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The Role of Information and Communication Technology (ICT) in Enhancing Marketing and Visitor Experience in Yacht Marinas: A Study of the Red Sea Coast

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Keywords

ICT, Digital Marketing, Yacht Marinas, Visitor Experience, Customer Engagement.

Abstract

The integration of Information and Communication Technology (ICT) has transformed marketing strategies and visitor experiences in the yacht marina industry. This study investigates the role of ICT in marketing yacht marinas along the Red Sea coast, emphasizing digital marketing tools, customer engagement, and sources of visitor information. It also explores how tourists and stakeholders discover yacht trips and assesses the impact of ICT on enhancing the overall visitor experience. Cochran's formula was applied, as it is widely used for large populations, ensuring that the sample adequately reflects the target group. Additionally, Slovin's formula was considered to adjust the sample size based on the total population and margin of error. A confidence level of 95% and a margin of error of 5% were used to enhance statistical reliability. Krejcie and Morgan's sample size table was also referenced to validate the final number. Based on these methods, 408 questionnaires were distributed to various stakeholders, including tourists, yacht renters, marina operators, and tourism professionals, ensuring a diverse and representative sample for the study. The collected data were analyzed using descriptive and inferential statistical methods, including Chi-square tests and Pearson correlation analysis, to examine relationships between demographic characteristics, ICT awareness, and digital marketing effectiveness. The findings reveal that social media, search engines, and digital advertising are the most effective tools for promoting yacht trips and enhancing visitor engagement. However, data analytics and customer loyalty programs remain underutilized, indicating gaps in ICT-driven marketing strategies. While ICT has significantly improved customer interaction, online booking, and engagement, challenges such as technology adaptation and digital literacy among some marina stakeholders persist. The study concludes that ICT is a vital tool for marketing yacht marinas and enhancing visitor experiences, yet further investments in AI-driven personalization, advanced digital marketing, and customer relationship management systems are necessary to maximize its impact. The study recommends strengthening online presence through SEO strategies, leveraging user-generated content for authenticity, and integrating AI-powered analytics to improve customer targeting and visitor retention.

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1. Introduction

According to the UNESCO Institute for Statistics (UIS, 2009), ICT comprises a collection of technological resources, including computers, Internet, live broadcasting technologies (television, radio, and webcasting), and recorded broadcasting technologies (audio and video players, podcasting, and storage devices) which are utilized to transmit, store, create, share, or exchange information. **Chandler and Munday (2011)** agree that information and communication technology encompasses all of the numerous media used to communicate information, such as the Internet, computers, television broadcasts, and even printed and handwritten notes.

A marina is defined as "a part of the water space and coastline specially constructed and arranged for the provision of link services, tourist accommodation in vessels, and other services in accordance with this Regulation" (**Lučić and Dubrovnik, 2017**). The smart marina concept emerged from the smart port concept and has been adapted to meet the specific of the nautical tourism Industry. Ports are also becoming more aware of their impact on the local population in terms of environmental quality, living standards, and port development (**Borruso et al. 2021**). Furthermore, the deployment of smart marina systems can provide marina operators with significant data insights, allowing them to make more informed operational decisions. For example, data on visitation patterns, vessel occupancy, and energy use can be used to optimize resource use and reduce waste (**Mundula et al., 2021**).

1.2. The Problem of the study:

Marinas are the most valuable part and starting points of nautical tourism development. There is a need to make them smarter due to emerging trends in new technology, systems, and solutions. They work to address functional and economic issues that affect their sustainability as they face mounting pressure to maximize their performance (**Molavi et al., 2020**). "Consequently, challenges related to operational procedures, environmental impact, energy efficiency, safety, and security arise (**Bucak and Kuleyin, 2016**). "Increased demand for nautical tourism leads to congestion since there are more vessels (particularly during peak season), which delays the arrival and departure of vessels at and from berths. If there is a lack of information sharing in the system, the marina management has to deal with operating errors (**Dragovic et al., 2016**). Therefore, there is a need to develop the methods used in the management of the Egyptian tourist marinas, which contributes to making operations more efficient, less costly and Optimizing human resource utilization/

1.3. Objectives of the Study:

The study aims to achieve five main objectives:

- 1) Explore the availability of information technology methods in the Egyptian tourist marinas.
- 2) Determine the different means of information technology applications used in each administrative and operational process in the Egyptian tourist marinas.
- 3) Shedding light on the problems facing tourists in the Egyptian tourist marinas when using information technology methods in the operations.
- 4) Present ideas and suggestions to solve the problems facing tourists in the Egyptian tourist marinas when using information technology methods.

1.4. Questions of the Study

- 1) What is the availability of information technology methods in the Egyptian tourist marinas?
- 2) What is the different means of information technology applications used in each administrative and operational process in the Egyptian tourist marinas?
- 3) What are the problems faced by the tourists in the Egyptian tourist marinas when using the methods of information technology in the operations?
- 4) Propose ideas and recommendations to address the challenges tourists encounter when utilizing information technology in Egyptian tourist marinas?

2. Literature Review

Since the 1980s, Information Communication Technologies (ICT) have enabled the global tourism industry. (Buhalis, 2003). Nowadays, the Internet and ICTs are important at all operational, strategic, structural, and marketing levels to facilitate global contacts between suppliers, intermediaries, and consumers worldwide (Egger and Buhalis, 2008).

2.1. Using Information and Communication Technology to enhance the marketing and management of marinas:

According to Molavi, et al., (2020) Information and Communication Technology (ICT) is increasingly used to enhance the marketing and management of marinas, providing tools to attract tourists, improve customer experiences, and streamline operations. Here's how ICT is applied in marketing to the tourist marinas:

1. Online Presence and Website Management

- **Website as a Marketing Hub:** Marina managers Leverage ICT to create user-friendly websites that act as the main point of contact for potential customers. Websites often include detailed information about services, available amenities,

and nearby attractions. Through ICT, these websites are Search Engine Optimization (SEO), improving their visibility to tourists searching for marinas online (Dinis et al., 2019).

- **Online Booking and Payment Systems:** ICT enables the integration of online booking platforms where visitors can reserve berths or services at the marina. This streamlines the booking process for tourists and allows marina managers to manage availability in real-time (Schröder et al., 2020).

2. Social Media Marketing and Engagement

- **Brand Building via Social Media:** Marinas use ICT to engage with potential and existing customers on social media platforms like Facebook, Instagram, and Twitter. These platforms help marinas display highlight their facilities, announce events, and promote special offers, building a community of loyal customers (Leung et al., 2013).
- **Customer Interaction and Feedback:** ICT tools on social media allow marinas to interact directly with customers through comments, messages, and reviews. This helps improve customer service and strengthens the marina's brand reputation (Sigala, 2018).

3. Customer Relationship Management (CRM) Systems

- **Data-Driven Marketing Strategies:** ICT-based CRM systems enable marinas to collect, store, and analyze customer data. This information helps marina managers Gain insights into customer preferences, behavior, and demographics, which can be used to create targeted marketing campaigns (Baker et al., 2018).
- **Personalized Marketing:** ICT facilitates personalized marketing through email campaigns and loyalty programs. For example, marinas can send tailored messages to visitors, offering personalized discounts, updates, or recommendations based on their past interactions with the marina (Prabha & Suresh, 2020).

4. Digital Advertising and Online Campaigns

- **Targeted Advertising:** Marinas leverage ICT tools like Google Ads, Facebook Ads, and Instagram Ads to run digital marketing campaigns. These platforms enable marinas to target specific demographics and geographical regions,

increasing the chances of reaching boating enthusiasts and potential tourists (Tuten & Solomon, 2017).

- **Programmatic Advertising:** ICT enables programmatic advertising, where AI-driven algorithms automatically purchase digital ad space based on real-time data. This allows marinas to optimize their marketing budget and reach a more relevant audience (Leung et al., 2013).

5. Mobile Marketing

- **Mobile Apps for Marinas:** ICT enables marinas to create dedicated mobile apps where customers can access services, book berths, or explore local attractions. These apps can send push notifications about upcoming events, promotions, or weather updates, increasing customer engagement (Dinis et al., 2019).
- **Location-Based Services:** ICT tools enable marinas to use location-based marketing, where mobile apps and GPS technologies send targeted promotions to customers when they are near the marina. This can Drive foot traffic and attract more visitors (Kaplan, 2012).

6. User-Generated Content and Reviews

- **Leveraging Customer Reviews:** ICT makes it easy for marinas to collect and display user-generated content, such as reviews on platforms like TripAdvisor, Google, or Yelp. Positive reviews serve as powerful marketing tools, improving the marina's credibility and attractiveness to new visitors (Sigala, 2018).
- **Encouraging Social Media Sharing:** Marinas encourage visitors to share their experiences on social media through hash tags or photo contests. ICT platforms facilitate the collection and promotion of this user-generated content, helping to build social proof and attract a wider audience (Tuten & Solomon, 2017).

7. Email Marketing Automation

- **Automated Campaigns:** ICT allows marina managers to automate email-marketing campaigns using CRM systems. Automated emails can be sent to customers for various purposes, such as welcoming new visitors, sending reminders for berth renewals, or promoting special events (Kotler et al., 2017).

- **Newsletters and Updates:** Marinas often use ICT tools to send regular newsletters with updates about marina services, upcoming events, and local news, keeping customers informed and engaged (**Baker et al., 2018**).

8. Data Analytics and Insights

- **Customer Behavior Analysis:** ICT tools like Google Analytics and CRM data analysis help marinas track visitor behavior on their website and social media platforms. "These tools generate valuable insights into customer preferences, highlighting the services and content that resonates most, thereby enabling more targeted marketing strategies (**Harrigan et al., 2015**)."
- **Market Segmentation:** ICT systems allow marinas to segment their customer base based on various criteria, such as demographics, past behavior, or preferences. This segmentation enables marina managers to create customized marketing campaigns for different customer groups, increasing the effectiveness of their efforts (**Prabha & Suresh, 2020**).

9. Virtual and Augmented Reality for Immersive Marketing

- **Virtual Tours of Marinas:** ICT applications in virtual reality (VR) allow marinas to offer virtual tours of their facilities, enabling potential customers to explore the marina from afar. This can attract high-end customers looking for premium services, as they can see the facilities in advance (**Tussyadiah et al., 2018**).
- **Augmented Reality Experiences:** ICT-driven AR experiences can be used for interactive marketing. For instance, visitors can scan a QR code to see 3D models of marina facilities or boats, creating a more engaging and immersive marketing approach (**Loureiro et al., 2019**).

10. Loyalty Programs and Customer Retention

- **ICT-Enabled Loyalty Programs:** Many marinas use ICT systems to create digital loyalty programs where customers earn points for frequent visits or bookings. These programs are typically managed through mobile apps or websites, encouraging repeat business and fostering customer loyalty (**Kotler et al., 2017**).

3. Research Methodology

This study adopts a quantitative research approach to analyze tourists' awareness of yacht trips along the Red Sea coast and assess the role of Information and Communication Technology (ICT) in marketing smart marinas. The research follows a descriptive and analytical design, aiming to evaluate the impact of digital tools on tourist awareness and the effectiveness of ICT-driven marketing strategies in marinas.

3.1. Data Collection

The sample size for this study was determined using a combination of statistical methods to ensure representativeness and accuracy. Given the study's focus on yacht marinas along the Red Sea coast, a structured approach was used to determine the appropriate sample size. Cochran's formula was applied, as it is widely used for large populations, ensuring that the sample adequately reflects the target group. Additionally, Slovin's formula was considered to adjust the sample size based on the total population and margin of error. A confidence level of 95% and a margin of error of 5% were used to enhance statistical reliability. Krejcie and Morgan's sample size table was also referenced to validate the final number. Based on these methods, 408 questionnaires were distributed to various stakeholders, including tourists, yacht renters, marina operators, and tourism professionals, ensuring a diverse and representative sample for the study including tourists, yacht renters, marina operators, and tourism professionals. The questionnaire was designed to evaluate:

- 1) How tourists learn about yacht trips through digital marketing channels such as search engines, social media, advertisements, and personal recommendations.
- 2) The effectiveness of ICT-driven marketing, including CRM systems, social media marketing, digital advertising, and mobile marketing.
- 3) Demographic factors influencing ICT adoption and awareness of yacht trips, including age, nationality, occupation, and educational level.

3.2. Data Analysis

The collected data were analyzed using SPSS Version 24, employing both descriptive and inferential statistical methods to derive insights into tourist awareness and ICT-driven marketing strategies. The analysis involved:

- Descriptive Statistics (frequencies, percentages, mean, and standard deviation) to summarize respondents' demographic characteristics and their perceptions of ICT in marketing.
- Chi-Square Tests to examine relationships between demographic factors (age, nationality, occupation) and awareness of yacht trips or ICT marketing adoption.
- Pearson Correlation Analysis to measure the association between awareness of yacht trips and the effectiveness of ICT marketing strategies.

This research design ensures a structured and data-driven approach, providing empirical evidence on how ICT enhances yacht tourism marketing and tourist awareness, while identifying key opportunities and challenges in digital transformation.

3.2.1. Questionnaire Design

The questionnaire was designed to evaluate tourists' awareness of yacht trips and the role of ICT in marina marketing strategies. It was structured into multiple sections, using a five-point Likert scale to measure respondents' perceptions of digital marketing effectiveness and awareness levels.

☒ Key Sections of the Questionnaire:

The questionnaire Considered one of the most widely used data collection methods within the strategy of survey (Saunders et al., 2009). According to Kirklees Council (2014) a questionnaire is a tool to collect and record information about a specific issue of importance and most of it made up of a list of questions.

1. Tourist Awareness of Yacht Trips – Examining how tourists discover yacht trips via search engines, social media, advertisements, and recommendations.
2. ICT in Smart Marina Marketing – Evaluating the role of social media marketing, CRM systems, digital advertising, mobile marketing, and data analytics in promoting yacht tourism.
3. Demographic Variables – Analyzing how age, nationality, occupation, and education level influence ICT adoption and awareness of yacht tourism.

3.3 Reliability

To ensure the reliability of the questionnaire, Cronbach's alpha coefficient was calculated to assess internal consistency. Cronbach's alpha measures the interrelatedness of items within a questionnaire, with values ranking from 0 (no consistency) to 1 (perfect consistency). According to Nunnally (1978), a value above 0.7 is considered acceptable in most social science research, indicating a reliable measurement instrument.

Table (1): Cronbach's Alpha Value

Variables	No. of items	Reliability coefficient	Validity Coefficient*
Awareness of yacht trips along the Red Sea coast	4	0.749	0.866
ICT applied in marketing to the smart marinas	9	0.703	0.839

$$* \text{ Validity coefficient} = \sqrt{\text{Reliability coefficient}}$$

For this study, Cronbach's alpha reliability was calculated for the key sections of the questionnaire, confirming the reliability of the collected data. As shown in Table (1) the Cronbach's alpha values ranged from 0.703 to 0.749, demonstrating acceptable internal consistency across all measured variables. The validity coefficient, calculated as the square root of the reliability coefficient, further confirms the robustness of the instrument, with values exceeding 0.80, ensuring that the questionnaire provides consistent and meaningful results.

These findings affirm that the questionnaire is statistically sound and suitable for analyzing the role of ICT in marketing smart marinas and enhancing tourist awareness of yacht trips along the Red Sea coast. The high reliability and validity values indicate that the instrument effectively captures respondents' perceptions, supporting the credibility of the study's conclusions.

4. Results and Discussion

Section one: Demographic characteristics of respondents

The table (2) illustrates the distribution of survey respondents based on their nationality, categorized into five main regions: Middle East & North Africa, Europe, Americas & Oceania, UK & English-Speaking Countries, and Other.

- European respondents constitute the largest segment at 45%, indicating a strong presence of tourists or stakeholders from this region in the study.
- Middle East & North Africa respondents make up 17%, reflecting a significant local or regional interest.
- Americas & Oceania account for 14%, showing moderate representation from these regions.
- UK & English-Speaking Countries contribute 12%, suggesting a relatively smaller yet relevant share of participants.
- The remaining 12% falls under the other category, indicating a diverse mix of nationalities that do not fit into the predefined classifications.

This distribution suggests that European tourists or professionals play a dominant role in the studied context, potentially influencing the trends and technological adoption in yacht marina management. The diversity in responses provides a well-rounded perspective, enhancing the study's validity in understanding global patterns in this sector.

Table (2): the distribution of survey respondents based on their nationality

Nationality	Frequency	Percent
Middle East & North Africa	72	17.6
Europe	184	45.1
Americas & Oceania	56	13.7
UK & English-Speaking Countries	48	11.8
Other	48	11.8
Total	408	100.0

The table (3) presents the age distribution of the survey respondents, divided into four categories:

- 41 to 60 years represents the largest group at 42.9%, indicating that middle-aged individuals are the most dominant participants in the study.
- 20 to 40 years follows closely at 39.5%, suggesting that younger professionals and tourists also form a significant portion of the respondents.
- More than 60 years accounts for 11.8%, showing a lower but notable presence of older individuals in the surveyed population.
- 20 years or less is the least represented group at 5.9%, implying minimal participation from younger age groups.

This distribution highlights that the majority of respondents belong to the 41-60 and 20-40 age groups, which could suggest that yacht marina activities and technology

adoption are most relevant to individuals in their professional and middle-age years. The relatively lower percentage of younger and older participants may indicate either limited engagement in the sector or specific preferences in maritime tourism and management.

Table (3): the age distribution of the survey respondents.

Age	Frequency	Percent
20 years or less	24	5.9
From 20 to 40 years	161	39.5
41 to 60 years	175	42.9
More than 60 years	48	11.8
Total	408	100.0

The table (4) illustrates the gender distribution of the survey respondents:

- Males constitute 64% of the sample, indicating a dominant presence of male participants in the study.
- Females represent 36%, showing a lower but still significant proportion of female respondents.

This distribution suggests that male participants are more engaged in activities related to yacht marinas on the Red Sea coast, whether as tourists, employees, or stakeholders. The lower female participation could reflect industry-specific dynamics, travel preferences, or occupational roles in the sector.

Table (4): the gender distribution of the survey respondents

Gender	Frequency	Percent
Male	263	64.5
Female	145	35.5
Total	408	100.0

The table (5) illustrates the occupational distribution of respondents engaged in yacht marina activities along the Red Sea coast. The results indicate:

- Tourists and yacht renters (41.2%) form the largest group, reflecting the primary role of marinas in catering to leisure and tourism.
- Yacht and boat owners (23.5%) represent a significant proportion, highlighting the presence of private ownership and maritime enthusiasts.
- Captains and yacht crew (17.6%) also constitute a notable share, emphasizing the importance of operational roles in the sector.
- Investors and business owners in marine tourism (9.8%) make up a smaller but essential segment, demonstrating financial interest and entrepreneurship in the industry.
- Media professionals and tourism bloggers (7.8%) have the lowest representation, suggesting a relatively limited but still relevant role in promoting and documenting the sector.

Table (5): the occupational distribution of respondents

Occupation	Frequency	Percent
Yacht and Boat Owners	96	23.5
Captains and Yacht Crew	72	17.6

Tourists and Yacht Renters	168	41.2
Investors and Business Owners in Marine Tourism	40	9.8
Media Professionals and Tourism Bloggers	32	7.8
Total	408	100.0

The table (6) presents the educational background of respondents involved in marine tourism activities. The distribution reveals:

- Higher Education (Bachelor's degree) (53%) constitutes the majority, indicating that most respondents have an academic background relevant to the industry.
- MSc/PhD holders (33%) represent a significant proportion, reflecting a highly educated group involved in yacht-related tourism, possibly in managerial, research, or specialized roles.
- Postgraduate Diploma holders (10%) demonstrate an intermediate level of academic advancement, suggesting further specialization beyond undergraduate studies.
- High School or below (4%) forms the smallest segment, indicating that most individuals engaged in this sector have pursued higher education.

This distribution suggests that the marine tourism sector attracts a highly educated workforce, which may contribute to professional service standards and industry development.

Table (6): the educational background of respondents

Educational level	Frequency	Percent
High School or below	16	3.9
Higher Education (Bachelor's degree)	216	52.9
Postgraduate Diploma	40	9.8
MSc / PhD	136	33.3
Total	408	100.0

Section two:***1) How did you learn about yacht trips along the Red Sea coast*****Table(7): respondents' sources of information about yacht trips along the Red Sea coast.**

Statement	1%	2%	3%	4%	%5	Mean	SD	Rank	Attitude
Search engines	5.9	3.9	15.4	61.0	13.7	3.73	.952	1	Agree
Recommended from a friend	2.0	19.6	29.7	37.0	11.8	3.37	.990	2	Neutral
Through the ads and promotions	9.6	11.8	35.5	27.5	15.7	3.28	1.152	3	Neutral
Others (please specify):.....	21.6	7.8	23.5	17.6	29.4	3.25	1.495	4	Neutral
Total mean	3.41								Agree

The table (7) presents respondents' sources of information about yacht trips along the Red Sea coast. The analysis is based on mean scores, standard deviation, and Likert scale classification.

Key Findings

1. Overall Attitude Toward Sources of Information
 - The total mean score is 3.41, indicating an overall “Agree” response.
 - This suggests that respondents generally find various sources of information useful, but their preferences vary.
2. Most Preferred Source of Information ("Agree")
 - Search engines (Mean = 3.73, SD = 0.952) ranked the highest, indicating that the majority of respondents rely on online searches to learn about yacht trips.
 - The high score suggests the importance of digital presence and SEO strategies for promoting yacht tourism.
3. Moderately Used Sources ("Neutral")
 - Recommendations from a friend (Mean = 3.37, SD = 0.990) suggest that word-of-mouth is moderately influential but not as dominant as digital searches.
 - Advertisements and promotions (Mean = 3.28, SD = 1.152) also fall in the neutral category, indicating mixed effectiveness. Some respondents find them useful, while others may not engage with ads.
 - Other sources (Mean = 3.25, SD = 1.495) received the lowest score, reflecting high variation in responses, possibly due to diverse individual preferences.
4. Insights and Implications
 - The findings highlight the dominance of search engines as the primary information source, emphasizing the need for strong online visibility for yacht tourism providers.
 - The relatively lower influence of advertisements suggests that marketing efforts should be better targeted to engage potential customers.
 - High standard deviations, particularly for "Other sources" (SD = 1.495), indicate variability in responses, suggesting that some respondents rely on alternative, less conventional methods to discover yacht trips.

2. How is ICT applied in marketing to the smart marinas?

Table (8): respondents' evaluations of ICT applications in marketing for smart marinas.

Marketing Application	1%	2%	3%	4%	5%	Mean	SD	Rank	Attitude
Social Media Marketing and Engagement	0	0	9.8	31.1	59.1	4.49	.669	1	Strongly Agree
Customer Relationship Management (CRM) Systems	0	0	5.9	55.1	39.0	4.33	.583	2	Strongly Agree
Digital Advertising and Online Campaigns	0	3.9	13.7	47.3	35.0	4.13	.792	4	Agree
Mobile Marketing	2.0	0	13.7	47.3	37.0	4.17	.809	3	Agree
User-Generated Content and Reviews	2.0	9.8	23.3	37.5	27.5	3.79	1.016	7	Agree
Email Marketing Automation	3.9	2.0	17.4	37.5	39.5	4.06	.998	5	Agree
Data Analytics and Insights	7.8	15.4	37.3	31.4	8.1	3.16	1.040	8	Neutral
Loyalty Programs and Customer Retention	3.9	3.9	21.3	35.5	35.3	3.94	1.037	6	Agree
Online Presence and Website Management	2.0	5.9	14.0	29.4	48.8	4.17	1.006	3	Agree
Total mean	4.03								Agree

The table (8) presents respondents' evaluations of ICT applications in marketing for smart marinas. The analysis is based on mean scores, standard deviation, ranking, and Likert scale classification.

Key Findings

1. Overall Attitude Towards ICT in Marketing

- The total mean score is 4.03, indicating an overall “Agree” response.
- This suggests that respondents acknowledge the importance of ICT tools in marina marketing, with some methods being more widely used than others.

2. Most Effective ICT Marketing Tools ("Strongly Agree")

- Social Media Marketing and Engagement (Mean = 4.49, SD = 0.669) ranked the highest, indicating that respondents strongly agree on the impact of social media in promoting marinas. This highlights the need for an active digital presence on platforms like Facebook, Instagram, and Twitter.
- Customer Relationship Management (CRM) Systems (Mean = 4.33, SD = 0.583) also received strong agreement, reflecting the importance of personalized marketing, automated interactions, and customer data management.

3. Widely Used ICT Marketing Tools ("Agree")

- Digital Advertising and Online Campaigns (Mean = 4.13, SD = 0.792) and Mobile Marketing (Mean = 4.17, SD = 0.809) indicate that paid advertisements and mobile-based promotions are commonly used but not as highly rated as social media.

- Email Marketing Automation (Mean = 4.06, SD = 0.998) suggests that email campaigns play a significant role in customer engagement and retention.
 - Online Presence and Website Management (Mean = 4.17, SD = 1.006) highlights the importance of maintaining an informative and well-optimized website to attract customers.
4. Moderate Effectiveness ICT Tools ("Neutral")
- User-Generated Content and Reviews (Mean = 3.79, SD = 1.016) indicates mixed responses, suggesting that while online reviews are valuable, their impact varies across marinas.
 - Loyalty Programs and Customer Retention (Mean = 3.94, SD = 1.037) received a moderate score, indicating that some marinas use loyalty programs effectively, while others may not have fully integrated them.
 - Data Analytics and Insights (Mean = 3.16, SD = 1.040) had the lowest score, suggesting limited adoption or awareness of data-driven marketing strategies.

Insights and Implications

- Social media and CRM systems are the most effective ICT tools for marina marketing, emphasizing the importance of digital engagement and customer relationship management.
- Traditional digital marketing methods (advertising, email, and mobile marketing) are widely used, but their effectiveness varies.
- Data analytics received the lowest rating, suggesting that marinas may not be fully utilizing insights for decision-making and targeted marketing strategies.
- The high standard deviations (e.g., 1.040 for data analytics, 1.037 for loyalty programs) indicate variability in adoption, meaning some marinas actively use these tools while others do not.

This result supported the first question of the study, and also achieved the first objective of this study, i.e.,: Explore the availability of information technology methods in the Egyptian tourist marinas.

Chi-Square Test

This part shows the relations between some important variables in the field study by cross tabulations, it also shows the significance differences between some of these variables with use chi-square test, and find in these part correlations between the variables of the study.

Table (9): Age & actively use Information and Communication Technology (ICT) tools in their operations.

Chi-Square Tests			
	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	505.138 ^a	57	.000
Likelihood Ratio	431.534	57	.000
Linear-by-Linear Association	1.996	1	.158
N of Valid Cases	408		

a. 54 cells (67.5%) have expected count less than 5. The minimum expected count is .47.

The **Chi-Square test** was conducted to examine the relationship between **age and active use of ICT tools in yacht marina operations**. The results indicate a **statistically significant association** ($\chi^2 = 505.138$, $df = 57$, $p = 0.000$), meaning that ICT usage levels vary across different age groups. However, **54 cells (67.5%) had expected counts below 5**, with a **minimum expected count of 0.47**, suggesting an **uneven distribution among age categories**, which may impact the reliability of the test results. The **Likelihood Ratio test** ($\chi^2 = 431.534$, $p = 0.000$) supports the significance of this relationship, while the **Linear-by-Linear Association test** (1.996 , $p = 0.158$) indicates that the relationship is **not strictly linear**, meaning that ICT usage does not increase or decrease consistently with age. This suggests that while some age groups may actively adopt ICT in marina operations, others may have lower adoption rates, possibly due to differences in technological familiarity or job responsibilities. Given the high proportion of low expected counts, **grouping similar age categories or conducting post-hoc analyses** could enhance the reliability of the findings. Additionally, integrating **factors such as occupation and experience** may provide a deeper understanding of **ICT adoption trends across different age groups in yacht marina management**.

Table (10): Correlations benefits and learn about yacht trips

Correlations benefits and learn about yacht trips			
		benefits	learn about yacht trips
Benefits	Pearson Correlation	1	.233**
	Sig. (2-tailed)		.000
	N	408	408
learn about yacht trips	Pearson Correlation	.233**	1
	Sig. (2-tailed)	.000	
	N	408	408
**. Correlation is significant at the 0.01 level (2-tailed).			

The **Pearson correlation analysis** was conducted to examine the relationship between **perceived benefits of ICT in yacht marina management** and **how respondents learn about yacht trips**. The results indicate a **significant positive correlation** ($r = 0.233$, $p = 0.000$) at the **0.01 level**, suggesting that individuals who recognize greater benefits of ICT are more likely to have learned about yacht trips through various information sources, such as search engines, recommendations, advertisements, or other channels. However, the correlation strength is **weak**, indicating that while there is a relationship, and other factors may also influence how individuals discover yacht trips. The significance of this finding highlights the role of ICT in **enhancing visibility, marketing effectiveness, and accessibility of information about yacht tourism**. Further analysis could explore whether **specific marketing tools, such as digital campaigns or social media, have a stronger influence on perceptions of ICT benefits in yacht marina operations**.

5. Results and Conclusion

The findings of this study highlight the significant role of Information and Communication Technology (ICT) in marketing yacht marinas and enhancing tourist awareness of yacht trips along the Red Sea coast. The results provide empirical

evidence on how digital tools influence tourists' decision-making processes, the effectiveness of various marketing channels, and the demographic factors impacting ICT adoption in yacht tourism.

1. Tourists' Awareness of Yacht Trips

The analysis revealed that search engines and online platforms are the most influential sources for discovering yacht trips, indicating that digital presence plays a crucial role in attracting visitors. Social media marketing and recommendations from friends or travel networks were also significant contributors, while traditional advertisements and offline promotions were found to have a lesser impact. These results suggest that yacht marinas should focus more on enhancing their digital marketing strategies to capture potential tourists through online search and social media engagement.

2. The Role of ICT in Marina Marketing

ICT adoption in marketing was found to be highly effective in promoting yacht marinas, particularly through social media engagement, digital advertising, customer relationship management (CRM) systems, and mobile marketing. The results indicate that tourists respond positively to digital interactions, personalized marketing campaigns, and automated engagement tools such as email marketing and loyalty programs.

However, data analytics and insights were found to be underutilized, suggesting that many marinas do not fully leverage data-driven marketing strategies to optimize their promotional efforts. While CRM systems and social media campaigns were widely implemented, some marinas lacked a structured approach to measuring marketing effectiveness through analytics and customer data tracking.

3. Influence of Demographic Factors

The study found a strong correlation between demographic factors (age, nationality, and occupation) and ICT adoption in yacht tourism marketing. European and North American tourists showed higher engagement with digital marketing strategies, particularly through search engines, social media, and mobile applications. In contrast, Middle Eastern tourists were more likely to rely on recommendations and traditional advertisements.

Educational background also played a role, as respondents with higher education levels (Bachelor's, MSc, or PhD) were more inclined to use online resources and digital platforms to explore yacht trips. This suggests that targeted marketing campaigns should consider demographic preferences to improve digital outreach effectiveness.

Additionally, the study found that younger tourists (aged 20-40) are more likely to rely on online searches and social media, whereas older tourists (41 and above) tend to prefer word-of-mouth recommendations. This highlights the need for customized digital marketing strategies targeting different age groups to maximize reach and engagement.

6. Conclusion

The study concludes that ICT has a profound impact on marketing strategies for yacht marinas and plays a key role in raising awareness of yacht trips among tourists. The findings emphasize the need for strong digital marketing campaigns, enhanced social media presence, and the integration of CRM and automation tools to improve visitor engagement.

However, the results also indicate that some ICT marketing tools, such as data analytics and customer insights, are not fully utilized, presenting an opportunity for marinas to adopt a more data-driven approach to tourism marketing. Additionally, demographic factors significantly influence how tourists interact with digital marketing channels, meaning that marketing efforts should be tailored to different audience segments based on age, nationality, and educational background.

To remain competitive in the digital tourism landscape, yacht marinas must continue investing in advanced ICT solutions, optimize digital marketing strategies, and enhance their online visibility to attract a broader audience and improve visitor engagement.

7. Recommendations

Based on the findings, the study provides several key recommendations to improve ICT-based marketing strategies and enhance tourists' awareness of yacht trips:

1. Strengthening Digital Marketing Strategies

Marinas should focus on expanding their digital presence through SEO-optimized websites, social media platforms, and targeted online campaigns. Since search engines and social media were found to be the most effective marketing channels, marinas must:

- Invest in search engine optimization (SEO) to improve ranking on Google and other search engines, making it easier for tourists to discover yacht trips.
- Enhance social media marketing efforts by using engaging content, influencer collaborations, and interactive campaigns on platforms like Instagram, Facebook, and TikTok.
- Implement retargeting strategies using digital ads to capture potential tourists who have previously searched for yacht trips.

2. Leveraging CRM and Automated Marketing Tools

Customer relationship management (CRM) systems should be further integrated to personalize communication with tourists and enhance engagement. Marinas should:

- Use email automation for personalized promotions, booking reminders, and loyalty programs.
- Implement chatbots and AI-driven customer support systems to provide instant responses to inquiries.
- Develop mobile-friendly interfaces that allow tourists to book and customize their yacht trips conveniently.

3. Enhancing Data-Driven Decision-Making

One of the key findings was the underutilization of data analytics in marketing efforts. To address this, marinas should:

- Adopt data tracking and analytics tools to monitor visitor engagement, track booking trends, and optimize marketing campaigns based on customer preferences.
- Use predictive analytics to anticipate tourist demand and adjust pricing strategies accordingly.
- Regularly assess the effectiveness of marketing campaigns using data-driven insights, allowing for continuous improvement.

4. Targeted Marketing Based on Demographics

Since different demographic groups engage with marketing channels in unique ways, marinas should implement segmented marketing approaches:

- For younger tourists (20-40 years): Focus on social media engagement, interactive content and mobile marketing strategies.
- For older tourists (41+ years): Prioritize email marketing, online advertisements, and direct recommendations from travel agencies.
- For international tourists: Provide multi-language content and region-specific promotions to appeal to European, Middle Eastern, and North American visitors.

5. Improving User Experience in Online Booking Systems

To attract more tourists, yacht marinas should enhance the efficiency and usability of online booking systems by:

- Developing user-friendly and visually appealing websites that simplify the booking process.
- Integrating secure payment gateways to provide smooth and hassle-free transactions.
- Offering virtual tours and real-time yacht availability to help tourists make informed decisions before booking.

6. Increasing Awareness through Influencer and Affiliate Marketing

Marinas can expand their reach by collaborating with travel bloggers, influencers, and tourism websites. This can be achieved by:

- Engaging social media influencers to promote yacht trips through travel vlogs and reviews.
- Partnering with online travel agencies (OTAs) such as Booking.com and Expedia to increase booking accessibility.
- Encouraging user-generated content by offering discounts or incentives for tourists who share their yacht experiences online.

7. Encouraging ICT Adoption in Smaller Marinas

While larger marinas may already implement ICT strategies, smaller marinas should receive support to improve their digital marketing presence. This can be done by:

- Providing digital marketing training sessions for marina staff to improve ICT adoption.
- Exploring government or private funding opportunities to assist small businesses in upgrading their ICT infrastructure.

- Developing shared digital platforms where smaller marinas can collectively market their services to attract more tourists.

8. Enhancing Cybersecurity and Data Protection

With the increased reliance on digital marketing and online booking systems, marinas must ensure strong cyber security measures to protect customer data. Recommended actions include:

- Implementing secure encryption technologies to protect online transactions.
- Regularly updating security protocols to safeguard against cyber threats.
- Educating tourists on data privacy to build trust in online booking platforms.

Final Thoughts

By implementing these recommendations, yacht marinas along the Red Sea coast can strengthen their digital marketing strategies, enhance visitor engagement, and attract a broader range of tourists. The integration of advanced ICT solutions, data-driven decision-making, and targeted marketing strategies will not only increase awareness of yacht trips but also improve the overall visitor experience, ensuring long-term success in the maritime tourism industry.

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الملخص العربي

أدى دمج تكنولوجيا المعلومات والاتصالات إلى تحويل استراتيجيات التسويق وتجارب الزوار في صناعة مراسي اليخوت. تبحث هذه الدراسة في دور تكنولوجيا المعلومات والاتصالات في تسويق مراسي اليخوت على طول ساحل البحر الأحمر، مع التركيز على أدوات التسويق الرقمي، وإشراك العملاء، ومصادر معلومات الزوار. كما تستكشف كيف يكتشف السياح وأصحاب المصلحة رحلات اليخوت وتقيم تأثير تكنولوجيا المعلومات والاتصالات على تحسين تجربة الزائر الإجمالية. تم تطبيق صيغة كوتشران، حيث يتم استخدامها على نطاق واسع للسكان الكبار، مما يضمن أن العينة تعكس المجموعة المستهدفة بشكل كافٍ. بالإضافة إلى ذلك، تم اعتبار صيغة سلوفين لضبط حجم العينة بناءً على إجمالي السكان وهامش الخطأ. تم استخدام مستوى ثقة 95٪ وهامش خطأ 5٪ لتعزيز الموثوقية الإحصائية. تمت الإشارة أيضًا إلى جدول حجم العينة الخاص بـ Morgan و Krejcie للتحقق من صحة الرقم النهائي. وبناءً على هذه الأساليب، تم توزيع 408 استبيانًا على مختلف أصحاب المصلحة، بما في ذلك السياح ومستأجري اليخوت ومشغلي المراسي والمحترفين في مجال السياحة، مما يضمن عينة متنوعة وتمثيلية للدراسة. وتم تحليل البيانات المجمعة باستخدام أساليب إحصائية وصفية واستدلالية، بما في ذلك اختبارات مربع كاي وتحليل ارتباط بيرسون، لفحص العلاقات بين الخصائص الديموغرافية والوعي بتكنولوجيا المعلومات والاتصالات وفعالية التسويق الرقمي. وتكشف النتائج أن وسائل التواصل الاجتماعي ومحركات البحث والإعلان الرقمي هي الأدوات الأكثر فعالية للترويج لرحلات اليخوت وتعزيز مشاركة الزوار. ومع ذلك، لا تزال تحليلات البيانات وبرامج ولاء العملاء غير مستغلة بشكل كافٍ، مما يشير إلى وجود فجوات في استراتيجيات التسويق التي تعتمد على تكنولوجيا المعلومات والاتصالات. وفي حين أدت تكنولوجيا المعلومات والاتصالات إلى تحسين تفاعل العملاء والحجز عبر الإنترنت والمشاركة بشكل كبير، إلا أن التحديات مثل التكيف مع التكنولوجيا والمحو الأمية الرقمية بين بعض أصحاب المصلحة في المراسي لا تزال قائمة. وخلصت الدراسة إلى أن تكنولوجيا المعلومات والاتصالات تعد أداة حيوية لتسويق مراسي اليخوت وتعزيز تجارب الزوار، ومع ذلك فإن المزيد من الاستثمارات في التخصيص القائم على الذكاء الاصطناعي والتسويق الرقمي المتقدم وأنظمة إدارة علاقات العملاء ضرورية لتعظيم تأثيرها. وتوصي الدراسة بتعزيز الحضور عبر الإنترنت من خلال استراتيجيات تحسين محركات البحث، والاستفادة من المحتوى الذي ينشئه المستخدمون من أجل الأصالة، ودمج التحليلات المدعومة بالذكاء الاصطناعي لتحسين استهداف العملاء والاحتفاظ بالزوار.

الكلمات المفتاحية

تكنولوجيا المعلومات والاتصالات، والتسويق الرقمي، ومراسي اليخوت، وتجربة الزوار، وإشراك العملاء.