



SUSTAINABLE STRATEGIES FOR TRADITIONAL VERSUS ONLINE MARITIME TRAVEL SERVICES PLATFORMS: A PROPOSED FRAMEWORK FOR THE PHILIPPINE TRAVEL INDUSTRY BASED ON THE OT SHIPPING COMPANY–EGT TRAVEL AGENCY SERVICE PARTNERSHIP

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Abstract

This study examines the sustainability and competitiveness of traditional maritime travel agencies in the Philippines amid the rapid emergence of online travel platforms. Focusing on the partnership between EGT Travel Agency and OT Shipping Company, the research investigates how traditional, human-centered service models can be strategically integrated with digital technologies to enhance operational efficiency, service quality, and long-term viability. Maritime travel agencies play a critical role in facilitating seafarer mobility through complex, time-sensitive, and compliance-driven travel arrangements, yet they face increasing pressure from automated and platform-based systems that emphasize speed, cost transparency, and scalability. Using a convergent parallel mixed-methods design, the study collected quantitative data from 300 OT Shipping Company personnel through structured surveys and qualitative insights from 15 respondents via semi-structured interviews. Statistical analyses, including descriptive statistics, correlation, and regression, were employed alongside thematic analysis to evaluate operational performance, digital readiness, and service effectiveness. Findings reveal that traditional maritime travel agencies maintain strong competitive advantages in reliability, crisis management, and trust-based relationships, while digital tools significantly enhance coordination efficiency and transparency when properly integrated. The results support the effectiveness of hybrid operating models that combine digital systems with human expertise. These models improve service performance, sustainability, and competitiveness without compromising the critical elements of compliance, accountability, and seafarer welfare. Based on the findings, the study proposes a comprehensive five-pillar integration framework — Cultural Foundation, Technical Infrastructure, Service Reliability, Strategic Sustainability, and Performance Excellence — that outlines best practices for balancing traditional service strengths with technological innovation. This research contributes to the limited academic literature on maritime travel services in the Philippine context and provides practical insights for travel agencies, ship management companies, and policymakers. Ultimately, it highlights that sustainable transformation in maritime travel lies not in full automation but in the strategic alignment of digital capabilities with human-centered service delivery.

Keywords: *maritime travel agencies; digital transformation; hybrid operating models; sustainability; competitiveness; seafarer welfare; Philippine maritime industry*



I. Introduction

The global maritime industry serves as the backbone of international trade, transporting more than eighty percent of global goods across international waters. Central to the sustainability of this industry is the continuous deployment and repatriation of seafarers, whose mobility ensures uninterrupted vessel operations. Seafarers must regularly travel from their home countries to designated ports worldwide to board or disembark from ships, a process commonly referred to as crew change operations. These movements are logistically complex, time-sensitive, and highly regulated, requiring precise coordination of international flights, immigration compliance, and vessel schedules.

In the Philippine context, seafarer mobility is particularly important. The Philippines is consistently recognized as one of the world's largest suppliers of maritime labor, deploying hundreds of thousands of seafarers annually. Supporting this workforce is a specialized segment of the travel industry known as maritime travel agencies, which differ fundamentally from conventional leisure or corporate travel agencies. Maritime travel agencies exclusively serve sea crew passengers, managing air transportation and related logistics to ensure timely and compliant crew deployment.

Traditionally, maritime travel agencies in the Philippines have operated on human-centered, trust-based service models. These agencies rely on experienced travel coordinators, manual or semi-automated booking systems, and long-standing relationships with ship management companies, crewing agencies, airlines, and regulatory institutions. Their operational value extends beyond ticket issuance to include risk management, problem resolution, and real-time intervention during travel disruptions.

Given the high operational and financial risks associated with delayed crew changes, reliability and accountability remain critical service attributes.

However, the maritime travel industry is undergoing a significant transformation driven by advances in digital technology. Online travel platforms, airline direct-booking systems, and automated travel management tools have introduced new mechanisms for improved booking efficiency, cost transparency, and real-time reporting.

Ship management companies increasingly demand faster processing times, improved visibility, and data-driven decision-making in seafarer travel arrangements.

Despite these advantages, the applicability of generic online travel platforms to seafarer travel remains limited. Seafarer mobility often involves complex routing, multiple transit points, visa restrictions, and sudden schedule changes, which require human judgment and contextual awareness.

Empirical studies indicate that fully automated systems struggle to manage emergency repatriations, denied boarding incidents, and regulatory exceptions without human intervention.

As a result, traditional maritime travel agencies have not been fully displaced but instead face increasing pressure to digitally enhance their service offerings.

This evolving landscape has created a critical challenge for traditional maritime travel agencies. On one hand, they must adopt digital technologies to improve efficiency, reduce costs, and remain competitive. On the other hand, they must preserve the trust-based, personalized service that constitutes their core competitive advantage.

Sustainability in this context extends beyond financial performance to include operational resilience, regulatory compliance, and social responsibility, particularly with respect to seafarer welfare.



Recent empirical studies suggest that hybrid and integrative service models offer a viable solution to this challenge, combining digital booking systems and automated reporting with dedicated human oversight to achieve efficiency while maintaining flexibility and accountability.

Such models have demonstrated improved customer satisfaction, reduced service disruptions, and greater resilience during global travel crises.

In the Philippine maritime travel sector, collaborative partnerships between ship management companies and specialized travel agencies illustrate the practical application of hybrid strategies, enabling the sharing of operational data, alignment of incentives, and integration of technological systems while retaining human decision-making authority.

Despite the strategic importance of maritime travel agencies in seafarer deployment, academic research remains limited, particularly within the Philippine context. Most existing studies on travel platforms focus on leisure tourism or general corporate travel, leaving a gap in understanding the unique operational requirements, competitive dynamics, and sustainability challenges of sea crew-focused travel agencies. This study addresses that gap by examining sustainable strategies for integrating traditional maritime travel platforms with contemporary technological innovations in the Philippine travel sector, by identifying existing operational models, analyzing the impact of online platforms, evaluating hybrid strategies, and developing a comprehensive integration framework.

Review of Related Literature

Digital transformation has reshaped travel-industry service delivery through online platforms, mobile applications, and integrated reservation systems that increase efficiency, clarity, and accessibility (Buhalis and Law, 2023), while raising customer expectations for seamless digital experiences (UNWTO, 2021). However, automation alone struggles with specialized, compliance-heavy demands such as visa requirements and emergency rerouting, which require human judgment and contextual understanding (Gretzel et al., 2020). This has driven the emergence of hybrid digital-human systems that combine digital efficiency with the flexibility and experience of human management, particularly where compliance and instant decision-making are required (Buhalis & Sinarta, 2020).

The Technology Acceptance Model (TAM) explains digital-system adoption through perceived ease of use and perceived usefulness.

and has since been extended to include social influence, facilitating conditions, and organizational readiness (Davis et al., 2020; Venkatesh et al., 2020). In compliance-heavy, hybrid operational settings, adoption is contingent on users perceiving digital systems as reliable and risk-minimizing rather than as sources of added complexity (Kim et al., 202; Alalwan et al., 2021).

Service quality — captured by the SERVQUAL dimensions of reliability, responsiveness, assurance, and empathy — remains central to customer trust and satisfaction even in digitally mediated settings (Parasuraman, Zeithaml, and Berry, 2021). Trust mediates the relationship between service quality and satisfaction, particularly in high-stakes, high-responsibility services such as maritime travel.

Human interaction continues to differentiate providers and build competitive advantage, even as digitalization increases efficiency and transparency (Kotler, Keller, & Chernev, 2021).

Sustainability in service operations is understood as the capacity to balance operational efficiency, resilience, and continuity over the long term (Sigala, 2020), extending beyond profitability to include adaptive capacity in the face of market and technological change. Digital capability strengthens organizational resilience when paired with



adaptive strategy, enabling firms to recover quickly from disruption while maintaining service continuity (World Bank, 2022); hybrid operating models — digital systems paired with human judgment — are increasingly seen as essential to competitiveness in technology-driven markets (Kaplan & Norton, 2020).

Empirical work further shows that higher digital readiness is associated with measurable gains in coordination accuracy, monitoring, and workflow effectiveness, but that these gains are most pronounced when digital systems are paired with human oversight for compliance-sensitive, contextual decisions.

The growth of online travel platforms has increased transaction speed, market visibility, and cost transparency, resetting consumer expectations and pressuring traditional operators to redefine their value propositions.

Yet automated platforms are frequently unable to coordinate the more complex, regulation-heavy demands of maritime travel — visa and transit dependencies, vessel-schedule synchronization, and emergency rerouting — underscoring the continued relevance of experience-based, trust-driven agencies and reinforcing the case for hybrid operating models (Nguyen, Simkin, and Canh, 2022; Zhang, Wang, and Xu, 2021).

Within the maritime-specific literature, sound travel coordination is foundational to operational continuity: crew mobility, documentation management, and regulatory compliance directly affect vessel schedules and seafarer welfare (International Labour Organization [ILO], 2022; Maritime Industry Authority [MARINA], 2023). Digital interventions have been shown to increase visibility, documentation accuracy, scheduling efficiency, and crisis response (World Bank, 2022), but digital uptake in maritime services must be accompanied by human oversight to preserve reliability and regulatory adherence in a highly regulated operating environment (ILO, 2022; MARINA, 2023). Methodologically, the literature underscores the importance of statistical rigor — exploratory factor analysis to strengthen construct validity (Fornell & Larcker, 2021), reliability testing via Cronbach's alpha and composite reliability (Hair, Hult, Ringle, and Sarstedt, 2022), and correlation/regression analysis to establish predictive relationships (Chin, 2020; Kock, 2020) — in developing and empirically justifying integration frameworks of this kind.

Collectively, this literature establishes that traditional maritime travel agencies retain a specialized, largely indispensable role grounded in trust, compliance expertise, and rapid human intervention, even as online platforms exert genuine competitive pressure through speed, transparency, and cost efficiency. The literature further indicates that neither model is sufficient in isolation: generic online systems lack the contextual flexibility that complex, regulation-bound seafarer travel requires, while purely manual operations face escalating cost and scalability pressures. Hybrid and integrative service models — combining digital booking and reporting systems with sustained human oversight — emerge across the literature as the most consistently supported approach to sustainability and competitiveness in specialized travel services. However, seafarer-specific research remains scarce, particularly in the Philippine context, where traditional and online platforms are more often framed as competitors than as complementary components of a single sustainable service model — the gap this study addresses.

Theoretical Framework

This study is anchored on four complementary theories that jointly explain how traditional maritime travel agencies can achieve sustainability and competitiveness through the strategic integration of digital technologies.

Digital Transformation Theory frames technology adoption as a reorganization of processes, service delivery, and value creation rather than an end in itself (Vial, 2019); for seafarer travel agencies, success in transformation depends on technology–organization fit and on preserving human oversight for compliance-sensitive, time-critical decisions.



Resource-Based View (RBV) holds that sustainable competitive advantage derives from valuable, rare, and difficult-to-imitate resources — in this context, long-standing relationships with ship-management firms, crew-change process experience, and earned trust — assets that generic online platforms cannot easily replicate, positioning them as strategic assets to be preserved and combined with digital capability.

Technology Acceptance Theory (TAM) explains that both internal users (travel coordinators) and external clients (ship management companies) adopt digital tools more readily when those tools are perceived as useful and easy to use without adding risk or complexity — a dynamic that explains why hybrid systems, which strengthen rather than displace human decision-making, gain greater institutional acceptance in maritime travel management.

Sustainability Theory extends the definition of organizational success beyond profitability to include operational resilience, regulatory compliance, and seafarer welfare, providing the overarching justification for a framework that treats efficiency gains as acceptable only insofar as they do not compromise seafarer welfare or regulatory standards. Together, these four theories support the study's central premise: that sustainability and competitiveness for seafarer-focused maritime travel agencies depend on strategically integrating durable organizational resources with well-fitted digital capability, guided by user acceptance and bounded by social responsibility.

Conceptual Framework

The study's conceptual framework (see original thesis Figure 1) unfolds across four phases. Phase I establishes the operational landscape of maritime travel agencies, defining the scope of seafarer-focused agencies, their current operational models and competitive advantages, and the distinguishing characteristics of online platforms. Phase II covers systematic data collection — survey and interview instrument design and administration to OT Shipping Company personnel — to generate empirical evidence on the influence of online platforms on traditional operators. Phase III analyzes and evaluates the collected data to assess strategic implications, test the study's hypotheses, and evaluate the effectiveness of existing and proposed digital strategies. Phase IV synthesizes findings from the prior phases into strategic recommendations and a comprehensive integration framework, with feedback loops to earlier phases supporting continuous refinement.

Statement of the Problem

The Philippine maritime travel industry is undergoing a critical transition in which traditional seafarer-focused travel agencies face mounting pressure from the growth of online travel platforms. Agencies such as EGT Travel Agency provide highly specialized services to ship-management corporations such as OT Shipping Company — personalized flight booking, document and visa coordination, real-time embarkation and repatriation monitoring, and crisis management — built on deep operational history and long-standing industry relationships. However, their reliance on manual processes, interpersonal coordination, and limited digital infrastructure leaves them exposed to competitive pressure from faster, more visible, automation-oriented online systems, even as the applicability of generic online travel platforms to maritime-specific needs — port-aligned routing, visa and transit requirements, vessel-schedule coordination, and emergency rerouting during crew-change disruptions — remains limited.

This dynamic gives rise to four interrelated problems: (1) economic vulnerability, as traditional agencies struggle to compete with the perceived convenience and pricing of online platforms; (2) operational constraints from limited digital support systems, leading to longer turnaround times and weaker scalability; (3) a sustainability gap, since online platforms rarely address seafarer welfare responsibilities while traditional agencies lack the technological optimization needed for economic resilience; and (4) the absence of a hybrid operating model capable of combining the trust, accountability, and human judgment of traditional agencies with the capabilities of the current digital ecosystem. There remains limited empirical guidance on how agencies such as EGT Travel



Agency can strengthen digital capacity while continuing to meet the operational demands of ship-management partners such as OT Shipping Company.

General Objective

The primary objective of this study is to develop a comprehensive framework for sustainable strategies that integrate traditional maritime travel platforms with contemporary technological innovations in the Philippine travel sector.

Specific Objectives

1. Identify the current operational models and competitive advantages of traditional maritime travel platforms in the Philippines.
2. Analyze the impact of online maritime travel platforms on the market share and customer base of traditional operators.
3. Formulate strategic recommendations for traditional maritime travel platforms to enhance their digital presence and service offerings.
4. Evaluate the potential effectiveness of proposed strategies in improving the sustainability and competitiveness of traditional maritime travel.
5. Develop a comprehensive framework outlining best practices for integrating traditional values with modern technological advancements in the Philippine maritime travel industry.

Hypotheses of the Study

The following null and alternative hypotheses were tested at the 0.05 level of significance:

6. H₁: Digital readiness significantly improves the service performance of maritime travel agencies. (H₀: no significant effect.)
7. H₂: Service-quality dimensions (reliability, responsiveness, assurance, empathy) significantly influence customer trust and satisfaction in maritime travel services. (H₀: no significant influence.)
8. H₃: Online travel platforms significantly affect the competitiveness of traditional maritime travel agencies. (H₀: no significant effect.)
9. H₄: Hybrid operating models (digital + human oversight) significantly enhance operational resilience and sustainability. (H₀: no significant impact.)
10. H₅: There is a significant relationship between digital readiness, service quality, and sustainability outcomes in maritime travel agencies. (H₀: no significant relationship.)

Significance of the Study

The findings are intended to benefit five stakeholder groups. Maritime travel agencies gain strategic insight into integrating digital technologies without compromising trust, accountability, and compliance. Ship-management companies and crewing agencies benefit from improved travel coordination, greater visibility of crew movements, and more reliable outcomes, supporting provider-evaluation decisions. Seafarers stand to benefit from more reliable, timely, well-coordinated travel arrangements that reduce stress, delays, and compliance-related risk. Industry policymakers gain a reference point to develop digital transformation guidelines for specialized travel



services. Academia and future researchers gain a framework, dataset, and methodology that can seed further study of digital integration, sustainability, and service innovation in specialized travel sectors.

Scope and Limitations

The study is a single-case analysis of EGT Travel Agency, examined through the experience of OT Shipping Company personnel directly involved in seafarer flight scheduling and crew-exchange logistics, rather than a comparison across multiple agencies — a design choice justified by the literature's consistent finding that maritime travel agencies share common operational strengths and sustainability challenges. Geographically, the study is limited to the Philippine context and OT Shipping Company's domestic operational offices; sectorally, it covers only maritime-specific flight booking and crew deployment/repatriation logistics, excluding leisure, general corporate, and consumer online travel booking. Methodologically, the study uses a convergent parallel mixed-methods design (structured surveys and semi-structured interviews) and does not include experimental system implementation or ethnographic observation.

Limitations include: a respondent pool restricted to OT Shipping Company personnel, which may not represent the views of seafarers, external crewing agencies, or airline partners; a single-case focus that precludes inter-agency comparison; reliance on self-reported perceptual data rather than objective performance records; no access to proprietary operational data such as negotiated airline rates or internal financial audits; findings that reflect conditions at the time of data collection in a fast-changing digital-technology environment; and a technology-acceptance assessment confined to tools already in use between OT Shipping Company and EGT Travel Agency rather than an experimental test of emerging platforms.



II. Methods

Research Design

This study used a convergent parallel mixed-methods design to investigate service delivery, digital integration, and sustainability in a single traditional maritime travel agency serving seafarers. The quantitative strand followed a descriptive-correlational approach examining operational models, digital integration, technology acceptance (perceived usefulness and perceived ease of use), service-quality dimensions (reliability, responsiveness, assurance, empathy), and the effect of online platforms on service performance, operational efficiency, sustainability, and competitive viability. Data were collected through structured five-point Likert-scale questionnaires (1 = strongly disagree to 5 = strongly agree) administered to OT Shipping Company crewing staff, logistics coordinators, and deployment coordinators who interact directly with EGT Travel Agency. Frequency analysis, weighted means, and correlation procedures were used to test the relationships between operational factors and perceived competitiveness.

The qualitative strand used semi-structured interviews and thematic analysis to capture experiential knowledge of operational processes, digital integration challenges, and perceptions of sustainability, adding contextual depth that quantitative survey data alone could not provide. The two strands were analyzed separately and then combined at the interpretation stage to enable triangulation. EGT Travel Agency was purposively selected as a representative case of a traditional maritime travel agency; no inter-agency comparison was conducted, consistent with literature indicating that maritime travel agencies share common operational strengths (trust-based service, compliance expertise, human judgment) and common sustainability challenges (manual processes, rising costs, digital pressure).

Research Setting

The study was conducted within OT Shipping Company's Philippine operational offices, where seafarer travel coordination and crew-change logistics are managed in regular, often daily, interaction with EGT Travel Agency for flight booking, documentation, and travel-disruption management. Data collection combined digital surveys distributed through internal communication channels (including Microsoft Teams) with in-person distribution during working hours, a two-mode approach intended to maximize accessibility and response rates, including for personnel based outside Metro Manila.

Respondents and Sampling

The quantitative sample comprised 300 OT Shipping Company employees directly involved in coordinating, processing, or managing seafarer travel arrangements with EGT Travel Agency, drawn from three personnel categories: Crewing and Deployment Officers (day-to-day flight arrangements, booking, and documentation), Travel and Logistics Coordinators/Administrative Staff (execution and confirmation of arrangements, issue resolution), and Supervisors, Operations Managers, and Persons-in-Charge (cost confirmation, partner performance oversight, agency-selection criteria). A parallel qualitative sample of 15 purposively selected respondents, drawn from the same categories, participated in semi-structured interviews. Sampling was purposive, using total enumeration when the pool of eligible personnel was manageable, and systematic sampling—applying Slovin's formula ($n = N / (1 + Ne^2)$, with a 0.05 margin of error)—when the eligible pool exceeded the computed minimum sample size.

Data Gathering Instrument and Procedure

The primary instrument was a structured questionnaire of closed-ended and five-point Likert-scale items measuring perceptions of traditional maritime travel characteristics and perceived competitiveness in a digitized travel market; a semi-structured interview guide supported the qualitative strand. Formal permission was secured



from OT Shipping Company management prior to data collection, and a company-designated liaison coordinated instrument distribution and compliance with internal protocols. Eligible respondents — personnel with first-hand experience in operational booking, documentation, and logistical coordination with EGT Travel Agency — were identified by company management. The questionnaire was distributed through internal mailing lists, Microsoft Teams and Outlook groups, and printed copies for respondents who preferred a paper format; each copy was accompanied by a cover letter explaining the study's purpose, the voluntary and anonymous nature of participation, and an estimated completion time of 8–10 minutes. The survey window remained open for 7–14 days, with a mid-point reminder to improve response rates. Completed questionnaires were checked for completeness before being coded and entered into Microsoft Excel, SPSS, and Jamovi Cloud for statistical processing. No personal identifiers were collected, and only aggregated findings were analyzed and reported.

Statistical Treatment

All statistical analyses were conducted at the 0.05 level of significance ($\alpha = 0.05$), aligned to each specific objective as follows.

- Objective 1 (operational models and competitive advantages): descriptive statistics (frequency, percentage, weighted mean); cross-tabulation across personnel categories; reliability testing, KMO, and Bartlett's test, and exploratory factor analysis (EFA) to validate constructs.
- Objective 2 (impact of online platforms): descriptive statistics; Pearson correlation and regression analysis; effect-size measures (β coefficients, Cohen's f^2).
- Objective 3 (strategic recommendations): regression predictor rankings; Importance–Performance Analysis (IPA); weighted scoring of digital-readiness indicators.
- Objective 4 (strategy effectiveness): mean evaluation of Likert-based responses; correlation analysis and paired t-tests; factor validation and Cronbach's alpha.
- Objective 5 (integration framework): standardized (z) scores to identify the strongest framework-feeding variables; correlation/regression model outputs as empirical justification; overall reliability for grouped constructs.

Qualitative data were analyzed thematically, with interview transcripts coded into emergent subthemes and triangulated with the quantitative results during interpretation.

Ethical Considerations

Participation was voluntary, anonymous, and covered by formal institutional approval from OT Shipping Company management. No personal identifiers were collected; data were stored securely, and only aggregated results are reported in this manuscript.

III. Results

Results are reported by respondent profile and then by specific objective, in the order in which the corresponding statistical treatment was applied. Interpretation of these findings in light of theory and prior literature is reserved for the Discussion section.

Respondent Profile

Table 1.1. Frequency Distribution of Respondents by Position in the Company

Position in the Company	f	% of Total
Administrative Staff	26	8.70%
Crewing Officer	123	41.00%
Crewing Staff	103	34.30%
Supervisor / Manager	48	16.00%
Total	300	100.00%

Crewing Officers (41.0%) and Crewing Staff (34.3%) together made up over three-quarters of respondents; Supervisors/Managers accounted for 16.0% and Administrative Staff for 8.7%.

Table 1.2. Frequency Distribution of Respondents by Length of Involvement in Seafarer Travel Coordination

Length of Involvement	f	% of Total
1–3 years	128	42.70%
Less than 1 year	70	23.30%
More than 6 years	102	34.00%
Total	300	100.00%

42.7% of respondents had 1–3 years of involvement, 34.0% had more than six years, and 23.3% had less than one year.

Table 1.3. Frequency Distribution of Respondents by Frequency of Interaction with EGT Travel Agency

Frequency of Interaction	f	% of Total
Daily	265	88.30%
Weekly	35	11.70%

Frequency of Interaction	f	% of Total
Total	300	100.00%

88.3% of respondents (n = 265) interact with EGT Travel Agency daily; the remaining 11.7% (n = 35) interact weekly.

Objective 1: Operational Models and Competitive Advantages

Table 2. Perceptions on Operational Models and Competitive Advantages

Item	Mean	SD	Interpretation
1. Clear, standardized procedures for handling seafarer travel	4.83	0.373	Strongly Agree / Very High
2. Travel documentation and visa requirements handled accurately	4.6	0.491	Strongly Agree / Very High
3. Effective coordination with airlines and vessel schedules	4.62	0.485	Strongly Agree / Very High
4. Human intervention critical in resolving travel disruptions	4.75	0.485	Strongly Agree / Very High
5. Maritime expertise provides advantage over automated platforms	4.92	0.266	Strongly Agree / Very High
6. Personalized coordination improves travel reliability	4.66	0.53	Strongly Agree / Very High
7. Trust and long-term partnership influence continued use	4.82	0.385	Strongly Agree / Very High
8. Strong performance in emergency crew travel situations	4.6	0.491	Strongly Agree / Very High
9. Better crisis management than online platforms	4.61	0.488	Strongly Agree / Very High
10. Face-to-face / personalized communication remains essential	4.75	0.434	Strongly Agree / Very High
Grand Mean	4.71	—	Strongly Agree / Very High

All items were rated Very High, with a grand mean of 4.71. The highest-rated item was maritime expertise as an advantage over automated platforms ($M = 4.92$); the lowest-rated items — accurate documentation/visa handling and strong emergency performance (both $M = 4.60$) — remained within the Very High range.

Table 3. Reliability and Validity Analysis

Metric	Value	Interpretation
Cronbach's Alpha (α)	0.87	Excellent reliability; items are highly consistent
KMO Measure of Sampling Adequacy	0.47	Marginal; responses are very homogeneous
Bartlett's Test: Chi-Square (χ^2)	15,045.33	Significant; data suitable for factoring
Bartlett's Test: p-value	< 0.001	Highly significant

Internal consistency was excellent ($\alpha = 0.87$) and Bartlett's test was highly significant ($\chi^2 = 15,045.33$, $p < .001$), indicating the item correlation matrix was suitable for factor analysis; the KMO value of 0.47, however, fell below the conventional 0.50 minimum for sampling adequacy.

Table 4. Exploratory Factor Analysis Loadings

Item	Factor 1	Factor 2	Communality (h^2)
1. Standardized procedures	-0.271	-0.002	0.073
2. Accurate documentation/visa handling	-0.296	-0.551	0.391
3. Airline/vessel schedule coordination	-0.356	-0.149	0.149
4. Human intervention in disruptions	-0.458	0.397	0.368
5. Maritime expertise advantage	-0.22	0.11	0.061
6. Personalized coordination	-0.439	0.219	0.24
7. Trust and long-term partnership	-0.155	-0.51	0.284
8. Emergency crew travel performance	-0.268	0.195	0.11
9. Crisis management vs. online platforms	-0.337	-0.327	0.22

Item	Factor 1	Factor 2	Communality (h ²)
10. Face-to-face communication essential	-0.227	0.227	0.103

Most factor loadings fell below the conventional 0.40 threshold, and communalities ranged from 0.061 to 0.391, indicating that the ten items did not resolve cleanly into separate latent factors, despite the data being statistically suitable for factoring.

Table 5. Cross-Tabulation of Item Means by Personnel Category

Personnel Category	It.1	It.2	It.3	It.4	It.5	It.6	It.7	It.8	It.9	It.10	Mean
Administrative Staff	4.83	4.59	4.61	4.74	4.91	4.83	4.56	4.58	4.7	4.71	4.71
Crewing Officer	4.84	4.61	4.63	4.76	4.92	4.84	4.56	4.57	4.71	4.71	4.71
Crewing Staff	4.84	4.58	4.64	4.78	4.93	4.87	4.53	4.62	4.73	4.73	4.73
Supervisor / Manager	4.83	4.63	4.6	4.73	4.93	4.87	4.6	4.6	4.73	4.73	4.73
Overall Mean	4.835	4.603	4.62	4.753	4.923	4.853	4.563	4.593	4.718	4.72	—

Item means ranged narrowly from 4.56 to 4.93 across all four personnel categories, with the highest agreement on maritime-expertise advantage (Item 5, overall M = 4.92) and personalized coordination (Item 6, overall M = 4.85), indicating a consistent view of operational strengths regardless of role.

Objective 2: Impact of Online Maritime Travel Platforms

Table 6. Impact of Online Maritime Travel Platforms

Item	Mean	SD	Interpretation
1. Faster booking processes	4.51	0.63	Very High Impact
2. Increased transparency in schedules and pricing	4.58	0.58	Very High Impact
3. Influence on efficiency expectations	4.48	0.64	Very High Impact
4. Competitive pressure on traditional agencies	4.42	0.55	Very High Impact
5. Effect on perceived relevance of traditional agencies	4.63	0.57	Very High Impact
6. Greater attraction to younger seafarers	4.61	0.58	Very High Impact

Item	Mean	SD	Interpretation
7. Price transparency reduces reliance on traditional agencies	4.39	0.7	Very High Impact
8. Risk of losing clients to online convenience	4.41	0.63	Very High Impact
9. Expanded customer choice in maritime travel	4.57	0.58	Very High Impact
10. Reduced customer loyalty to traditional agencies	4.33	0.7	Very High Impact
Grand Mean	4.493	—	Very High Impact

All ten items were rated Very High Impact (grand mean = 4.49); the largest effects were on perceived relevance of traditional agencies ($M = 4.63$) and appeal to younger seafarers ($M = 4.61$), while the smallest — still Very High — were reduced customer loyalty ($M = 4.33$) and reduced reliance due to price transparency ($M = 4.39$).

Table 7. Pearson Correlation Analysis

Variables	Pearson r	p-value	Interpretation
Online Platform Impact ↔ Traditional Agency Performance	0.939**	< 0.001	Very strong positive correlation

Online platform impact and traditional agency performance were strongly and positively correlated ($r = 0.939$, $p < .001$).

Table 8. Regression Analysis and Effect Size

Predictor Variable	β	t	p	R^2	Cohen's f^2
Traditional Agency Performance	-1.198	-9.970	< .001	0.883	7.52
Online Platform Impact	1.251	47.338	< .001		

The regression model explained 88.3% of the variance in the outcome ($R^2 = 0.883$) with an extremely large effect size (Cohen's $f^2 = 7.52$). Online platform impact was a large, significant positive predictor ($\beta = 1.251$, $t = 47.338$, $p < .001$), while the traditional-agency-performance term carried a significant negative coefficient ($\beta = -1.198$, $t = -9.970$, $p < .001$) in the same model.

Objective 3: Strategic Recommendations — Digital Readiness

Table 9. Weighted Scoring for Digital Readiness

Item	Weighted Mean	Interpretation
1. Digital tools improve efficiency in travel coordination	4.7	Strongly Agree / Very High

Item	Weighted Mean	Interpretation
2. Digital systems help monitor crew travel status effectively	4.63	Strongly Agree / Very High
3. Digital reporting enhances coordination with EGT Travel Agency	4.52	Strongly Agree / Very High
4. Digital tools complement human decision-making	4.52	Strongly Agree / Very High
5. Digital systems support faster response to disruptions	4.41	Strongly Agree / Very High
6. Digital tools used are easy to understand	4.49	Strongly Agree / Very High
7. Learning digital systems requires minimal effort	4.37	Strongly Agree / Very High
8. Digital communication tools simplify documentation	4.32	Strongly Agree / Very High
9. Willingness to adopt hybrid (human + digital) systems	4.86	Strongly Agree / Very High
10. Training and support are necessary for digital integration	4.74	Strongly Agree / Very High
Grand Mean	4.556	Strongly Agree / Very High

Digital readiness was rated Very High overall (grand mean = 4.56). Willingness to adopt hybrid systems scored highest ($M = 4.86$); documentation-simplification and ease-of-learning items scored lowest ($M = 4.32$ – 4.37), still within the Very High range.

Table 10. Importance–Performance Analysis (IPA) of Digital-Readiness Items

Item	Performance (Mean)	Importance (r)	Quadrant
Digital efficiency in travel coordination	4.7	0.82	Keep Up the Good Work
Crew travel status monitoring	4.63	0.78	Keep Up the Good Work

Item	Performance (Mean)	Importance (r)	Quadrant
Digital reporting/coordination with EGT	4.52	0.9	Concentrate Here (Critical Gap)
Digital tools complement human decisions	4.52	0.9	Concentrate Here (Critical Gap)
Faster response to disruptions	4.41	0.83	Concentrate Here (Immediate Focus)
Digital tools easy to understand	4.49	0.71	Low Priority
Minimal effort to learn digital systems	4.37	0.82	Concentrate Here (Immediate Focus)
Documentation simplification	4.32	0.3	Low Priority
Willingness to adopt hybrid systems	4.86	0.62	Possible Overkill
Training and support necessity	4.74	0.61	Possible Overkill

Digital efficiency and crew-status monitoring fell in the Keep-Up-the-Good-Work quadrant (high performance, high importance). Digital reporting and human–digital complementarity fell in the Concentrate-Here / Critical-Gap quadrant (high importance, comparatively lower performance), alongside disruption response and ease of learning (Concentrate-Here / Immediate Focus). Documentation simplification and ease of understanding fell in the Low-Priority quadrant; willingness to adopt hybrid systems and training support fell in Possible-Overkill (high performance, comparatively lower correlation with importance).

Table 11. Regression Predictor Rankings (Drivers of Competitiveness)

Rank	Item	β	Impact Level
1	Digital communication tools simplify documentation	0.251	Primary Driver
2	Learning digital systems requires minimal effort	0.16	Strong Driver
3	Digital systems support faster response to disruptions	0.145	Moderate Driver
4 (tie)	Digital reporting enhances coordination	0.136	Moderate Driver
4 (tie)	Digital tools complement human decision-making	0.136	Moderate Driver

Rank	Item	β	Impact Level
5	Digital tools improve efficiency in travel coordination	-0.135	Contributing Factor

The strongest predictor of competitiveness was ease of digital documentation ($\beta = 0.251$), followed by ease of learning digital systems ($\beta = 0.160$); efficiency gains from digital tools carried the smallest, negative coefficient ($\beta = -0.135$) among the five ranked predictors.

Objective 4: Effectiveness of Proposed Strategies

Table 12. Weighted Scoring on Strategy Effectiveness

Item	Weighted Mean	Interpretation
1. Hybrid strategies improve service reliability	4.67	Strongly Agree / Very Effective
2. Digital integration enhances long-term sustainability	4.66	Strongly Agree / Very Effective
3. Proposed strategies improve coordination efficiency	4.67	Strongly Agree / Very Effective
4. Strategies strengthen competitiveness	4.49	Strongly Agree / Very Effective
5. Strategies support seafarer welfare	4.56	Strongly Agree / Very Effective
6. Hybrid strategies reduce operational costs while maintaining quality	4.6	Strongly Agree / Very Effective
7. Digital integration improves seafarer satisfaction	4.31	Strongly Agree / Very Effective
8. Strategies increase resilience against industry disruptions	4.42	Strongly Agree / Very Effective
9. Strategies enhance collaboration between stakeholders	4.18	Strongly Agree / Very Effective
10. Strategies contribute to overall sector growth	4.36	Strongly Agree / Very Effective

Item	Weighted Mean	Interpretation
Grand Mean	4.492	Strongly Agree / Very Effective

All proposed strategies were rated Very Effective (grand mean = 4.49); reliability and coordination-efficiency gains scored highest ($M = 4.67$), while enhanced stakeholder collaboration scored lowest ($M = 4.18$), still within the Very Effective range.

Table 13. Strategic Correlation and Performance Analysis

Indicator	Correlation (r)	Strategic Importance
Digital integration improves seafarer satisfaction	0.934	Critical Success Driver
Strategies enhance collaboration between stakeholders	0.895	Highly Significant
Strategies support seafarer welfare	0.786	Strong Driver
Strategies strengthen competitiveness	0.777	Strong Driver
Hybrid strategies reduce operational costs while maintaining quality	0.742	Strong Driver

Seafarer satisfaction with digital integration showed the strongest correlation with overall strategy performance ($r = 0.934$), followed by stakeholder collaboration ($r = 0.895$), seafarer welfare support ($r = 0.786$), competitiveness ($r = 0.777$), and cost reduction without quality loss ($r = 0.742$).

Table 14. Reliability and Factor Validation — Sustainability and Competitiveness Constructs

Construct / Item	Corrected Item-Total r	α if Item Deleted	Cronbach's α
Sustainability — Item 1: Hybrid strategies improve reliability	0.651	0.908	
Sustainability — Item 2: Digital integration enhances sustainability	0.733	0.903	
Sustainability — Item 3: Strategies improve coordination efficiency	0.651	0.908	
Sustainability — Item 4: Strategies strengthen competitiveness	0.777	0.901	

Construct / Item	Corrected Item-Total r	α if Item Deleted	Cronbach's α
Sustainability — Item 5: Strategies support seafarer welfare	0.786	0.9	$\alpha = 0.915$
Competitiveness — Item 6: Reduce cost while maintaining quality	0.742	0.903	
Competitiveness — Item 7: Digital integration improves satisfaction	0.934	0.887	
Competitiveness — Item 8: Increase resilience against disruptions	0.652	0.908	
Competitiveness — Item 9: Enhance stakeholder collaboration	0.895	0.892	
Competitiveness — Item 10: Contribute to sector growth	0.706	0.905	$\alpha = 0.915$ (overall)

Both constructs showed excellent internal consistency, with an overall Cronbach's alpha of 0.915 and item-total correlations ranging from 0.651 to 0.934; no item's removal raised the overall alpha above 0.915.

Table 15. Paired t-Test — Sustainability vs. Competitiveness

Variable	Mean	SD	Mean Diff.	t	p	Interpretation
Sustainability (Items 1–5)	4.61	0.38	0.24	12.784	< .001	Significant
Competitiveness (Items 6–10)	4.37	0.45				

Sustainability-oriented items ($M = 4.61$, $SD = 0.38$) scored significantly higher than competitiveness-oriented items ($M = 4.37$, $SD = 0.45$); the mean difference of 0.24 was statistically significant ($t = 12.784$, $p < .001$).

Objective 5: Comprehensive Integration Framework

Table 16. Reliability and Framework Foundation

Metric	Value	Interpretation
Overall Cronbach's Alpha (α)	0.957	Excellent reliability
Number of Framework Items	10	Comprehensive

Metric	Value	Interpretation
Model Fit (Regression R ²)	1.00	Fully accounted-for structure in this model

Note: an R² of exactly 1.00 is unusual for a survey-based regression model and typically signals either a deterministic/definitional relationship among the variables entered, or a modeling artifact (e.g., overfitting with too few cases relative to predictors); this figure is reproduced as reported in the source thesis and was not independently re-derived for this manuscript.

The ten-item framework instrument showed excellent internal consistency ($\alpha = 0.957$) and, as reported in the source data, a regression R² of 1.00.

Table 17. Framework Component Prioritization

Framework Pillar (Item)	Performance (Mean)	Z-score	β	Strategic Role
10. Continuous improvement embedded in framework design	4.88	2.15	0.074	Performance Leader
3. Technology acceptance influences framework success	4.68	0.43	0.124	Strategic Support
7. Collaboration between traditional agencies and online platforms	4.67	0.37	0.107	Growth Driver
8. Sustainable framework balances efficiency with seafarer welfare	4.67	0.37	0.106	Operational Pillar
2. Service quality central to digital integration	4.47	-1.35	0.13	Primary Success Driver
1. Operational efficiency essential to a sustainable framework	4.43	-1.69	0.128	Primary Success Driver

Continuous improvement showed the highest performance rating ($M = 4.88$, $Z = 2.15$) but the smallest regression weight ($\beta = 0.074$) of the six items shown; service quality and operational efficiency showed the largest regression weights ($\beta = 0.130$ and 0.128) despite comparatively lower mean scores and negative z-scores, indicating a low mean-to-influence relationship for these two items.

Qualitative Findings

Fifteen semi-structured interviews were coded thematically. Representative verbatim evidence is retained below exactly as recorded in the source transcripts.

Table 18. Operational Models and Competitive Advantage — Emergent Subthemes

Subtheme (Emergent Code)	Tally	Representative Verbatim Evidence
24/7 Human Intervention & Crisis Management	15	"Human intervention is extremely important... plans change overnight, so having someone who can quickly adjust arrangements is very valuable." (R14) / "Crisis management capability... reliability and immediate response are more critical than price." (R1)
Maritime-Specific Technical Expertise	12	"Crew travel is not like regular tourism. There are compliance issues, immigration rules, and tight joining schedules." (R14) / "Agencies understand that delays can affect vessel operations." (R15)
Personalized Coordination & Account Management	11	"Traditional agencies manage travel through dedicated account managers who understand crew rotation schedules and visa requirements." (R1)
Reliability and Operational Security	10	"Trust grows when agencies consistently support our operations without creating additional problems." (R14) / "They monitor the trip until the seafarer reaches the vessel or arrives home." (R14)
Documentation & Compliance Accuracy	8	"Maritime expertise ensures that travel arrangements comply with operational requirements and documentation rules." (R15) / "They handle visa requirements and port restrictions which online platforms lack." (R1)

The most frequently cited subtheme was 24/7 human intervention and crisis management (15/15 respondent references), followed by maritime-specific technical expertise (12), personalized coordination (11), reliability/operational security (10), and documentation/compliance accuracy (8).

Table 19. Technology Acceptance and Digital Integration — Emergent Subthemes

Subtheme (Emergent Code)	Tally	Representative Verbatim Evidence
Hybrid Complementarity (Human + Digital)	14	"Digital tools support the process, but human experience is still necessary to make the right decisions." (R14) / "A hybrid model enhances efficiency while maintaining operational control and service reliability." (R1)
Technological Learning Curve & Training	11	"Initial adoption required training... Resistance mainly came from adapting established manual workflows." (R1) / "Workshops and system tutorials would make adoption easier." (R13)
Efficiency in Routine Automation	9	"Automation handles routine processes, while human oversight ensures flexibility and problem resolution." (R1) / "Digital tools assist our work but cannot fully replace professional judgment." (R13)

Subtheme (Emergent Code)	Tally	Representative Verbatim Evidence
System Integration Challenges	7	"One challenge is the adjustment period for both employees and agencies when new systems are introduced." (R14) / "If systems are disconnected, it may actually create duplication of work." (R2)

Hybrid complementarity was the most frequently cited subtheme (14/15), followed by training/learning-curve concerns (11), routine-automation efficiency (9), and system-integration challenges (7).

Table 20. Framework Development Inputs — Emergent Subthemes

Subtheme (Emergent Code)	Tally	Representative Verbatim Evidence
Sustainable Crew Welfare & Morale	13	"Sustainability should focus on long-term crew welfare and efficient travel planning." (R12) / "If travel arrangements are handled properly, seafarers feel more secure and focused on their duties." (R14)
Strategic Stakeholder Collaboration	10	"Collaboration could expand travel options... open new opportunities for efficiency." (R12) / "Collaboration is possible through API integrations or shared booking systems." (R1)
Operational Transparency & Accountability	9	"Best practices should include maintaining accountability, clear communication, and continuous improvement." (R14) / "Sustainability principles include carbon-conscious travel planning and digital documentation." (R1)

Crew welfare and morale was the most frequently cited framework-input subtheme (13/15), followed by stakeholder collaboration (10) and operational transparency/accountability (9).

Table 21. Triangulation of Quantitative and Qualitative Results

Research Focus	Quantitative Finding	Qualitative Insight	Triangulated Conclusion
I. Human vs. Digital Priority	IPA (Obj. 3): human–digital balance items placed in the "Concentrate Here" quadrant.	100% (15/15) of respondents identified human intervention as the critical factor during travel disruptions.	Convergent: digital tools are desired for speed, but the firm's competitive edge remains the human safety net; pure automation is viewed as a risk.
II. Sustainability vs. Profit	Paired t-test (Obj. 4): sustainability (M = 4.61) significantly higher than competitiveness (M = 4.37), $p < .001$.	13/15 respondents defined sustainability primarily in terms of crew welfare ("seafarers feel secure when travel is managed by experts").	Complementary: the statistical sustainability score is driven by a value for seafarer well-being; sustainability here is human-centric, not only environmental.



Research Focus	Quantitative Finding	Qualitative Insight	Triangulated Conclusion
III. Framework Foundations	Regression (Obj. 5): traditional-value items (1 & 2) had the highest influence ($\beta \approx 0.13$) despite lower raw means.	14/15 respondents supported a hybrid model in which technology supports, not replaces, relationships.	Validated: preserving traditional values is the most efficient path to digital success; readiness for this specific hybrid path is high.

Across all three triangulation foci, the quantitative and qualitative strands converged: human oversight is prioritized over full automation, sustainability is operationalized by respondents mainly through seafarer welfare, and traditional service values carry disproportionate statistical influence relative to their raw mean scores.

IV. Discussion

Operational Models and Competitive Advantage

The very high cross-role agreement on operational-model items (Table 2 grand mean = 4.71; Table 5 range 4.56–4.93) indicates that EGT Travel Agency's competitive advantage is perceived consistently across the organization, rather than concentrated in a single role tier. This is consistent with the Resource-Based View: maritime expertise, standardized procedures, and trust-based partnership function as valuable, difficult-to-imitate resources rather than role-specific perceptions. The excellent scale reliability ($\alpha = 0.87$) supports the internal consistency of these ratings, but the marginal KMO value (0.47) and weak, cross-loading factor structure (Table 4) suggest that respondents do not experience these ten attributes as separable dimensions — operational efficiency, reliability, and human expertise are perceived as a single, holistic construct of "traditional agency strength" rather than as distinct sub-constructs. This holistic pattern is itself consistent with hybrid-model literature, indicating that digital preparedness, service quality, and human intervention are inherently interwoven rather than independent in specialized travel services (Nguyen, Simkin, and Canh, 2022)

Impact of Online Platforms and the Case for Hybrid Integration

Online platforms were perceived as exerting a very high impact across all measured dimensions (Table 6, grand mean = 4.49), and this impact correlated very strongly and positively with traditional-agency performance (Table 7, $r = 0.939$, $p < .001$). Read together with the regression results (Table 8), the pattern suggests that online-platform pressure is functioning less as a simple displacement threat and more as a performance driver: agencies that engage with, rather than ignore, the standards set by online platforms (speed, transparency, cost clarity) show stronger measured performance. The negative coefficient on the traditional-agency-performance term in the same regression model — alongside the very large R^2 and effect size — should be interpreted cautiously, since a model explaining 88% of variance from two closely related composite indices measured in the same survey may partly reflect shared method variance rather than two fully independent constructs; this is noted as an analytic caveat rather than a reversal of the finding. The practical reading supported by the qualitative data (Table 18, Table 21-I) is that online platforms set a competitive floor for speed and transparency that traditional agencies must meet, without displacing the human-centered functions — crisis management, compliance judgment, personalized coordination — that respondents consistently identified as irreplaceable.

Digital Readiness and Drivers of Competitiveness

Digital readiness was rated Very High overall (Table 9, grand mean = 4.56), with the strongest endorsement given to willingness to adopt hybrid systems ($M = 4.86$) rather than to any single digital capability — a pattern consistent with Technology Acceptance Theory, under which digital tools gain acceptance when perceived as complementary to, rather than a replacement for, existing judgment and workflows. The Importance–Performance Analysis (Table 10) identifies digital reporting and human–digital complementarity as the clearest priority gaps ("Concentrate Here"), while the regression predictor rankings (Table 11) show that usability and simplicity — not raw efficiency gains — are the strongest statistical drivers of competitiveness (documentation ease, $\beta = 0.251$; ease of learning, $\beta = 0.160$). Taken together, these results indicate that further digital investment should prioritize reducing friction and complexity in existing digital tools over adding new automated capability, since usability factors carry more statistical weight than efficiency perceptions in this sample.

Effectiveness of Hybrid Strategies and the Sustainability–Competitiveness Relationship

Proposed hybrid strategies were rated Very Effective overall (Table 12, grand mean = 4.49), with seafarer satisfaction from digital integration showing the strongest correlation with overall strategy performance of any indicator tested (Table 13, $r = 0.934$). The paired t-test (Table 15) found sustainability-oriented items rated significantly higher than competitiveness-oriented items ($M = 4.61$ vs. 4.37, $p < .001$) — a statistically modest

but significant difference that, combined with the qualitative theme of crew welfare as the dominant lens through which respondents defined sustainability (Table 20; Table 21-II), supports interpreting sustainability in this context as substantially human-centered rather than purely financial or environmental. Both constructs showed excellent reliability (Table 14, overall $\alpha = 0.915$), supporting confidence in this distinction. This pattern is broadly consistent with Sustainability Theory as applied to labor-intensive service industries, where organizational resilience and workforce welfare are treated as sustainability outcomes in their own right rather than as secondary to profitability.

The Comprehensive Integration Framework

The ten-item framework instrument showed excellent reliability (Table 16, $\alpha = 0.957$). Framework-component prioritization (Table 17) revealed a notable divergence between raw performance ratings and regression influence: continuous improvement scored highest on perceived performance ($M = 4.88$) but carried the smallest regression weight ($\beta = 0.074$), while service quality and operational efficiency scored comparatively lower on raw performance ($M = 4.47$ and 4.43 , with negative z -scores) yet carried the largest regression weights ($\beta = 0.130$ and 0.128) among the items shown. This mean-versus-influence divergence — also visible in the qualitative triangulation (Table 21-III), where traditional-value items had the strongest statistical influence despite lower raw means — is read here as evidence that respondents may under-rate the strategic importance of foundational service-quality and efficiency attributes relative to newer, more visible initiatives such as continuous-improvement programs, even though the former carry more statistical weight in predicting overall framework success.

Building on this prioritization and on the qualitative subthemes identified in Tables 18–20, the study proposes a five-pillar strategic framework for maritime travel agencies:

- Cultural Foundation — a Cultural Continuity Program that digitizes institutional memory and embeds legacy client-relationship data into modern CRM systems, preserving organizational identity and trust-based partnerships through digital transformation.
- Technical Infrastructure — a Digital Operations Enhancement Strategy that automates routine tasks (flight booking, visa tracking, compliance reporting) and deploys real-time dashboards, overseen by a Technology Steering Committee, to increase speed, accuracy, and transparency in high-volume logistics.
- Service Reliability — a Human-in-the-Loop Reliability Framework in which technology rapidly detects disruptions while human coordinators execute rerouting and compliance-sensitive decisions, supported by a Service Recovery Playbook and scenario-based crisis simulations.
- Strategic Sustainability — a Seafarer Welfare and Sustainability Program providing mobile-accessible itineraries, transparent travel updates, 24/7 human support, and welfare indicators embedded in operational KPIs.
- Performance Excellence — a Hybrid Benchmarking and Policy Advocacy Initiative, auditing digital initiatives against SERVQUAL standards, publishing a Maritime Travel Integration Handbook, and advocating for policy incentives that institutionalize hybrid best practices industry-wide.

Discussion of Hypotheses

H₁ (digital readiness and service performance) is supported: digital readiness ratings were consistently high (Table 9), and usability-related digital factors were significant positive predictors of competitiveness (Table 11), though the qualitative data (Table 19) caution that these gains depend on continued human oversight for compliance-sensitive decisions.

H₂ (service quality and customer trust/satisfaction) is supported: the SERVQUAL-aligned operational-model items were rated Very High with excellent scale reliability (Tables 2–3), and trust/long-term partnership items scored among the highest in the study (Table 2, Items 7 and 10).

H₃ (online platforms and competitiveness) is supported: the very strong correlation and large regression effect between online-platform impact and agency performance (Tables 7–8) confirm a significant relationship, though — as discussed above — automated platforms were not perceived as capable of fully substituting for traditional agencies in complex, compliance-heavy scenarios (Table 18).

H₄ (hybrid operating models and resilience/sustainability) is supported: hybrid strategies were rated Very Effective (Table 12), correlated strongly with sustainability-related indicators (Table 13), and were independently affirmed in the qualitative data as the preferred model by 14 of 15 interviewees (Table 21-III).

H₅ (relationship between digital readiness, service quality, and sustainability outcomes) is supported: the excellent reliability of the combined framework instrument (Table 16) and the consistent, statistically significant relationships across Tables 7, 8, 13, and 15 jointly support treating digital readiness and service quality as interdependent contributors to sustainability outcomes, though the exact $R^2 = 1.00$ result noted under Table 16 should be treated as a data or modeling artifact requiring re-verification rather than as evidence of a perfectly deterministic relationship.

Theoretical and Practical Implications

The findings support all four anchoring theories in a mutually reinforcing way: Resource-Based View explains why traditional-agency strengths remain statistically influential despite digital disruption; Digital Transformation Theory explains why the benefits of digitalization materialize only when tools fit existing compliance-sensitive workflows; Technology Acceptance Theory explains the strong preference for hybrid over fully automated systems; and Sustainability Theory explains why respondents defined sustainability primarily through seafarer welfare rather than financial metrics alone. Practically, the results indicate that maritime travel agencies seeking to remain competitive should prioritize reducing friction in existing digital tools, formalize human-in-the-loop protocols for disruption response, and treat crew-welfare indicators as core (not peripheral) performance metrics.

Limitations

This study is a single-case analysis of one agency–client partnership (EGT Travel Agency and OT Shipping Company); findings may not generalize to other maritime travel agencies or to non-Philippine contexts without further validation. The respondent pool was restricted to OT Shipping Company personnel, excluding the perspectives of seafarers themselves, competing crewing agencies, airline partners, and EGT Travel Agency staff. All quantitative data are self-reported perceptions rather than objective performance records, and no proprietary financial or contractual data were available for analysis. The marginal KMO value and weak factor structure (Tables 3 and 4) limit the confidence that can be placed in any sub-dimensional interpretation of the operational-model construct, and the $R^2 = 1.00$ result reported in Table 16 warrants independent statistical re-verification before the framework is used for external validation or publication. As noted throughout this Discussion and in the Editorial Transparency Notice, a substantial number of in-text citations in the source manuscript could not be verified against its Reference list and require author correction before this manuscript is submitted for peer review.

Conclusions

The sustainable future of Philippine maritime travel agencies serving seafarers lies not in a choice between traditional and digital models, but in their deliberate integration. Crisis management, regulatory compliance, and complex routing decisions continue to require human judgment that digital tools cannot yet replicate, even as digital systems measurably improve efficiency, transparency, and coordination when properly integrated.

Sustainability in this sector is shown to be substantially anthropocentric — anchored in crew welfare and morale rather than financial performance alone — and the proposed five-pillar framework (Cultural Foundation, Technical Infrastructure, Service Reliability, Strategic Sustainability, and Performance Excellence) offers an empirically grounded structure for pursuing competitiveness without compromising these human-centered values.

Recommendations

11. To maritime travel agencies: adopt hybrid systems that automate routine processes while keeping crisis management and compliance oversight human-led; invest in CRM tools that preserve institutional memory and client relationships.
12. To seafarers (as intended beneficiaries): ensure mobile-accessible itineraries and round-the-clock support to reduce travel-related stress and support morale and operational focus.
13. To industry stakeholders and partners: pursue collaboration through shared booking systems, API integration, and joint training programs to increase efficiency and innovation.
14. To policymakers and regulators: develop policies that incentivize hybridization, welfare-focused sustainability, and benchmarking of digital initiatives against established service standards.
15. To future researchers: test the longitudinal effects of hybrid adoption on crew welfare, operational resilience, and market competitiveness to refine and externally validate this framework; independently re-verify the Table 16 regression result; and resolve the citation discrepancies documented in this manuscript before any journal submission.

Table 22. Objectives, Findings, Conclusions, and Recommendations

Objective	Findings	Conclusions	Recommendations
1. Identify existing operational models	Traditional agencies rely on trust-based, human-centered service, institutional memory, and personalized client relationships.	Traditional models remain indispensable for managing compliance-sensitive, complex travel requirements.	Digitize institutional memory through CRM systems to preserve relationship nuance while modernizing operations.
2. Analyze the impact of online travel platforms	Online platforms provide speed, transparency, and cost efficiency, but struggle with complex routing, visa restrictions, and emergency rerouting.	Online platforms exert competitive pressure but cannot fully replace traditional agencies in specialized maritime contexts.	Adopt a hybrid integration that combines digital booking efficiency with human oversight for compliance-sensitive processes.
3. Evaluate hybrid strategies for integration	Hybrid models improve customer satisfaction, reduce disruptions, and enhance resilience during crises.	Hybrid strategies are the most effective approach, balancing digital efficiency with human adaptability.	Institutionalize a Human-in-the-Loop Reliability Framework and conduct scenario-based crisis simulations.
4. Develop a comprehensive	Sustainability requires operational efficiency,	A strategic framework built on cultural foundation,	Implement a Seafarer Welfare and Sustainability Program



Objective	Findings	Conclusions	Recommendations
framework for sustainable integration	resilience, and welfare-centric innovation; welfare-focused digital adoption improves morale and long-term viability.	technical infrastructure, service reliability, sustainability, and performance excellence ensures competitiveness.	with mobile-accessible itineraries, transparent updates, and 24/7 support.
5. Assess relationships between digital readiness, service quality, and sustainability	Regression and correlation analyses indicate digital readiness and service quality directly influence sustainability outcomes.	Digital readiness and service quality are interdependent drivers of sustainable competitiveness.	Establish a Hybrid Benchmarking and Policy Advocacy Initiative auditing digital initiatives against SERVQUAL standards.



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