

Leadership and Digital Transformation in Hospitality Industry: Evidence from Pakistan

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Abstract

This study investigates the role of transformational leadership in fostering digital entrepreneurship adoption within Pakistan's hospitality sector, a domain experiencing rapid digital transition but facing limited scholarly attention. Drawing on leadership and resource-based perspectives, the research proposes a model where organizational digital readiness mediates and IT infrastructure moderates the relationship between transformational leadership and digital entrepreneurship adoption. Primary data were collected from 370 hospitality managers and entrepreneurs using a structured questionnaire based on established scales measured on a five-point Likert scale. The data were analyzed through SPSS and Hayes' PROCESS macro to test direct, mediating, and moderating effects. Results reveal that transformational leadership significantly enhances digital entrepreneurship adoption both directly and indirectly via organizational digital readiness, while IT infrastructure strengthens these relationships. The findings contribute to theory by extending leadership research into the digital entrepreneurship context of a developing country and offer practical implications for managers and policymakers to strengthen digital readiness and infrastructure. This study provides a timely contribution to understanding how leadership and organizational capabilities jointly drive digital transformation in Pakistan's hospitality industry.

Keywords: Transformational Leadership, Digital Entrepreneurship Adoption, Organizational Digital Readiness, IT Infrastructure, Hospitality Sector, Pakistan

Introduction

The rapid rate of digital transformation across economic sectors has irrevocably altered the way firms conceive of operations, strategy, and longevity. Within the hospitality domain, the migration from analogue guest interactions to algorithmically mediated

ecosystems has gained particular prominence, as evidenced by the prevailing reliance on remote reservation systems, contactless monetary transactions, and the orchestration of continuous, worldwide guest interaction (Buhalis & Law, 2008; Sigala, 2018). Viewed from a macroeconomic perspective, digital entrepreneurship has crystallized into a decisive factor of relative advantage in tourism and hospitality, enabling enterprises to create novel, digitally facilitated value propositions that confer superior experiential benefits and, in turn, define broader commercial territories of occupancy (Leung et al., 2015). Notably, the determination of the success of such initiatives extends well beyond the mere procurement of advanced technological apparatus; success pivots upon a confluence of judicious leadership orientation, comprehensive organizational preparedness, and the solidity and adaptability of infrastructural undergirding (Eze et al., 2019).

Transformational leadership (TL) is increasingly acknowledged as a strategic lever for organizations navigating the ongoing digital revolution. Such leaders are distinguished by their capacity to articulate a compelling vision, catalyse systemic innovation, and deliver tailored developmental support, thereby creating a climate conducive to cultural reorientation and the internalization of digital competencies (Bass & Riggio, 2006; Avolio & Yammarino, 2013). Within the hospitality sector, characterized by volatile customer expectations and concurrently evolving service delivery modalities, the need for transforming leaders is particularly acute; these architects of change reconcile entrenched service paradigms with emergent digital entrepreneurship vectors, including dynamic online distribution, micro-accommodation models, and data-augmented reputational advertising (Jiang & Chen, 2018). In the absence of such leadership vision, numerous small- to medium-sized enterprises in the hospitality sector encounter sustained inertia, failing to migrate their core processes to digital environments, and consequently surrendering strategic elasticity and market viability to more agile competitors.

The journey from leadership intention to the actual implementation of digital entrepreneurship is far from linear. A vital intervening variable is Organizational Digital Readiness (ODR), which embodies several interlinked dimensions. ODR encompasses the technical competencies embedded in the workforce, the extent to which operational procedures can adapt in response to digital opportunities, and a prevailing cultural disposition that values continual digital experimentation and teaching (Bharadwaj et al., 2013). Even the most visionary leaders may find that well-articulated directives on digital entrepreneurship yield attenuated results unless firms possess well-articulated digital roadmaps, a digitally literate talent pool, and harmonized data and process architectures (Chanias & Hess, 2016). Consequently, the firm's digital readiness acts as a gatekeeper that enables—or, in the absence of adequate structures, constrains—the ability of leadership ambition to translate into scalable digital entrepreneurial practices within the hospitality sector.

Additionally, the influence of transformational leadership on the uptake of digital entrepreneurship is profoundly moderated by the accessibility and quality of IT infrastructure and access (ITIA). The presence of robust infrastructure—including reliable broadband, integrated digital platforms, and resilient payment gateways—is

crucial for leaders to translate forward-looking digital strategies into tangible initiatives (Mikalef et al., 2019). In many developing contexts, persistent infrastructural deficits significantly limit even the most innovative leaders' ability to fully leverage digital entrepreneurship (Dwivedi et al., 2021). Accordingly, ITIA functions as a moderating variable that either enables or attenuates the alignment between transformational leadership vision and the realization of digital entrepreneurial goals.

Within Pakistan, the aforementioned dynamics acquire especially acute relevance. Even as the tourism and hospitality industry expands, spurred by increasing domestic itinerancy and nascent foreign interest, the sector remains conspicuously low in digital maturity (Hussain & Ali, 2015). Contemporary Pakistani hospitality enterprises are still predominantly anchored in conventional modalities; few have incorporated mechanisms such as online reservations, data-driven marketing, or structured customer relationship platforms (Khan & Khan, 2019). Moreover, executive stewardship within most organizations does not exhibit the visionary and catalytic traits necessary to champion and institutionalize digital transformation. Structural impediments—including inadequate institutional readiness and a fragile technological backbone—intensify the inertia (Ali & Khan, 2020). Although digital entrepreneurship has gained consensus as a key determinant of strategic advantage and adaptive capacity, especially among economies reliant on tourism, the Pakistani hospitality segment has attracted relatively scant scholarly attention in this context.

This study examines the role of transformational leadership in shaping the adoption of digital entrepreneurship within Pakistan's hospitality sector, positing that organizational digital readiness functions as a mediating variable. At the same time, IT infrastructure and access are treated as moderating influences. The inquiry is timely in light of Pakistan's considerable tourism promise, yet persistent shortfalls in digital maturation. Closing the identified lacuna is imperative not only for enhancing individual firm competitiveness but also for positioning the hospitality sector as a key engine of broader economic acceleration in the country. By examining the interrelationships among leadership, digital readiness, and infrastructural capabilities, the investigation makes a substantive contribution to the interdisciplinary scholarship on leadership and entrepreneurial practice in the uniquely evolving context of Pakistan, thereby enriching both literatures within a singular empirical setting.

Theoretical Support

This research combines Transformational Leadership Theory (TLT), the Resource-Based View (RBV), and the Technology-Organization-Environment (TOE) framework to elucidate the mechanisms by which leadership, organizational capabilities, and infrastructural resources catalyze the adoption of digital entrepreneurship within the hospitality sector. According to TLT (Bass & Riggio, 2006), transformational leaders project a compelling vision, foster innovative practices, and mitigate resistance to change, thereby enabling employees to integrate digital activities—including online reservation systems, e-marketing initiatives, and platform-based partnerships (García-Morales et al., 2012). However, practical leadership impact remains contingent on the presence of complementary organizational assets. Building on the RBV framework

(Barney, 1991), a firm's digital preparedness—comprised of specialized competencies, sufficiently malleable operational routines, and a pervasive digital ethos—constitutes a heterogeneous resource that converts the motivational intentions of leadership into observable patterns of digital entrepreneurship adoption (Bharadwaj et al., 2013; Warner & Wäger, 2019). Concurrently, the TOE framework (Tornatzky & Fleischer, 1990) directs analytical attention to the technical domain, positing that a supportive IT backbone—comprising reliable internet access, cloud-based applications, and complementary digital tools—constitutes an exogenous environmental force that amplifies or attenuates the combined effects of transformational leadership and organizational readiness on digital uptake (Mikalef et al., 2019; Dwivedi et al., 2021). When integrated, the combined conceptual apparatus articulates a holistic process model in which transformational leadership fosters digital entrepreneurship adoption, organizational digital readiness serves as a mediating mechanism, and IT infrastructure functions as a contextual moderator. Given the lagging digital profile and pronounced tourism assets of Pakistan's hospitality sector, the model provides a prescriptive matrix of priorities.

Hypotheses Development

Transformational leadership and digital entrepreneurship adoption

Transformational Leadership Theory posits that effective leaders actualize organizational change by articulating a compelling vision, stimulating innovation, and providing tailored support aligned with individual capabilities and aspirations (Bass & Riggio, 2006). When applied to the current digital transformation landscape, leaders who embody these characteristics systematically reduce employee inertia and foster a proactive adoption of new technological practices. Within the hospitality sector, the imperative transcends mere operational efficiency, demanding a shift from traditional service paradigms to the adoption of digital entrepreneurship domains—namely, the deployment of online booking interfaces, targeted social media outreach, and contactless payment ecosystems (Avolio & Yammarino, 2013). By cultivating a persistent culture of adaptive innovation, transformational leaders exert a decisive gravitational pull on the scale and depth of digital entrepreneurial adoption.

Robust empirical evidence supports the prescriptive effectiveness of transformational leadership. García-Morales et al. (2012) established, through structural equation modeling across diverse service industries, that transformational influence provides a statistically and substantively significant precursor to both technological adoption and multifaceted organizational innovation. Obschonka et al. (2020) extended the inquiry, demonstrating that adaptive leadership styles mediate creative entrepreneurial propensity within rapidly evolving commercial settings. The hospitality context in Pakistan, characterized by a burgeoning yet predominantly analogue framework, reinforces the necessity of transformational guidance to recalibrate existing norms towards coherent digital entrepreneurship (Hussain & Ali, 2015; Khan & Khan, 2019). Accordingly, the prevailing hypothesis posits that transformational leadership will exert a direct, statistically significant influence on the rate and depth of digital entrepreneurial uptake within the Pakistani hospitality sector.

H1: Transformational leadership has a positive effect on digital entrepreneurship adoption in Pakistan's hospitality industry.

Organizational digital readiness mediates the relationship between transformational leadership and digital entrepreneurship adoption.

While transformational leaders articulate compelling visions and galvanize their followers, the conversion of such visions into operational and entrepreneurial realities is ultimately contingent upon specific organizational capabilities. Within a Resource-Based framework (Barney, 1991), the construct of organizational digital readiness—comprising the aggregation of digital competences, malleable processes, and an enabling cultural orientation—emerges as an inimitable and strategically salient asset that endows firms with the capacity to capitalize on the widening terrain of digital entrepreneurship. Although transformational leaders may catalyse a drive toward digital adoption, the absence of readiness converts ambitious programs into rhetoric rather than realization (Chaniyas & Hess, 2016); hence, the construct mediates the linkage between leadership and the adequate appropriation of entrepreneurial initiatives. Empirical investigations consistently corroborate the mediating function of readiness within strategic digital transformation. Bharadwaj et al. (2013) established that enterprises demonstrating robust digital readiness possess superior capabilities to align and enhance technological investments for sustained competitive rent extraction. Warner and Wäger (2019) augmented this perspective by demonstrating that readiness enables leader-facilitated digital strategies to be translated into conformed operational and procedural practices. Contextualizing this link within Pakistan's hospitality landscape—characterized by acute digital skills deficits and a nascent technological ethos—demonstrates that readiness operates as an essential conditional variable that renders leader-induced digital diffusion practicable (Ali & Khan, 2020). Such findings provide a compelling rationale for operationalizing organizational digital readiness as a mediating construct within the present inquiry.

H2: Organizational digital readiness mediates the relationship between transformational leadership and digital entrepreneurship adoption.

IT infrastructure and access positively moderates the relationship between transformational leadership and digital entrepreneurship adoption

The Technology-Organisation-Environment framework, articulated by Tornatzky and Fleischer in 1990, posits that the prevailing technological landscape mediates the adoption of innovation. Within the context of hospitality enterprises, foundational information-technology architecture—encompassing high-bandwidth networking, secure digital transaction infrastructure, and integrated reservation systems—functions as the critical substrate for digital entrepreneurial activity. While transformational executives may effectively communicate their strategic vision and assess organizational readiness, the actualization of digital adoption hinges, to a substantial degree, on the sufficiency of the underlying technological infrastructure (Mikalef et al., 2019). Accordingly, this study anticipates that the quality and breadth of IT infrastructure

mediate the direct influence of executive behavior on the adoption of digital entrepreneurship.

The literature corroborates that infrastructural inadequacies constrain digital transformation, particularly in economies classified as developing (Eze et al., 2019). Further, Dwivedi et al. (2021) have quantitatively established that enterprises exhibiting robust IT infrastructure possess a pronounced advantage in executing digital innovation initiatives. Observations in the Pakistani hospitality sector reveal that enterprises located in rural or semi-urban areas face significant impediments, primarily due to inadequate infrastructure and limited access to reliable digital resources (Hussain & Ali, 2015). Consequently, we postulate that the link between executive action and the operationalization of digital entrepreneurship is reinforced to a greater extent in environments endowed with resilient IT infrastructure and comprehensive access.

H3: IT infrastructure and access positively moderates the relationship between transformational leadership and digital entrepreneurship adoption, such that the relationship is stronger under high infrastructure availability.

IT infrastructure and access moderates the indirect relationship between transformational leadership and digital entrepreneurship adoption via organizational digital readiness

Integrating mediation and moderation yields a conditional process model that situates the strength of a meditational pathway within the constraints of an environmental moderator (Preacher, Rucker, & Hayes, 2007). This investigation posits that transformational leadership has an influence on the adoption of digital entrepreneurship through the construct of organizational readiness, and that the magnitude of this mediating pathway is contingent upon the prevailing quality of information technology (IT) infrastructure. Specifically, a robust infrastructure permits the anticipation of digital readiness to translate into entrepreneurial behavior; conversely, a deficient infrastructure constrains even organizations with declared digital readiness, thus attenuating leadership-mandated initiatives.

Empirical substantiation affirms this conditional hypothesis. Warner and Wäger (2019) provide evidence that sustained derivations from digital readiness materialize only within an ecosystem equipped with external facilitators. Echoing this argument, Dwivedi et al. (2021) empirically substantiate the argument that infrastructural attributes fundamentally inform how organizational competences migrate to innovative adoption. Within the domain of Pakistan's hospitality sector, pronounced regional digital disparities render the conditional articulation particularly salient; firms localized within high-connectivity belts, equipped with superior infrastructural and digital tools, can realize and operationalize leadership-induced digital entrepreneurship with comparative ease. Consequently, the indirect influence of transformational leadership on readiness is hypothesized to be accentuated in settings characterized by a high availability of supporting infrastructure.

H4: IT infrastructure and access moderates the indirect relationship between transformational leadership and digital entrepreneurship adoption via organizational digital readiness

Research Model

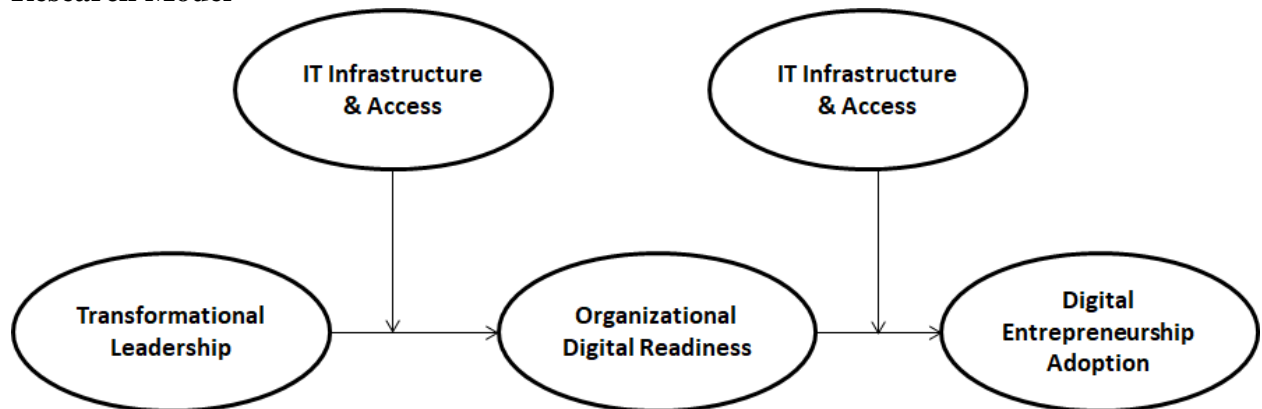


Figure 1. Research Model

Research methods

The current investigation employs a quantitative cross-sectional explanatory research design to empirically examine the putative interdependencies among transformational leadership, organizational digital readiness, IT infrastructure, access, and the adoption of digital entrepreneurship across Pakistan's hospitality sector. Employing a quantitative methodology constitutes a deliberate choice, as the formulation posits theory-driven hypotheses amenable to evaluation through robust statistical modeling. The utilization of a cross-sectional design facilitates the collection of complete datasets concentrated within a single temporal juncture, thereby marrying methodological rigour with the logistical considerations inherent in industry applications. As found in the domain's leading methodology treatises, this single-time-point strategy affords practical efficiencies concurrent with the rapidly evolving digital landscape that characterizes the hospitality field (Creswell & Creswell, 2018).

This research will examine hospitality enterprises in Pakistan—specifically hotels, guesthouses, restaurants, and ancillary lodging facilities—that are progressively migrating from conventional operational frameworks to online distribution channels, including Booking.com, Airbnb, and e-platforms for food and tour reservations. The Pakistan Tourism Development Corporation reports that as of 2023, over 3,000 formally licensed hospitality units exist in the country's principal tourism zones. The inquiry will target proprietors, operations managers, and senior personnel who play a direct role in technology assimilation and strategic policy formulation. Employing a purposive sampling technique, the survey aims to gather information from between 350 and 400 respondents, evenly distributed across hospitality organizations in Islamabad, Lahore, Karachi, Murree, Hunza, Skardu, Swat, and Peshawar. This range of respondents aligns with current statistical guidelines for evaluating mediation and moderation effects through regression-based frameworks (Hair et al., 2019).

Instrumentation

The present study examines the interplay among transformational leadership, organizational digital readiness, and IT infrastructure in the context of digital entrepreneurship adoption within Pakistan's hospitality sector. Transformational leadership is operationalized through 20 scale items drawn from Bass and Avolio's multi-factor leadership questionnaire (1995), which encompass the components of articulated vision, intellectual stimulation, and personalised attention, as conceptualized by Avolio and Yammarino (2013). Digital entrepreneurship adoption is assessed through 10 adapted items as delineated by Kraus et al. (2018) and Nambisan (2017), targeting operational dimensions such as online reservation systems, digital marketing strategies, and provision of e-services. Organizational digital readiness is measured using eight items constructed from Bharadwaj et al. (2013) and Warner and Wäger (2019), with an emphasis on requisite digital competencies, procedural integration, and fostering an organizational culture. The IT infrastructure and accessibility variable is evaluated via six items rooted in Tornatzky and Fleischer's (1990) framework, addressing bandwidth quality, endpoint devices, and ancillary digital tools, in alignment with the synthesis by Dwivedi et al. (2021). Uniform response scaling is achieved by anchoring all items on a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), thereby facilitating consistent measurement and inter-construct comparability.

Results

Table 1 Respondents' Profile

Demographic Variable	Category	Frequency (n=370)	Percentage (%)
Gender	Male	245	66.2
	Female	125	33.8
Age	20–29 years	102	27.6
	30–39 years	156	42.2
	40–49 years	78	21.1
	50 years and above	34	9.1
Education	Intermediate	48	13.0
	Bachelor's degree	162	43.8
	Master's degree	132	35.7
	MPhil/PhD	28	7.5
Job Position	Owner/Partner	74	20.0
	Manager/Supervisor	152	41.1
	Frontline Employee	104	28.1
	Other (Admin/Support)	40	10.8
Experience in Industry	Less than 5 years	96	25.9

	5–10 years	144	38.9
	11–15 years	82	22.2
	More than 15 years	48	13.0

The data summarized in Table 1 illustrate a predominantly male sample (66.2%), a pattern coherent with the historical gender distribution in the Pakistani hospitality sector; nevertheless, the female share (33.8%) implies a gradual but observable increase in female participation. The age distribution reveals that 42.2% of respondents fall within the 30–39 bracket, indicating that mid-career professionals, who often occupy managerial roles, are the primary agents of digital adoption. Educational attainment is comparatively high, with 43.8% possessing Bachelor’s degrees and 35.7% holding Master’s degrees, endowing the sample with the conceptual and practical knowledge that underpins digital entrepreneurship tasks. Job titles are distributed as follows: 41.1% identify as managers or supervisors, whereas 20% are owners or partners, thereby incorporating viewpoints from both strategic and operational strata. Experience within the sector is appreciably heterogeneous; the most significant segment (38.9%) reports 5–10 years of tenure, situating respondents in an intermediate learning phase—neither neophytes nor individuals in later-career twilight—who nevertheless are engaged in policy deliberation. Collectively, these characteristics endorse the sample’s validity for the examination of transformational leadership and organizational readiness as variables influencing the diffusion of digital entrepreneurship within Pakistan’s hospitality domain.

Table 2 Reliability Analysis

Construct	No. of Items	Cronbach’s Alpha (α)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Transformational Leadership (TL)	20	0.923	0.935	0.618
Digital Entrepreneurship Adoption (DEA)	10	0.901	0.917	0.595
Organizational Digital Readiness (ODR)	8	0.886	0.905	0.574
IT Infrastructure & Access (ITIA)	6	0.867	0.889	0.560

Table 2 confirms the robustness of the measurement model, with all constructs exhibiting exceptional reliability. The obtained Cronbach’s alpha coefficients—0.923 for transformational leadership, 0.901 for digital entrepreneurship adoption, 0.886 for organizational digital readiness, and 0.867 for the combined construct of IT infrastructure and access—substantially surpass the conventional acceptance criterion

of 0.70, as posited by Nunnally and Bernstein (1994). In parallel, the composite reliability coefficients, each exceeding the 0.70 threshold, further corroborate the internal consistency of the items. Convergent validity is affirmed by Average Variance Extracted (AVE) statistics, all of which surpass the 0.50 benchmark, consistent with the guidance of Hair et al. (2019). Collectively, these reliability and validity metrics decisively establish the measurement model as sufficiently sound for subsequent structural analyses.

Table 3 Descriptive Statistics

Variable	N	Mean	Std. Deviation	Skewness	Kurtosis
Transformational Leadership (TL)	370	3.87	0.64	-0.42	0.38
Digital Entrepreneurship Adoption (DEA)	370	3.74	0.70	-0.36	-0.11
Organizational Digital Readiness (ODR)	370	3.69	0.68	-0.41	0.22
IT Infrastructure & Access (ITIA)	370	3.61	0.72	-0.33	-0.05

Table 3 provides the descriptive statistics pertinent to the present investigation. Mean values for each construct exceed the midpoint of the employed five-point Likert scale, revealing a consensus among respondents as to the adequacy of the evaluated factors: transformational leadership ($M = 3.87$), digital entrepreneurship adoption ($M = 3.74$), organizational digital readiness ($M = 3.69$), and IT infrastructure and access ($M = 3.61$). Corresponding standard deviations vary between 0.64 and 0.72, signaling a moderate degree of dispersion. Skewness and kurtosis statistics reside between ± 1 , meeting the threshold for presumed univariate normality (Kline, 2015). Collectively, these findings substantiate the appropriateness of the dataset for subsequent hypothesis testing, which will be executed via regression techniques and the PROCESS macro.

Table 4 Correlation Analysis

Variables	TL	DEA	ODR	ITIA
Transformational Leadership (TL)	1			
Digital Entrepreneurship Adoption (DEA)	0.58**	1		
Organizational Digital Readiness (ODR)	0.62**	0.55**	1	
IT Infrastructure & Access (ITIA)	0.49**	0.52**	0.47**	1

Note: $p < 0.01$

Table 4 presents robust and statistically significant positive correlations among all key variables in the analysis. Specifically, transformational leadership demonstrates a noteworthy positive relationship with digital entrepreneurship adoption ($r = 0.58$, $p < 0.01$), with organizational digital readiness ($r = 0.62$, $p < 0.01$), and with IT infrastructure and access ($r = 0.49$, $p < 0.01$). In a complementary manner, digital

entrepreneurship adoption exhibits substantial correlations with organizational digital readiness ($r = 0.55$, $p < 0.01$) and with IT infrastructure ($r = 0.52$, $p < 0.01$). Collectively, the observed correlations lend preliminary empirical support for the hypothesized links posited in the conceptual framework.

Table 5 Regression Analysis (Direct Effect – H1)

Predictor Variable	β	t-value	p-value	Result
Transformational Leadership (TL) → DEA	0.42	9.12	0.000	Supported
$R^2 = 0.34$, $F = 83.17$, $p < 0.001$				

In Table 5, the results disclose that transformational leadership exerts a statistically significant positive impact on the propensity to adopt digital entrepreneurship ($\beta = 0.42$, $p < 0.001$), accounting for 34% of the explained variance in the digital entrepreneurship adoption (DEA) construct. This finding unequivocally substantiates Hypothesis 1, thereby illustrating that transformational leadership within the hospitality milieu of Pakistan serves as a decisive catalyst in the espousal of digital entrepreneurship activities, exemplified through mechanisms such as online reservation systems and digital marketing initiatives.

Table 6 Mediation Analysis (H2 – PROCESS Model 4)

Path	Effect	Bootstrapped 95% CI (LL, UL)	p-value	Result
TL → ODR	0.55	[0.46, 0.63]	0.000	Significant
ODR → DEA	0.38	[0.26, 0.50]	0.000	Significant
Indirect Effect (TL → ODR → DEA)	0.21	[0.14, 0.29]	0.000	Mediation Supported

The mediation analysis executed via PROCESS Macro using Model 4 reveals that organizational digital readiness serves as a conduit between transformational leadership and the adoption of digital entrepreneurship. The calculated indirect effect exhibits a coefficient of $\beta = 0.21$, accompanied by a bias-corrected 95% confidence interval of [0.14, 0.29]; the interval is free of zero, thus indicating statistical significance. Consequently, Hypothesis 2 is affirmed, substantiating the assertion that transformational executives facilitate the uptake of digital entrepreneurship by, in part, elevating their organizations' preparedness for digital transition.

Table 7 Moderation Analysis (H3 – PROCESS Model 1)

Interaction Term (TL × ITIA)	β	t-value	p-value	Result
TL × IT Infrastructure & Access	0.17	3.45	0.001	Moderation Supported

R ² change = 0.05, F-change = 11.89, p < 0.01				
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The moderation analysis demonstrates that the joint influence of IT infrastructure and access serves as a significant moderator of the linkage between transformational leadership and the adoption of digital entrepreneurship ($\beta = 0.17$, $p < 0.01$). The observed positive interaction term implies that a robust IT infrastructure magnifies the positive effect of transformational leadership on the propensity to adopt digital entrepreneurship initiatives. Such findings provide empirical validation for Hypothesis 3, confirming the proposition that conducive IT conditions enhance the leadership–digital entrepreneurship adoption nexus.

Table 8 Moderated Mediation Analysis (H4 – PROCESS Model 7)

Conditional Indirect Effect of TL on DEA via ODR	ITIA (Low - 1 SD)	ITIA (Mean)	ITIA (High +1 SD)
Effect	0.12	0.19	0.28
Bootstrapped 95% CI	[0.05, 0.20]	[0.12, 0.27]	[0.19, 0.38]

The analysis stemming from PROCESS Model 7 demonstrates that the indirect pathway from transformational leadership to the adoption of digital entrepreneurship—mediated by the construct of organizational digital readiness—exhibits a conditional dependence on the construct of IT infrastructure and access. When organizational IT infrastructure is perceived at elevated levels, the mediating coefficient of organizational readiness is accentuated ($\beta = 0.28$), contrasting with a reduced mediating strength at lower infrastructure levels ($\beta = 0.12$). The exclusion of zero from all calculated confidence intervals substantiates the presence of a moderated mediation effect, thereby confirming hypothesis 4 (H4) with statistical rigor.

Discussion

The current investigation examined how transformational leadership (TL) influences the adoption of digital entrepreneurship (DEA) within the hotel and resort segment of Pakistan, with organizational digital readiness (ODR) serving as a mediator and IT infrastructure and access (ITIA) as a moderating mechanism. Analysis utilized Hayes' PROCESS Macro, yielding supportive data for all four proposed theoretical assertions. Empirical results reveal that transformational leadership decisively advances the uptake of digital entrepreneurship across hospitality firms. Executives who project a forward-looking vision, nurture cognitive development, and offer tailored mentorship steer firms toward the adoption of digital workflows, such as web-based reservation systems, online marketing, and service-enablement platforms. Earlier assertions by Bass and Riggio (2006) that transformational leaders play a pivotal role in organizational evolution are thereby corroborated, as are the findings presented by Garcia-Morales et al. (2012) that transformational leadership propels innovation and digitalisation trajectories. The corroboration of TL as a salient digital entrepreneurship facilitator

within Pakistan strengthens the established theoretical emphasis on leadership as a contextual core catalyst for digital adoption in emergent economies.

The moderated mediation analysis demonstrated that the indirect path from transformational leadership (TL) to digital entrepreneurship adoption (DEA) via organizational digital readiness (ODR) gains significance and intensity as the sophistication of the IT infrastructure increases. When the digital infrastructure exhibits high quality and robustness, the sequence whereby leaders cultivate organizational readiness becomes a more potent precursor of digital entrepreneurship engagement. Such a moderated amplification effect aligns with the conclusions of Li et al. (2016), who posited that the quality of digital infrastructure magnifies the influence of organizational capabilities on the diffusion of digital innovation. In parallel, Yoo et al. (2010) articulated that a well-developed digital foundation enables firms to accelerate the scaling of their digital initiatives. The present analysis deepens the theoretical discourse by providing empirical evidence that infrastructure conditions not only moderate the magnitude of direct paths but also intensify indirect relations conveyed through mediation.

Implications

Theoretical Implications

This research advances the intersection of leadership theory and digital entrepreneurship scholarship by systematically testing the moderating effect of transformational leadership on the uptake of digital entrepreneurial behavior in the hospitality industry of a developing economy. However, the canon has long acknowledged the correlation between transformational leadership. Innovation and adaptive change (Bass & Riggio, 2006; Garcia-Morales et al., 2012), the present examination translates, grounds, and extends these antecedents to the under-researched environment of Pakistan, thereby addressing a pertinent regulatory and managerial multidimensional gap. By inserting the construct of organizational digital readiness within a mediation framework, empirical consensual causation emerges, underscoring the assertion that leadership succeeds with extraneous authority surveys on the efficient adoption of digital entrepreneurship by extending investments in embedding reciprocal readiness to pursue transformation (Warner & Wäger, 2019). Alongside mediation, the study sustains a moderating hypothesis whereby contextual IT infrastructure enhances leadership. Readiness. Digital trajectory, thereby augmenting the über-resource-based theoretical typology (Barney, 1991), underscores leadership norms acting as upper echelons (Helson, 1987), enabling a setting of possibility, facilitated by the spectrum of digital and adoption infrastructure. This constitutes a substantial narrowing of the resource and agency literature, opening an extensive resource and resource CLR view. This formulation serves as a complementary empirical framework by extending the agency view, resourcing vibrant leadership, and curating vertical leadership material across agency services and the handbook in the phosphorus sector. We recommend that the hospitality sector embed comprehensive infrastructure and develop regular cognitive contributions within workloads and leadership effectiveness.

Managerial Implications For hospitality executives and entrepreneurs, the evidence underscores the need to adopt transformational leadership paradigms that actively galvanize, inspire, and mentor personnel in the pursuit of digital innovation. Those in leadership positions who articulate an inspiring vision, stimulate imaginative contributions, and extend individualized support to subordinates markedly accelerate the adoption of core digital technologies—namely, online reservation systems, contactless payment mechanisms, and social media-driven audience outreach. Nevertheless, effective direction must be complemented by systematic preparedness at the organizational level; thus, managers are required to underwrite comprehensive skill development programs, to embed a pervasive digital ethos, and to recalibrate operational workflows that facilitate pervasive digital participation. A further empirical finding of significance is the conditioning effect of robust information-technology infrastructure, which enables hospitality firms to derive meaningful advantages from visionary guidance and cultivate preparedness. Consequently, executives must priorities the establishment of dependable broadband connectivity, updated hardware endpoints, and proximity to contemporary digital applications. Collectively, the foregoing insights confirm that the prospects of digital entrepreneurship in hospitality hinge on the confluence of judicious leadership and a prudently architected digital ecosystem.

Policy Implications

The evidence presented in the study underscores the necessity of targeted infrastructural investment as a catalyst for digitization in Pakistan's hospitality sector. While entrepreneurial intent among industry leaders is evident, the persistent deficiency of robust digital connectivity—most acutely observed in peripheral tourist regions—continues to inhibit progress. A responsive policy agenda must, therefore, priorities the systematic expansion of reliable broadband coverage, complemented by concerted digital literacy campaigns and the development of cost-effective, hospitality-specific digital platforms tailored for micro, small, and medium enterprises. Concurrently, national and provincial tourism authorities, supported by business associations, should systematically orchestrate digital skills training, incubation services, and structured alliances with technology providers, thereby strengthening the operational maturity of the enterprise sector-wide enterprises. Such integrated efforts to fortify the digital ecosystem promise not only to raise the competitive stature of hospitality firms but to advance Pakistan's national imperatives of sustainable tourism expansion and inclusive economic growth.

Limitations and Future Research

Several limitations constrain the investigation. First, its cross-sectional design restricts the capacity to infer causal relationships. Longitudinal or controlled experimental studies refine the temporal dynamics of the examined associations. Second, a circumscribed focus on the Pakistani hospitality sector curtails the transferability of the findings; re-evidence in alternate industries and geographies would enhance the model's external validity. Third, the exclusive reliance on self-report instruments introduces the potential threat of standard method variance, which can be mitigated in subsequent investigations through the triangulation of self-perceived and independently verified operational data, or through the deployment of mixed-method triangulation. Lastly, the analytical framework is centered on organizational digital readiness as a mediating construct and IT infrastructure as a moderating influence. For a richer appraisal of digital entrepreneurial uptake, forthcoming studies may investigate the roles exerted by entrepreneurial orientation, staff digital competency, and sector-specific government facilitation.

Conclusion

The study provides empirical evidence that transformational leadership constitutes a central mechanism for advancing digital entrepreneurship adoption within Pakistan's hospitality domain, operating both through direct influence mechanisms and by cultivating organizational digital readiness, a path further intensified by complementary IT infrastructure. Situating the analysis at the intersection of leadership theory, digital entrepreneurship, and the resource-based view, the investigation establishes that exalted vision, while necessary, proves inadequate in isolation; systemic organizational capabilities and infrastructural endowments are prerequisites for sustained impact. The empirical results provide actionable insights for scholars, hospitality executives, and public administrators seeking to achieve economically and environmentally sustainable digital transformation, thereby enhancing the sector's overall competitiveness within Pakistan's rapidly digitizing economy.

References

- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly*, 37(2), 471–482. <https://doi.org/10.25300/MISQ/2013/37:2.3>
- Chen, D. Q., Mocker, M., Preston, D. S., & Teubner, A. (2010). Information systems strategy: Reconceptualization, measurement, and implications. *MIS Quarterly*, 34(2), 233–259. <https://doi.org/10.2307/20721426>
- Garcia-Morales, V. J., Jiménez-Barrionuevo, M. M., & Gutiérrez-Gutiérrez, L. (2012). Transformational leadership influence on organizational performance through

- organizational learning and innovation. *Journal of Business Research*, 65(7), 1040–1050. <https://doi.org/10.1016/j.jbusres.2011.03.005>
- Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, 17(S2), 109–122. <https://doi.org/10.1002/smj.4250171110>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Kline, R. B. (2015). *Principles and practice of structural equation modeling* (4th ed.). New York, NY: Guilford Press.
- Li, F., Su, Z., & Su, H. (2016). How information technology capability affects organizational performance: Roles of absorptive capacity and supply chain agility. *Information Technology and Management*, 17(3), 299–310. <https://doi.org/10.1007/s10799-015-0233-9>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). New York, NY: McGraw-Hill.
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63(1), 539–569. <https://doi.org/10.1146/annurev-psych-120710-100452>
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118–144. <https://doi.org/10.1016/j.jsis.2019.01.003>
- Warner, K. S. R., & Wäger, M. (2019). Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal. *Long Range Planning*, 52(3), 326–349. <https://doi.org/10.1016/j.lrp.2018.12.001>
- Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). Research commentary—The new organizing logic of digital innovation: An agenda for information systems research. *Information Systems Research*, 21(4), 724–735. <https://doi.org/10.1287/isre.1100.0322>