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# Potential barriers and drivers in the growth of blue economy: Perspectives of nautical tourism

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**Abstract:** This study investigates the potential of developing a maritime tourism project within the blue economy of Pakistan and explores the factors influencing blue growth and maritime tourism. A quantitative research approach has been adopted. The research gathered primary data from diverse experts and stakeholders within the maritime sector and related industries. The study's target population comprised on various entities involved in these sectors. A sample of around 250 individuals was selected using a convenient sampling technique. The collected data underwent analysis using the Statistical Package for the Social Sciences (SPSS) and the Partial Least Square (PLS) method. This approach was chosen to explore and understand the intricate relationships between variables in the context of the maritime industry. Structural Equation Modeling (SEM) and Confirmatory Factor Analysis (CFA) techniques were then employed to scrutinize the data further, allowing for a comprehensive examination of the interconnections among the variables identified in the study. This robust methodological approach enhances the study's credibility and provides valuable insights into the dynamics of the maritime sector and its associated industries. The findings indicate that a balanced approach, valuing business sustainability, top management support, and enabling innovation structures positively impact blue growth. Additionally, uncertainty avoidance and promoting short-term goals have an appositive impact on the blue economy. Moreover, two potential barriers, Functional strategy, and weak competency, do not significantly affect the blue economy. This study lays the foundation for further exploration and implementation of strategies that promote sustainable growth and development in Pakistan's blue economy. By integrating the insights gained from this study into policy and decision-making processes, stakeholders can work together to create a vibrant and sustainable maritime tourism sector that benefits both local communities and the environment.

**Keywords:** blue economy; maritime tourism; ocean economy; potential drivers; potential barriers

## 1. Introduction

New global trends regarding economic development have been discovered that entirely depend on the oceans, namely as Ocean Economy, Blue Growth, and Blue Economy. The terms define the advancement of events happening in the ocean and coastal areas. As oceans are of great importance, the concept of blue growth is uplifting daily in terms of globalization (Bennett et al., 2021). Blue growth includes emerging economic conditions and ocean, sea, and coast events. Environmental

growth can also be furnished through blue growth by focusing on various sectors and maritime businesses (Caswell et al., 2020a). Moreover, the European Union (UN) and the UN Department of Economic & Social Affairs are highlighting the new evolving concept of blue growth and the potential prospects of the Blue Economy deriving from the ocean industry, i.e., Fisheries, Shipping, Maritime Tourism, Renewable Energy, Aquaculture, Sea-bed Mining and Marine Biotechnology. Larger industries such as coastal development, port infrastructure, and services also depend on the Blue Economy. South Asian countries have a huge coastline of approx. 173,000 km; most South Asian states rely solely on the blue economy. The blue economy contributes 15% and 22%, respectively, to the gross domestic product of Indonesia, Vietnam, and tragically, Pakistan is far beyond these countries. Monetary and biologically rich seas ensure 35% of mangroves, 18% of seagrass meadows, and almost 30% of the world's coral reefs. Bangladesh has immense coastlines and marine resources; it has the world's most productive and useful beachfront region due to the prudent topography of its area. According to Jacqueline Birch, fish code director at the Food and Farming Association, Bangladesh's blue economy generates \$6 billion annually and has the potential to increase more. Similarly, Sri Lanka enjoys numerous advantages of having diverse waterfront and marine environments, high travel industry and entertainment capabilities, and significant contiguous ocean paths. The Maritime Tourism industry is essential to public development and economic growth, particularly in countries like Pakistan. Pakistan has enormous potential for the blue economy but has not received its importance. It has a diverse coastline of 1050 km, including the mainland rack and Exclusive Economic Zone EEZ. Pakistan has a solid opportunity to profit from marine resources in the aforementioned seaside regions, opening up monetary opportunities. Under the China-Pakistan Economic Corridor (CPEC), as China seeks to reach Gwadar, it is acknowledged that the blue economy may flourish manifold. Apart from Gwadar, Pakistan can help the blue economy by expanding the travel industry in the Marine Waterfront regions, developing the district's fisheries, and mining previously untapped marine minerals. Pakistan's policymakers failed to capitalize on the blue economy of CPEC & real and realized how to take advantage of the blue support from several states, yet its manifestation warrants numerous challenges. The blue economy will also make Pakistan unique by opening up financial employment opportunities in fisheries, hydroponics, energy production, transportation, and the travel industry.

Under the China-Pakistan Economic Corridor (CPEC), Pakistan must support its blue economy and provide unfamiliar travelers with these undiscovered Gwadar perspectives. Pakistan's economy has been struggling for a long time. We need to realign the conventional economy and open up new avenues for development. CPEC serves as a lifeline for Pakistan's traditional economy and a stomach for establishing Pakistan's blue economy. The untapped blue economy of Pakistan must be explored, utilized, and profited greatly through Pecan enhanced oceanic organization between China and Pakistan under CPEC. Because the CPEC project can guarantee a supported financial development for Pakistan specifically and the region as a whole besides the territorial network. Pakistan has followed the blue turn of events as a signatory of the (SDG-14) Sustainable Development Goals (Lewis et al., 2021).

Pakistan is strategically located, having a coastline of 1050 km, an Exclusive Economic Zone of 240,000 square km, and an additional Extended Continental Shelf of 50,000 square km. This extensive sea area serves as a crucial foundation for the public economy. Baluchistan, with a length of 730 to 770 kilometers, has been identified as a distinct and mostly untapped resource with significant potential for the blue economy. Pakistan, being a maritime country, despite having enormous potential in the maritime tourism industry, has never been taken seriously by the populace and the government in developing its Blue Economy across all sectors. Pakistan's sea area presently only contributes 0.4% to the country's GDP, which is significantly low. In comparison, Pakistan's GDP is currently at US \$1.5 billion, while India and Bangladesh have a GDP of US \$6 billion and US \$5.6 billion respectively. The same highlights the potential emerging growth of Pakistan's blue economy (Asaf Humayun and Naghmana Zafar, 2014). As a result, experts claim that these blue assets have the potential to propel Pakistan's blue development when utilized appropriately. Consequently, given the well-known issues and challenges, there is a need to identify the drivers and barriers that impact the outcomes of Pakistan's blue economy development (Sarwar, 2022). As a result, some of the major answers need to be addressed to solve this problem.

RQ1: What potential growth barriers impact the blue economy and maritime tourism?

RQ2: What potential growth factors impact the blue economy and maritime tourism?

## **2. Materials and methods**

### **2.1. Importance of blue economy in Pakistan**

BE (Blue Economy) is so important to economic events that researchers worldwide have developed various models to predict its use and realize its full potential. To reap its benefits, mechanical and macroeconomic management models have been used. Additionally, administration systems have been used to manage blue development issues in the Indian Sea Locale (Roccliffe et al., 2014).

Pakistan can gain a lot by incorporating extensive security management strategies. The old-style idea of care could not contract with all of the tests modeled by a globalized ecosphere in the 21st period (Ostad-Ali-Askari, 2022). By acquiring numerous domain names (monetary, cultural, military, political, and natural) that play a huge position in the prosperity of states, this method should change the limited attitude toward security (Huang et al., 2020). Counting these areas was reasonable because they immediately affected people and social groups living within state boundaries. Financial viability is essential for cultural security, one of the five areas of safety, just as it is essential for public safety (Wang et al., 2022).

### **2.2. Potential barriers to the blue economy**

Blue Economy development is gaining traction globally as it can help conserve marine life and mitigate environmental degradation. However, specific challenges hinder this process and the overall growth of the blue economy, such as vulnerability evasion, which implies that people are aware of the lack of blue development but still deem it acceptable. This trend is related to Hofstede's social aspect theory,

which explains how culture influences different activities. Vulnerability evasion has been identified as a significant obstacle to blue development. The development of a blue economy has been deemed highly uncertain in various seas and oceans due to unclear guidelines and standards, leading to industry corruption. In addition, a lack of viable strategies has also been identified as a potential barrier to blue development (Keen et al., 2018).

In a similar vein, although reasonable procedures may contribute to the establishment of blue development, it is essential to investigate and reflect on the implications of these methodologies and what they entail in this sector. According to (Leposa, 2020), the methodologies can also identify additional opportunities for advancement in the Blue Economy. In addition, it has been acknowledged that various provincial methodologies are inadequate for supporting blue development regarding substantial thoughts. According to Lee et al. (2020a), feasible improvement in the Blue Economy has been recognized as a significant test in which the procedures are not carried out appropriately to ensure viability. One of the main challenges in blue economy development is the focus on short-term gains, which prioritizes maximizing production without considering the long-term impacts on marine life and the environment. Despite generating profits, this approach may negatively affect both people and nature.

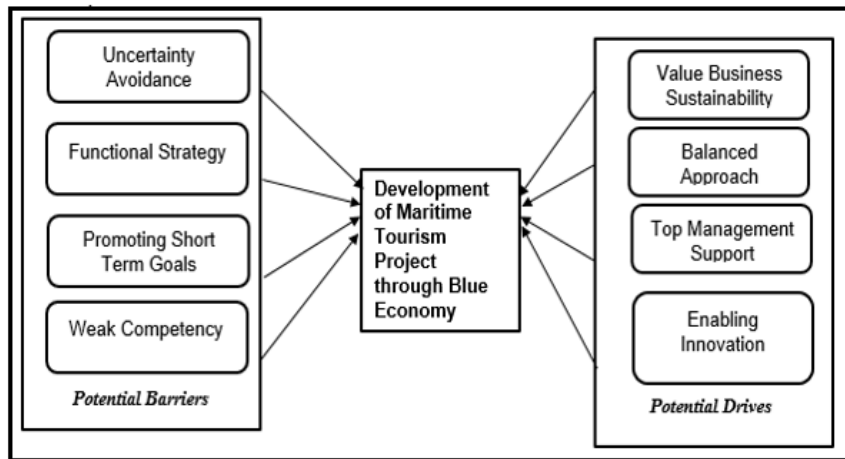
Furthermore, a lack of innovation and collaboration in addressing environmental concerns has also been identified as a significant barrier to the growth of the blue economy (van den Burg et al., 2020). Because it can rethink the cycles in light of novel ideas and advancements, the work of development can be a significant figure in blue development. Its concept relies on appropriate methods, arrangements, and ideas to improve natural and social issues through the collaboration of various entertainers. Unadulterated cooperation and trust between various partners or entertainers are necessary for this interaction's outcome (Queirós et al., 2021). Lack of creativity can also be exacerbated by a hypothetical linkage to the problematic development hypothesis, which centers on configuration-driven advancement in blue sea techniques.

### **2.3. Potential drivers of blue growth**

Specific drivers can also aid the development and advancement of the blue economy. They think business supportability is crucial because it focuses on making a business viable and providing useful benefits. The presence of a practical business can fundamentally affect the strong improvement of blue development. For instance, natural manageability results from advanced production processes that are clean, controlled, and productive (Bogadóttir, 2020). The strategy should be manageable, and its connected, tried-and-true methods can help foster a powerful achievement for blue development. Moreover, natural concerns are included from the beginning of this cycle because they can contribute to the proposed framework or industry's business viability (Lagasco et al., 2019). Similarly, business maintainability has sparked a desire for innovation, provided that it is accompanied by a high grade, certifications, and novel approaches to enhancing the environment and business (Li et al., 2020). The analyst has substituted business supportability for business

manageability in this evaluation.

Another crucial driver of blue development is adopting a fair approach, which emphasizes balancing production costs and benefits to ensure sustainable blue development. When the production processes are in harmony with the benefits and environmental sustainability, it helps policymakers to formulate more effective production methods. This approach also emphasizes the importance of incorporating the needs and concerns of all stakeholders, including local communities and indigenous peoples, in decision-making processes related to blue development. By taking a fair approach, policymakers can help promote the long-term sustainability of the blue economy (Pace et al., 2023). The blue improvement fixates on zeroing fairly to balance the reasonable and monetary organization of the typical resources. Blue development can be affected by the effective use of hydroponics, jobs, food frameworks, trade, and environmental administrations (Mundhenk et al., 2016). The primary goal of this interaction is to recognize and comprehend the unique harmony between the climate and the resources.



**Figure 1.** Conceptual model.

These points of view may help incorporate a sound method of climate development and management (Wenhai et al., 2019). Furthermore, top-level support or responsibility for the benefits of hydroponics exercises and, ultimately, blue development has been identified as a further driver of blue development (Hussain et al., 2018). Effective leadership and management at the highest level can drive the blue economy by identifying and addressing potential obstacles. Furthermore, adopting a holistic approach to managing marine ecosystems and their socio-environmental systems can promote sustainable blue economy (Choudhary et al., 2021). Similarly, individuals can benefit from the expansion of blue development and its economy, which, in conjunction with canning, provides viable assets through effective administration, backing, and advancement (Caswell et al., 2020b). The enabling development structure is a key driver of blue development, as it emphasises the importance of creating a shared vision for the ocean and promoting innovative growth strategies that prioritize sustainability. Innovation has been recognised as a crucial factor in the development of the blue economy, as it can enable more efficient resource use, greener technologies, a circular economy, and strong business

models that promote socio-regional cohesion. Strategies that prioritise creative specialization can help foster blue development. (See **Figure 1**).

### **3. Results and discussion**

A quantitative research approach has been adopted in the current study, aligning with the research objectives. To analyze the development of maritime tourism projects through Pakistan's blue economy, primary data will be collected from a diverse range of experts and stakeholders. The target population for this study comprises various entities involved in the maritime sector and related industries. From a modern perspective, the present study aimed to gather awareness and insights from the general population regarding the development of maritime tourism projects through Pakistan's blue economy. To achieve this, a sample of approximately 250 individuals has been gathered. A rule of thumb for SEM studies is a recommended sample of 200 as fair and 300 as good (Anderson and Gerbing, 1988). In this study, a convenient sampling technique has been adopted to gather data for several reasons, including the ease of access to potential respondents. Another reason to adopt convenient sampling was data in the maritime sector is often fragmented and dispersed across various stakeholders, including shipping companies, ports, and regulatory bodies. Convenient sampling is a non-probability sampling method in which individuals are selected based on their convenience and availability to the researcher (Farrokhi and Mahmoudi-Hamidabad, 2012). A physical method was also employed for data collection. This involved distributing printed copies of the questionnaire in person. A survey method was employed to gather the necessary data for the study, which involved both personal and online interactions with the respondents. The survey questionnaire utilized a 5-point Likert scale, a widely used measurement tool developed by Rensis Likert in 1932. The Likert scale allowed respondents to indicate their level of agreement with statements related to the research topic. The scale ranged from 1, representing "strongly disagree," to 5, indicating "strongly agree." The collected data in this study was analyzed using two software: SPSS (Statistical Package for the Social Sciences) and PLS-SEM (Partial et al. Equation Modeling).

### **4. Discussion**

Convergent validity is a statistical concept used to determine the level of agreement between two or more measures intended to measure the same construct. According to (Rönkkö and Cho, 2022), convergent validity refers to the extent to which multiple measures of the same construct yield similar results. In other words, if two or more measures of the same construct produce comparable results, then it can be concluded that there is convergent validity. To assess convergent validity, researchers often examine the factor loadings of each item in the factor analysis. (Shrestha, 2021) proposed a method of assessing convergent validity by examining the amount of variance extracted for each factor. They suggested that if the amount of variance extracted exceeds 0.50, then convergent validity is established. Furthermore, the results of the study under consideration indicate that the variance extracted in four scales ranged from 0.55 to 0.927, suggesting that convergent

validity is established. This means that the measures used in the study are reliable and accurately measure the same construct. The high level of convergent validity observed in this study suggests that the measures used are appropriate and effective for measuring the construct of interest. This is a crucial finding, ensuring the study results are valid and trustworthy.

One such criterion is that the average variance extracted (AVE) must be greater than 0.5 (Sarstedt et al., 2020). This indicates that its indicators capture at least 50% of the variance in the measured construct. A higher AVE score indicates better convergent validity, as it indicates greater agreement between the different measures of the same construct. Comp composite reliability is another criterion for assessing the measurement model, which must be greater than 0.7. This criterion ensures that the construct is being measured consistently and reliably and that the measures all assess the same underlying construct. A higher composite reliability score indicates better internal consistency and reliability of the measurement model. In addition, Cronbach’s alpha is another criterion used to evaluate a measurement model’s reliability. The acceptable threshold for Cronbach’s alpha is 0.7(Bujang et al., 2018), which means that if the value of Cronbach’s alpha is higher than 0.7, the measurement model is considered reliable. This criterion ensures that the measures all assess the same underlying construct and that the items consistently measure the same construct(See **Table 1**).

#### **4.1. Construct reliability and validity**

**Table 1.** Factor loadings, Cronbach’s alpha, composite reliability, and AVE.

<b>Constructs</b>	<b>Items</b>	<b>Loading</b>	<b>AVE</b>	<b>CompositeReliability</b>	<b>CronbachAlpha</b>
<b>BA</b>	<b>BA1</b>	0.739	0.557	0.810	0.799
	<b>BA2</b>	0.667			
	<b>BA3</b>	0.870			
	<b>BA4</b>	0.718			
	<b>BA5</b>	0.723			
<b>DMT</b>	<b>DMT1</b>	0.853	0.673	0.903	0.903
	<b>DMT2</b>	0.778			
	<b>DMT3</b>	0.814			
	<b>DMT4</b>	0.841			
	<b>DMT5</b>	0.849			
	<b>DMT6</b>	0.783			
<b>EI</b>	<b>EI1</b>	0.827	0.734	0.930	0.910
	<b>EI2</b>	0.928			
	<b>EI3</b>	0.876			
	<b>EI4</b>	0.859			
	<b>EI5</b>	0.789			

**Table 1. (Continued).**

<b>Constructs</b>	<b>Items</b>	<b>Loading</b>	<b>AVE</b>	<b>CompositeReliability</b>	<b>CronbachAlpha</b>
<b>FS</b>	<b>FS1</b>	0.865	0.640	0.881	0.859
	<b>FS2</b>	0.735			
	<b>FS3</b>	0.721			
	<b>FS4</b>	0.801			
	<b>FS5</b>	0.867			
<b>PTMG</b>	<b>PTMG1</b>	0.859	0.638	0.883	0.883
	<b>PTMG2</b>	0.881			
	<b>PTMG3</b>	0.719			
	<b>PTMG4</b>	0.759			
	<b>PTMG5</b>	0.762			
<b>TMS</b>	<b>TMS1</b>	0.650	0.672	0.909	0.877
	<b>TMS2</b>	0.842			
	<b>TMS3</b>	0.851			
	<b>TMS4</b>	0.863			
	<b>TMS5</b>	0.871			
<b>UA</b>	<b>UA1</b>	0.898	0.753	0.934	0.919
	<b>UA2</b>	0.889			
	<b>UA3</b>	0.858			
	<b>UA4</b>	0.805			
	<b>UA5</b>	0.886			
<b>VBS</b>	<b>VBS1</b>	0.723	0.589	0.849	0.832
	<b>VBS2</b>	0.815			
	<b>VBS3</b>	0.721			
	<b>VBS4</b>	0.845			
	<b>VBS5</b>	0.725			
<b>WC</b>	<b>WC1</b>	0.703	0.612	0.881	0.843
	<b>WC2</b>	0.872			
	<b>WC3</b>	0.850			
	<b>WC4</b>	0.743			
	<b>WC5</b>	0.729			

Note: UA= Uncertainty Avoidance, FS = Functional Strategy, PTMG =PromotingShort Term Goal, VBS = Value Business Sustainability, EI, Enabling Innovation, BA = Balanced Approach, TMS = Top Management Support, and DMT = Development of Maritime Tourism.

#### **4.2. Discriminant validity**

As Rudd (n.d.) described, discriminatory legitimacy is “the degree to which a particular latent variable completely does not match other inactive factors.” Regarding this research, AVE estimates assuming rules by Fornell and Larcker, (1981) are assumed to be discriminatory legitimacy. The legitimacy of discrimination is obtained by evaluating the relationship between the inertia factor and the square root of AVE (Fornell and Larcker, 1981). According to the general criteria of Fornell and Larker (1981), it is recommended that the normal turnover



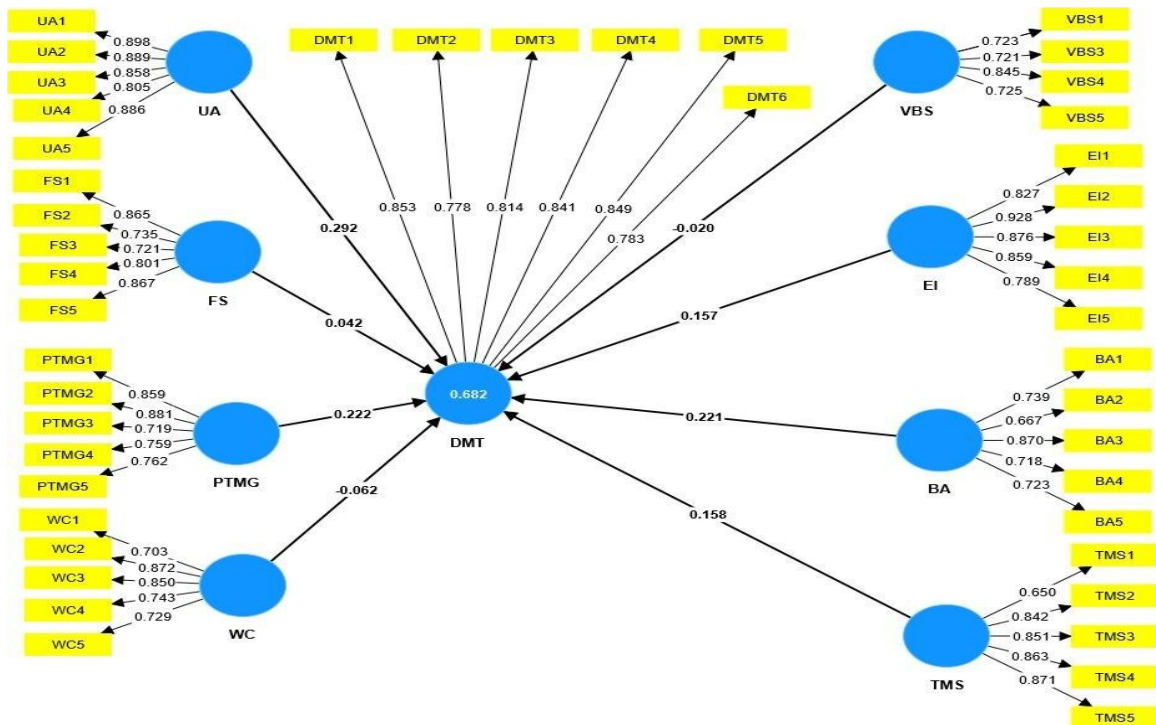
estimated at 0.50 or higher be used to assess the legitimacy of the judgment. As Fornell and Larker (1981) suggested, the base AVE used should be higher than the value of inactive factors that show discriminatory legitimacy. Due to the inconsistent analysis of AVE for all the potential factors shown in **Table 2**, this article includes models; considering all aspects, these models have AVE, Cronbach’s Alpha, and Composite reliability values(See **Figure 2**).

**Table 2.** Discriminant validity.

	<b>BA</b>	<b>DMT</b>	<b>EI</b>	<b>FS</b>	<b>PTMG</b>	<b>TMS</b>	<b>UA</b>	<b>VBS</b>	<b>WC</b>
BA	0.746								
DMT	0.702	0.820							
EI	0.595	0.673	0.857						
FS	0.600	0.554	0.610	0.800					
PTMG	0.561	0.677	0.637	0.463	0.799				
TMS	0.713	0.590	0.460	0.551	0.537	0.820			
UA	0.597	0.676	0.632	0.455	0.585	0.331	0.868		
VBS	0.472	0.452	0.526	0.457	0.470	0.340	0.469	0.767	
WC	0.626	0.538	0.462	0.474	0.558	0.469	0.622	0.473	0.782

Note: Discriminant validity is shown in diagonally bold values, UA= Uncertainty Avoidance, FS = Functional Strategy, PTMG =Promoting Short Term Goal, VBS = Value Business Sustainability, EI, Enabling Innovation, BA = Balanced Approach, TMS = Top Management Support and DMT = Development of Maritime Tourism.

**4.3. Path coefficients**



**Figure 2.** Path coefficients (potential drives) in the PLS-SEM model.

**Table 3.** Hypotheses results.

Hypothesis	Estimates	T statistics	P values	Status
BA → DMT	0.221	3.715	0.000	Accepted
VBS → DMT	0.162	2.563	0.001	Accepted
TMS → DMT	0.158	3.357	0.001	Accepted
EI → DMT	0.157	2.463	0.014	Accepted

Acceptance criteria: The *P*-value should be less than 0.005. The *t*-statistics value should be greater than 1.9526 (Newbold et al., 2019).

**Table 3** presents the results of hypothesis testing for the relationship between different independent variables and a dependent variable (DMT). All hypotheses are accepted, signifying a significant relationship. The estimates range from 0.157 to 0.221, indicating the strength of each variable's effect on DMT. T statistics, well above 2, and *P*-values, below 0.05, validate the significance. This suggests that each of the four variables significantly impacts DMT.

## 5. Conclusion

The research findings highlight several crucial relationships between key factors and the growth of the blue economy, particularly in the context of maritime activities in Pakistan. Firstly, a balanced approach is associated with blue growth, emphasizing the need to balance economic benefits in maritime tourism with environmental preservation and community well-being through effective regulations and policies (Bennett, 2022; Lee et al., 2020). Secondly, valuing business sustainability significantly fosters blue growth and recognises the long-term environmental, social, and economic impacts of business operations and decision-making (Farmery et al., 2021; Tirumala and Tiwari, 2022). Thirdly, top management support enables organizations to prioritize and invest in sustainable practices, contributing to the growth of the blue economy in Pakistan (Des Roches et al., 2021; Nash et al., 2020). Fourthly, there is a demonstrated relationship between enabling innovation structures and blue growth, underlining the essential role of innovation in driving sustainable economic growth in ocean-based industries, including aquaculture (Sigwart et al., 2021). On the other hand, functional strategy shows no significant association with blue growth, potentially indicating limitations or a need for a more collaborative mindset across departments (Eddy et al., 2021; Liu et al., 2020). Additionally, the study by Stelzenmüller et al. (2021) supports the absence of a significant relationship between uncertainty avoidance and blue growth. Lastly, the insignificant relationship between prioritizing short-term growth and blue growth, as shown by Daly et al. (2021), suggests the importance of fostering a long-term vision among policymakers and managers for the sustained growth of the maritime sector in Pakistan. Tuli et al. (2020) also contribute by highlighting a relationship between weak competency and blue economy growth, signaling an area for improvement to ensure the sector's continued development. In summary, these findings collectively offer a nuanced understanding of the diverse factors influencing the growth of the blue economy in Pakistan.

The implications drawn from the multifaceted relationships identified in the

studies emphasize the imperative for a comprehensive and coordinated approach to foster the growth of Pakistan's blue economy. Policymakers and industry stakeholders should prioritize the development and implementation of robust regulatory frameworks that balance economic interests with environmental conservation and community well-being in maritime tourism. Moreover, businesses need to embrace a long-term perspective, valuing sustainability in their operations to positively impact sectors like fisheries, aquaculture, shipping, and tourism. Strong top management support is crucial for steering organizations toward sustainable practices, allocating resources for research, development, and adopting innovative technologies within the blue economy. Encouraging an environment that enables innovation is equally vital, particularly in addressing environmental challenges in sectors like aquaculture. While functional strategies alone may not be primary growth drivers, their role in supporting sustainability initiatives should not be overlooked. To propel the blue economy forward in Pakistan, a collective effort involving regulatory bodies, industry leaders, and innovative practices is essential for creating a sustainable and prosperous maritime future

### **5.1. Limitations**

While this research has provided valuable insights into the development of maritime tourism projects through the blue economy in Pakistan, certain limitations should be acknowledged. First, the research sample was limited to a specific geographic location or region within Pakistan. Therefore, the findings may not be fully generalizable to the entire country or other regions with different characteristics or circumstances. To enhance the external validity of future studies, it is recommended to include a more diverse and representative sample that encompasses various coastal areas and regions of Pakistan.

Secondly, the research used a mixed-method approach, combining quantitative analysis and qualitative interviews. While this approach allows for a comprehensive topic exploration, it also presents limitations. The quantitative analysis was based on participant self-reported data, which may be subject to response biases or inaccuracies. Additionally, while providing rich insights, the qualitative interviews were conducted with a limited number of experts and stakeholders. Therefore, the findings may not fully capture the perspectives and experiences of all relevant stakeholders in the blue economy and maritime tourism sector. Another limitation is the reliance on cross-sectional data, which provides a snapshot of the research variables at a specific time. Longitudinal studies that track the development and changes in the blue economy over time would provide a more robust understanding of its growth and the factors influencing it. Furthermore, the research focused primarily on the factors related to business sustainability, management support, and innovation structures. While these factors are important, other variables that could impact blue growth, such as government policies, market conditions, and socio-cultural factors, were not extensively examined. Future research could consider incorporating broader variables to provide a more comprehensive analysis.

Additionally, the research relied on self-reported demographic data, which may be subject to recall bias or misrepresentation. While efforts were made to ensure the

accuracy and reliability of the data, there is a possibility of response biases or errors in reporting. Future studies could employ additional measures, such as objective assessments or validation techniques, to enhance the reliability of the demographic data. Lastly, the research focused specifically on the context of Pakistan's blue economy and maritime tourism. The findings may not directly apply to other countries or regions with different socio-economic, cultural, and environmental contexts. Therefore, caution should be exercised when generalizing the findings to other settings. Acknowledging these limitations, it is recommended that future research addresses these gaps by employing larger and more diverse samples, utilizing longitudinal designs, incorporating a wider range of variables, and conducting comparative studies across different regions and countries. By addressing these limitations, future research can further enhance our understanding of the blue economy and maritime tourism and contribute to developing sustainable practices and policies in this field.

## **5.2. Future directions**

The research findings presented shed light on critical factors influencing the development of maritime tourism projects within the blue economy in Pakistan. To enhance the depth of our understanding of the growth dynamics in this context, there is a compelling need for longitudinal studies. Longitudinal research allows for the examination of trends and changes over an extended period, providing a more nuanced and comprehensive view of the evolving relationship between the blue economy and maritime tourism projects. Moreover, researchers should consider widening their study's scope by including a diverse sample that reflects the various coastal regions in Pakistan. Coastal regions often exhibit unique characteristics and challenges, and a more varied sample would contribute to a richer understanding of region-specific dynamics, enabling the formulation of targeted and effective strategies.

While the current research focuses specifically on Pakistan, future studies could benefit from exploring maritime tourism projects in other geographical regions. A comparative analysis across different regions would not only broaden the scope of the study but also facilitate the identification of common patterns or unique challenges that may exist in diverse contexts. Additionally, future research endeavors could delve into a broader range of variables to comprehensively understand the complexities of the blue economy's growth. Variables such as government policies, market conditions, socio-cultural factors, and technological advancements play integral roles in shaping the trajectory of maritime tourism projects and the overall blue economy. By incorporating these diverse factors into the research framework, scholars can offer a more holistic perspective on the multifaceted influences that contribute to or hinder the growth and sustainable development of the blue economy. In essence, future research endeavours should aim for a more extensive and inclusive exploration of the factors shaping the intricate relationship between the blue economy and maritime tourism, fostering a deeper comprehension that can inform more targeted and effective policies and practices.

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## References

- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411–423. <https://doi.org/10.1037/0033-2909.103.3.411>
- Asaf Humayun, & Naghmana Zafar. (2014). Pakistan's 'Blue Economy': Potential and Prospects. *Policy Perspectives: The Journal of the Institute of Policy Studies*, 11(1). <https://doi.org/10.13169/polipers.11.1.0057>
- Bennett, N. J. (2022). Mainstreaming Equity and Justice in the Ocean. *Frontiers in Marine Science*, 9. <https://doi.org/10.3389/fmars.2022.873572>
- Bennett, N. J., Blythe, J., White, C. S., & Campero, C. (2021). Blue growth and blue justice: Ten risks and solutions for the ocean economy. *Marine Policy*, 125, 104387. <https://doi.org/10.1016/j.marpol.2020.104387>
- Bogadóttir, R. (2020). Blue Growth and its discontents in the Faroe Islands: an island perspective on Blue (De)Growth, sustainability, and environmental justice. *Sustainability Science*, 15(1), 103–115. <https://doi.org/10.1007/s11625-019-00763-z>
- Bujang, M. A., Omar, E. D., & Baharum, N. A. (2018). A Review on Sample Size Determination for Cronbach's Alpha Test: A Simple Guide for Researchers. *Malaysian Journal of Medical Sciences*, 25(6), 85–99. <https://doi.org/10.21315/mjms2018.25.6.9>
- Caswell, B. A., Klein, E. S., Alleway, H. K., et al. (2020a). Something old, something new: Historical perspectives provide lessons for blue growth agendas. *Fish and Fisheries*, 21(4), 774–796. <https://doi.org/10.1111/faf.12460>
- Choudhary, P., G. V. S., Khade, M., Savant, S., Musale, A., G. R. K. K., Chelliah, M. S., & Dasgupta, S. (2021). Empowering blue economy: From underrated ecosystem to sustainable industry. *Journal of Environmental Management*, 291, 112697. <https://doi.org/10.1016/j.jenvman.2021.112697>
- Daly, J., Knott, C., Keogh, P., & Singh, G. G. (2021). Changing climates in a blue economy: Assessing the climate-responsiveness of Canadian fisheries and oceans policy. *Marine Policy*, 131, 104623. <https://doi.org/10.1016/j.marpol.2021.104623>
- Des Roches, S., Pendleton, L. H., Shapiro, B., & Palkovacs, E. P. (2021). Conserving intraspecific variation for nature's contributions to people. *Nature Ecology & Evolution*, 5(5), 574–582. <https://doi.org/10.1038/s41559-021-01403-5>
- Eddy, T. D., Lam, V. W. Y., Reygondeau, G., Cisneros-Montemayor, A. M., Greer, K., Palomares, M. L. D., Bruno, J. F., Ota, Y., & Cheung, W. W. L. (2021). Global decline in capacity of coral reefs to provide ecosystem services. *One Earth*, 4(9), 1278–1285. <https://doi.org/10.1016/j.oneear.2021.08.016>
- Farmery, A. K., Allison, E. H., Andrew, N. L., Troell, M., Voyer, M., Campbell, B., Eriksson, H., Fabinyi, M., Song, A. M., & Steenbergen, D. (2021). Blind spots in visions of a “blue economy” could undermine the ocean's contribution to eliminating hunger and malnutrition. *One Earth*, 4(1), 28–38. <https://doi.org/10.1016/j.oneear.2020.12.002>
- Farrokhi, F., & Mahmoudi-Hamidabad, A. (2012). Rethinking Convenience Sampling: Defining Quality Criteria. *Theory and Practice in Language Studies*, 2(4). <https://doi.org/10.4304/tpls.2.4.784-792>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39. <https://doi.org/10.2307/3151312>
- Huang, Y., Raza, S. M. F., Hanif, I., Alharthi, M., Abbas, Q., & Zain-ul-Abidin, S. (2020). The role of forest resources, mineral resources, and oil extraction in economic progress of developing Asian economies. *Resources Policy*, 69, 101878. <https://doi.org/10.1016/j.resourpol.2020.101878>
- Hussain, M. G., Failler, P., Karim, A. Al, & Alam, M. K. (2018). Major opportunities of blue economy development in Bangladesh. *Journal of the Indian Ocean Region*, 14(1), 88–99. <https://doi.org/10.1080/19480881.2017.1368250>
- Keen, M. R., Schwarz, A.-M., & Wini-Simeon, L. (2018). Towards defining the Blue Economy: Practical lessons from pacific ocean governance. *Marine Policy*, 88, 333–341. <https://doi.org/10.1016/j.marpol.2017.03.002>
- Lagasco, F., Collu, M., Mariotti, A., Safier, E., Arena, F., Atack, T., Brizzi, G., Tett, P., Santoro, A., Bourdier, S., Salcedo Fernandez, F., Muggiasca, S., & Larrea, I. (2019, June 9). New Engineering Approach for the Development and Demonstration of a Multi-Purpose Platform for the Blue Growth Economy. Volume 6: Ocean Space Utilization. <https://doi.org/10.1115/OMAE2019-96104>
- Lee, K.-H., Noh, J., & Khim, J. S. (2020a). The Blue Economy and the United Nations' sustainable development goals: Challenges and opportunities. *Environment International*, 137, 105528. <https://doi.org/10.1016/j.envint.2020.105528>

- Lee, K.-H., Noh, J., & Khim, J. S. (2020b). The Blue Economy and the United Nations' sustainable development goals: Challenges and opportunities. *Environment International*, 137, 105528. <https://doi.org/10.1016/j.envint.2020.105528>
- Leposa, N. (2020). Problematic blue growth: a thematic synthesis of social sustainability problems related to growth in the marine and coastal tourism. *Sustainability Science*, 15(4), 1233–1244. <https://doi.org/10.1007/s11625-020-00796-9>
- Lewis, D. J., Yang, X., Moise, D., & Roddy, S. J. (2021). Dynamic synergies between China's Belt and Road Initiative and the UN's Sustainable Development Goals. *Journal of International Business Policy*, 4(1), 58–79. <https://doi.org/10.1057/s42214-020-00082-6>
- Li, L., Ruzzo, C., Collu, M., Gao, Y., Failla, G., & Arena, F. (2020). Analysis of the coupled dynamic response of an offshore floating multi-purpose platform for the Blue Economy. *Ocean Engineering*, 217, 107943. <https://doi.org/10.1016/j.oceaneng.2020.107943>
- Liu, W., Wang, G., Yu, M., Chen, H., Jiang, Y., Yang, M., & Shi, Y. (2020). Projecting the future vegetation–climate system over East Asia and its RCP-dependence. *Climate Dynamics*, 55(9–10), 2725–2742. <https://doi.org/10.1007/s00382-020-05411-2>
- Mundhenk, B. D., Barnes, E. A., Maloney, E. D., & Nardi, K. M. (2016). Modulation of atmospheric rivers near Alaska and the U.S. West Coast by northeast Pacific height anomalies. *Journal of Geophysical Research: Atmospheres*, 121(21). <https://doi.org/10.1002/2016JD025350>
- Nash, K. L., Blythe, J. L., Cvitanovic, C., Fulton, E. A., Halpern, B. S., Milner-Gulland, E. J., Addison, P. F. E., Pecl, G. T., Watson, R. A., & Blanchard, J. L. (2020). To Achieve a Sustainable Blue Future, Progress Assessments Must Include Interdependencies between the Sustainable Development Goals. *One Earth*, 2(2), 161–173. <https://doi.org/10.1016/j.oneear.2020.01.008>
- Ostad-Ali-Askari, K. (2022). Management of risks substances and sustainable development. *Applied Water Science*, 12(4), 65. <https://doi.org/10.1007/s13201-021-01562-7>
- Pace, L. A., Borch, K., & Deidun, A. (2023). Bridging Knowledge Gaps towards 2030: The Use of Foresight for the Strategic Management of a Sustainable Blue Economy. *Sustainability*, 15(13), 10026. <https://doi.org/10.3390/su151310026>
- Queirós, A. M., Talbot, E., Beaumont, N. J., et al. (2021). Bright spots as climate—Smart marine spatial planning tools for conservation and blue growth. *Global Change Biology*, 27(21), 5514–5531. <https://doi.org/10.1111/gcb.15827>
- Rocliffe, S., Peabody, S., Samoily, M., & Hawkins, J. P. (2014). Towards A Network of Locally Managed Marine Areas (LMMAs) in the Western Indian Ocean. *PLoS ONE*, 9(7), e103000. <https://doi.org/10.1371/journal.pone.0103000>
- Rönkkö, M., & Cho, E. (2022). An Updated Guideline for Assessing Discriminant Validity. *Organizational Research Methods*, 25(1), 6–14. <https://doi.org/10.1177/1094428120968614>
- Rudd, J. M. (n.d.). Factor Analysis and Discriminant Validity: A Brief Review of Some Practical Issues.
- Sarstedt, M., Ringle, C. M., Cheah, J.-H., Ting, H., Moises, O. I., & Radomir, L. (2020). Structural model robustness checks in PLS-SEM. *Tourism Economics*, 26(4), 531–554. <https://doi.org/10.1177/1354816618823921>
- Sarwar, S. (2022). Impact of energy intensity, green economy and blue economy to achieve sustainable economic growth in GCC countries: Does Saudi Vision 2030 matters to GCC countries. *Renewable Energy*, 191, 30–46. <https://doi.org/10.1016/j.renene.2022.03.122>
- Shrestha, N. (2021). Probit Model Analysis of Tourists' Revisit Intention to Nepal. *OALib*, 08(02), 1–14. <https://doi.org/10.4236/oalib.1107210>
- Sigwart, J. D., Blasiak, R., Jaspars, M., Jouffray, J.-B., & Tasdemir, D. (2021). Unlocking the potential of marine biodiversity. *Natural Product Reports*, 38(7), 1235–1242. <https://doi.org/10.1039/D0NP00067A>
- Stelzenmüller, V., Cormier, R., Gee, K., et al. (2021). Evaluation of marine spatial planning requires fit for purpose monitoring strategies. *Journal of Environmental Management*, 278, 111545. <https://doi.org/10.1016/j.jenvman.2020.111545>
- Tirumala, R. D., & Tiwari, P. (2022). Innovative financing mechanism for blue economy projects. *Marine Policy*, 139, 104194. <https://doi.org/10.1016/j.marpol.2020.104194>
- Tuli, F. J., Hossain, A., Kibria, A. K. M. F., Tareq, A. R. M., Mamun, S. M. M. A., & Ullah, A. K. M. A. (2020). Removal of methylene blue from water by low-cost activated carbon prepared from tea waste: A study of adsorption isotherm and kinetics. *Environmental Nanotechnology, Monitoring & Management*, 14, 100354. <https://doi.org/10.1016/j.enmm.2020.100354>
- van den Burg, S. W. K., Schupp, M. F., Depellegrin, D., Barbanti, A., & Kerr, S. (2020). Development of multi-use platforms at sea: Barriers to realising Blue Growth. *Ocean Engineering*, 217, 107983. <https://doi.org/10.1016/j.oceaneng.2020.107983>
- Voyer, M., Quirk, G., McIlgorm, A., & Azmi, K. (2018). Shades of blue: what do competing interpretations of the Blue Economy mean for oceans governance? *Journal of Environmental Policy & Planning*, 20(5), 595–616. <https://doi.org/10.1080/1523908X.2018.1473153>
- Wang, Q., Lai, Y. L., Xu, X., & McDowall, A. (2022). The effectiveness of workplace coaching: a meta-analysis of contemporary psychologically informed coaching approaches. *Journal of Work-Applied Management*, 14(1), 77–101. <https://doi.org/10.1108/JWAM-04-2021-0030>
- Wenhai, L., Cusack, C., Baker, M., et al. (2019). Successful Blue Economy Examples with an Emphasis on International Perspectives. *Frontiers in Marine Science*, 6. <https://doi.org/10.3389/fmars.2019.00261>