

RESIDENTS' PERCEPTION TOWARDS GEOHERITAGE CONSERVATION AND TOURISM DEVELOPMENT: EVIDENCE FROM JODHPUR, INDIA

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Abstract: The Mehrangarh Fort in Jodhpur, India, located at the height of 150 meters above the surrounding sandy plains, is one of the city's most prominent monuments built over the Jodhpur group-Malani-Igneous Suite. The old city, which boasts numerous blue-painted houses, lies adjacent to the Mehrangarh Fort. The residents of the old city play a significant role in keeping the geoheritage and cultural heritage intact. The study investigates the moderating role of residents' Perception towards support for Geoheritage Tourism and Conservation in and around Mehrangarh Fort. A combination of Weber's theory of substantive and formal rationality (WTSFR) and Social Exchange Theory (SET) is used to investigate and infer the interposing and moderating role of residents' perception on the relationship between influencing factors and support for geo-heritage conservation. A PLS evaluation of the SEM reveals a substantial capacity of the residents' perception to predict support for conservation and tourism development.

Key words: geoheritage, tourism development, social exchange theory, residents' perception

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INTRODUCTION

The area of this study is a geo-site notified by the Geological Survey of India as a National Geological Monument known as the Jodhpur Group-Malani Igneous Suite Contact. This geological structure marks the final period of igneous activity on the Indian subcontinent during the Precambrian period. The term was changed numerous times throughout the years, including Malani Beds (Blanford, 1877), Malani Volcano Series (La Touche, 1902), Malani System (Coulson, 1933), The Malani Granite and Volcanic Suite (Pascoe, 1959), and ultimately Malani Igneous Suite (Pareek, 1981). The Mehrangarh Fort, located at the height of 150 meters above the surrounding sandy plains, one of the city's most prominent monuments, is built over this group of rocks (Kaur, 2020).



Figure 1. Contact between Malani Volcanics and Jodhpur Sandstone with 'Unconformity', rock structure exposed near the entrance of Mehrangarh Fort (Source: Authors' own)

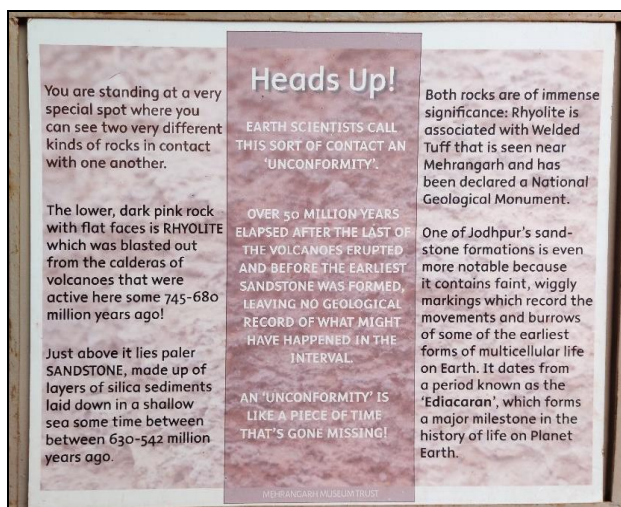


Figure 2. The information provided near the 'unconformity' exposed close to the entrance of Mehrangarh Fort Palace (Source: Authors' own)

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This is also an important geological site, with a robust erosional contact between the Malani Volcanics and the Jodhpur Sandstone atop it. Geologists call this phenomenon an “unconformity” as there is no record of continuous sedimentation in the particular region. The feature contains a non-depositional surface separating two rock masses from two different ages. (Pareek, 1981) noted three phases of Magmatism in Malani-Igneous Suite; significant felsic and minor mafic flows (Extrusive phase), granitic plutons (Intrusive phase), and Felsic and mafic dike swarms (Dike phase). Malani Rhyolites and associated lavas, tuff, welded tuff, and mafics of MIS have formed 600 ± 70 Ma. After a period of unconformity, during the Ediacaran age (635-542 Ma), the Malani-Igneous-Suite was overlaid by a deposit of Jodhpur Sandstone which belongs to the Marwar Supergroup (Kaur et al., 2020; Pandey and Bahadur, 2009).

This unconformity is exposed at Mehrangarh Fort, near the entrance (Figure 1). Malani Rhyolites, in Pink, maroon, brown, purple, grey, and green colours are separated by tuff, welded tuff, and pyroclastic rocks. The columnar joints that have been created the range in size from rectangular to hexagonal, with some reaching a length of 30 meters or more. Porphyritic rhyolite with a rich purple colour covers it (Pareek, 1981). While driving out of town, the welded tuff outcrop is about 100 meters on the right side of the road, just before the Mehrangarh Fort and also visible below the fortified structure (shown in Figures 3, 4, 5 and 6). The old city in Jodhpur, which boasts numerous blue-painted houses, is encircled by a wall with many gates and surrounds the Mehrangarh Fort (Figure 7). However, during the last few decades, the city has grown significantly outside of the wall.



Figure 3 and Figure 4. Location of Jodhpur (above) and Welded Tuff on the way to Mehrangarh Fort (below) (Source: Lama and Rathore, 2018; Maps, 2012)

A study towards understanding residents’ psychology towards geo-heritage conservation and tourism development is a call to action (Gannon et al., 2020). This study is particularly interested in answering two pertinent research queries viz; *a*) what are the antecedents of residents’ support towards conservation of the geo-site and tourism development and *b*) what is the moderating effect of residents’ perception towards geo-heritage conservation.

In academic literature, various terminologies have been used to study the concept of “residents’ perception” in the context of heritage conservation; the nomenclatures used to define the construct of “perceptions” include terms like “attitudes” and “reactions” (Andereck and Vogt, 2000; Byrd et al., 2009; Da Silva Lopes et al., 2019; Davis et al., 1988; Garau-Vadell et al., 2013; García et al., 1995; Jurowski et al., 1997b). Irrespective of the various terminologies used to identify and investigate the emotions of residents towards heritage conservation and tourism development, the significant

parameters that are taken into cognisance are based upon the direct, indirect, and undetermined effects that tourism and conservation efforts have on the local inhabitants (Sharpley, 2014). Recent researches in the field of residents' perception about tourism development purport the fact that natives are usually supportive of any initiative that leads to more arrival of tourists in their regions when they positively discern the impacts in the long run (Látková and Vogt, 2012; Nicholas et al., 2009; Nunkoo and Ramkissoon, 2010; Rasoolimanesh et al., 2017; Sharpley, 2014).



Figure 5. The Mehrangarh Fort built in Jodhpur Sandstone located over the Jodhpur group of Malani-Igneous Suite (Source: Authors' own)

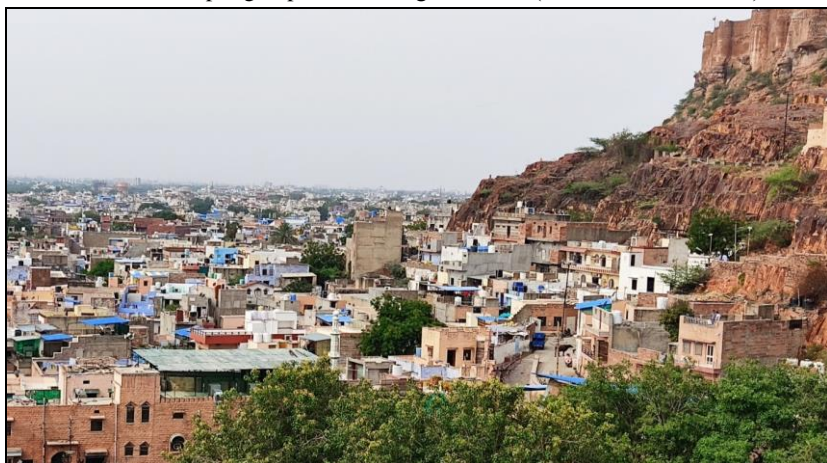


Figure 7. The local community staying close to Mehrangarh Fort (Source: Authors' own)

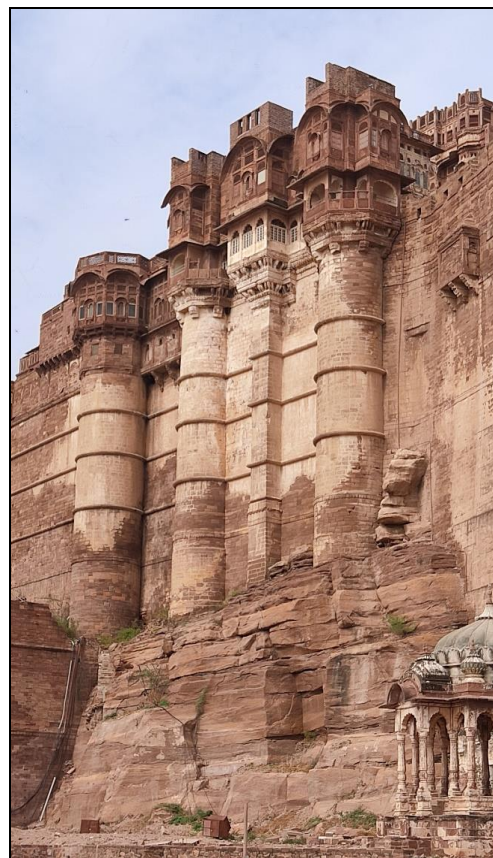


Figure 6. The welded tuff below the fortified structure of Mehrangarh Fort Palace (Source: Authors' own)

Tourism as an economic activity impacts the local communities by incrementing labour and entrepreneur prospects, advancing infrastructure, raising living standards, improving leisure and recreation capabilities, and facilitates the preservation of indigenous culture (Andereck and Vogt, 2000; Deery et al., 2012; Hwang et al., 2012). On the other hand, negative influence from the incoming tourists cannot be ignored, with prominence given to accruing costs of living and property rates, urban congestion and rise in organised crimes (Deery et al., 2012; Hwang et al., 2012; Látková and Vogt, 2012). Taking cognisance of this discrepancy, previous researches have focussed on factors like the impact of community attachment (Gursoy et al., 2002; Látková and Vogt, 2012) community involvement ((Nicholas et al., 2009); (Rasoolimanesh et al., 2017), attitudes towards the environment (Gursoy et al., 2002; Nicholas et al., 2009), cultural and ethological attributes (Rasoolimanesh et al., 2017), economic benefits (Jaafar et al., 2015; Ko and Stewart, 2002) on resident's attitude towards the impact(s) of tourism development in their locals.

Furthermore, (Ng and Feng, 2020) have highlighted the effects of such factors on geoheritage conservation in the purview of residents. Theoretically, exploring the hosts' perspective's role can increase the available knowledge and litmus test the incorporation of residents' perception in previous literature, which may guide studies to gauge such relationships in the future. Pragmatically, this study aims to supplement the efforts of destination planners, managers and other operatives to optimally manage and administer the heritage tourism inventory while stimulating the host's perception towards their communities and channelising the same towards conservation efforts.

THEORETICAL LENSES

Scrutiny of literature reveal that multiple theories have been expedited to explain the role of influencing factors in moulding hosts' perception towards geoheritage conservation. Authors (Nicholas et al., 2009; Rasoolimanesh et al., 2017) expedited the role of stakeholder theory while (Rasoolimanesh et al., 2019) used Weber's theory of formal and substantive rationality to approach the notion of residents' perceptions. However, (Gursoy et al., 2002; Jurowski et al., 1997b; Ko and Stewart, 2002; Látková and Vogt, 2012; Rasoolimanesh et al., 2015; Sharpley, 2014) observe domination of the social

exchange theory (SET) in the discussion. Andereck et al., 2005; Jurowski et al., 1997b; Wang and Pfister, 2008 observe that SET explains why residents are encouraged to support heritage conservation when they sense the positive impacts preponderate the negative ones. On the other hand (Rasoolimanesh and Seyfi, 2020) note that SET may suffer from certain lacunae, as it may only comprehend the effects of positive and negative perceptions towards heritage conservation; furthermore, investigations by (Andereck et al., 2005; Boley et al., 2014; Sharpley, 2014) have highlighted the weakness of SET to clarify the factors influencing the perception of residents. (Cropanzano et al., 2017) have been critical of the SET in its capacity to capture behavioural antecedents and imprecise behavioural predictions.

Andereck et al., 2005; Boley et al., 2014; Rasoolimanesh, et al., 2017 have considered the adoption of Weber's theory of substantive and formal rationality (WTSFR) propounded by (Weber, 1978) to offset the epistemological deficiencies laid above and simultaneously develop scientific inquiries to determine factors affecting residents' perception towards conservation. The merit associated with WTSFR is that it aims to describe actions and perceptions based on two rationality types: substantive and formal (Boley et al., 2014). Substantive rationality concerns impressions, value systems, thoughts and ethical motives (Boley et al., 2007). Ward and Berno, 2011 argue that there exists a dissimilarity among hosts and visitors from the point of view of demography which subsequently moulds the hosts' deportment and attitudes towards tourism development. However, the SET is not fully cognised of this differential (Ward and Berno, 2011b). This is a significant consideration that motivated researchers to imbibe facets of Weber's Theory of Substantive and Formal Rationality to study the interactions among hosts and natives in tourism development and conservation. A few critical works of literature includes (Boley et al., 2014; Ranasinghe and Pradeepamali, 2019; Rasoolimanesh et al., 2017). Therefore, to study, capture and predict host behaviour in the context of conservation of a geoheritage and tourism development, this study deploys substantive factors from the WTSR like the quality of life (Uysal et al., 2016) and resident's utilisation of resources (Allen et al., 1993) and support for conservation from the SET (Ng and Feng, 2020). After a thorough literature review, it is revealed that the moderator of choice residents' perception is a novel interaction under investigation to understand the effectiveness of attitude of hosts towards not only developing a tourism product and conserving a geological feature.

Furthermore, the interaction effect is a call to action by (Boğan et al., 2020), who studied the dynamics of this construct in the context of hotel social responsibility. The above premises provide the authors with enough ground to amalgamate both the WTSFR and SET. The study aims to provide pragmatic solutions to managing and promoting a geosite and develop a sustainable tourism model by considering the local community's central role. The study will be executed by investigating and inferring upon the hedonic, perceptive, trade-off relationships with support for conservation endeavours and the moderating role of residents' perception between the influencing factors and support conservation. The study aims to capture, process and predict residents' support for preserving geo-heritage sites and tourism potential.

LITERATURE REVIEW

Theoretical Framework and Constructs

The study finds its inspiration and pertinent gap(s) from (Gannon et al., 2020), wherein the investigation recommends that future studies should examine novel independent variables, namely; place image, safety and security, personality, resident's utilisation of heritage and tourism resources, well-being and quality of life, the current study aims to gauge the relationship between above factors and support for geo-heritage conservation

(a) Place Image

Kotler et al., 1993 defined the concept of place image as "the sum of beliefs, principles, and impressions that individuals have towards a certain place". Shields, 2013 through their book titled "Places on the margin: Alternative geographies of modernity" describe "the various discrete meanings associated with real places or regions regardless of their character in reality". Authors like (Ajayi and Tichaawa, 2020; Hankinson, 2004; Stachow and Hart, 2010; Warnaby, 2009) have indicated that individuals may develop distinctive attitudes towards a particular place based on experiences and associations they have from it; furthermore, these attitudes translate into a stereotype when they become widely putative (Boisen et al., 2011). Individual's discernment of physical places is ambiguous and is non-represent of reality Anholt, 2010 and Dinnie, 2011. Stylidis et al., 2014b) deployed a scale and proposed that residents' place image influences their perception of tourism and subsequently mould their support for tourism development. Still, the outcomes outline the need for a more resident-centred measuring vehicle to capture tourism impacts.

H1: Place image has a significant effect on the support for geoheritage conservation

(b) Safety and Security

Safety and security can be defined as the state of knowing that any agent will induce no harmful effects under specific conditions. In tourism academia, a study by (Chiciudean et al., 2019) has used resident's feelings of safety and security to determine the critical factors for sustainable rural development. In another study, researchers (Imbeah et al., 2020; Wang et al., 2010) reveals that female residents of the Chinese city of Shandong reported reluctance to embrace tourism due to safety and security concerns, which makes the construct even more vital for academic scrutiny, (Konstantaki and Wickens, 2010) corroborate the same through their findings among London residents which showed lack of confidence about the security arrangements made during the 2012 London Olympic Games. (Rasoolimanesh et al., 2017) conceptualised the measure of "community gain" wherein one of the critical parameters is residents' perception towards community safety and security; their study aims to gauge the collective perception of the inscription of George Town in coastal Malaysia as a WHS.

H2: Safety and Security have a significant effect on support for geoheritage conservation

(c) Resident's Utilisation of Resources

Drumm and Bank, 2005 have described a community in the context of protected areas like World Heritage Sites as "a heterogeneous group who share residence in the same geographic area and access a set of local natural resources", residents in and around the vicinities of World Heritage Sites have increasing access to the opportunity to make decisions about their consumption of resources and livelihood infrastructure (Cochrane and Tapper, 2006). Furthermore, the stakeholder theory and critically analysed the interaction between locals and wildlife-based tourism developments in Zimbabwe, wherein it was observed that locals are to be considered the traditional users of resources in the natural site. Jurowski et al., 1997a has utilised tourism resource utilisation as an exogenous variable to determine residents' support for tourism in a mountain tourism zone in Virginia (US). Jurowski and Gursoy, 2004 observed a direct inverse relationship between the utilisation of tourism resource base and the cultural costs. Jurowski and Gursoy, 2004 differentiated their sample into 3 sub-samples based on a group's physical proximity to a World Heritage Site; the prediction indicated varying sentiments towards resource consumption among the groups. Imbeah et al., 2020 have argued that while residents are aware that resource duplicity exists in the use of resources among natives and tourists, further research should explore how this affects support for conservation.

H3: Residents utilisation of resources have a significant impact on the support for conservation efforts

(d) Resident's Well Being

In recent decades, increasing emphasis has been paid to the role of tourism planners in attempting to contribute to the well-being of local inhabitants by reducing the potential costs of tourism development, and research provides that residents have a positive lineation towards tourism development if they know about their well-being which happens to be at the heart of all the growth (Lopes et al., 2019). Although a study by (Wu et al., 2019) have stated the effect of subjective well-being (SWB) in the context of tourist perception at geoheritage tourism sites, no such studies have kindled on the topic of residents well-being. Therefore, the current study aims to empirically test the relationship between well being of the resident and support for geoheritage conservation as (Park et al., 2020) believe that residents are significantly more inclined towards support for a protected area when they sense that the action of supporting conservation will offset the ill effects of visitor movements in their local commune which is again a disposition of the Weber's Two Factor Rationality.

H4: Resident's well-being has an impact on the support for conservation

(e) Quality of Life

Andereck and Nyaupane, 2011 developed the TQOL or the Tourism Quality of Life (QoL) to understand the resident's side of tourism impacts to their overall living standards, which, among other things, consist of factors like air and water quality, preservation of a way of life, state of public transportation, among others. The interdependence between tourism development and quality of life has attracted the interest of researchers since the last decade (Han et al., 2019; Kim et al., 2013; Ko and Stewart, 2002; Uysal et al., 2016) also utilised this item. Its relationship with the residents' support for geoheritage conservation has been discerned by (Syarafina and Misni, 2016), who had observed a significant and positive effect of QoL on ensuring the sustainability of a geopark in Indonesia. Hence, it would be interesting to investigate the same in the context of Jodhpur.

H5: Quality of life for residents have a significant effect on support for conservatory actions

(f) Support for Conservation

Megeirhi et al., 2020 utilised the VBN (value-belief-norm) to understand local residents of Carthage intentions to support sustainable cultural heritage tourism development, wherein it was observed that psychological precedents are responsible for moulding residents attitudes towards tourism development, in another study by (Ng and Feng, 2020) recorded that positive attitude among the locals dwelling around a UNESCO world heritage site supported tourism propagation, while negative attitude portrays a lack of support. An interdisciplinary approach towards understanding residents' support for conservation efforts of a national park in Botswana reveals that various demographic factors like literacy, employment status and proximity to the site play a pivotal role.

(g) Residents Perception

Zheng et al., 2019 deployed the cognitive appraisal theory and identified the causes of residents' emotional responses to developing a performing arts facility for tourist consumption. The study elicited specific attributes of residents' perceptions like happiness, love, and gratefulness but was negatively related to sadness and anger. Additionally, the study highlighted the fact that positive effects had more impact on touristic performing arts development than negative. Monterrubio et al., 2020 used a negativity biased approach to gauge the emotions and attitudes of local residents towards the result of an airport. It was observed that perceived negative image outweighs all positive outlooks, a contrast from the former study. The current study is built upon antecedents from (Jaafar et al., 2015) who identified that residents' perception towards the conservation of a world heritage site in Malaysia was an important factor in explaining the overall propensity of young people towards promoting and sustaining World Heritage Sites in their locality. Furthermore, Rastegar concluded that resident attitudes towards tourist development within and around protected areas play a fundamental role in deciding the future trajectory for the destination in terms of policy and sustainable governance. Therefore, the authors contemplate examining the moderating role of local perception towards geoheritage and tourism development in the current study as the authors adopt a post-positivist approach to study the transactions between tourism activities and the local populace (Henderson, 2011; Khayati and Zouaoui, 2013). In the post-positivist

paradigm, the researchers are interested to examine and predict social phenomena (like residents’ perception) against the background of a context (geoheritage) (Henderson, 2011b).

H6: Residents’ perception moderates the relationship between safety and security and residents’ support for conservation

H7: Residents’ perception moderates the relationship between resident’s utilisation of resources and residents’ support for conservation

H8: Resident’s perception has a significant influence on well-being, which affects residents support for conservation

H9: Resident’s perception has a significant influence on place image, which affects residents support for conservation

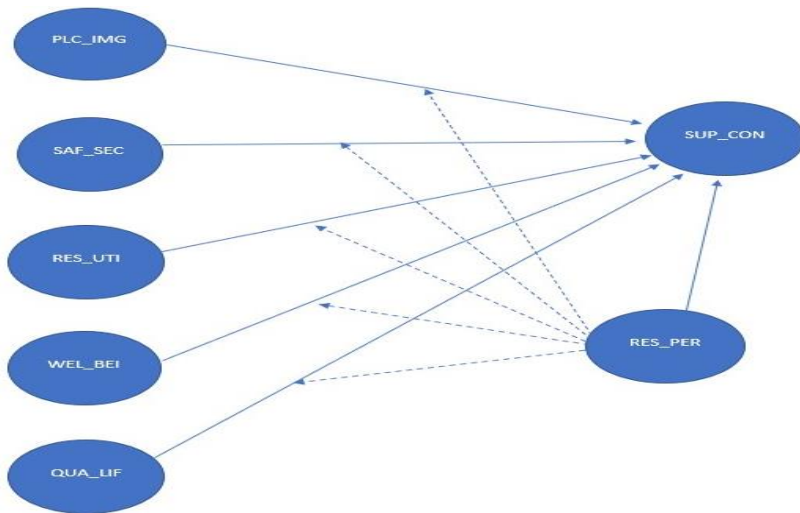


Figure 8. Conceptual Framework Developed by the Authors

Table 1. Demographical Statistics of the Study

Items	Category	Frequency	Ratio (%)
Gender	Female	46	45.5
	Male	54	53.5
Age	18–30	96	95.05
	31–40	5	4.95
Education	Master or higher	37	64.4
	Bachelor	64	35.6
Occupation	Employed	11	10.9
	Self-employed	6	5.9
	Student	79	78.2
	Unemployed	5	5.0

RESEARCH METHODOLOGY

1. Sampling and data collection procedure

This study was conducted based on the conceptual framework presented in Figure 8. Randomised sampling methodology was utilised to give equal opportunity to all participants to have their responses scrutinised. Residents of Old city, Jodhpur (men, women and others) aged between 18-60 participated in the data collection drive. Due to the ongoing COVID-19 pandemic, an online response collection campaign was conducted between January 2021 and March 2021. A sample size of 200 was estimated in conjunction with the ten times rule promulgated by (Sarstedt et al., 2014).

2. Scale and Questionnaire Design

Table 2. Measurement scale developed by the authors

Symbol Assigned	Construct	Operationalisation	Scale Adopted
PLC_IMG	Place Image	1. Effective local government 2. Good job opportunities 3. Interesting historic sites 4. Clean	(Stachow and Hart, 2010); (Warnaby, 2009)
SAF_SEC	Safety Security	5. There is enough civil defense infrastructure available 6. Crimes against women and children are significantly low 7. Cases of vandalism are rare 8. This is a safe place to live	(Muresan et al., 2019) (Konstantaki and Wickens, 2010)
RESI_UTIL	Residents Utilisation of Tourism Resources	9. There is access to public services for all residents 10. Locals make use of hotels and restaurants frequented by tourists 11. Locals have access to infrastructure like roads, accommodations used by tourists	(Jurowski and Gursoy, 2004), (Manwa, 2003)
WEL_BEIN	Well Being	12. I feel my basic necessities are being met 13. There are enough facilities to relax and rejuvenate in the city 14. I find it wholesome living in this city	(Lopes et al., 2019)
QOL	Quality of Life	15. There are places for passive and participative recreational activities 16. I have the opportunity to socialise with my neighbours. 17. I can fully express my creativity and talent in the city-sphere	(Uysal et al., 2016) (Burckhardt and Anderson, 2003)
RES_PER	Resident’s perception	18. The destination implements environmentally responsible actions 19. The destination implements special programs to minimise any negative impact on the environment 20. The destination contributes to the positive development of society	(Zheng et al., 2020) (Su et al., 2019)
SUPP_CON	Support for conservation	21. I engage in local conservation activities 22. I support sustainable development of the tourism industry around the geo-site 23. I will support future conservation efforts 24. I am involved in the well-being of the site	(Megeirhi et al., 2020) (Ng and Feng, 2020)

3. Data analysis

Partial Least Square Regression was used to capture and predict residents' behaviour based on the moderating effect of Resident Perception on Support for Conservation Activities. The SMART-PLS Package by (Hair et al., 2017) was utilised for the analysis. Test for Common Method Bias was conducted through the Factor Analysis Module of SPSS by IBM, and the dataset achieved <50%, which is admissible under Harman's Single Factor Test for measurement bias. The rationale behind selecting the PLS-Structuring Equation Modeling was based on the significant number of investigations involving residents' attitudes and support for conservation and tourism development which used the PLS-SEM method (Gursoy and Rutherford, 2004; Jurowski et al., 1997a; Liang and Hui, 2016a; Styliadis et al., 2014a; Williams and Lawson, 2001). Additionally, statistical treatments by the PLS-SEM is not challenged by non-normal data, and it can produce robust observations with smaller datasets (Jr. et al., 2017; Sarstedt et al., 2016; Dey et al., 2020; Rai et al., 2013; Hung et al., 2021)

RESULTS

1. Reliability Analysis, Convergent and Discriminant Validity

The academic community has used PLS to investigate psychometric attributes of social processes like the interaction of individuals to change in their environment (Ashill et al., 2005); A key parameter of the measurement model's robustness is the construct reliability which is identified through the Cronbach's alpha coefficient. In this study, Cronbach's alpha value reach the accepted value of ≥ 0.5 , satisfying the criteria of construct reliability (Bagozzi and Yi, 1988) (Table 3). In Table 4, two vital criteria, the Composite Reliability (CR), which is a testament to the robustness of the indicators to the respective manifest variable is at an acceptable level of ≥ 0.7 , and the convergent validity or AVE (Average Value Extracted), a critical informatic to gauge variance due to measurement error is observed to be >0.5 which is admissible according to (Farrell, 2010). Through the Fornell-Lacker Criterion and the cross-loadings (Table 3), the discriminant validity of constructs is satisfied as square root of each construct's AVE is higher than its correlation with another construct, and each item loads highest with respect to its associated construct (Henseler et al., 2014).

Table 3. Fornell-Lacker Criterion
(Source: Authors' processing from SMART PLS 3.2.9)

Variable	Items	Factor Loadings (λ)	Cronbach's α	CR	AVE
Place Image	PLC1	0.733	0.765	0.846	0.581
	PLC2	0.801			
	PLC3	0.830			
	PLC4	0.674			
Safety and Security	SAF1	0.781	0.734	0.849	0.653
	SAF2	0.868			
	SAF3	0.601			
	SAF4	0.697			
Resident's Utilisation of Tourism Resources	RES1	0.789	0.777	0.871	0.692
	RES2	0.868			
	RES3	0.837			
Well Being	WEL1	0.814	0.846	0.896	0.683
	WEL2	0.836			
	WEL3	0.773			
Quality of life	QOL1	0.804	0.734	0.829	0.553
	QOL2	0.842			
	QOL3	0.873			
	QOL4	0.783			
Resident's Perception	REP1	0.843	0.809	0.883	0.715
	REP2	0.847			
	REP3	0.848			
Support for Conservation	SUC1	0.661	0.751	0.833	0.503
	SUC2	0.785			
	SUC3	0.780			
	SUC4	0.741			

2. Model Performance

Table 4. Factor Reliability and Validity (Source: Author's Process from SMART PLS 3.2.9)

Construct	PLC_IMG	QUA_LIF	RES_PER	RES_UTI	SAF_SEC	SUP_CON	WELL_BEI
PLC_IMG	0.762						
QUA_LIF	0.374	0.744					
RES_PER	0.116	0.299	0.846				
RES_UTI	0.373	0.278	0.167	0.832			
SAF_SEC	0.409	0.448	0.041	0.462	0.808		
SUPP_CON	0.278	0.49	0.288	0.232	0.443	0.709	
WELL_BEI	-0.009	0.058	0.608	-0.008	-0.115	0.211	0.826

Table 5 Model Performance (Source: Authors' processing from SMART PLS 3.2.9)

Interaction Type	Interactions	Path Coeff. (β)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values	Hypothesis Supported
Moderation	PLC_IMG*RES_PER -> SUP_CON	0.08	0.08	0.06	1.337	0.18	No
	QUA_LIF*RES_PER -> SUP_CON	-0.012	-0.012	0.052	0.221	0.82	No
	RES_UTI*RES_PER -> SUP_CON	0.128	0.118	0.156	2.292	0.03	Yes
	SAF_SEC*RES_PER -> SUP_CON	-0.069	-0.071	0.052	1.335	0.18	No
Direct	PLC_IMG -> SUP_CON	0.059	0.062	0.042	1.403	0.16	No
	QUA_LIF -> SUP_CON	0.331	0.334	0.044	7.439	0.00	Yes
	RES_UTI -> SUP_CON	-0.089	-0.083	0.054	1.656	0.09	No
	SAF_SEC -> SUP_CON	0.321	0.316	0.053	6.073	0.00	Yes
	WELL_BEI -> SUP_CON	0.191	0.191	0.052	3.643	0.00	Yes
Dependent Variable: SUP_CON		Coefficient of Determination (R^2): 0.381 (38%)				Empirical Remark: Satisfactory (significant at $p < 0.05$)	

DISCUSSIONS

The study considers 4 moderating interactions and 5 direct interactions, thereby giving rise to 9 testable assumptions. The opening part of this segment shall discuss the assumptions concerning direct relationships among the dependent and independent variables. The next part shall cover the discourse on the moderating terms in determining the dependent variable. The first hypothetical assumption hypothesises the efficacy of place images in predicting support for conservation. In the extant literature, it is observed that this particular association is positive (place image and support for heritage conservation) according to (Stylidis et al., 2016). As an alternative antecedent to a case study on the effect of place branding on landscape conservation in Switzerland, authors (Tobias and Müller Wahl, 2013) observe a similar positive affinity between the notion of place image and support for landscape conservation.

In this particular study among the old city residents, Jodhpur, the authors have detected a negative correspondence among place image and support for conservation, which signifies a potent departure from earlier studies (Table 5). Extant studies that have been built on the Social Exchange Theory (SET) like (Ap, 1992; Gursoy and Rutherford, 2004; Stylidis et al., 2014b) have observed that constructs like place attachment and image have been found negative in predicting conservation support. These findings corroborate the findings of this study.

The second hypothetical statement deals with testing the correlation between safety and security and support for geoheritage conservation. In conjunction with studies that centre around similar themes, authors (Pegas et al., 2013) observed that when it comes to the conservation of marine heritage, residents of a particular Brazilian village emit positive emotional response given the fact that conservation efforts may impact the villagers' safe passage to the coastal ridge. This antecedent has signalled similarity with the findings of our study wherein the assumption of a positive correlation between safety and security of residents and support for conservation has been accepted (Table 5). In their research (Priporas et al., 2017) test the effect of community sense of safety and security on conservation behaviour among AirBnB users. The study was underpinned by the Social Exchange Theory (SET) and exhibited a positive correlation between safety and security and conservation proclivity. The current research records a positive association between safety and security and support for geoheritage conservation in alignment with the SET's previous finding.

Thirdly, a hypothesis was developed to test the relationship between residents' utilisation of tourism resources and support for geoheritage conservation. It was observed in this study that there exists a negative correlation between the two constructs. It is noteworthy that previous researches in the field like (Jurowski et al., 1997c), have outlined a significant positive relationship among residents using resources meant for tourists.

Their support for the conservation of tangible heritage (Nunkoo and Ramkissoon, 2010) adds to the discourse by studying residents' support towards developing an integrated resort in Mauritius. Their study indicates a positive linear relationship among the variables in question. In our study, the relationship between the residents' utilisation of tourism resources and support for geoheritage conservation in the context of residents of the old city, Jodhpur, is negative, which again is a departure from the conventional findings (Table 5). A plausible explanation may be the implication of Weber's two-factor rationalisation because respondents who are primarily dwellers of the area around the geoheritage do not sense a positive outcome from the tourism activities and the subsequent conservation efforts. Boley et al., 2014 argue that the locals may become distant from any development program in their community if the benefits are not perceivable. It is here that authors like (Gannon et al., 2021) have deployed Weber's two-factor rationalisation theory in addition to the SET to understand the relationship between residents' utilisation of tourism resources and support for geoheritage conservation, as the former theoretical underlining captures psycho-cognitive states beyond the emotion-based confines traditionally offered by the SET (Mody and Day, 2014).

The fourth assumption of interest is a probable positive link between resident's well-being and support for geoheritage conservation. In a parallel investigation, (Chen et al., 2020) studied the construct of well-being due to the interaction between tourists and residents. Park et al., 2017 have identified a positive association between tourism development and community well-being which is mirrored by findings (Gannon et al., 2020). In our study, empirical evidence suggests that resident's well-being plays a significant and positive part in assessing the support for geoheritage conservation in the old city of Jodhpur (Table 5). The association between resident's well being and support for conservation has underpinnings from Weber's two-factor rationality and SET (Yolal et al., 2016), wherein a positive link has been ascertained between the tested factors. This is in conjunction with the findings of this investigation.

The fifth hypothesis dealt with investigating the direct relationship between quality of life and support for geoheritage conservation. In conjunction with studies like (Liang and Hui, 2016b) who have found a positive correlation between the quality of life and support for tourism development. Because support for conservation of geoheritage as a context hasn't been studied before, our result of a positive relationship among the constructs in question is a novel finding. Our study is further strengthened by the empirical findings by (Yu et al., 2011), who observe strong affiliation of the quality of life construct in impacting residents' support to tourism development, which we consider a proxy to support geo-heritage conservation (Table 5). Quality of life construct has robust foundations from the SET (Liang and Hui, 2016b), which has been tested in contexts concerning support for tourism development and not conservation of any heritage site, which may be considered an addition to the existing corpus of knowledge.

This study introduces 4 investigative assumptions to gauge the moderating efficiency of residents' perception to predict support for geoheritage conservation. While 3 assumptions were found to lack empirical evidence to be accepted, the one moderating interaction having residents' utilisation of tourism resources as a pathway to the dependent variable (Residents' utilisation of tourism resources* Resident's perception-> support for conservation) has been identified as a robust moderating effect. Incidentally, there are no antecedents in extant literature to derive for this special relationship.

A scoping literature review from leading scientific directories like Scopus and Web of Science leads us to describe the findings of the interaction terms mentioned above as being novel.

Expected contribution to theory and practice

The theoretical contribution of this study is that the Weber's 2 Factor Rationality is deployed with the behavioural aspects of the Social Exchange Theory (SET) to scrutinise the behaviour of residents towards geoheritage conservation and tourism development in their locality. This gives another dimension for academicians to approach issues related to the conflict between residents needs and tourists wants, thereby augmenting and extending the spectrum of the Social Exchange Theory. After a thorough systematic literature review and practising abundant caution, it can be discerned that the study's novelty includes the inculcation of constructs like residents' quality of life and well-being to study the factors of support for conservation and tourism development (Gannon et al., 2020). Progressively, the moderating interactions significantly affects the predictive capacity of the theoretical framework used in this study.

The practical aspect of the study is immense. It gives the practitioners leverage to better plan for managing geoheritage sites and develop robust strategies for their development, keeping in mind the duplicity of resources. By deploying novel attributes like residents' quality of life and the moderating effect of resident's perception to model conservation support behaviour among the local community, the sustainability of the delicate geoheritage site. Our study contains a post-positivist approach which implies that support for geoheritage conservation includes a critical element of human context that makes the role of residents a vital component of planning or executing geoheritage conservation endeavours. It is interesting to note that the Mehrangarh fort was featured in the critically acclaimed Hollywood film 'The Dark Night Rises' (Nolan, 2012), in addition to the numerous Hindi language movies filmed in and around the vicinity of the fort and the igneous rock structures. These developments have made the promotion and conservation of the geoheritage site the need of the hour. Policies should provide impetus to evolving touristic activities like film tourism, rock tourism and heritage tourism.

Future researches should focus on increasing the generalizability of the study by conducting longitudinal studies. The authors recommend the time-lag method of data collection wherein the responses are more robust, and measurement bias-related issues are also reduced significantly (Ali et al., 2020). Furthermore, future investigations could employ constructs that manifest non-hedonic, non-volitional and self-reflective attributes of residents' behaviour towards geoheritage conservation and tourism development, especially in middle-income countries like India (Verma and Chandra, 2018)

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