi-square (χ^2)	419.931	414.459
NFI	0.824	0.826

As presented in Table 4.1, the model demonstrates a favourable fit across both the saturated and estimated models. In PLS-SEM, the Standardized Root Mean Square Residual (SRMR) serves as the primary metric for global model fit, where a value less than 0.080 indicates an acceptable fit. The structural model yielded an SRMR of 0.069 for both the saturated and estimated models, confirming that the path structure successfully minimizes the residual variance between the observed and theoretical covariance matrices. Additionally, the exact fit criteria (d_ULS and d_G) along with the Normed Fit Index (NFI) of 0.824 provide further empirical evidence that the interactive framework tracking Trainee Ability, Trainee

structural path analysis (Fornell & Larcker, 1981).

4.2 Model Fit Indices

Following the assessment of the measurement model, the study evaluated the structural model's integrity by examining the global model fit indices. This step is essential in PLS-SEM to ensure that the hypothesized model adequately represents the empirical data collected from the public healthcare institutions in Bida, Niger State (Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida).

Motivation, and Transfer of Training aligns strongly with the collected data.

4.3 Reliability and Convergent Validity Test

Following the evaluation of the measurement model, a rigorous assessment of reliability and convergent validity was conducted to ensure that the latent constructs were accurately and consistently measured within the public healthcare institutions under study. In accordance with standard psychometric evaluation protocols, three primary metrics were analysed: Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE).

Table 4.2: Reliability and Convergent Validity Test

Item	Outer Loading	CA	CR	AVE
TA1	0.860			
TA2	0.955			

Item	Outer Loading	CA	CR	AVE
TA3	0.925			
TA4	0.932			
TA5	0.878			
Trainee Ability		0.948	0.960	0.829
TF1	0.931			
TF2	0.971			
TF3	0.961			
TF4	0.975			
TF5	0.953			
Transfer of Training		0.953	0.964	0.843
TM1	0.898			
TM2	0.908			
TM3	0.918			
TM4	0.911			
TM5	0.953			
Trainee Motivation		0.978	0.983	0.918

For this specific research context, an alpha value of 0.5 is established as the minimum acceptable threshold benchmark for reliability. As presented in Table 4.2, the internal consistency metrics for all three constructs exceed this threshold, proving high internal stability. Specifically, Trainee Ability returns a Cronbach's Alpha of 0.948 and a CR of 0.960. Trainee Motivation achieves a CA of 0.978 and a CR of 0.983, while Transfer of Training yields a CA of 0.953 and a CR of 0.964.

Furthermore, convergent validity was confirmed using the AVE relative to the designated Fornell and Larcker 0.5 threshold. For convergent validity to be established, the AVE must surpass 0.50, signifying that the latent variable accounts for more than half of the variance of its indicators. The results demonstrate exceptional convergent validity, as the AVE scores reached 0.829 for Trainee

Ability, 0.918 for Trainee Motivation, and 0.843 for Transfer of Training. This confirms that the empirical indices are highly reliable and well-suited for subsequent structural model estimation.

4.4 Discriminant Validity

This study used both Heterotrait-Monotrait (HTMT) Ratio and Fornell and Larcker Criterion to test the study discriminant validity.

4.4.1 Discriminant Validity – Heterotrait-Monotrait (HTMT) Ratio

To complete the evaluation of the measurement model, the study assessed discriminant validity using the Heterotrait-Monotrait (HTMT) Ratio of Correlations. Discriminant validity ensures that each latent construct is empirically distinct from other constructs in the model, confirming that a variable measures a unique phenomenon not captured by others.

Table 4.3: Discriminant Validity Assessment Using Heterotrait–Monotrait Ratio (HTMT)

Constructs	Trainee Ability	Trainee Motivation	Trainee Motivation
Trainee Ability			
Trainee Motivation	0.762		
Transfer of Training	0.778	0.855	

According to the strict criteria established by Henseler et al. (2015), HTMT values should ideally remain below the conservative threshold of 0.85 to guarantee distinctiveness, though values up to 0.90 are acceptable for conceptually linked constructs. As presented in Table 4.3, the HTMT correlation ratio between Trainee Ability and Trainee Motivation stands at 0.762, while the ratio between Trainee Ability and Transfer of Training is 0.778, both falling safely below the conservative 0.85 baseline. The correlation ratio between Trainee Motivation and Transfer of Training is 0.855, which comfortably satisfies the liberal threshold of 0.90. These indices indicate that all three latent constructs achieve sufficient discriminant validity within the studied public healthcare institutions.

4.4.2 Discriminant Validity – Fornell and Larcker Criterion

To further confirm the empirical distinctiveness of the measurement model, discriminant validity was evaluated using the classic Fornell and Larcker criterion. This analysis evaluates whether each latent variable shares more variance with its own assigned indicators than it does with any other construct in the structural model. In accordance with the designated Fornell and Larcker threshold, discriminant validity is established when the square root of the Average Variance Extracted (AVE) for each construct is strictly greater than its highest correlation with any other construct.

Table 4.4: Discriminant Validity Test – Fornell and Larcker Criterion

Constructs	Trainee Ability	Trainee Motivation	Trainee Motivation
Trainee Ability	0.911		
Trainee Motivation	0.732	0.918	
Transfer of Training	0.752	0.830	0.956

As presented in Table 4.4, the diagonal values written in bold represent the square roots of the AVE for each latent variable, while the off-diagonal values represent the correlation coefficients between the constructs. The square root of the AVE for Trainee Ability is 0.911, which is higher than its correlations with Trainee Motivation (0.732) and Transfer of Training (0.752). Similarly, the square root of the AVE for Trainee Motivation stands

at 0.918, exceeding its correlation with Transfer of Training (0.830). Finally, Transfer of Training exhibits a square root of the AVE of 0.956, which comfortably exceeds all corresponding cross-correlations. These statistical indices demonstrate that all three constructs satisfy the Fornell-Larcker benchmark, confirming that each variable captures an independent and unique organizational

phenomenon among the healthcare personnel in Bida.

4.5 EVALUATION OF STRUCTURAL (INNER) MODEL

4.6 Collinearity Problem

Following the validation of the measurement model, the initial step in evaluating the structural model was to assess potential collinearity issues among the predictor variables. Collinearity occurs when explanatory variables are highly correlated, which can distort the estimation of path coefficients and obscure the true

statistical significance of individual paths. To ensure the structural regression coefficients remain stable and unbiased, the study utilized the Variance Inflation Factor (VIF) as the primary diagnostic tool. According to the guidelines established by Hair et al. (2017), a VIF value exceeding 5.0 indicates a problematic level of collinearity that requires item trim adjustments, whereas values below 3.0 are considered ideal for establishing structural independence in complex models.

Table 4.5: Collinearity Test

Path Relationship	VIF
Trainee Ability	2.283
Trainee Motivation	2.251
Trainee Motivation × Trainee Ability → Transfer of Training	1.385

As presented in Table 4.5, the inner VIF values for the independent and moderating predictors are well within the ideal parameters. Specifically, Trainee Ability returns a VIF of 2.283, and Trainee Motivation registers a VIF of 2.251. The interaction relationship (Trainee Motivation × Trainee Ability → Transfer of Training) variable, Transfer of Training, reflects a baseline inner VIF of 1.385. Because all individual VIF indices fall comfortably below the conservative 3.0 threshold, the structural model is entirely free from lateral collinearity issues, confirming that the path relationships can be estimated with a high degree of statistical confidence.

4.7 Coefficient of determination R^2

Table 4.6: R-square value

	R-square	R-square adjusted
Transfer of Training	0.762	0.754

As presented in Table 4.6 and illustrated in the structural model path diagram in figure 4.1, the model exhibits an exceptionally high level of predictive accuracy. The R^2 value for Transfer of Training is 0.762, with a corresponding R^2 adjusted value of 0.754. This indicates that Trainee Ability

Following the collinearity assessment, the Coefficient of Determination (R^2) was calculated to evaluate the predictive power of the structural model and to determine the extent to which the exogenous variables specifically Trainee Ability and Trainee Motivation explain the variance in the dependent variable, Transfer of Training. As a statistical measure, the R^2 value represents the proportion of the total variance in the endogenous construct (Transfer of Training) that is successfully predicted by the collective influence of the independent and moderating variables. According to the benchmarks established by Chin (1998), R^2 values in PLS-SEM are categorized as weak (0.19), moderate (0.33), or strong (0.67).

and Trainee Motivation collectively account for 76.2% of the total variance in the transfer of training among healthcare professionals at the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida. Applying the established benchmarks, this value significantly

surpasses the 0.67 threshold, confirming that the structural model possesses substantial and strong predictive power within the context of these public health institutions.

4.8 Effect Size (f^2)

While the coefficient of determination (R^2) reflects the collective predictive power of the structural model, it does not reveal the individual contribution of each independent variable to the endogenous

construct. To evaluate this, the effect size (f^2) was calculated. The f^2 value measures the change in the R^2 value when a specific exogenous construct is omitted from the structural model, indicating whether the omitted variable has a meaningful impact on the endogenous variable. According to the standard benchmarks established by Cohen (1988), f^2 values are classified as small (0.02), medium (0.15), or large (0.35).

Table 4.7: Effect Size (f^2) of Exogenous Variables on Transfer of Training

Hypothesized Relationship	f^2	Effect Size Interpretation
Trainee Ability $\rightarrow$ Transfer of Training	0.115	Small Effect
Trainee Motivation $\rightarrow$ Transfer of Training	0.566	Large Effect
Trainee Motivation $\times$ Trainee Ability $\rightarrow$ Transfer of Training	0.118	Small Effect

As presented in Table 4.7, the individual effect sizes of the predictors vary across the model. The direct path from Trainee Ability $\rightarrow$ Transfer of Training yielded an f^2 value of 0.115, which signifies a small effect on post-training skill generalization. In contrast, the direct path from Trainee Motivation $\rightarrow$ Transfer of Training returned an exceptional f^2 value of 0.566, indicating a large effect. This demonstrates that psychological drive plays a dominant operational role in predicting training transfer within the studied healthcare institutions. Finally, the interaction path representing the moderating effect (Trainee Motivation $\times$ Trainee Ability $\rightarrow$ Transfer of Training) produced an f^2 value of 0.118, which represents a small but meaningful interactive effect, confirming that the presence of the moderator shifts the primary structural relationship.

4.9 Bootstrapping Procedure and Test of Hypothesis

To formally test the study's hypotheses and evaluate the statistical significance of the path relationships, a non-parametric bootstrapping procedure was executed using 5,000 resamples. This computational approach provides robust standard errors and t-statistics to determine the precision of the estimated path coefficients.

According to the standard two-tailed decision rule at a 5% significance level, a structural path relationship is considered statistically significant if the t-statistic is greater than 1.96 ($t > 1.96$) and the corresponding p-value is less than 0.05 ($p < 0.05$). Meeting these empirical thresholds indicates a high likelihood that the observed structural effects are genuine and not the result of random sampling variation, thereby confirming the validity of the hypothesized paths among the surveyed public healthcare personnel.

The statistical results generated from the bootstrapping algorithm are systematically organized in figure 4.2 and Table 4.8.

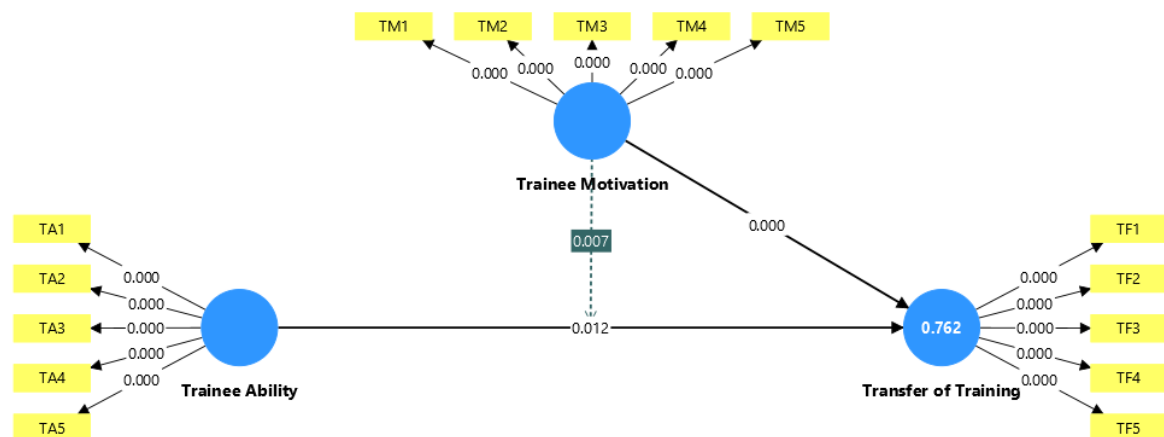
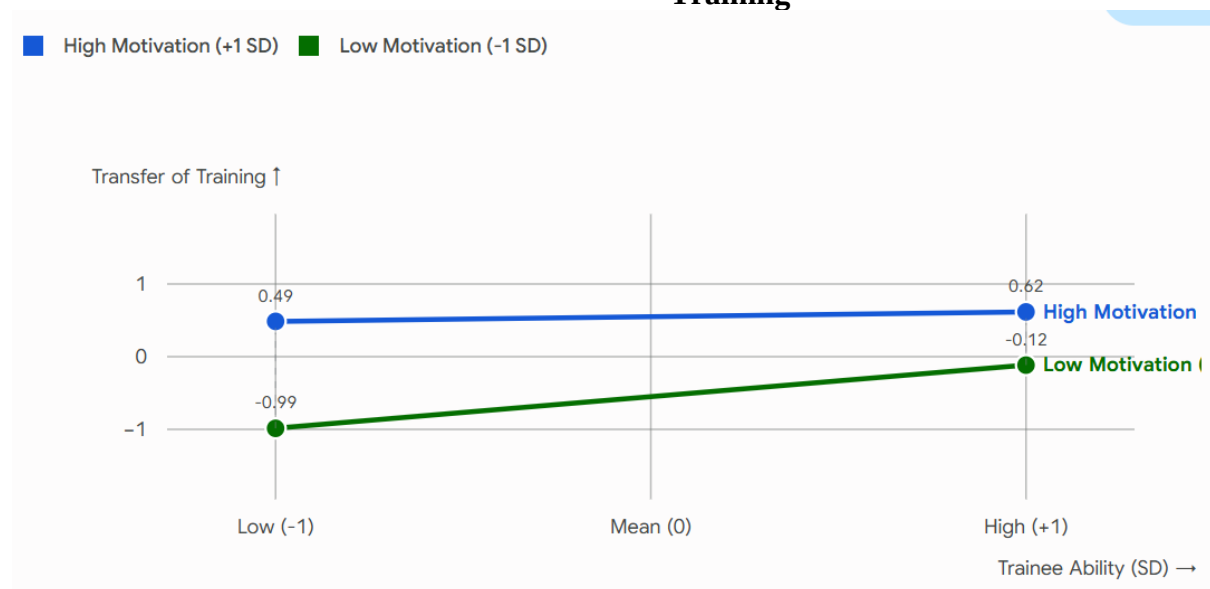


Figure 4.2: Bootstrapping path diagram

Interaction Plot of Trainee Ability and Trainee Motivation on Transfer of Training



Graph 4.1: Interaction Plot of Trainee Ability and Trainee Motivation on Transfer of Training

This interaction plot illustrates that Trainee Motivation significantly and positively moderates the relationship between Trainee Ability and Transfer of Training. The negative coefficient for the interaction term ($b_3 = -0.185$) visualizes a dampening effect, which means that while increases in Ability are associated with more effective training transfer across the board, this positive relationship is notably weaker for trainees who are highly motivated, as their performance remains consistently high.

Conversely, for trainees with low motivation, increased Trainee Ability is absolutely essential, serving as the primary driver for achieving any substantial transfer of training. Ultimately, while having both high ability and high motivation produces the best outcomes, high motivation appears to operate as a stabilizing factor, rendering a trainee's Transfer of Training less dependent on their underlying baseline capability.

Table 4.8: Path Coefficients and Hypotheses Testing Results

Hypothesized Relationship	β (O)	Standard Deviation (SD)	t-value	P-value	Decision
Trainee Ability $\rightarrow$ Transfer of Training	0.250	0.099	2.521	0.012	Rejected
Trainee Motivation $\rightarrow$ Transfer of Training	0.551	0.097	5.665	0.000	Rejected
Trainee Motivation $\times$ Trainee Ability $\rightarrow$ Transfer of Training	-0.185	0.069	2.695	0.007	Rejected

The first hypothesized relationship evaluates the direct effect of Trainee Ability on Transfer of Training. The empirical results reveal a positive path coefficient (beta) of 0.250, with a standard deviation of 0.099. This yields a t-value of 2.521 (which is greater than the 1.96 threshold) and a p-value of 0.012 (which is less than 0.05). Statistically, these indices demonstrate that Trainee Ability has a significant positive direct effect on the transfer of skills among healthcare personnel.

The second hypothesized relationship examines the direct impact of Trainee Motivation on Transfer of Training. The structural analysis shows a substantial positive path coefficient (beta) of 0.551, with a standard deviation of 0.097. This results in a highly robust t-value of 5.665 and a p-value of 0.000. Because the t-statistic is far above 1.96 and the p-value is well below the 0.01 mark, Trainee Motivation stands as the strongest, highly significant predictor of training transfer in this study.

The final hypothesized relationship tests the moderating effect of the interaction term, Trainee Motivation $\times$ Trainee Ability, on Transfer of Training. The results produce a negative path coefficient (beta) of -0.185, with a standard deviation of 0.069, generating a t-value of 2.695 and a p-value of 0.007. Since the t-value exceeds 1.96 and the p-value is below 0.05, the moderating effect is statistically significant. The negative coefficient (beta = -0.185) reveals a dampening interaction, meaning that while both motivation and

ability are individually positive, their interaction behaves non-linearly the positive effect of motivation on training transfer tends to decrease or level off at exceptionally high levels of trainee ability.

4.10 Discussion of Findings

This section provides a detailed empirical discussion of the statistical results derived from the structural model analysis. The findings are contextualized within the public healthcare setting of Bida, Niger State, by comparing and contrasting them with recent global literature on training transfer.

4.10.1 Direct Effect of Trainee Ability on Transfer of Training

The empirical results established that Trainee Ability exerts a statistically significant positive direct effect on Transfer of Training among personnel at the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida ($\beta = 0.250, t = 2.521, p = 0.012$).

Theoretically, this result validates the input phase of Baldwin and Ford's (1988) *Transfer of Training Model*, which positions baseline cognitive ability and technical acumen as fundamental entry characteristics necessary for skill retention and generalization. It is further anchored in the expectancy component ($E \rightarrow P$) of Vroom's (1964) *Expectancy Theory*, which posits that an individual's belief in their baseline capacity to execute a task is an essential prerequisite for performance. This finding aligns with foundational literature (Chang & Chiang, 2013; Ford et al., 2018; Nunes, 2003) as well as recent empirical studies (Al-Ali et al., 2026;

Somerville et al., 2026), which confirm that baseline learner proficiency directly dictates the rate and accuracy of post-training skill translation.

In the practical operational context of Bida's public hospitals, healthcare delivery involves high-stakes clinical protocols such as administering complex dosage schedules, operating modern diagnostic machinery, or processing electronic medical records. When nurses, doctors, and administrative staff possess strong foundational qualifications and cognitive agility, they face significantly lower cognitive load during workshops, allowing them to seamlessly adapt and execute new clinical guidelines on the hospital floor without committing procedural errors. As a researcher, I argue that while technical ability is not the sole determinant of performance, it serves as the indispensable non-negotiable threshold for public health institutions. Without baseline technical competence, no amount of institutional encouragement can produce safe, error-free healthcare delivery.

4.10.2 Direct Effect of Trainee Motivation on Transfer of Training

The structural path analysis revealed that Trainee Motivation exerts a dominant, highly significant positive direct effect on Transfer of Training ($\beta = 0.551, t = 5.665, p = 0.000, f^2 = 0.566$).

Theoretically, this finding strongly reinforces Vroom's (1964) *Expectancy Theory*, specifically the valence (*V*) and instrumentality (*I*) dimensions, which establish that intentional human action requires psychological valuation of outcomes and the drive to achieve them. It also supports the psychological readiness dimension within Baldwin and Ford's (1988) trainee characteristics domain. This dominant path coefficient is consistent with contemporary empirical findings by Ouerdian (2025), Ligale (2026), and Yang et al. (2025), who identified motivation as the primary bridge converting instruction

into active engagement, as well as Silva and Pinto (2024) and Hamzah et al. (2025), who demonstrated that psychological drive is what makes skills "stick" under demanding institutional constraints.

In resource-constrained environments like FMC Bida and Umar Sanda General Hospital, healthcare workers frequently encounter systemic bottlenecks, including heavy patient loads, equipment deficits, and bureaucratic delays. Under such conditions, technical ability alone remains dormant; it requires intrinsic and extrinsic psychological drive for a nurse or administrator to actively push past workplace frustrations, break away from obsolete routines, and intentionally implement modern clinical protocols. As a researcher, I argue that motivation is the true operational engine of public health reform in developing nations. While ability represents potential capacity, motivation represents the active kinetic force that translates learned knowledge into daily ward routines under real-world pressures.

4.10.3 Moderating Effect of Trainee Motivation on the Trainee Ability–Transfer of Training Relationship

The final hypothesis test uncovered a statistically significant, negative moderating effect for the interaction term (Trainee Motivation $\times$ Trainee Ability) on Transfer of Training ($\beta = -0.185, t = 2.695, p = 0.007$). Theoretically, while Vroom's (1964) *Expectancy Theory* proposes a simple linear multiplicative relationship (*Performance = Ability $\times$ Motivation*), these empirical results support modern non-linear and bounded interaction models of performance (Ouerdian, 2025). It illustrates a ceiling effect or law of diminishing marginal returns regarding psychological drivers when baseline competence is exceptionally high. This intricate interaction aligns with recent workplace studies by Kuraoka (2026), Mehner et al. (2025), and Nĩmante et al. (2025), which demonstrate that

specialized clinical environments introduce unique structural dynamics that alter how individual traits interact to produce actual skill application.

In public hospital wards, highly experienced medical consultants and specialized nurses already operate at a high baseline of clinical autonomy, where adherence to standardized medical protocols is driven primarily by professional duty and technical mastery rather than fluctuating motivational states. Consequently, increasing their personal motivation yields negligible additional training transfer. Conversely, for lower-ability or junior staff, motivation acts as a critical lifeline that compensates for technical gaps and significantly boosts skill application. As a researcher, I argue that this dampening interaction is a practical reality of professional healthcare delivery; hospital management must therefore adopt a differentiated strategy by prioritizing motivational interventions for junior staff while providing advanced technical infrastructure and autonomy for high-ability personnel.

5. Conclusion

Based on the structural model analysis, it is concluded that Trainee Ability and Trainee Motivation are both highly critical, interdependent determinants of Transfer of Training among public healthcare personnel at the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida. Specifically, a strong baseline of technical capability (Trainee Ability) provides the necessary cognitive foundation for staff to absorb new knowledge, while an employee's internal psychological drive (Trainee Motivation) acts as the single most powerful direct catalyst for translating that knowledge into active clinical and administrative practice. Furthermore, the study concludes that Trainee Motivation significantly moderates the relationship between Trainee Ability and Transfer of Training

through a negative interaction, proving that the structural relationship is non-linear; the boosting power of motivation is vital for maximizing training transfer among lower-ability personnel, but it tends to level off for highly skilled, experienced staff members who rely primarily on standardized professional medical guidelines.

Recommendations

Based on the empirical finding that Trainee Ability directly and significantly enhances the Transfer of Training, the management of the Federal Medical Centre, Bida, and Umar Sanda General Hospital, Bida, must restructure their pre-training protocols to accurately assess and build foundational employee competence. Instead of deploying a uniform training program for all staff, institutional administrators should conduct comprehensive pre-training needs assessments to evaluate baseline technical readiness and clinical capability. For personnel identified as having lower baseline capabilities, preparatory foundational modules should be introduced before the main training interventions. By systematically elevating baseline Trainee Ability prior to advanced clinical or administrative sessions, these public healthcare institutions can ensure that participants possess the cognitive readiness required to absorb, adapt, and successfully transfer complex medical protocols back to their daily hospital floor duties.

Concurrently, given that Trainee Motivation was identified as the strongest direct predictor of Transfer of Training and a significant moderator of the ability–transfer relationship, management must design targeted motivational interventions that differentiate between staff segments. For less experienced or lower-ability personnel where motivation has a strong boosting effect, leadership should implement immediate post-training support systems, such as recognition

awards, continuous mentoring, and clear performance incentives to sustain their drive. Conversely, for highly skilled, expert personnel where the interaction effect demonstrated that motivation naturally levels off management should focus less on basic behavioural encouragement and more on structural empowerment. This includes appointing high-ability staff as peer mentors,

involving them in curriculum design, and removing workplace barriers to allow them to transfer knowledge smoothly according to standardized professional guidelines. Fostering institutional Trainee Motivation through these distinct approaches will maximize training investments and optimize healthcare delivery across Niger State.

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