

The Role of Tourism Potential, Community Attachment and Infrastructure in Tourism Development in Tirah Valley, Khyber Pakhtunkhwa, Pakistan

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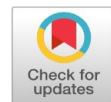
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Abstract: Tirah Valley, District Orakzai, has breathtaking landscapes, glaciers, snow-covered mountains and lush green meadows. Besides, the traditional house structures also can attract tourists but yet tourism is not developed here due to certain reasons. However, Tirah Valley would emerge as a tourist destination in Khyber Pakhtunkhwa, Pakistan. Therefore, this study examines the role of tourism potential, community attachment, and infrastructure in tourism development in Tirah Valley, Orakzai. The study collected 250 responses through a structured questionnaire and examined the data using structural equation modeling. Results revealed that tourism potential, community attachment, and infrastructure positively influence tourism development in Tirah Valley. Additionally, the study found tourism potential and infrastructure are the most influential factors of tourism development. Policy implications are suggested to develop Tirah Valley, Orakzai as a tourist destination.

Keywords: Tourism Potential, Community Attachment, Infrastructure, Tourism Development, Structural Equation Modelling

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INTRODUCTION

Travel and Tourism sector is considered a key driver of economic growth, employment and cultural exchange worldwide. In recent years developing economies increasingly leverage tourism industry to accelerate growth, promote peace and alleviate poverty (Malik et al., 2010; Shahzad et al., 2017; Richard, 2002; Oh, 2005). Tourism accelerates growth by generating income, creating employment opportunities and supporting infrastructure development (Durberry, 2004). Additionally, it enhances foreign reserves, facilitates industrial development and promotes economic linkages across various sectors. Therefore, tourism has become a central priority for many developing countries (Lin et al., 2016; Naradda Gamage et al., 2017; Salifou, & Haq, 2017; Haq et al., 2022; Munir et al., 2024; Haq et al., 2024).

Pakistan possesses immense tourism potential due to its beautiful landscapes, rugged mountains, lakes, deserts, rich ancient civilization, cultural and religious tourism (Chen & Wei, 2009). The country attracts local as well as foreign tourists to various tourist destinations of Pakistan likes, Hunza, Shogran, Naran, Kaghan, Kalam, Swat, Malam, Shangla, Murri, Ayyubia (Arshad et al., 2018; Munir et al., 2025). However, in recent years, tourist behavior has begun to change, as tourists seek to explore new tourist destinations, where they experience authentic local culture and traditions. Therefore, their intention is not only to travel and explore new destinations but to discover and understand their culture, ethics and history (Guzman et al., 2011). One such emerging destination is district Orakzai (Figure 1), known as Tirah valley, potentially enriched to attract tourists, covering the beautiful landscapes, glaciers, rugged and snow-covered mountains, traditions and culture. In the District Orakzai Kalaya, Samana, Landok, Zaira, Feroz Khel, Manawar and Khalwat are the significant tourists Destinations (KPBOIT, 2025). The region is now more accessible due to government initiatives, such as improved security conditions, construction of roads and mobile network facilities.

The development of tourism sector not only depends upon the infrastructure facilities at destination such as communication and transportation and health facilities, but also on community support. The support of local people

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is essential for the successful operation and sustainable development of tourism (Jurowski, 1994). The development of tourism affected the quality of life of host community. Therefore, the execution of any tourism project without knowing the support and behavior of the host population can threaten the success of the project. Because of the anger or mistrust of the host population can annoy the tourists, which are then reluctant to revisit these areas, where they feel uncomfortable (Fridgen, 1991). Therefore, knowledge and the factors affecting the support of host population is essential for tourism development in the area. Therefore, the understanding of tourism potential and support of community and infrastructure facilities for tourism development is essential for policy makers and tourism stakeholders.

Despite its vast tourism potential, Orakzai remains largely unexplored both as a tourist destination and in academic literature. This study addresses this gap by examining the roles of tourism potential, community attachment, and infrastructure in fostering tourism development in Tirah, Orakzai, Khyber Pakhtunkhwa, Pakistan. This novel empirical study focusing on these factors in this specific context. The study contributes novel insights into the limited literature on tourism development in emerging and post-conflict regions. Additionally, by employing second-generation analytical techniques specifically structural equation modeling (SEM) via Smart PLS. The research offers methodological innovation that enhances the robustness of the findings. The outcomes provide valuable implications for strategic planning, destination management, and policy formulation aimed at sustainable tourism development in lesser-known areas.

LITERATURE REVIEW

Community Attachment and Tourism Development

The community attachment and support have been extensively discussed in the literature. The community support and development of tourism is based on various factors like benefits and costs associated with tourism development (Teng, 2019). These benefits and cost are classified into three categories economic, social and environmental aspects (Murphy 1981; Gursoy et al, 2002). The first element on which development of tourism and resident support rely is infrastructure facilities. The development of infrastructure facilities, especially in tourism areas, provides jobs opportunities and increase income and wellbeing of the community. Likewise, the provision of basic facilities like water, sanitation and utilities services like banking, electricity gas and communication services enhance community attachment and tourism development (Munir et al., 2025; Huq et al., 2023). The social benefits can be in shape of provision of education facilities, which brings positive changes in the behaviour and socioeconomic life of the local peoples. Thus, the people look tourism development as an element of prosperity and welfare (Jordan et al., 2013; Adongo et al., 2017).

Community attachment has been extensively used as an effective element in the tourism development studies (Adongo et al., 2017). It is argued that attachment of host community in favor of tourism development leads to the development of tourism industry (Morales et al. 2018). However, community attachment is linked with the outcomes of tourism on the socioeconomic lives of host community (Nunkoo & Ramkissoon, 2010). The host community who looks the tourism development economically beneficial are found to have positive tourism development, while those who find negative socioeconomic benefits are found to oppose the tourism development (Gursoy et al. 2010). The results are contradictory, some studies show positive attachment towards tourism development, while some have negative attachment to tourism development. In this context the study of Demirović-Bajrami et al. (2020) found that community support and community attachment are the positive factors of sustainable tourism development (Lisha et al., 2023). Nonetheless, Gursoy et al. (2010) suggested that societies with higher community attachment have negative socioeconomic impact on tourism development. Generally, most of the studies finds that communities with higher degrees of attachment have higher tourism development (Huong & Lee, 2017; Gaonkar & Sukthankar, 2025).

H₁: Community attachment affects tourism development.

Tourism Potential and Tourism Development

Tourism potential plays an essential role in tourism development of destinations. Tourism potential refers to destination intrinsic and extrinsic tourism resources that make it appealing to tourists (Douglas et al., 2023). These resources include natural resources, infrastructure, governance and community support makes a destination to grow as a tourism hub. According to Buhalis, (2000) tourism potential includes the natural cultural, and accessibility

facilities at destinations. Similarly, Crouch & Ritchie (1999) emphasize that destination competitiveness depends on the ability to develop and market its tourism resources. Priskin (2001) argues that destinations rich in ecological resources such as protected areas and natural parks have higher tourism potential to develop as tourist destinations. Additionally, Richards (2011) emphasized that destinations cultural resources provide authenticity and uniqueness to tourists makes it appealing. According to Ouariti and Jebrane (2020), destinations with efficient infrastructure and communication facilities enhance the accessibility and attractiveness of destination. Destinations without adequate infrastructure and communication suffer to develop as tourist hubs, even with high tourism potential (Wendt et al., 2021). Studies Likewise, Khatiwada et al. (2024), who examined that tourism potential, if the developed through community attachment, can lead to economic growth in the region. Similarly, Plzáková and Tittelbachova (2024) emphasize that tourism potential whether tangible or intangible is crucial for sustainable tourism development.

H₂: Tourism potential, affect tourism development.

Infrastructure and Tourism Development

Infrastructure facilities include roads, buildings, bridges, hotel's restaurant, power, energy, water and sanitation and communication facilities (Jafri & Xiao, 2016). Research studies investigated association between infrastructure facilities and tourism development. For instance, Mazrekaj (2020) carried out study on the impact of road infrastructure on tourism development and concluded that there is a positive relationship between infrastructure facilities and tourism development. Similarly, the study conducted by Mandić et al., (2018) confirmed that Infrastructure and recreational facilities showed significant impact on tourism development. Mostly, studies suggested there is direct relationship between infrastructure facilities and tourism development (Das & Chatterjee, 2017; Khadaroo & Seetana, 2007).

H₃: Infrastructure facilities affect tourism development.

Infrastructure and Community Attachment

Community attachment is the involvement or sense of belonging of people towards community (Eslami et al. 2019). McCool & Martin (1994) and Gautam & Bhalla (2023) define community attachment as the social integration, participation, people belonging and feeling towards the community (Gautam & Bhalla, 2023). Community attachment plays a crucial role in mediating the relationship between infrastructure and tourism development (Munir et al., 2025). Studies have shown that infrastructure facilities and community attachment and tourism development are positively correlated. The provision of infrastructure facilities brings positive image on the attitude of host community because community looks it as beneficial to their wellbeing. Infrastructure facilities bring income and employment opportunities at destination, which are found to be major factors of community attachment (Abdollahzadeh & Sharifzadeh, 2014). Similarly, the construction of roads, schools, hospitals and water supply leads to the engagement and development of community (Bulus, & Adefila, 2014). The Gieling et al. (2018) conducted a study on infrastructure facilities and community attachment. This study examines whether infrastructure facilities affect different groups of community differently. The sense of belonging fosters the local community to support tourism development and participate in tourism planning and development (Nunkoo & Ramkissoon, 2010).

H₄: Community attachment mediates the relationship between infrastructure and tourism development.

From the literature mentioned above, the study found that tourism potential, infrastructure and community attachment directly correlated with tourism development. This direct relationship led us to formulate model one. Additionally, community attachment can play the role of mediator in association between infrastructure and tourism development, this led us to established model two. Thus, model one measures the direct relationship of tourism potential, infrastructure and community attachment on tourism development in Orakzai and model two measures the mediating effect of community attachment between infrastructure and tourism development. Figure 2 displays the conceptual Model of the Study.

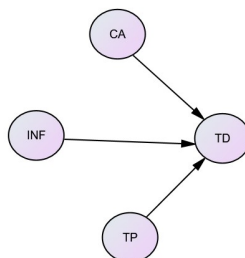


Figure 1: Conceptual Model of the Study

RESEARCH METHODOLOGY

Study Location

Tirah Valley is situated in the district Orakzai, Khyber Pakhtunkhwa. Figure 1 part (a) highlights the location of Khyber Pakhtunkhwa in Pakistan whereas Figure 1 part (b) highlights district Orakzai. The Valley has great potential to become a major tourist destination. However, inadequate infrastructure facilities and security conditions have previously limited its development. Following the FATA merger into Khyber Pakhtunkhwa, the government has prioritized its development to expand tourism opportunities. Infrastructure development is underway on improvement of roads, hospitals, education, banking, electricity, communication facilities, gas, water and sanitation facilities (KPBOIT, 2025). Additionally, the introduction of police to the merged areas has improved the safety and security, making the region safe for tourism. Looking at the rising trend tourist arrivals in the established areas of Khyber Pakhtunkhwa, Punjab and Gilgit Baltistan (Khyber Pakhtunkhwa Culture and Tourism Authority, 2025). Given this trend further actions are needed to develop new tourist destinations.

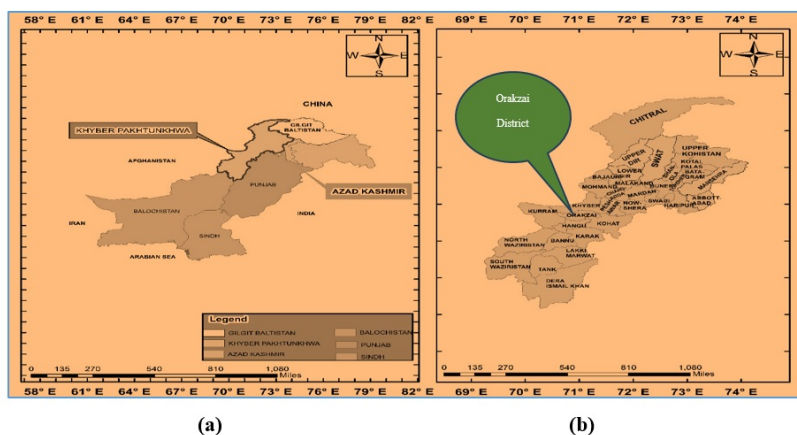


Figure 2: Map (a) shows the Studied Province. Map (b) shows the studied District

Sampling Method and Sample Size

The study employed primary data to examine the impact of tourism potential, community attachment, and infrastructure on tourism development. To determine an appropriate sample size, power analysis as recommended by Cohen (2013) was used. Based on a medium effect size ($f^2 = 0.15$) and a 5% level of significance, the minimum required sample size for analysis was 85. However, to ensure optimal statistical power and model reliability, the study used a total of 250 samples, as suggested by Hair et al. (2011). Moreover, a proportionate random sampling technique was applied to ensure adequate representation from each Tehsil. Table 1 presents the proportion of samples collected from the four Tehsils of District Orakzai, corresponding to their respective population sizes.

Table 1: . Sampling distribution

District Orakzai	Population	Percentage	Samples
Central Tehsil	59132	23.25	50
Ismail Zai Tehsil	23963	9.42	19
Lower Tehsil	107323	42.2	93
Upper Tehsil	63885	25.12	53
Total population	254303	100	215

Measurement of Constructs

The study examines the interplay between tourism potential, community attachment and infrastructure on tourism development Tirah Valley, District Orakzai, Khyber Pakhtunkhwa, Pakistan. The study used two models, one measuring the direct impact of tourism potential, community attachment and infrastructure on tourism development (Lee, 2013) and the other considers community attachment as a between infrastructure and tourism development. The latent variable infrastructure has been measured by six indicators (INF1-INF6). All the indicators of infrastructure have been adopted from the study of Munir et al. (2025). Tourism potential has been measured by three items (TP1-TP3). Items were adopted from Zhu et al. (2017). Similarly, Community attachment was measured by four items (CA1- CA3) and all the items were obtained from Gursoy et al. (2002). Tourism development has been measured by three items and all the items have been taken from (Zhu et al., 2017). Items were measured on five-point Likert scales ranging from 1 to 5.

The analysis was performed with the statistical package Smart PLS version 3.2. 9. The Smart PLS has been widely used in Partial Least Square Modelling (PLS-SEM). The PLS-SEM is second generation technique used to assess the relationship between endogenous and exogenous latent (Fursova, 2018). This technique is consisted of two models namely the measurement and structural model. The measurement model is used to find the reliability and validity of the PLS-SEM, while the Structural model has been used to obtain the path coefficient, standard errors, t values and probability values (Sarstedt et al., 2021; Ayokunmi, 2022). The reliability and validity of PLS SEM is examined using Cronbach Alpha (CA), composite reliability (CR) and average variance extracted (AVE). According to Azwa et al. (2016), for obtaining reliability, the CA and CR values of their respective construct should be greater than 0.70. For convergent and discriminant validity the AVE and square of AVE should be greater than 0.5 and 0.70 respectively (Hair et al., 2017).

RESULTS AND DISCUSSION

Demographic Statistics

Demographic statistics are presented in Table 2. The respondent of the study shows that majority of the responded are males (82%) compared to females' respondent (18%). This is because of the socioeconomic culture and education of the region. In Pashtun culture especially in rural areas males more likely to participate in socioeconomic activities while female serves as housewife. Similarly, the low literacy rate coupled with the culture makes females to less participate in such tourism related surveys. The data shows that age groups have been significant factors in respondents' participation. The highest response rate was observed between the ages of 18-24 (40%) followed by 35-44 (30.6%), 25-34 (16.3%), 45-54 (9.3%), 55-64 (4.7%) and 65-74 (2.8) respectively. Education of respondents was also a significant factor in participation. The data shows that most of respondents were higher secondary education degree holders (HSSC) (30.7%), followed by bachelor's degree holders (BA/BSC)

(22.8%), matriculate (SSC) was (22.3%), primary education was (14.9%), master and above and illiterate were 4.2% and 5.1% respectively. Employment was also a crucial factor for respondents to participate in survey as employed respondents were 58.7% and unemployed was 41.3 %.

Table 2: . Demographic Statistics

Demographics	Measurement Scale	Total Respondents	Percentage
Gender	Males	177	82.3
	Females	38	17.7
Marital Status	Single	107	49.2
	Married	108	50.8
Age	18-24	89	41.4
	25-34	30	16.3
	35-44	60	30.6
	45-54	20	9.3
	55-64	10	4.7
	65-74	6	2.8
	Education	Illiterate	11
Primary		32	14.9
SSC		48	22.3
HSSC		66	30.7
Bachelor		59	22.8
Master and above		9	4.2
Employment	Employed	126	58.7
	Unemployed	89	41.3

Table 3 portrays the results of reliability and validity convergent validity of first and second model. The results show that both models satisfy the reliability and convergent validity criteria as the Cronbach alpha and composite reliability and AVE values are greater than the required threshold of 0.7 and 0.5 respectively (Rana & Ameen 2023). Furthermore, the discriminant validity of both models is assessed by Fornell and Larcker (1981) criterion which are displayed in Table 4. The results indicate that AVE is greater than 0.50, thus both models satisfy the discriminant validity criterion. The reliability and validity of both models led us to use PLS SEM.

Table 3: . Results of Reliability and Convergent Validity

First Model			
Construct	CA	CR	AVE
CA	0.73	0.73	0.58
INF	0.83	0.86	0.56
TD	0.7	0.82	0.61
TP	0.72	0.83	0.63
Second Model			
CA	0.74	0.7	0.57
INF	0.81	0.86	0.52
TD	0.74	0.82	0.61
TP	0.72	0.84	0.63

Table 4: . Results of Discriminant Validity

First Model				
	CA	INF	TD	TP
CA	0.76			
INF	0.3	0.75		
TD	0.31	0.28	0.78	
TP	0.26	0.03	0.47	0.79

Second Model				
	CA	INF	TD	TP
CA	0.76			
INF	0.45	0.72		
TD	0.15	0.2	0.78	
TP	0.27	-0.01	0.47	0.79

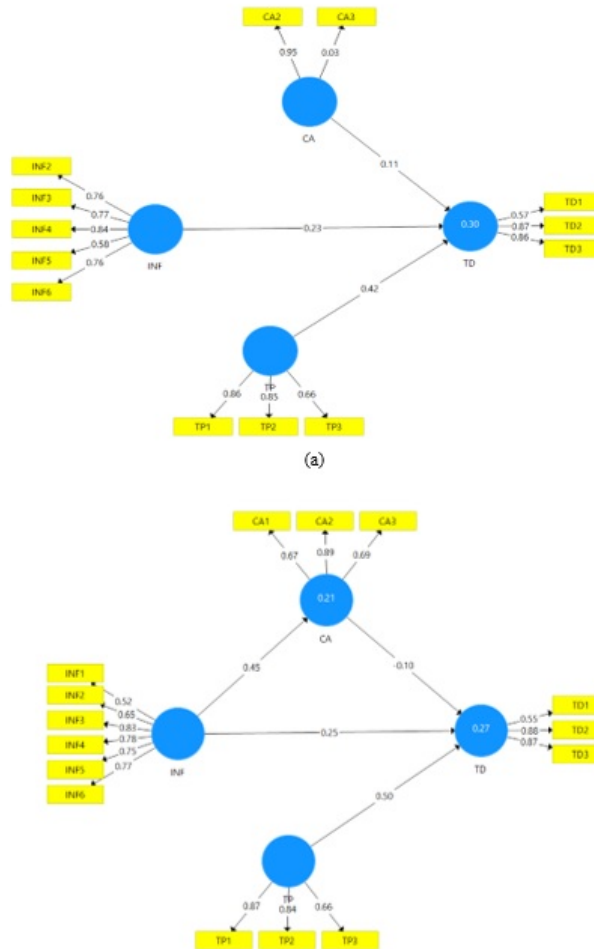


Figure 3: Part (a) shows the first measurement model. Part (b) shows second measurement model.

Table 5 shows the results of path coefficients of first and second model. The results of the first model indicate that community attachment is positive and significantly affects tourism development, thus accepting H₁ hypothesis. This indicates that individuals having strong ties within the community significantly support the development of tourism at destination. The results match with the study of Nunkoo & Ramkissoon (2010), which argued that community attachment significantly affects tourism development. The results about the mediating affect of

community attachment between infrastructure and tourism development indicated that community attachment insignificantly affect tourism development in Orakzai. Thus, H4 hypothesis is rejected.

Infrastructure, which is the basic facility and essential element of tourism development, shows a significant positive impact on tourism development in Orakzai. The results of the first model confirm the H₃ hypothesis that the infrastructure facilities positively contributed towards tourism development. Infrastructure facilities are required to meet the needs of tourists and increases the satisfaction of tourist (Jovanović & Ivana (2016). Looking into the role of infrastructure and recreational facilities the study of Mandić et al. (2018) confirmed that infrastructure facilities are interconnected with tourism development and have significant contribution towards tourism development. In the second model, the relationship between infrastructure and tourism development becomes insignificant.

Table 5: . Path Coefficients

First Model				
Construct	Coefficients	Standard Deviation	t -Values	p- Values
CA →TD	0.13	0.06	2.26	0.02
INF →TD	0.23	0.06	3.62	0
TP →TD	0.42	0.05	7.84	0
Second Model				
CA →TD	-0.1	0.09	1.07	0.28
INF →TD	0.25	0.19	1.34	0.18
INF →CA	0.45	0.05	9.52	0
TP →TD	0.5	0.08	6.23	0
Mediating Effect				
INF →CA →TD	-0.04	0.04	1.07	0.28

The results of the first model show tourism potential have a significant and positive effect on tourism development, thus accepting H2 hypothesis. The path coefficient shows that among other variables tourism potential has higher path coefficient. This indicates that tourism potential greatly affects tourism development. The result of the second model also confirms that tourism potential positively and significantly affects tourism development. The study conducted by Zhu et al. (2017) also concluded same result in China. The results of the second model indicate that infrastructure positively and significantly affects community attachment. This indicates that infrastructure facilities and community attachment are interrelated. The strong correlation can be attributed to the fact that the development of infrastructure, particularly in tourism areas, generates employment opportunities for residents, thereby reducing unemployment and improving the overall wellbeing of the community. The provision of basic infrastructure such as water, sanitation, and essential services like banking, electricity, gas, communication, and access to education brings positive changes to the community's socioeconomic conditions. As a result, the community perceives tourism development as a source of prosperity and regional welfare. Conversely, the study fails to find significant evidence to accept community attachment as a mediator between infrastructure and tourism development, thus rejecting H₄ hypothesis. Figure 4 displays the graphical illustration of path coefficients of both models of the study.

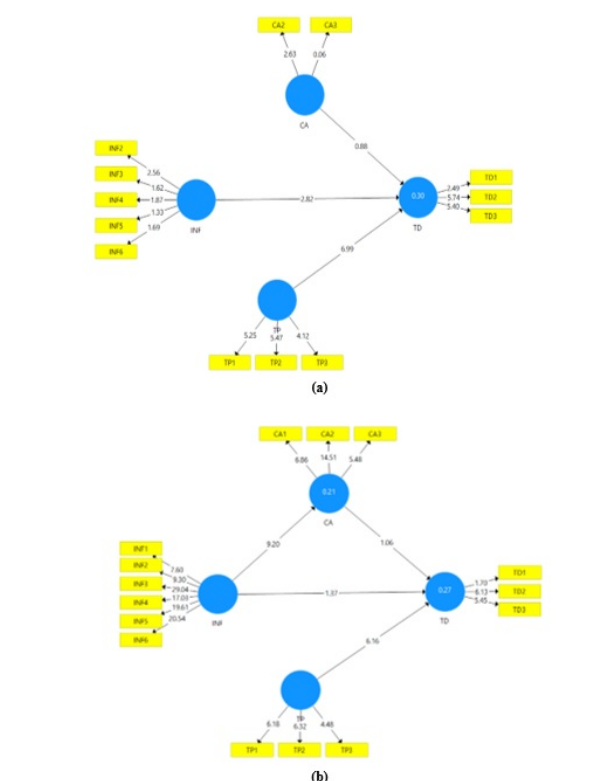


Figure 4: Path diagram of structural equation modelling

CONCLUSION AND RECOMMENDATIONS

There are many well developed and established tourism destinations in Khyber Pakhtunkhwa, Pakistan. However, in recent years, tourist behaviour has begun to change, as tourists seeks to explore destinations, where they experience authentic local culture and traditions. One such emerging destination, District Orakzai, known as Tirah valley, potentially enriched to attract tourists, covering the beautiful landscapes, glaciers, rugged and snow-covered mountains, traditional and hospitable culture. The region is now more accessible due to government initiatives, such as improved security conditions, construction of roads and mobile network facilities. Despite vast tourism potential the region is largely unexplored, as little academic research has examined it as a viability tourist destination. Therefore, this study examines the role of tourism potential, community and infrastructure on tourism development in Tirah Valley. The study collected 250 responses from the local community by distributing structure questionnaires among respondents. The responses were then analysed through Partial Least Square Structural Equation Modelling. The results of the study validated reliability and validity criteria. Furthermore, the path coefficients indicate that tourism potential, community attachment and infrastructure positively and significantly affect tourism development in Orakzai. Furthermore, the models fail to establish the mediating effect of community attachment between infrastructure and tourism development in Tirah Valley. However, the study found that infrastructure and tourism are keen to tourism development in development of tourism in Orakzai. Thus, the result led us to accept H₁, H₂ and H₃ hypothesis and to reject H₄ Hypothesis.

The study suggests some recommendations based on the results of the study. The tourism authorities and planners should engage the community through tourism awareness, cultural related festivals and tourism related skills development programs to enhance the community attachment and tourism development. The community should be engage in tourism planning and management to enhance their sense of ownership and responsibility towards tourism. The government should continue to improve the infrastructure facilities like roads, mobile network and hospitality facilities to attract more tourists. Moreover, investment should be made in eco-friendly infrastructure to maintain the natural environment and sustainable tourism. The government, along with public authorities, should promote the tourism potential of Orakzai by offering tourism packages that include guided tours, accommodation, and cultural experiences. Encourage public private partnership to invest in tourism products to benefit the tourist

and local community.

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