

Hospital Innovation and its Relationship with Transformational and Ambidextrous Leadership

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ABSTRACT

Purpose: The study aims to examine the influence of transformational and ambidextrous leadership styles on administrative and technological innovation in public sector hospitals. It also examines the influence of each component of leadership styles on hospital innovation.

Design/methodology/approach: This cross-sectional study employed the survey methodology to investigate the relationships between leadership styles and hospital innovation. A total of 315 usable responses were collected from medical officers working in public sector hospitals. A 29-item scale was used to assess the leadership styles and a 17-item scale was used to assess hospital innovation. Demographic data were obtained, which included age, work tenure, gender, and educational level.

Findings: The hospitals demonstrated a moderate level of administrative and technological innovation. As perceived by the medical officers, transformational and ambidextrous leadership styles were positive and significant predictors of hospital innovation. It further revealed that the idealized influence and intellectual stimulation components of transformational, and exploitation behaviors of ambidextrous leadership are positive and significant predictors of hospital innovation.

Conclusions: Transformational and ambidextrous leadership styles were effective in enhancing innovation in healthcare organizations. More attention must be focused on developing leadership competencies among medical doctors to perform leadership roles in their organizations and promote innovation.

Implications: Healthcare policies and strategies are needed to promote innovation, and facilitate the implementation of certain leadership qualities by providing healthcare leaders with the appropriate training and environment.

Originality/value: This research presents a rare insight into the current state of healthcare innovation in the public sector hospitals in Pakistan, especially because the country is relatively under-researched and under-resourced in the health sector. Thus, the research adds to the theoretical views concerning earlier research undertaken in other, mainly developed countries, highlighting new perspectives on healthcare leadership and innovation..

Keywords: Transformational leadership; Ambidextrous leadership; Hospital innovation.

1 Introduction

Healthcare organizations operate in a very complex and uncertain environment. They must constantly change to offer the best patient care, diagnostics, and treatments. In this context, innovation is a critical element that ensures the survival and success of hospitals (Flessa and Huebner, 2021). According to Kimble and Massaoud (2017), the idea of innovation is not particularly new. As a notion borrowed from other industries and with a definition akin to those used in business, technology, and marketing, the phrase has found its way into the healthcare industry. Innovations in the field of healthcare are under the broader umbrella of social innovations, which aim to solve social issues. By implementing systemic changes, social innovation promotes novel strategies for addressing the challenges of poverty, education, health, and overall human development. The World Health Organization (WHO) has urged the need to accelerate innovation in healthcare. "Health innovation improves the efficiency, effectiveness, quality, sustainability, safety, and/or affordability of healthcare (WHO, 2023)." This could include new or enhanced healthcare policies, practices, systems, patient care services, delivery techniques, and diagnostic and treatment technologies. Additional factors to consider are advancements in research, patient happiness, education, and access to affordable healthcare. Simply stated, the ultimate purpose of health innovation is to enhance our capacity to meet demands for healthcare by enhancing the effectiveness of the healthcare system (Kimble and Massaoud, 2017). There are several advances in healthcare innovation and the need is growing, but theoretical and scientific research in this field is still quite limited as the majority of the publications in the past five years and before are related to

innovation in business and commercial sectors. At the same time, there is an increasing demand for research on healthcare innovations (Flessa and Huebner, 2021). Therefore, the current study is an attempt to fill this gap concerning innovation in the healthcare literature.

Employees, particularly medical personnel, play an important role in offering technological and administrative innovation. They develop and execute creative solutions in their hospitals, thereby increasing their capacity for innovation. As a result, hospital leadership should be able to build synergies with medical supervisors and paramedics to suggest valuable ideas or reforms by sharing expertise and improving their learning capacities. The hospital's administration should create a culture of innovation and foster both individual and collective innovation among their employees. For hospitals to successfully manage the complex nature of healthcare organizations, developing and retaining innovative leadership that fosters innovation at the individual and organizational levels is currently the most significant and important challenge (Marques *et al.*, 2022). However, despite its importance, the knowledge about organizational and individual factors underlying the most suitable leadership style is still limited (Le and Lei, 2019). Although it is well known that leadership is an important driver of innovation, however, there is a gap in the literature regarding the most suitable leadership style in developing countries, especially within the context of the healthcare sector. Therefore, the current research has addressed this important issue by studying the type of leadership that may have a significant and positive relationship with innovation in health organizations.

In general, leadership styles influence organizational innovation directly or indirectly. Leaders have an impact on the culture of the organization, organizational learning, information exchange, and employees' behavior. They also have an impact on organizational practices that help to create a climate that fosters creativity (Jia *et al.*, 2018). Organizational innovation and leadership styles have been the subject of several studies. All positive leadership styles including entrepreneurial, strategic, authentic, ethical, spiritual, and servant leadership have been shown to influence organizational innovation, according to systematic research reviews by Alblooshi *et al.* (2020) and Lee *et al.* (2019). Organizational innovation is impacted both directly and indirectly by the most widely researched leadership styles, such as transformational and transactional leadership (Günzel-Jensen *et al.*, 2018). Miller and Miller (2020) emphasized the need for leaders to be more transformational to foster innovative behaviors. In addition, Rosing *et al.* (2011) asserted that innovation is a complex phenomenon. Different leadership behaviors are essential at different stages of innovation. The researchers claimed that in addition to transformational leadership behaviors, ambidexterity of leadership is required at the innovation initiation and innovation implementation stage. These two stages of innovation are called the exploration and exploitation stages. In any case, despite the lack of conclusive results about the specific leadership style that encourages innovation, it can be asserted that leadership is one of the main factors to encourage innovation in companies/hospitals (Sethibe and Steyn, 2017). Based on those two leadership styles, we built a framework of leadership style and their impact on hospital innovation.

2 Literature Review and Hypotheses Development

A thorough search was conducted to identify published papers that examined the relationship between leadership styles and innovation. We used two keywords: lead* AND innovate* with truncation in the advanced search option to fetch articles related to the leadership and innovation variables. Only articles using these keywords in the title field were searched and were published within the past five years (2018-2022). The search was expanded to retrieve all other related words and synonyms used for leadership and innovation. The results were further filtered to articles published in the English language only. A systematic review revealed that a substantial amount of literature on leadership and its relationship with several variables of innovation was produced during the past five years. The research area appeared to have received greater attention during the past five years than ever before. It was observed that most of the research has taken place in the commercial or industrial sector and there was little to no attention given to leadership and innovation in healthcare. Therefore, this study is an attempt to fill this gap in the literature and addresses the important issue of leadership and its impact on innovation in healthcare to deliver high-quality patient care and improve life expectancy.

Transformational leadership consists of four components, namely: idealized influence, intellectual stimulation, intellectual motivation, and individualized consideration, and is reported as strongly associated with organizational innovation. The empirical investigations by Li *et al.* (2017); Al-Farhan (2018); Liu and Lee, (2018); Sattayaraksa and Boon-itt, (2018); Al-Husseini, El-Beltagi and Moizer, (2019); Li *et al.*, (2019); Taylor, Santiago and Hynes, (2019); Pradhan and Jena, (2019); Zuraik and Kelly, (2019); Hansen and Pihl-Thingvad, (2019); Al-Husseini and Moizer, (2021); Al-Husseini *et al.* (2021); Puni *et al.* (2022); and, Sarwar *et al.* (2022) have consistently reported positive

relationships between transformational and innovation. Hence, based on these studies we can establish the following hypothesis:

H1: Transformational leadership is positively related to hospital innovation.

This leads to the following sub-hypotheses:

H1a: Idealized influence is positively related to hospital innovation.

H1b: Inspirational motivation is positively related to hospital innovation.

H1c: Intellectual stimulation is positively related to hospital innovation.

H1d: Individualized consideration is positively related to hospital innovation.

Rosing *et al.* (2011) established that due to the complex nature of innovation from the ideation to the implementation stage, any one leadership style is not sufficient. A leader needs to switch between different behaviors at the idea exploration (opening behaviors) stage and the exploitation (closing behaviors) stage. These behaviors are called ambidextrous leadership behaviors. Several studies have reported a significant relationship between ambidextrous leadership and innovation. For example, ambidextrous leadership and employees' innovative behaviors (Lawrence *et al.*, 2022); organizational innovation (Jia *et al.*, 2021); exploratory and exploitative innovation (Yi, Mao and Wang, 2019); team innovation (Dilupa and Yi-Chen, 2020), innovative capability and radical innovation (Li *et al.*, 2020); and, technological innovation (Yang *et al.*, 2021). Therefore, the literature and empirical research on the importance of ambidexterity of leadership behaviors helped us to establish the following hypothesis:

H2: Ambidextrous leadership is positively related to hospital innovation.

This leads to the following sub-hypotheses:

H2a: Opening leadership behaviors are positively related to hospital innovation.

H2b: Closing leadership behaviors are positively related to hospital innovation.

Based on the above hypotheses, Figure 1 illustrates the conceptual framework of the study. The conceptual framework aims to investigate the relationship between leadership styles and hospital innovation. Hospital innovation constitutes both administrative and technological innovations.

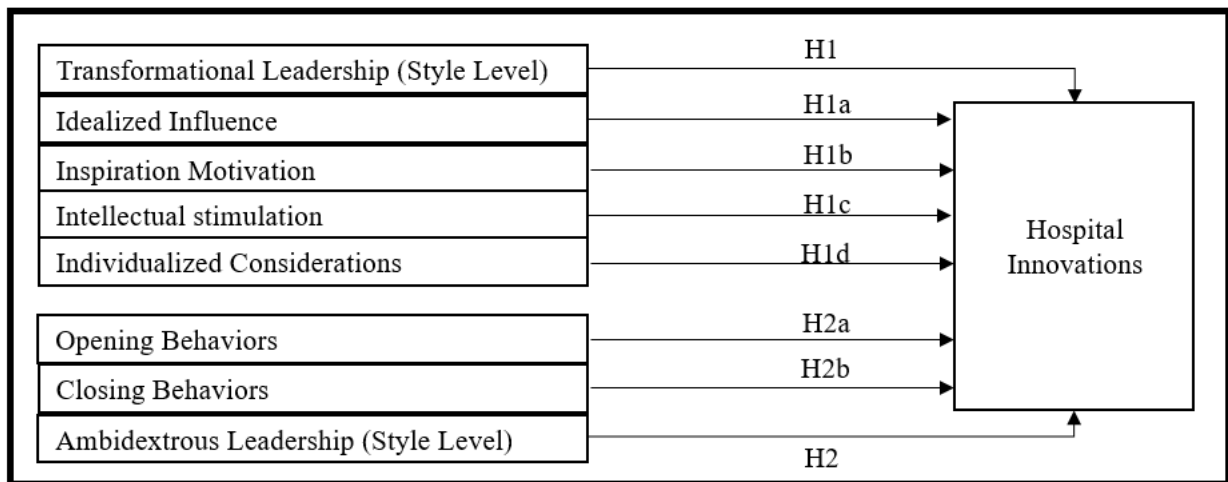


Figure 1: Conceptual framework

3 Methodology

Population and Sampling

The sample consisted of medical officers employed in public sector hospitals. Medical officers are entry-level doctors who work in teaching hospitals as part of their house job/residency requirement. The reason for choosing public sector hospitals was that their performance lacks behind the private sector due to their strong bureaucratic nature. In addition, public hospitals do not give due importance to innovation. Political interference is common leaving serious leadership and governance problems. Moreover, doctors are the most informed individuals and important players in delivering healthcare services. Another rationale is that the doctors are in leadership positions in these hospitals as well. A stratified random sample was drawn from the large hospitals. Data were collected using an online survey. A total of 320 usable responses were received which were analyzed using SPSS version 26.

The demographics statistics indicated that among the respondents, about 52% were female medical officers, and 48% male officers. All respondents possessed an MBBS degree. The mean age of the respondents was 27 years.

Measures

Our conceptual model involved two exogenous (independent) variables and one endogenous (dependent) variable. Participants completed the 20-item scale taken from the Multifactor Leadership Questionnaire (Bass and Avolio, 2000), which measures the four dimensions of transformational leadership: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Ambidextrous leadership’s two dimensions: opening and closing behaviors were measured using a 9-item scale. Hospital innovation (administrative and technological) were measured using the 17-items scale taken from Wu and Hsieh (2013). Participants were asked to indicate their degree of perception about their immediate supervisory doctor’s leadership particular behavior by using a five point Likert scale ranging from ‘strongly disagree (1)’ to ‘strongly agree (5)’. Cronbach’s alpha (α) for transformational (TSF), and ambidextrous (AMB) leaderships was 0.94, and 0.893, respectively; and, 0.949 for hospital innovation which demonstrated excellent internal consistency of the factors (an alpha of greater than 0.70).

Results and Analysis

Descriptive statistics were used to analyze the demographic data of the sample. Before the analysis of the correlation, the scores of variables were tested for normality. The overall mean scores and standard deviation of the three constructs were: transformational leadership (M = 3.033, SD = 0.825), ambidextrous leadership (M = 2.939, SD = 0.854), and organizational innovation (M = 3.193, SD = 1.028). It was observed that ambidextrous leadership has a lower mean score as compared to transformational leadership.

Correlation Analysis

Pearson correlation coefficients were calculated to analyze the correlation among the variables. The results of correlation coefficients at each component level are reported in table 1. The overall correlation results of the higher level constructs (style level) show that hospital innovation (ORGINO) has a moderately positive and statistically significant relationship with leadership styles: transformational ($r = .603, n=320, p < .001$) and ambidextrous ($r = .553, n = 320, p < .001$). Therefore, it confirmed that an increase in transformational and ambidextrous leadership behaviors would lead to higher innovation by the doctors at the hospital level.

Table 1. Descriptive statistics and correlation analysis

	Mea n	Std. Deviation	Skewn ess	Kurto sis	ORGI NO	TSFII	AMB OB	AMB CB	TSFI M	TSFIS	TSFI C
ORGI NO	3.19	1.029	-0.311	-1.209	0.82						
TSFII	2.99	1.047	0.001	-1.276	0.497** *	0.795					
AMBO B	2.85	1.045	0.206	-1.228	0.271** *	0.250* **	0.765				
AMBC B	3.06	1.129	-0.105	-1.223	0.575** *	0.481* **	0.276* **	0.803			
TSFIM	3.15	0.895	-0.483	-0.529	0.555** *	0.596* **	0.150* **	0.693* **	0.769		
TSFIS	3.08	1.061	-0.196	-1.138	0.582** *	0.617* **	0.278* **	0.695* **	0.734* **	0.796	
TSFIC	2.97	1.024	0.132	-1.152	0.519** *	0.511* **	0.240* **	0.648* **	0.575* **	0.636* **	0.76 2

***. Correlation is significant at the 0.01 level (2-tailed).

4 Measurement Model Assessment

The measurement model specifies the relationship between response items (observed variables) and their underlying latent variables (Gunzler, Perzynski and Carle, 2021, p. 124). The two main criteria used to assess the measurement model include the goodness of fit of the model and the validity and reliability of the construct (Hair, Page and Brunsveld, 2020). In this regard, Confirmatory factor analysis (CFA) was run to establish the convergent and discriminant validity of the scales. Table 2 shows all item loadings, beta values, Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and MaxR(H). The scores were on their respective scale and were statistically significant.

Discriminant validity indicates the extent to which a given construct differs from other constructs (Henseler *et al.* 2017, p.361). We applied Heterotrait-monotrait (HTMT) ratio to assess discriminant validity (Henseler, Ringle and Sarstedt, 2015). The value of HTMT should be less than 0.9 to indicate. The results are presented in table 3. The HTMT values of all the components were less than 0.90 indicating that discriminant validity between the factors was established.

Table 2. Convergent and discriminant validity statistics

Predictor	Outcome	Std Beta	CR	AVE	MSV	MaxR(H)
	ORGINO8	0.836				
	ORGINO12	.841 ***				
	ORGINO16	.833 ***				
	ORGINO10	.827 ***				
	ORGINO15	.841 ***				
	ORGINO9	.825 ***				
	ORGINO1	.815 ***				
	ORGINO7	.829 ***				
ORGINO	ORGINO17	.821 ***	0.972	0.673	0.338	0.972
	ORGINO4	.814 ***				
	ORGINO6	.829 ***				
	ORGINO14	.816 ***				
	ORGINO11	.804 ***				
	ORGINO5	.808 ***				
	ORGINO3	.825 ***				
	ORGINO2	.786 ***				
	ORGINO13	.793 ***				
	TSFII8	0.798				
	TSFII6	.804 ***				
	TSFII5	.784 ***				
TSFII	TSFII1	.809 ***	0.932	0.632	0.381	0.933
	TSFII7	.771 ***				
	TSFII4	.813 ***				
	TSFII3	.772 ***				
	TSFII2	.810 ***				
	AMBOB1	0.759				
	AMBOB4	.759 ***				
AMBOB	AMBOB2	.764 ***	0.876	0.585	0.077	0.876
	AMBOB5	.785 ***				
	AMBOB3	.755 ***				
AMBCB	AMBCB4	0.841	0.879	0.644	0.483	0.881

	AMBCB3	.764 ***				
	AMBCB2	.796 ***				
	AMBCB1	.807 ***				
	TSFIM4	0.767				
TSFIM	TSFIM1	.780 ***	0.853	0.592	0.539	0.853
	TSFIM3	.774 ***				
	TSFIM2	.756 ***				
	TSFIS1	0.797				
TSFIS	TSFIS2	.801 ***	0.874	0.634	0.539	0.875
	TSFIS3	.767 ***				
	TSFIS4	.820 ***				
	TSFIC4	0.741				
TSFIC	TSFIC3	.813 ***	0.847	0.58	0.42	0.85
	TSFIC1	.738 ***				
	TSFIC2	.752 ***				

Note: CR = Composite Reliability, AVE = Average Variance Extracted, MSV = Maximum Shared Variance, MaxR(H) = Maximum Reliability, ORGINO = Hospital Innovation, TSFII = TSF Idealized Influence, TSFIS = TSF Intellectual Stimulation, TSFIM = TSF Inspirational Motivation, TSFIC = TSF Individualized Consideration, AMBOB = AMB Opening Behaviors, AMBCB = AMB Closing Behaviors.

Table 3. Discriminant validity (HTMT Ratio)

	ORGINO	TSFII	AMBOB	AMBCB	TSFIM	TSFIS	TSFIC
ORGINO							
TSFII	0.496						
AMBOB	0.271	0.248					
AMBCB	0.576	0.484	0.276				
TSFIM	0.555	0.599	0.15	0.692			
TSFIS	0.582	0.613	0.275	0.689	0.733		
TSFIC	0.519	0.51	0.242	0.651	0.569	0.636	

Model Fit Assessment

Maximum likelihood estimation was utilized for testing each construct’s measurement model. The standardized factor loadings of items constituting various constructs were found to be significant and greater than 0.70. Model fitness was determined using the various fit indices: χ^2 / degrees of freedom; goodness-of-fit index (GFI); root mean square error of approximation (RMSEA); root mean square residual (SRMR); and, Chi-square (CMIN). Values obtained corresponding to the indices related to the individual construct’s measurement model met the statistical standards recommended in the literature (Hair et al., 2021). The overall measurement model capturing all of the studies constructs also very well met the goodness-of-fit norms as indicated by its fit indices (χ^2 /df = 1.321, SRMR= .033, RMSEA = .027, CFI = .979, CMIN = 1191.653, PClose = 0.682).

5 Structural Model Assessment

The main aim of this research was to examine the impact of transformational and ambidextrous leadership styles on hospital innovation. The results from SEM demonstrated a good fit for the model. Figure 2 and Table 4 show the full estimates of the direct relationship of leadership styles with hospital innovation.

H1 proposed that transformational leadership has a significant relationship with hospital innovation. Based on the results of the hypotheses tested below in table 4, it can be concluded that transformational leadership ($\beta = .547, p < 0.001$) has a positive and significant relationship with hospital innovation.

Similarly, H2 proposed that ambidextrous leadership has a significant relationship with hospital innovation. Based on the results of the hypotheses tested, it can be concluded that ambidextrous leadership ($\beta = .389, p < 0.001$) also has a positive and significant relationship with hospital innovation. It helps us in establishing that both leadership styles are predictors of hospital innovation, predicting a significant and positive relationship. Hence, the results of the study supported H1 and H2. These findings are in line with previous studies conducted by Setiawan, (2020), and Oluwafemi *et al.* (2020). Furthermore, according to the regression analysis results, transformational and ambidextrous leaderships jointly explained 45% (adjusted $R^2 = .45$) of the total variance in hospital innovation.

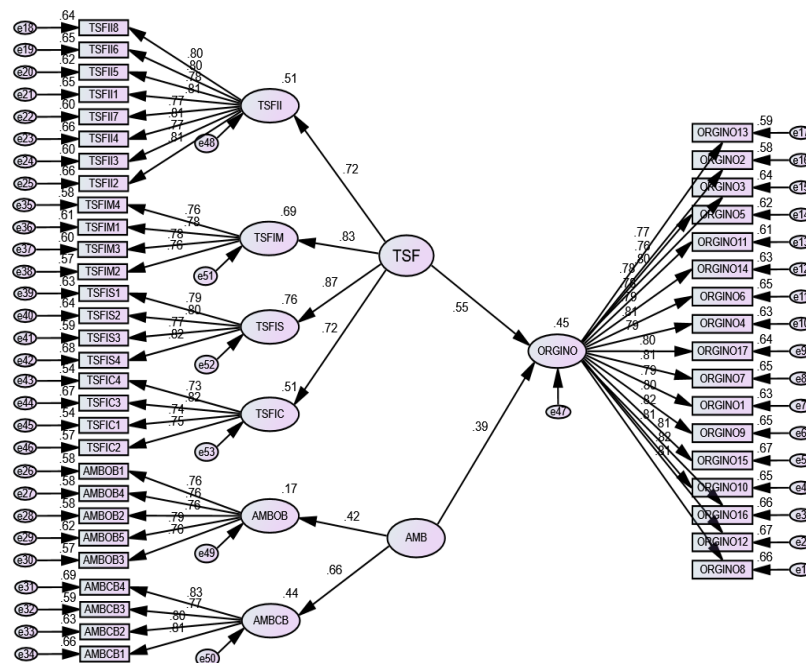


Figure 2. Structural Model Depicting the Path Estimates at Style Level

Table: 4. Results of hypotheses testing between transformational, ambidextrous leadership styles and hospital innovation

Hypothesis	Relationship	Estimate	S.E.	C.R.	P	Remarks
H1	ORGINO <--- TSF	.547	.094	7.892	***	Supported
H2	ORGINO <--- AMB	.389	.265	3.465	***	Supported

*** p<0.001

We further tested the impact of each component of leadership styles on hospital innovation, as shown in table 5 and depicted in figure 3. Idealized influence (H1a), intellectual stimulation (H1c) of transformational leadership, and closing behaviors (H2c) of ambidextrous leadership were significantly and positively associated with hospital innovation ($\beta=.191, CR=3.481; \beta=.197, CR=3.481; \beta=.262, CR=4.586$) respectively; whereas, inspirational motivation, individualized consideration of transformational leadership, and opening behaviors of ambidextrous leadership were positively related to hospital innovation but their impact was not significant ($\beta=.172, CR=3.018; \beta=.058, CR=2.771; \beta=.112, CR=2.009$). Thus, the hypotheses (H1b, H1d and H2a) are also

supported; therefore, the more idealized influence, intellectual stimulation, and exploitation (closing) behaviors the more hospital innovation. Furthermore, the four components of transformational and two components of ambidextrous leadership jointly explained 21% (adjusted $R^2 = .21$) of the total variance in hospital innovation.

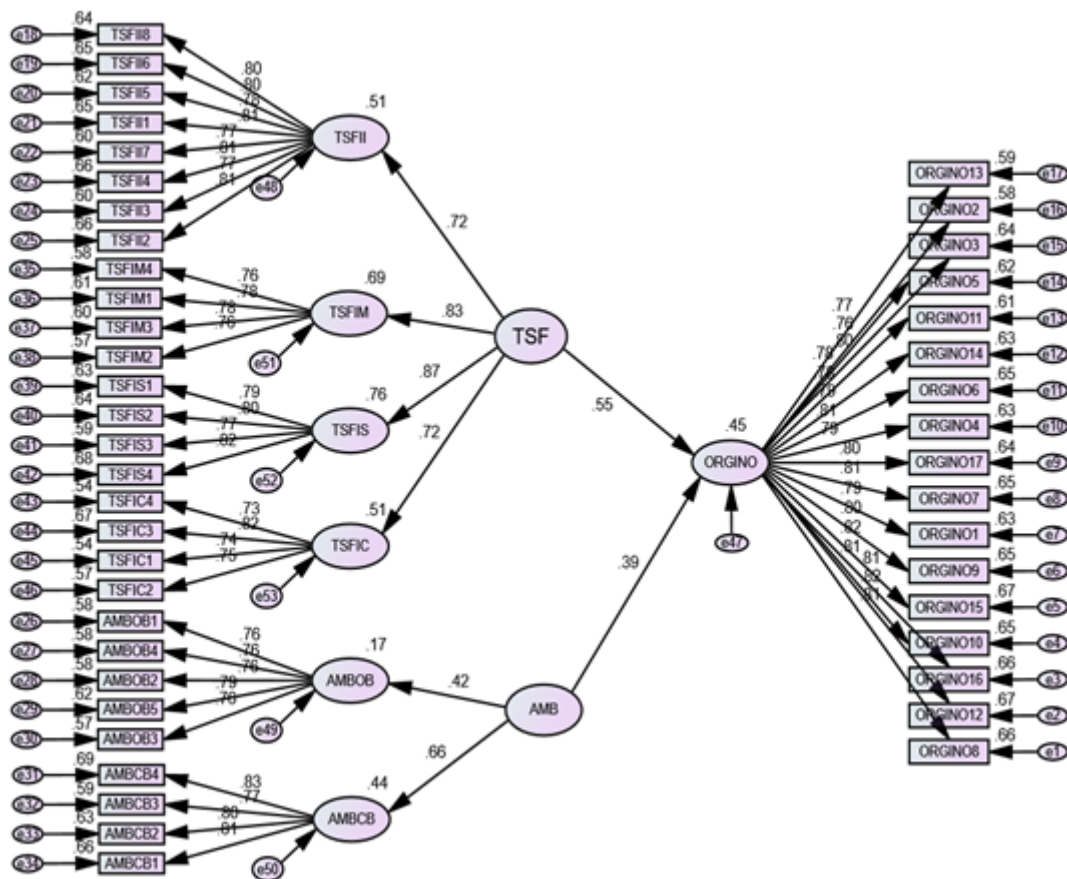


Figure 3. Structural model depicting the path estimates at component level

Table 5. Results of hypotheses testing between components of leadership styles and hospital innovation

Hypothesis	Relationship	Estimate	S.E.	C.R.	P	Remarks
H1a	ORGINO <--- TSFII	.191	.049	3.481	***	Supported
H2a	ORGINO <--- AMBOB	.112	.050	2.009	.045	Supported
H2b	ORGINO <--- AMBCB	.262	.046	4.586	***	Supported
H1b	ORGINO <--- TSFIM	.172	.058	3.018	.003	Supported
H1c	ORGINO <--- TSFIS	.197	.052	3.481	***	Supported
H1d	ORGINO <--- TSFIC	.158	.058	2.771	.006	Supported

*** $p < 0.001$

6 Discussion

The objective of this study was to investigate the underlying mechanism of the relationship between transformational, ambidextrous leadership and hospital innovation in the public sector. We hypothesized that hospital innovation is influenced by certain leadership behaviors. In line with the previous literature, our findings revealed a positive impact of leadership style and its components on innovation. Previous literature has generally found a positive role of leadership in enhancing different innovation types (e.g. Gui L. *et al.*, 2022; Cui R. *et al.*, 2022; David G. *et al.*, 2021; Darwish and Zeng, 2020; Ye *et al.*, 2018). However, this study takes that to the next level by identifying the varying impact of components of leadership styles on innovation in the healthcare sector. For instance, our findings reveal that idealized influence and intellectual stimulation by the supervisory doctor have a greater influence on innovation. Similarly, the exploitation behavior of the supervisory doctor has greater influence

as compared to the exploration behavior. This shows certain components of transformational and ambidextrous leadership are more suitable for supporting innovation among medical doctors in public sector hospitals. These findings are consistent with the upper-echelon theory (Hambrick and Mason, 1984). Supervisory leadership behaviors (idealized influence and intellectual stimulation) propagate and influence innovation goals to achieve higher performance (Le *et al.*, 2021).

Findings confirmed that supervisory doctor's unique transformational characteristics such as building mutual respect; going beyond self-interest; displaying a sense of confidence and power; acting according to value and belief; and considering the ethical and moral effect of each decision; encouraging their subordinates to look at a problem differently; suggesting new ways to complete a task; seeking different viewpoints in solving problems; rethinking ideas; and encouraging re-check ideas contribute to innovation. Similarly, ambidexterity of supervisory doctor's behaviors (exploitation or closing) such as monitoring and controlling goal attainment; establishing routines; taking corrective action; adhering to rules; sanctioning errors; and sticking to plans significantly contribute to medical and administrative innovations at the hospital. This finding, however, is in contradiction to the study conducted by Selamat *et al.* (2020) which established that closing leadership behavior fosters only explorative innovation activities. Selamat *et al.*'s (2020) study was conducted on SMEs, whereas, the current study was carried out in hospital settings. Furthermore, Oluwafemi *et al.* (2020) discovered that a combination of both leadership behaviors (opening and closing) predicts employee ambidextrous innovation behaviors, which is supported by the findings of this study.

Leaders demonstrating inspirational motivation, individualized consideration of transformational leadership, and opening behaviors of ambidextrous leadership are vital for innovation as these attributes are also positively related to hospital innovation. This suggested that the medical officers surveyed from hospitals believed that their supervisory doctors exhibited vision; enthusiasm for accomplishments; confidence; teamwork; optimism about the future. They also demonstrated qualities of individualized consideration such as teaching and coaching; individual treatment; recognizing, skills and abilities; developing an individual's capabilities; and helping get what an individual wants. These findings are similar to findings reported by Bosselut and Chareyre (2020). Similarly, the supervisory doctors also demonstrated ambidexterity of exploration (opening) behaviors such as experimentation with ideas, new ways of accomplishing a task; risk-taking; independent thinking and acting; and, giving room for ideas. These findings confirm prior literature suggesting that leaders who use supporting behaviors can foster the exploration and exploitation of ideas by employees (Jia *et al.*, 2018; Yi *et al.*, 2019; Duc *et al.*, 2020).

7 Implications

Scholars assert that leadership has a positive impact on innovation performance (Gumusluoglu and Ilsev, 2009; Jiang and Chen, 2018; Alblooshi, 2022). However, limited studies investigated the differential impact of components of leadership (Lee *et al.*, 2019). This study broadens our understanding of doctors' role in innovation in the healthcare delivery system. Thus, this study addressed the issue of scarcity of leadership and innovation literature with specific reference to the health sector. Extending its theoretical assumptions to demonstrate that certain characteristics of transformational and ambidextrous leadership play a significant role to promote doctors' innovative behaviors. It also helped in explaining how leadership can help hospitals achieve innovative outcomes. This study provides insights into innovation and leadership framework in hospitals, especially within the context of a developing country. The findings of this study have direct practical implications for policymakers and stakeholders. So, hospitals must align with the patient interests to promote innovation. Public policy professionals and hospital administrators can incorporate these findings to design and deliver leadership and innovation development programs to develop hospitals' capacity to understand and adopt effective leadership styles and people management practices. Hospitals all over the world and especially in the developing world struggle with innovation because they show reluctance to adopt a leadership style that requires delegation, empowerment, and participation. Hospital management in the public sector considers power as an immediate reward and, thus does not adopt practices that give lead or discretion to doctors to create and promote a culture of innovation. Due to this cynical approach, hospital SMEs struggle to take benefit of contemporary leadership practices and doctors' full potential to achieve an innovation-based advantage, to deliver the best medical practices. Adoption of innovation supportive leadership practices and doctors' innovative behaviors can potentially lead to enhanced diagnostics and treatments.

8 Conclusions

This study sought to ascertain whether the hospital's innovation was impacted by the leadership style of its supervisory doctors. At various levels of responsibility in the five main public sector hospitals, medical doctors (house officers) assessed the leadership qualities of their supervisory doctors and shared their perceptions of hospital innovation. The findings revealed that transformational and ambidextrous styles of leadership were significantly and positively related to administrative and technological innovations in the healthcare units. It also revealed that certain characteristics of transformational and ambidextrous leadership have a greater impact on hospital innovation. The study provided empirical evidence of the impact of leadership on hospital innovation. The findings are in line with the positive leadership theories and their relationship with organizational innovation theory. Leadership theories suggest that transformational and ambidextrous leadership positively impact organizational innovation. A hospital supervisory doctor must have the ability to choose appropriate leadership behaviors to create a culture of innovation at all levels of the organization. The stakeholders should make sure that hospital leadership is given the proper training and that there are enough resources available to strengthen leadership in healthcare organizations and foster innovation for better patient care and a longer life expectancy.

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