

The Role of Leadership in Moderating the Effect of Interprofessional Collaboration on Training Quality at Bali Mandara Eye Hospital

Lusius Lino Febronius Gibson^{1*}, Ni Ketut Dewi Irwanti², Luh Komang Candra Dewi³

Master of Management Program, Faculty of Business, Tourism and Education, Universitas Triatma Mulya, Bali, Indonesia

Corresponding Author: Lusius Lino Febronius Gibson,
202461101078@triatmamulya.ac.id

ARTICLE INFO

Keywords: Interprofessional Collaboration, Leadership, Training Quality, Health Professionals, Teaching Hospital

Received : 25, June

Revised : 22, July

Accepted: 20, August

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ABSTRACT

This study examines the effects of interprofessional collaboration (IPC) and leadership on training quality and tests whether leadership moderates the IPC-training quality relationship at Bali Mandara Eye Hospital. A quantitative cross-sectional survey was conducted among health professionals and other health-related personnel. From a population of 163 employees, 116 respondents were selected using proportionate stratified random sampling. Data were collected through a structured five-point Likert-scale questionnaire and supported by documentation, observation, and interviews. Partial Least Squares-Structural Equation Modeling showed that IPC positively and significantly affected training quality ($\beta = 0.455$, $t = 4.920$, $p < 0.001$), while leadership also had a positive and significant direct effect ($\beta = 0.434$, $t = 4.663$, $p < 0.001$). The interaction between IPC and leadership was positive but not significant ($\beta = 0.028$, $t = 0.613$, $p = 0.540$). Leadership therefore functioned as a predictor moderator: it independently improved training quality but did not strengthen or weaken the effect of IPC. The findings indicate that hospitals should reinforce cross-professional partnership, cooperation, and coordination while improving leaders' individualized support and integrating leadership practices into interprofessional training design.

INTRODUCTION

Interprofessional collaboration (IPC) represents a fundamental shift from fragmented professional practice toward coordinated, patient-centered health care. It involves developing and maintaining effective working relationships among health professionals, learners, patients, families, and communities through respect, trust, shared decision-making, and partnership (World Health Organization, 2010; Patima, 2022). IPC is particularly relevant to teaching hospitals because clinical service, education, and training occur within the same organizational environment.

IPC comprises partnership, cooperation, and coordination. Partnership positions each profession as an equal contributor rather than as a subordinate occupational group. Cooperation combines professional authority and competence through an agreed division of work, while coordination enables teamwork through effective communication and information exchange (Orchard et al., 2018; Fathya et al., 2021). These mechanisms can improve integrated care and create a richer clinical learning environment.

Evidence indicates that IPC supports coordinated, patient-centered chronic care and comprehensive service delivery (Pascucci et al., 2021; Boulanger et al., 2024). Nevertheless, barriers remain, including insufficient time and training, poorly defined roles, fear of losing professional identity, ineffective communication, and limited recognition of other professions' contributions (Rawlinson et al., 2021). Without deliberate organizational support, multidisciplinary work may remain parallel rather than genuinely collaborative.

Bali Mandara Eye Hospital is a type A specialized eye hospital and teaching hospital with an accredited education, training, and research management unit. It has supported clinical education for medical students, ophthalmology residents, nurses, and other health professionals and has independently organized health training since 2023. Hospital records documented 33 training activities during 2023-2025, but none specifically addressed IPC or Ward Board Meetings. Internal discussions also identified that training remained separated by profession, IPC content was absent from learner orientation, and leadership support had not yet been fully integrated into interprofessional learning activities.

Activity Theory explains learning as the product of interactions among individuals, teams, tools, rules, division of labor, and organizational objectives (Hashim & Jones, 2007; Hasan & Kazlauskas, 2014). Within this framework, leadership shapes rules and mediates how organizational elements support collective learning. Although prior studies suggest that leadership is essential to sustaining IPC (Hu & Broome, 2020; Bornman & Louw, 2023), evidence is limited regarding whether leadership amplifies the effect of IPC on training quality in a specialized teaching hospital. This study therefore analyzes the direct effects of IPC and leadership on training quality and tests leadership as a moderating variable at Bali Mandara Eye Hospital.

LITERATURE REVIEW

Interprofessional Collaboration

IPC is a process of communication and shared decision-making in which the combined knowledge and skills of multiple professions generate a synergistic effect. Collaborative practice includes responsibility, accountability, communication, cooperation, coordination, assertiveness, professional autonomy, and mutual trust and respect (Bridges et al., 2011). Formal interprofessional learning arrangements have improved learning processes and caring ability among health-profession students (Bridges et al., 2011; Munoz-Rubilar et al., 2020). In this study, IPC was operationalized through partnership, cooperation, and coordination.

Leadership

Leadership is the ability and process of influencing, motivating, and directing individuals or groups to contribute effectively to organizational goals. The study adopted four transformational leadership dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Azmy, 2021). Leaders can facilitate IPC by serving as role models, initiating and maintaining collaboration, and demonstrating fairness and benevolence toward team members (Hu & Broome, 2020).

Training Quality

Training quality denotes the degree to which a training program achieves excellence and produces intended learning and organizational outcomes. It was evaluated using the Kirkpatrick framework: reaction, learning, behavior, and results (Azizah et al., 2023). Reaction assesses participant satisfaction; learning captures changes in knowledge, attitudes, or skills; behavior concerns transfer to the workplace; and results evaluate organizational effects. An interprofessional environment can strengthen each level by linking learning content to coordinated clinical practice.

Conceptual Framework and Hypotheses

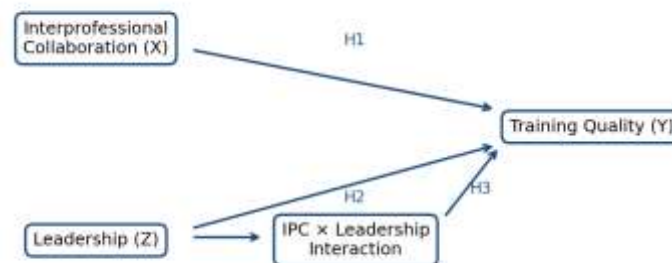


Figure 1. Conceptual framework and hypothesis paths
Source: Developed by the author from the research model, 2026

H1: Interprofessional collaboration has a positive and significant effect on training quality.

H2: Leadership has a positive and significant effect on training quality.

H3: Leadership significantly moderates the effect of interprofessional collaboration on training quality.

METHODOLOGY

This study used a non-experimental quantitative cross-sectional design at Bali Mandara Eye Hospital, Bali Province, Indonesia. The population comprised 163 civil-servant health professionals and other health-related personnel working directly in hospital services: physicians, nurses, medical record officers, radiographers, laboratory personnel, optometrists, nutritionists, anesthesia personnel, pharmacists, and pharmacy technicians. Eligible participants had worked at the hospital for at least one year, had attended a hospital education or training program, and agreed to participate. Employees who did not meet these criteria were excluded.

The minimum sample was calculated using the Slovin formula with a 5% margin of error. Proportionate stratified random sampling then ensured representation across professional groups, resulting in 116 respondents: 16 physicians, 73 nurses, 5 medical record officers, 1 radiographer, 2 laboratory personnel, 3 optometrists, 2 nutritionists, 2 anesthesia personnel, 5 pharmacists, and 7 pharmacy technicians.

Primary data were collected using a structured closed questionnaire scored on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). IPC was measured through partnership, cooperation, and coordination. Leadership was measured through idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Training quality was measured through reaction, learning, behavior, and results. Documentation, observation, and interviews were used to support interpretation. Item validity required a product-moment correlation above 0.30, and reliability required Cronbach's alpha above 0.70.

Table 1. Variables, indicators, and descriptive means

Variable	Indicators	Mean
IPC (X)	Partnership; cooperation; coordination	4.01
Leadership (Z)	Idealized influence; inspirational motivation; intellectual stimulation; individualized consideration	3.93
Training quality (Y)	Reaction; learning; behavior; results	4.09

Source: Processed research data, 2026

Descriptive statistics summarized respondent characteristics and variable means. Hypotheses were tested with variance-based Partial Least Squares-Structural Equation Modeling (PLS-SEM) in SmartPLS 3. The outer model was

evaluated using indicator loadings, Average Variance Extracted (AVE), Cronbach's alpha, composite reliability, and the Fornell-Larcker criterion. The inner model was evaluated using R^2 , adjusted R^2 , path coefficients, t-statistics, and p-values generated through bootstrapping. Effects were considered significant when $t > 1.96$ and $p \leq 0.05$. Moderation was classified by comparing the significance of the leadership direct effect and the $IPC \times$ leadership interaction effect (Ngatno, 2015).

RESEARCH RESULT AND DISCUSSION

Respondent Characteristics

All 116 selected respondents were included in the analysis. Most respondents were women (70.7%), older than 40 years (44.0%), nurses (62.9%), and employees with more than six years of service (74.1%). The profile indicates that perceptions were largely provided by experienced personnel with sustained exposure to the hospital's clinical and training systems.

Table 2. Respondent characteristics

Characteristic	Dominant category	n	%
Age	>40 years	51	44.0
Sex	Female	82	70.7
Profession	Nurse	73	62.9
Length of service	>6 years	86	74.1

Source: Processed research data, 2026

Descriptive Findings

IPC obtained a mean score of 4.01, indicating good collaborative practice. Cooperation received the highest mean (4.09), followed by coordination (4.00), while partnership was lowest (3.95). Leadership was also rated positively (mean 3.93). Inspirational motivation was strongest (4.08), whereas individualized consideration was substantially lower (3.60), suggesting a need for more personal coaching, mentoring, feedback, and attention to individual development needs. Training quality recorded a mean of 4.09. Results (4.16), behavior (4.15), and learning (4.12) were rated higher than reaction (3.96), indicating that participants perceived useful outcomes but saw room to improve learning methods, facilities, media, and the immediate training experience.

Measurement and Structural Models

The research instrument was valid and reliable. Pearson item-total correlations ranged from 0.697 to 0.906, exceeding the 0.30 criterion, while preliminary Cronbach's alpha values ranged from 0.712 to 0.879. In the PLS measurement model, loadings for the three substantive constructs ranged from 0.713 to 0.950. AVE values were 0.672-0.767, composite reliability values were 0.859-0.929, and Cronbach's alpha values were 0.751-0.897. The Fornell-Larcker

criterion was met because each construct's square root of AVE exceeded its correlations with the other constructs.

Table 3. Summary of PLS-SEM evaluation

Construct	Loading	α	CR	AVE
IPC	0.713-0.877	0.751	0.859	0.672
Leadership	0.780-0.950	0.896	0.929	0.767
Training quality	0.806-0.912	0.897	0.928	0.764

Source: Processed research data, 2026

The structural model explained 70.1% of the variance in training quality ($R^2 = 0.701$; adjusted $R^2 = 0.693$). This indicates that IPC, leadership, and their interaction jointly provided substantial explanatory power for perceived training quality, while 29.9% of the variance was attributable to factors outside the model.

Hypothesis Testing

Table 4. Direct and moderating effects

Path	β	t	p	Decision
IPC → Training quality	0.455	4.920	<0.001	Supported
Leadership → Training quality	0.434	4.663	<0.001	Supported
IPC × Leadership → Training quality	0.028	0.613	0.540	Not supported

Source: Processed research data, 2026

Effect of IPC on Training Quality

IPC had a positive and significant effect on training quality ($\beta = 0.455$, $t = 4.920$, $p < 0.001$), supporting H1. Stronger partnership, cooperation, and coordination were associated with better participant reactions, learning, workplace behavior, and organizational results. Collaboration enables professions to exchange knowledge, clarify roles, coordinate patient care, and connect training content to actual clinical workflows. This finding is consistent with the World Health Organization's position that collaborative practice strengthens integrated health care and interprofessional learning (World Health Organization, 2010). It also aligns with evidence that coordination supports implementation of IPC in teaching hospitals (Fathya et al., 2021) and that academic-clinical partnerships create more effective learning environments (Bvumbwe, 2016).

The comparatively low partnership score deserves attention. Although respondents generally reported good collaboration, partnership requires more than task sharing: it involves equal professional status, mutual trust, open communication, and shared decisions. The hospital should therefore provide structured interprofessional case discussions, Ward Board Meetings, collaborative simulation, and joint training evaluation. These activities can shift collaboration from informal cooperation toward an explicit learning system.

Effect of Leadership on Training Quality

Leadership had a positive and significant direct effect on training quality ($\beta = 0.434$, $t = 4.663$, $p < 0.001$), supporting H2. Leaders influence whether personnel receive direction, encouragement, resources, psychological safety, and opportunities to apply new competencies. Inspirational motivation was the strongest leadership indicator, suggesting that managers were effective in generating enthusiasm. Intellectual stimulation and idealized influence were also rated favorably, indicating support for ideas, problem solving, trust, and role modeling.

Individualized consideration was the weakest indicator. Training quality can be improved when leaders identify individual competence gaps, conduct coaching and mentoring, provide specific post-training feedback, and match development opportunities to professional roles. The result is consistent with evidence that leadership development supports health-profession education and collaborative practice (Bornman & Louw, 2023). Leadership should therefore be treated as an independent organizational determinant of training quality rather than merely as administrative endorsement.

Moderating Role of Leadership

The IPC $\times$ leadership interaction was positive but not significant ($\beta = 0.028$, $t = 0.613$, $p = 0.540$); therefore, H3 was not supported. Leadership neither strengthened nor weakened the effect of IPC on training quality. Under the moderation classification used in the thesis, leadership was a predictor moderator: its direct effect on the outcome was significant, but the interaction effect was not (Ngatno, 2015).

This finding does not mean leadership is unimportant. Rather, IPC and leadership appear to operate primarily as parallel direct drivers of training quality. One explanation is that leadership practices had not yet been systematically embedded into interprofessional training. The absence of dedicated IPC or Ward Board Meeting training during 2023-2025 supports this interpretation. Leaders may motivate personnel and support training generally without altering how collaboration translates into learning outcomes. A measurable moderating effect may require more explicit integration through shared learning objectives, protected time, defined interprofessional roles, joint facilitation, and routine post-training review.

The result differs from conceptual and review evidence suggesting that leadership is central to maintaining academic-practice partnership and collaborative innovation (Bvumbwe, 2016; Bornman & Louw, 2023). The difference may reflect context, measurement, or study design. The cross-sectional data captured perceived leadership at one point in time, while moderation may emerge only after sustained implementation of interprofessional structures. Future longitudinal or intervention studies should test whether leadership becomes a significant moderator after formal IPC training and Ward Board Meetings are established.

Practical Implications

Table 5. Priority management actions

Priority	Evidence	Recommended action
Partnership	Lowest IPC mean (3.95)	Interprofessional case review, shared decisions, and Ward Board Meetings
Individual support	Lowest leadership mean (3.60)	Coaching, mentoring, feedback, and individualized development plans
Training experience	Lowest quality dimension: reaction (3.96)	Improve facilitation, learning media, facilities, and participant feedback
Integration	Moderation not significant	Embed leadership roles, shared objectives, and joint evaluation into IPC training

Source: Processed research data, 2026

CONCLUSION AND RECOMMENDATIONS

Interprofessional collaboration and leadership each had positive and significant direct effects on training quality at Bali Mandara Eye Hospital. IPC improved training quality through partnership, cooperation, and coordination, while leadership contributed through role modeling, motivation, intellectual stimulation, and individualized support. Leadership did not significantly moderate the effect of IPC on training quality and was therefore classified as a predictor moderator.

Hospital management should strengthen cross-professional partnership, expand leaders' individualized consideration, improve participants' immediate training experience, and formally integrate leadership practices with IPC learning. Priority strategies include Ward Board Meetings, joint case discussions, collaborative simulation, coaching, mentoring, and multidisciplinary post-training evaluation. These measures may improve both workforce competence and the quality of integrated eye care.

ADVANCED RESEARCH

The study was limited to one specialized hospital, used self-reported questionnaire data, examined only three constructs, and employed a cross-sectional design. Causal conclusions and generalization to other hospitals should therefore be made cautiously. Future research should use longitudinal, multicenter, or intervention designs and consider organizational culture, psychological safety, workload, learning transfer, and training governance as additional variables.

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