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Research Article

Compilation of the Web Page Design Pattern: A Case Study of Private Sports Clubs in Selected Countries

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Abstract

Objective: Websites serve as the showcase for sports clubs, and their optimal design attracts users. Combining two evaluation models with a modern approach offers a unique method for presenting an innovative model. The aim of the present study was to develop a framework for designing the web pages of private sports clubs based on the evaluation and comparative analysis of private sports clubs in Iran, the United Kingdom, Germany, and Spain. *Methodology*: The research method, in terms of its objective, was applied and descriptive-comparative in nature. The statistical population of this study comprised 80 websites of private sports clubs in Iran, Germany, the United Kingdom, and Spain. To identify the websites of private sports clubs, Google Maps and its advanced settings (selecting the location for the keyword search) were used, along with the keyword "private sports club" in the four countries. Website evaluation was conducted based on the ISO9126-1 model in accordance with the IEEE1061 license. In this evaluation, two models-Web Assessment Index and Web-QEM-were employed. The checklist for the first model (Marincas and Vultur, 2007) includes five main criteria: accessibility, navigability, speed, reliability, and content, assessed on a five-point scale ranging from "very unsuitable" (0-20) to "very suitable" (81-100). The second model (Olsina et al., 1999) consists of four main criteria: usability, functionality, reliability, and efficiency, evaluated on a five-point scale from 0 to 1. In this study, various online and offline software tools were used for the analysis of the criteria. *Findings*: The results showed that the final ranking of the websites according to both the Web-QEM and Web Assessment Index evaluation methods was, respectively, the United Kingdom, Spain, Germany, and Iran. In the Web-QEM method, the websites of the United Kingdom scored 70.6%, Spain 67.15%, Germany 61.3%, and Iran 47.5% out of 100. In the Web Assessment Index method, the websites of the United Kingdom scored 69.55%, Spain 68.85%, Germany 60.25%, and Iran 42.7% out of 1. In both methods, the websites of private sports clubs in the United Kingdom demonstrated the best status, while those in Iran showed the weakest. *Conclusion:* Managers of private sports clubs should devote the greatest attention to improving the evaluation standards of their clubs' websites in order to achieve suitable professional success in their business.

Keywords

Evaluation, Design Pattern, Private Sports Clubs, Web Pages

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1. Introduction

Today, the World Wide Web is one of the most important tools that many people around the world use as the main tool to access information [14], including private sports clubs that have sought to increase useful communication between websites and their users and have always tried to increase this effective communication [10].

Given the growing capabilities of the Internet and increased access for individuals, the number of visitors to websites has increased today, and the importance of website quality has become more important than ever. On the other hand, given the unique opportunities and advantages that Internet technology, especially the World Wide Web, has created, today there are few organizations, institutions or any governmental or private entities that have not designed a website or information base to take greater advantage of this technology [22]. Therefore, the website is very important as a reflection of the activities of an organization or private company and a communication bridge between stakeholders, and this is obvious to everyone. Although the measures taken in this regard are very valuable and worthwhile and indicate the realization of the importance and position of the Internet and the World Wide Web, it must be acknowledged that just designing a website does not provide the context for use and, as a result, achieving the desired goals [18]. Information and communications technology, as one of the new human technologies, has not only undergone profound changes itself, but is also rapidly affecting lifestyles, business, teaching methods, transportation, security issues, and more. Today, the use of information and communication technologies in private sports clubs in the country is very tangible, and club managers and coaches use it more to develop and upgrade their scientific and technical level. They also advertise their business space through cyberspace and are always trying to introduce their club services [11].

Today, having a user-friendly website is considered a key factor in flourishing other production factors in private sports clubs, so much so that the impact of this capability for more communication with athletes and increasing business investment revenues on websites has received a lot of attention. So much so that sports club websites are considered a kind of wealth creation tool. On the other hand, the country's private sports clubs today face complex, rapidly changing, and in some ways unprecedented environments. In order for private sports clubs, including those in Iran, to become effective and efficient, they must continuously align their internal website configurations with each other [7] and pay special attention to the club development process to respond to today's changing world, because its goal as an essential element is to strive for superiority and create a competitive advantage. The country's private sports clubs can design and create a website by selecting and hiring, purchasing, or upgrading the quality of their current websites through comprehensive quality assessment and comparison with other clubs and modeling them. With this approach, they improve the capabilities of their website [8].

Clubs should have quality websites. Because there is no human interaction on the website and interactions flow through technology. Some aspects of human interaction such as honesty, friendship, cooperation, affection, commitment, flexibility cannot be replaced by technology and the lack of these aspects must be compensated by improving website quality [31]. To evaluate these improvements, one must act using evaluation methods based on standard principles and rules and quality evaluation models, which have great diversity. The approach of some models is the users' perspective and the approach of some others is to examine the standards observed in designing websites through checklists [27]. Methods and models that are under international standards are two models: Web Assessment Index and Web-QEM evaluation model which follow ISO9126-1 models under IEEE1061 license. Following these standards includes key design criteria including accessibility, speed, navigation, content and reliability of key website design elements [5]. Therefore, regular review and evaluation of the website in terms of structure and content, and subsequently identifying their strengths and weaknesses, will provide appropriate strategies for policymaking and decision making in this area [3]. Also, the popularity and spread of using the Internet and websites has created opportunities for sports clubs that make using the Internet a key component in their marketing strategy. Sports club managers, especially private sports clubs, enhance their communication with users and fans by providing up-to-date information about the club, products and services such as updated match results, news and seasonal tickets [20].

Given the rapid and unexpected developments of the present era and the importance of the role and position of sports and its connection with different segments of the people, the need for clubs to adapt to technology and the necessities of the modern world is obvious, so that by optimal use of information technology as a valuable opportunity to respond to rapid environmental changes and increase efficiency [23]. It seems that with the growth of people's internet usage, sports clubs have sought to increase communication through cyberspace and have provided information and electronic services through it [29]. In website design, in addition to software and hardware issues, the quality of information provided to the end user affects the use of the website [9]. Evaluating club websites is important because it leads to understanding the structure and content of the website, and helps identify their strengths and weaknesses [4]. To what extent the content and structure of private sports club websites are based on evaluation principles and standards? Do they have the necessary accessibility and capabilities based on standards? Given the advancement of web technologies, to what ex-

tent have private sports club websites been able to adapt to these changes? And have they been able to find a suitable position on the web compared to other private sports club websites? To achieve these questions, private sports club websites need to be evaluated.

The design of sports club websites or the changes made to them have led to the creation of new features such as automation services, virtual training, file transfer services, etc. [26]. Therefore, the question always arises as to what extent the changes made to websites are based on website quality assessment standards? To examine this issue, it seems that scientific and valid tools should be used to evaluate club websites. However, due to non-compliance with some principles and standards, private sports club websites may be designed differently in terms of quality, structure and user services. These different designs can lead to problems in user access to required information, so that websites cannot actually provide optimal services. Therefore, in order to examine the structure and content of websites and their compliance with quality assessment standards, and to prevent non-standard designs, it seems necessary that private sports club websites be continuously evaluated. The most comprehensive and latest method based on quality assessment standards and models is the Web Assessment Index which was used in this study to evaluate the websites of private sports clubs in Iran, England, Germany and Spain. This study seeks to answer the question: What is the website design pattern of private sports clubs based on comparative evaluation and study of Iranian clubs and selected countries?

2. Methodology

The research method is descriptive and applied in terms of purpose. The statistical population of the present study included the websites of private sports clubs in Iran, England, Spain and Germany, totaling 80 private sports club websites (Tables 1, 2, 3 and 4), which was determined through initial investigations.

Table 1. *websites of private sports clubs in Iran.*

Club's Name	Website's Links	Club's Name	Website's Links
Zaraban	zaraban.group	Arsha Club	arshaclub.com
Shahin	www.shahinkerman.ir	Cheshmeh Complex	cheshmehclub.com
Mobarez Academy	www.fighter-ac.ir	Bahrampour Complex	bahrampourclub.com
Asiabadi	asiabody.com	Part Novin	partnovin.com
Soboika	souboukai.asnaf.top	Rosha	r8fitness.com
Miead	www.hungar.org	Energy +	energyplus.ir
Padideh	padidehclub.com	Zaki	zakee.ir
Bahrami	bahramiclub.com	Kahkeshan	kahkeshan-gym.ir
Ayandeh Sazan	www.asbasket.com	Sinergy	monavari-gym.com
Iran Chess	www.shatranjiran.com	Rea	rheaclub.ir

Table 2. *websites of private sports clubs in England.*

Club's Name	Website's Links	Club's Name	Website's Links
Richmond volleyball	richmondvolleyball.co.uk	Swim Ireland	swimireland.ie
Better	better.org.uk	Surfing England	surfingengland.org
Badminton wales	badminton.wales	DG1 leisure	dg1leisure.co.uk
Basketball Northern Ireland	basketballni.com	Nothing Hill	bodyworkswest.co.uk
Basketball Wales	basketball.wales	McLaren leisure	mclarenleisure.co.uk
Basketball Scotland	basketballscotland.co.uk	Haddington ASC	swimhaddington.co.uk
Ayr Storm	ayrstorm.com	Roehampton	roehamptonclub.co.uk

Club's Name	Website's Links	Club's Name	Website's Links
Baseball-Softball UK	baseballsoftballuk.com	Parsons Green	parsonsgreenclub.com
England Squash	englandsquash.com	Glasgow Nomads	glasgownomads.co.uk
Sport Northern Ireland	sportni.net	All Stars Boxing	allstars-gym.co.uk

Table 3. websites of private sports clubs in Germany.

Club's Name	Website's Links	Club's Name	Website's Links
Fit Klusiv	fitklusiv.de	Tennis in Berlin	svbb-tennis.de
SG Stern	sgstern.de	Mag DeBurg Golf	firstgolf-magdeburg.de
Well You Fitness	wellyou.eu	SAFO	sportclub-safo.de
Tennis Club SCC Berlin	tcsccberlin.de	Londes sport Bund	landessportbund-hessen.de
JF Club	justfit-club.com	Strandbad Grunau 1908	strandbadgruenau.de
SC Frankfurt 80	sc1880.de	Bayerischer Landes-sport Vernad e.v.	blsv.de
Lufthansa Sportverein	lsvham.de	Rheinland-PFALZ	lsb-rlp.de
MunichHealth Sports Club	munichhealthclub.com	Urban Sports Club	urbansportsclub.com/en
Leo's Sports Club	leos.tv	McFit	mcfit.com/de
Private Sport Club	private-sportsclub.de	Green Gym Berlin	greengymberlin.de

Table 4. websites of private sports clubs in Spain.

Club's Name	Website's Links	Club's Name	Website's Links
Bel Air Tennis Club	belairtennis.com	The Club Gym	jointheclub.es
Don Carlos	doncarlosresort.com	Fit Club Mallorca	fitclubmallorca.com
Club Del Sol	tenniscostadelsol.com	David Lloyd	davidlloyd.es
Reial Club De Tennis	rctb1899.es	Club Fit	club-fit.eu
Puente Romano	puenteromano.com	Real Canoe N.C.	realcanoe.es
Manolo Santa	manolosantana.es	CN Metropole	cnmetropole.com
Elite Tennis Academy	elitennis.com	Club Delmar	clubdelmardesanamaro.com
Miraflores Tennis Club	miraflorestennisclub.com	Abama Golf	abamagolf.com
Royal Tennis Club	royaltennisclub.com	Bfit Ibiza Sports Club	bfitibiza.com
Health Club Maspalomas	maspalomasgym.com	Havana Gym Maspalomas	havana-gym.com

To search for private sports club websites, Google Maps and its advanced settings (selecting a location for keyword search) and the keyword "private sports club" in Iran, England, Spain and Germany were used.

To evaluate the websites, ISO9126-1 models were used which follow the IEEE1061 license. These models have standard checklists under the named license. In this study, the Web Assessment Index model and the Web-QEM model with the named standard were used. The Web Assessment Index model checklist was presented by Marincas and Vultur (2007) which has 5 main criteria (accessibility, navigation, speed, reliability, content) and its standard measurement scale is a 5-point spectrum including very inappropriate (0-20), inappropriate (21-40), average (41-60), appropriate (61-80) and very appropriate

(81-100) [19]. The Web-QEM model checklist was presented by Olsina et al. (1999) which has 4 main criteria (usability, performance, reliability and efficiency) and its standard measurement scale is a 5-point spectrum including very inappropriate (0-0.20), inappropriate (0.21-0.40), average (0.41-0.60), appropriate (0.61-0.80) and very appropriate (0.81-1) [24]. The main criteria scores were obtained from the sum of scores given to sub-criteria. To measure the characteristics and subscales of the variables of the mentioned models, appropriate software tools were used in accordance with those standards, which are stated in Table 5.

Table 5. *Online and offline software's for evaluating Web Assessment Index and Web-QEM criteria.*

Type	Name
Online	Google PageSpeed Insights
Online	GTmetrix.com
Online	Jetseo.ir
Online	analytics.upseo.ir
Online	WAVE Evaluation Tool
Online	EqualWeb Accessibility Checker
Offline	SSW Link Auditor 4.41
Offline	SiteMonitor Enterprise 4.03
Offline	Xens link sleuth
Offline	Screaming Frog SEO Spider

3. Results

In the present study, first the official websites of private sports clubs in Iran, England, Spain and Germany were identified using Google Maps and the keyword "private sports club". Then, using online and offline standard tools that followed website design standards and are used worldwide today and are somehow international, the indices used in the Web Assessment Index model and Web-QEM model checklists were examined to identify the status of websites from the perspective of this model based on its main and sub-criteria. The results of evaluating websites in Iran are shown in Tables 6, 7, England in Tables 8, 9, Germany in Tables 10, 11 and Spain in Tables 12, 13.

Table 6. *evaluation of the websites of Iran's private sports clubs based on the main criteria of the Web Assessment Index method.*

Index	Web Assessment Index							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Total	Average Score	Standard Deviation
Accessibility	0%	5%	60%	30%	5%	100%	6.15	1.348
Speed	15%	15%	30%	40%	0%	100%	5.45	2.038
Navigation	10%	40%	20%	25%	5%	100%	5.05	2.089
Reliability	20%	10%	10%	40%	20%	100%	6	2.902
Content	15%	55%	25%	5%	0%	100%	20.05	9.053
Final Result	5%	35%	35%	25%	0%	100%	8.54	2.68

Table 7. *evaluation of the websites of Iran's private sports clubs based on the main criteria of the Web-QEM method.*

Index	Web-QEM							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Total	Average Score	Standard Deviation
Usability	5%	35%	45%	10%	5%	100%	0.2215	0.08331
Functionality	55%	10%	5%	5%	25%	100%	0.0656	0.06104
Reliability	20%	15%	25%	25%	15%	100%	0.0620	0.03222

Index	Web-QEM							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Total	Average Score	Standard Deviation
Performance	10%	15%	10%	50%	15%	100%	0.1260	0.1260
Final Result	5%	35%	35%	25%	0%	100%	0.1188	0.03873

Table 8. evaluation of the websites of England's private sports clubs based on the main criteria of the Web Assessment Index method.

Index	Web Assessment Index							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Result	Very Undesirable	Undesirable
Accessibility	0%	10%	15%	15%	60%	100%	8.30	2.17
Speed	0%	0%	35%	45%	20%	100%	7.20	1.32
Navigation	0%	20%	15%	15%	50%	100%	7.55	2.58
Reliability	5%	5%	15%	40%	35%	100%	7.45	2.13
Content	0%	10%	30%	45%	15%	100%	39.05	10.73
Final Result	0%	10%	10%	50%	30%	100%	13.91	3.11

Table 9. evaluation of the websites of England's private sports clubs based on the main criteria of the Web-QEM method.

Index	Web-QEM							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Total	Average Score	Standard Deviation
Usability	5%	10%	20%	50%	15%	100%	0.3085	0.10132
Functionality	20%	20%	5%	5%	50%	100%	0.1090	0.06464
Reliability	5%	0%	0%	20%	75%	100%	0.0995	0.02328
Performance	0%	0%	0%	15%	85%	100%	0.1890	0.02075
Final Result	0%	10%	10%	50%	30%	100%	0.1765	0.03827

Table 10. evaluation of the websites of Germany's private sports clubs based on the main criteria of the Web Assessment Index method.

Index	Web Assessment Index							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Result	Very Undesirable	Undesirable
Accessibility	0%	5%	20%	35%	40%	100%	7.90	1.804
Speed	0%	5%	20%	65%	10%	100%	7.10	1.334
Navigation	0%	35%	15%	30%	20%	100%	6.25	2.197
Reliability	5%	0%	15%	50%	30%	100%	7.25	1.943

Index	Web Assessment Index							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Result	Very Undesirable	Undesirable
Content	5%	0%	15%	50%	30%	100%	31.75	9.722
Final Result	0%	10%	30%	50%	10%	100%	12.05	2.72

Table 11. evaluation of the websites of Germany's private sports clubs based on the main criteria of the Web-QEM method.

Index	Web-QEM							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Total	Average Score	Standard Deviation
Usability	0%	25%	25%	50%	0%	100%	0.2855	0.08114
Functionality	30%	30%	5%	15%	20%	100%	0.0790	0.05812
Reliability	0%	10%	20%	30%	40%	100%	0.0835	0.02477
Performance	0%	10%	20%	30%	40%	100%	0.1650	0.02819
Final Result	0%	10%	30%	50%	10%	100%	0.1533	0.03426

Table 12. evaluation of the websites of Spain's private sports clubs based on the main criteria of the Web Assessment Index method.

Index	Web Assessment Index							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Result	Very Undesirable	Undesirable
Accessibility	0%	0%	5%	10%	85%	100%	9.55	1.05
Speed	0%	0%	25%	55%	20%	100%	7.45	1.19
Navigation	0%	10%	10%	25%	55%	100%	8.20	2.21
Reliability	5%	0%	15%	50%	30%	100%	7.60	2.01
Content	0%	15%	35%	45%	5%	100%	36.05	9.48
Final Result	0%	0%	35%	60%	15%	100%	13.77	2.10

Table 13. evaluation of the websites of Spain's private sports clubs based on the main criteria of the Web-QEM method.

Index	Web-QEM							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Total	Average Score	Standard Deviation
Usability	0%	5%	10%	85%	0%	100%	0.3445	0.06878
Functionality	20%	50%	10%	0%	20%	100%	0.0710	0.05300
Reliability	0%	0%	0%	45%	55%	100%	0.0955	0.01234
Performance	0%	5%	5%	35%	55%	100%	0.1605	0.03576

Index	Web-QEM							
Result	Very Undesirable	Undesirable	Medium	Desirable	Very Desirable	Total	Average Score	Standard Deviation
Final Result	0%	0%	25%	60%	15%	100%	0.1679	0.02889

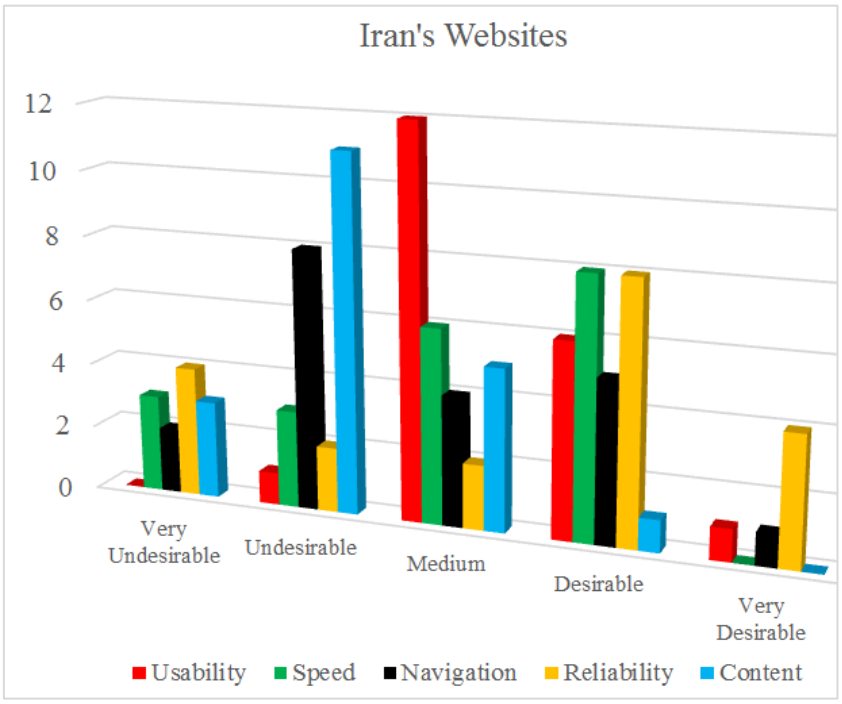

Figure 1. *The status evaluation diagram of the websites of private sports clubs in Iran based on the main criteria of the Web Assessment Index method.*

The results of evaluating the websites of Iran's private sports clubs based on the accessibility criterion with an average score of (6.15) show that 60% of the websites are in an average condition. The speed criterion with an average score of (5.45) shows that 40% of the websites are in an appropriate condition. The navigation criterion with an average score of (5.05) shows that 40% of the websites are in an inappropriate condition. The reliability criterion with an average score of (6) shows that 40% of the websites are in an appropriate condition and the content criterion with an average score of (20.05) shows that 55% of the websites are in an inappropriate condition.

In summary, the Web Assessment Index method in evaluating the websites of Iran's private sports clubs with an average score of (8.54) shows that 35% of the websites are in an inappropriate condition and 35% are also in an average condition. The Synergy club website received the lowest score (19) and the two Asiabadi and Zarban club websites received the highest score (62) using the Web Assessment Index method.

The results of evaluating Iran's private sports clubs' websites based on usability criterion with an average score of (0.2215) show that 45% of the websites are in an average condition. The performance capability criterion with an average score of (0.0656) shows that 55% of the websites are in a very inappropriate condition. The reliability criterion with an average score of (0.0620) shows that 25% of the websites are in an average condition and 25% are also in an appropriate condition, and the efficiency criterion with an average score of (0.1260) shows that 50% of the websites are in an appropriate condition. In summary, the Web-QEM method in evaluating Iran's private sports clubs' websites with an average score of (0.1188) jointly showed 35% in an inappropriate condition and 35% in an average condition. The Synergy club website received the lowest score (0.02) and the two Ayandehsazan club websites received the highest score (0.74) using the Web-QEM method.

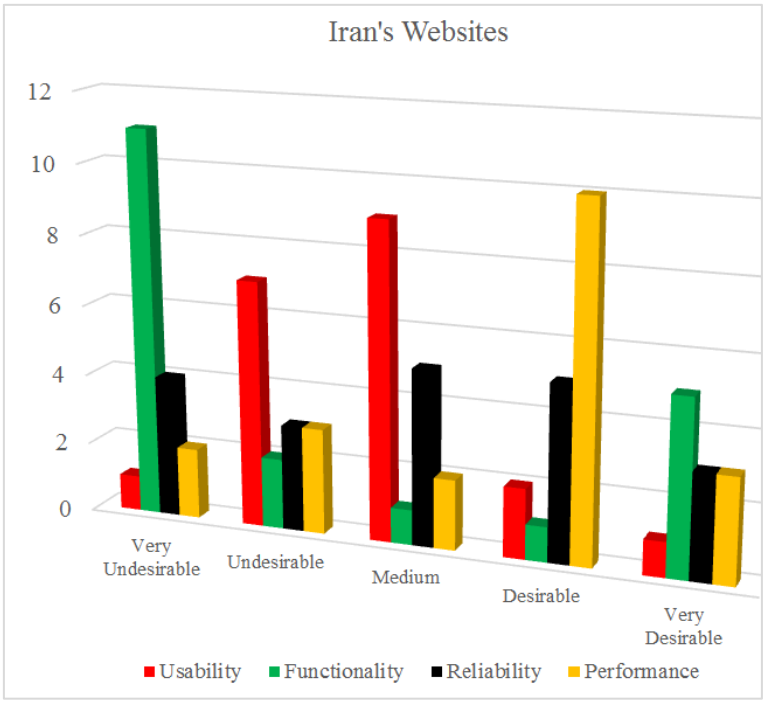

Figure 2. *The status evaluation diagram of the websites of private sports clubs in Iran based on the main criteria of the Web-QEM method.*

The results of evaluating the websites of England's private clubs based on the accessibility criterion with an average score of (8.30) show that 60% of the websites are in a very appropriate condition. The speed criterion with an average score of (7.20) shows that 45% of the websites are in an appropriate condition. The navigation criterion with an average score of (7.55) shows that 50% of the websites are in a very appropriate condition. The reliability criterion with an average score of (7.45) shows that 40% of the websites are in an appropriate condition and the content criterion with an average score of (39.05) shows that 45% of the websites are in an appropriate condition.

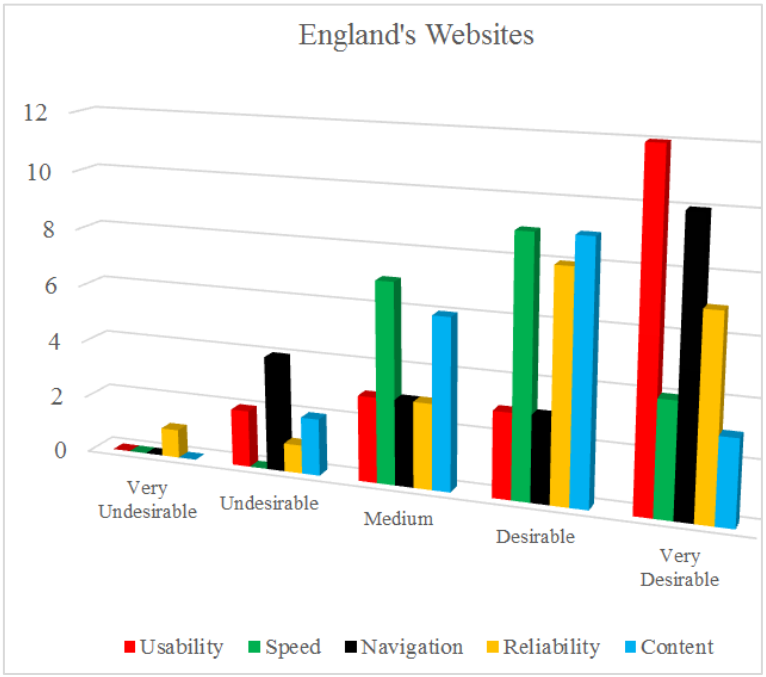

Figure 3. *Status diagram of the websites of private sports clubs in England based on the main criteria of the Web Assessment Index method.*

In summary, the Web Assessment Index method in evaluating the websites of England's private sports clubs with an average score of (13.91) shows that 50% of the websites are in an appropriate condition and 30% are also in a very appropriate condition.

The results of evaluating England's private sports clubs' websites based on usability criterion with an average score of (0.3085) show that 50% of the websites are in an appropriate condition. The performance capability criterion with an average score of (0.1090) shows that 50% of the websites are in a very appropriate condition. The reliability criterion with an average score of (0.0995) shows that 75% of the websites are in a very appropriate condition, and the efficiency criterion with an average score of (0.1890) shows that 85% of the websites are in a very appropriate condition. In summary, the Web-QEM method in evaluating England's private sports clubs' websites with an average score of (0.1679) shows that 50% of the websites are in an appropriate condition. The two Richmond Volleyball Club and Air Storm Club websites received the lowest score (0.40) and the Best Club website received the highest score (0.94) using the Web-QEM method.

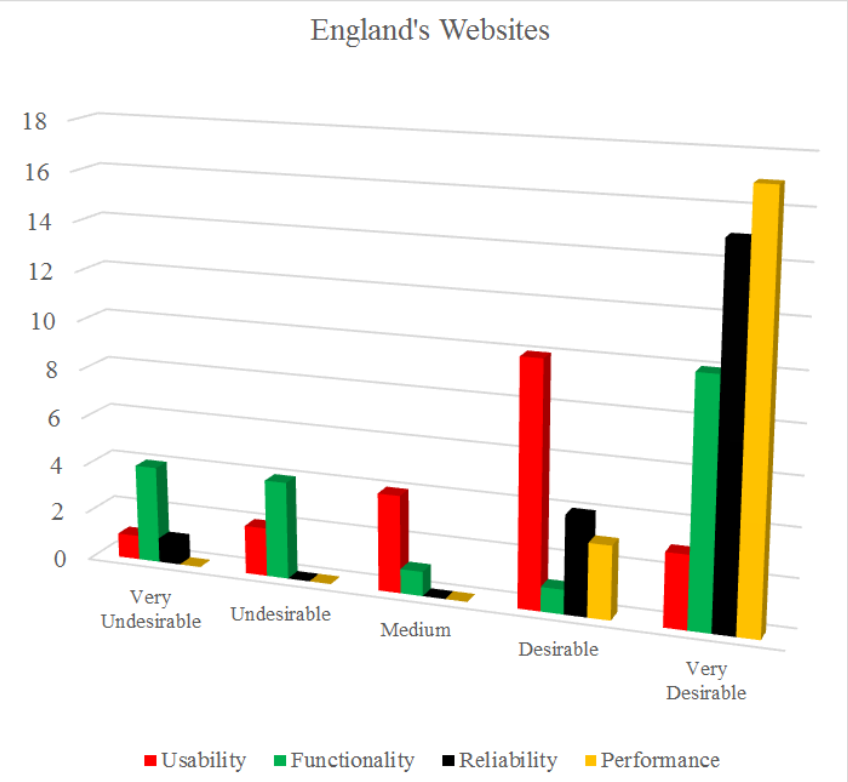

Figure 4. *Status diagram of the websites of private sports clubs in England based on the main criteria of the Web-QEM method.*

The results of evaluating the websites of Germany's private clubs based on the accessibility criterion with an average score of (7.90) show that 40% of the websites are in a very appropriate condition. The speed criterion with an average score of (7.10) shows that 65% of the websites are in an appropriate condition. The navigation criterion with an average score of (6.25) shows that 35% of the websites are in an inappropriate condition. The reliability criterion with an average score of (7.25) shows that 50% of the websites are in an appropriate condition and the content criterion with an average score of (31.75) shows that 50% of the websites are in an appropriate condition.

In summary, the Web Assessment Index method in evaluating the websites of Germany's private sports clubs with an average score of (12.05) shows that 50% of the websites are in an appropriate condition and 30% are also in an average condition.

The results of evaluating Germany's private sports clubs' websites based on usability criterion with an average score of (0.2855) show that 50% of the websites are in an appropriate condition. The performance capability criterion with an average score of (0.0790) shows that 30% of the websites are in a very inappropriate condition and 30% are also in an inappropriate condition. The reliability criterion with an average score of (0.0835) shows that 40% of the websites are in a very appropriate condition, and the efficiency criterion with an average score of (0.1650) shows that 40% of the websites are in a very appropriate condition.

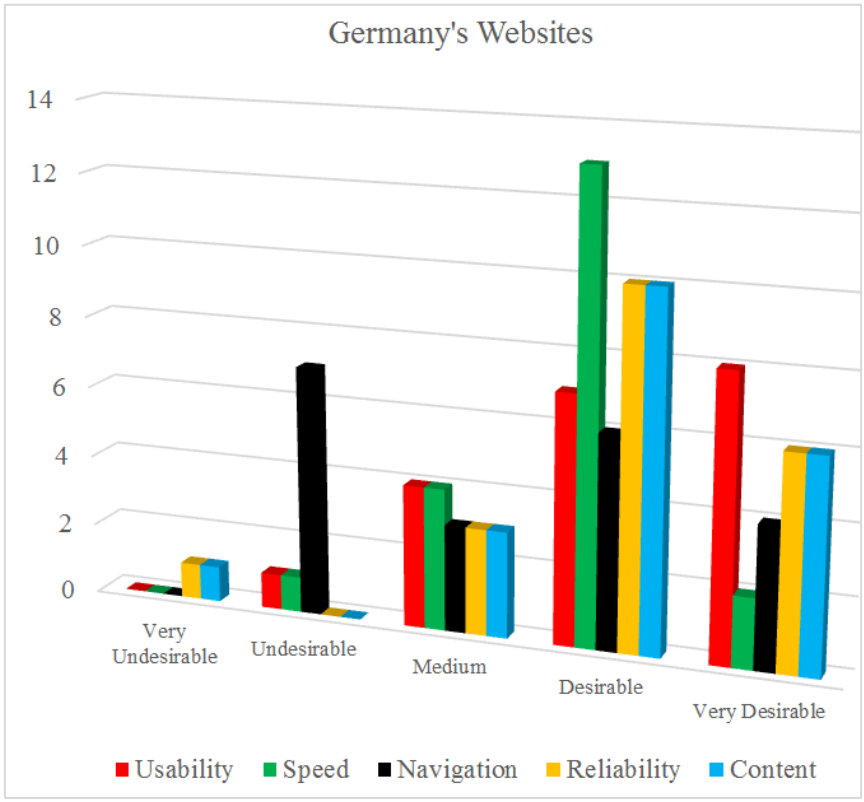

Figure 5. *Status diagram of the websites of private sports clubs in Germany based on the main criteria of the Web Assessment Index method.*

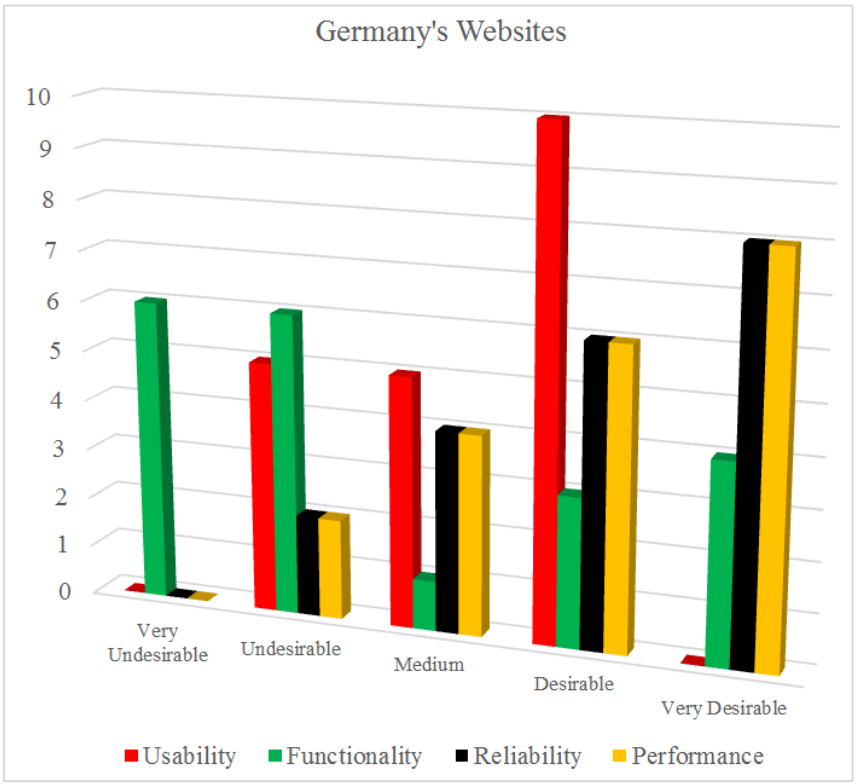

Figure 6. *Status diagram of the websites of private sports clubs in Germany based on the main criteria of the Web-QEM method.*

In summary, the Web-QEM method in evaluating Germany's private sports clubs' websites with an average score of (0.1533) shows that 50% of the websites are in an appropriate condition. The Luftana Sports Complex website received

the lowest score (0.37) and the two Rheinland Sports Complex and Berlin Tennis Club websites received the highest score (0.81) using the Web-QEM method.

The results of evaluating Spain's private sports clubs' websites based on accessibility criterion with an average score of (9.55) show that 85% of the websites are in a very appropriate condition. The speed criterion with an average score of (7.45) shows that 55% of the websites are in an appropriate condition. The navigation criterion with an average score of (8.20) shows that 55% of the websites are in a very appropriate condition. The reliability criterion with an average score of (7.60) shows that 50% of the websites are in an appropriate condition and the content criterion with an average score of (36.05) shows that 45% of the websites are in an appropriate condition. In summary, the Web Assessment Index method in evaluating Spain's private sports clubs' websites with an average score of (13.77) shows that 60% of the websites are in an appropriate condition. The Maspalomas Fitness Club website received the lowest score (47) and the Pol Rom Sports Complex website received the highest score (90) using the Web Assessment Index method.

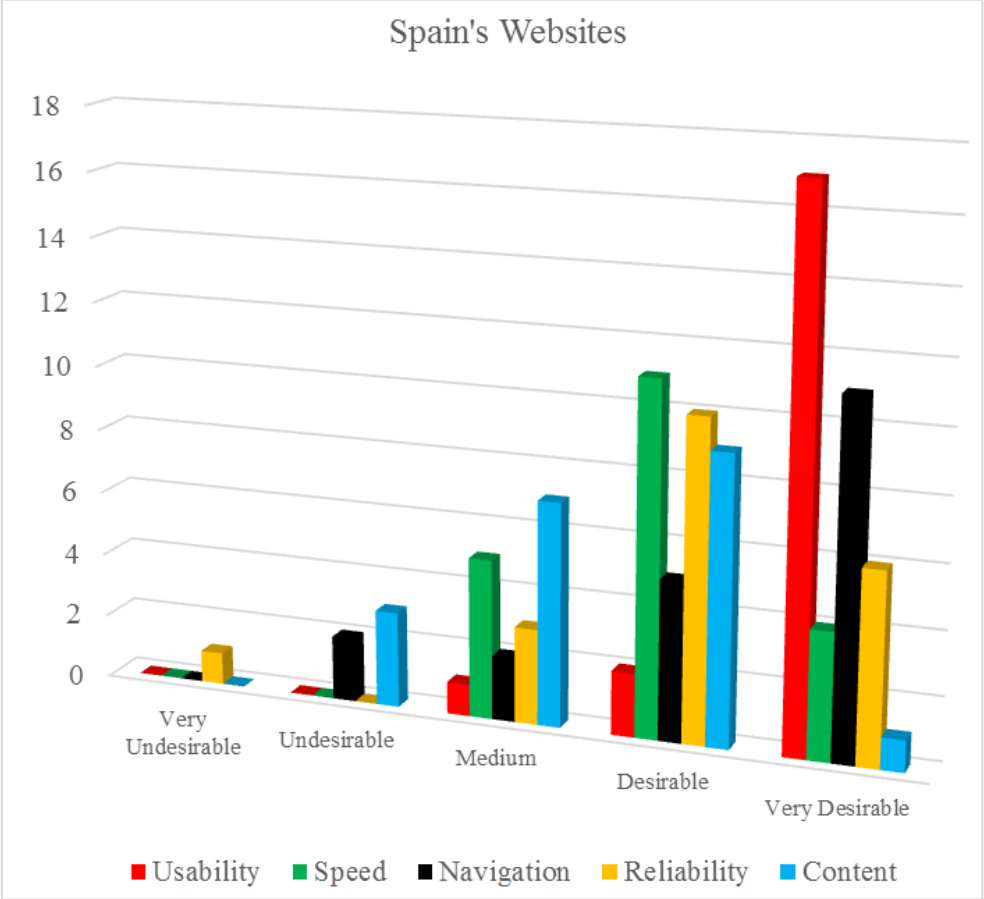

Figure 7. *Status diagram of the websites of private sports clubs in Spain based on the main criteria of the Web Assessment Index method.*

The results of evaluating Spain's private sports clubs' websites based on usability criterion with an average score of (0.3445) show that 85% of the websites are in an appropriate condition. The performance capability criterion with an average score of (0.0710) shows that 50% of the websites are in an inappropriate condition. The reliability criterion with an average score of (0.0955) shows that 55% of the websites are in a very appropriate condition, and the efficiency criterion with an average score of (0.1605) shows that 55% of the websites are in a very appropriate condition. In summary, the Web-QEM method in evaluating Spain's private sports clubs' websites with an average score of (0.1679) shows that 60% of the websites are in an appropriate condition. The David Lloyd Club website received the lowest score (0.44) and the Maspalomas Fitness Club website received the highest score (0.88) using the Web-QEM method.

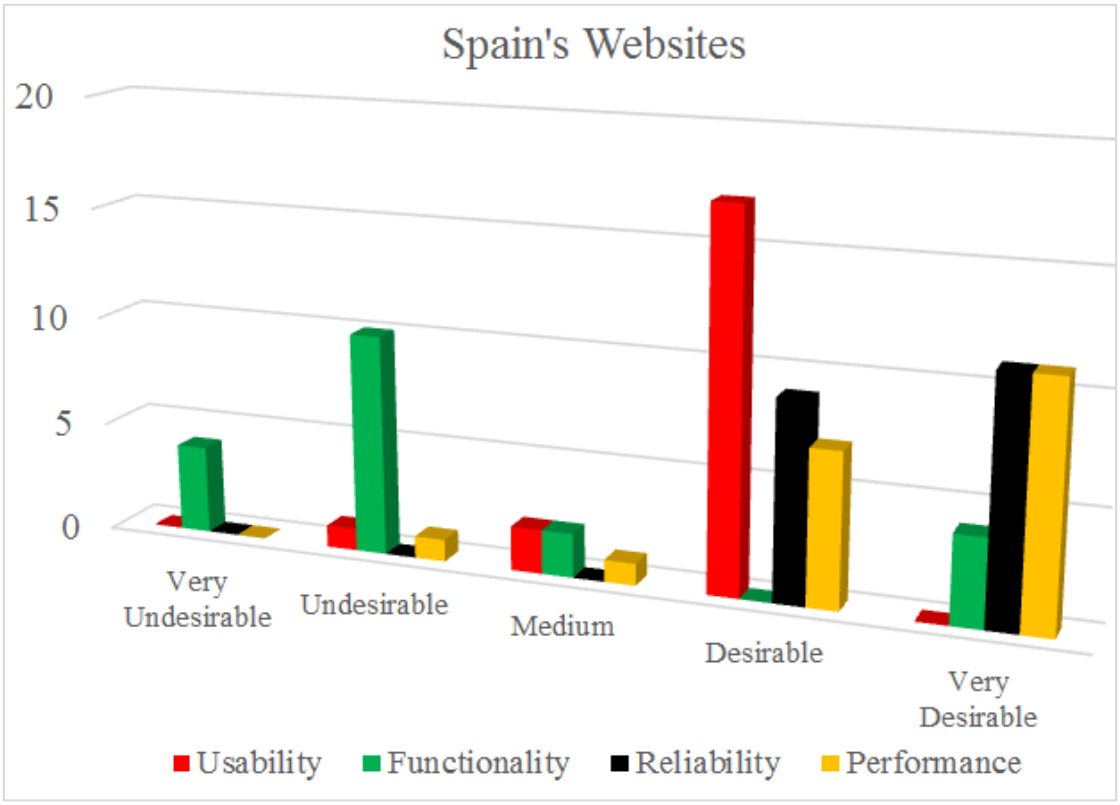

Figure 8. *Status diagram of the websites of private sports clubs in Spain based on the main criteria of the Web-QEM method.*

To make the final comparison of the websites of the four countries - Iran, England, Germany and Spain - the analysis of variance test was used and the results are shown in Tables 14-17. The results are categorized and presented in two groups of Web-QEM criteria and Web Assessment Index.

Table 14. *ANOVA test for Web-QEM benchmark.*

Web-QEM	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.039	3	0.013	10.408	0.001
Within Groups	0.094	76	0.001		
Total	0.133	79			

Table 15. *Bonferroni test for Web-QEM model.*

(I) Country	(J) Country	Mean Difference (I-J)	Std. Error	Sig.
Iran	Germany	-0.03449*	0.01115	0.017
	Spain	-0.04911*	0.01115	0.001
	England	-0.05774*	0.01115	0.001
Germany	Iran	0.03449*	0.01115	0.017
	Spain	-0.01463	0.01115	1.000
	England	-0.02325	0.01115	0.242
England	Iran	0.05774*	0.01115	0.001

(I) Country	(J) Country	Mean Difference (I-J)	Std. Error	Sig.
Spain	Spain	0.02325	0.01115	1.000
	Germany	0.00862	0.01115	1.000
	Iran	0.04911*	0.01115	0.001
	Germany	0.01463	0.01115	0.242
	England	-0.00862	0.01115	1.000

*. The mean difference is significant at the 0.05 level.

Table 16. ANOVA test for Web Assessment Index benchmark.

Web Assessment Index	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	375.420	3	125.140	17.510	0.001
Within Groups	543.148	76	7.147		
Total	918.568	79			

Table 17. Bonferroni test for Web Assessment Index model.

(I) Country	(J) Country	Mean Difference (I-J)	Std. Error	Sig.
Iran	Germany	-3.51000*	0.84538	0.001
	Spain	-5.24000*	0.84538	0.001
	England	-5.37000*	0.84538	0.001
Germany	Iran	3.51000*	0.84538	0.001
	Spain	-1.73000	0.84538	0.265
	England	-1.86000	0.84538	0.185
England	Iran	5.37000*	0.84538	0.001
	Spain	0.13000	0.84538	1.000
	Germany	1.86000	0.84538	0.185
Spain	Iran	5.24000*	0.84538	0.001
	Germany	1.73000	0.84538	0.265
	England	-0.13000	0.84538	1.000

*. The mean difference is significant at the 0.05 level.

The results showed that there is a significant difference between the quality status of web design of Iran's websites compared to Germany, Spain and England (P<0.05). Iran's evaluation scores are much lower than the three selected European countries, and there is no significant difference between the scores of the three countries of Germany, Spain and England (P>0.05).

In summary, the status of website design of Iran's private sports clubs is at an inappropriate to average level, Germany is at an average to appropriate level, Spain is average to appropriate, and England is very appropriate to appropriate.

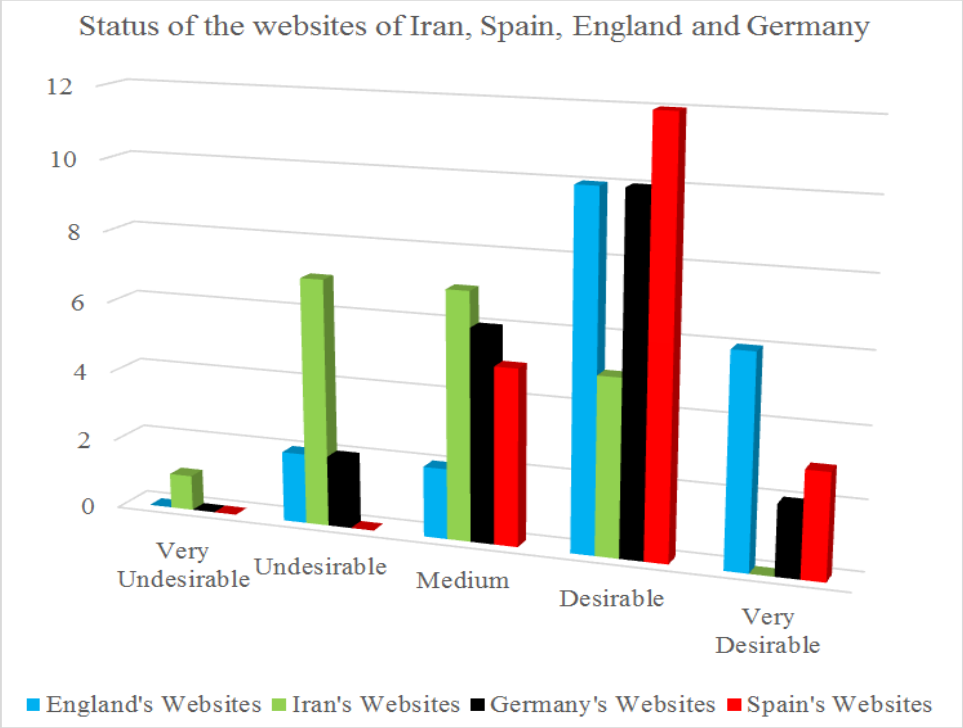

Figure 9. *Comparison chart of the websites of private sports clubs in Iran, Spain, England and Germany based on Web-QEM criteria.*

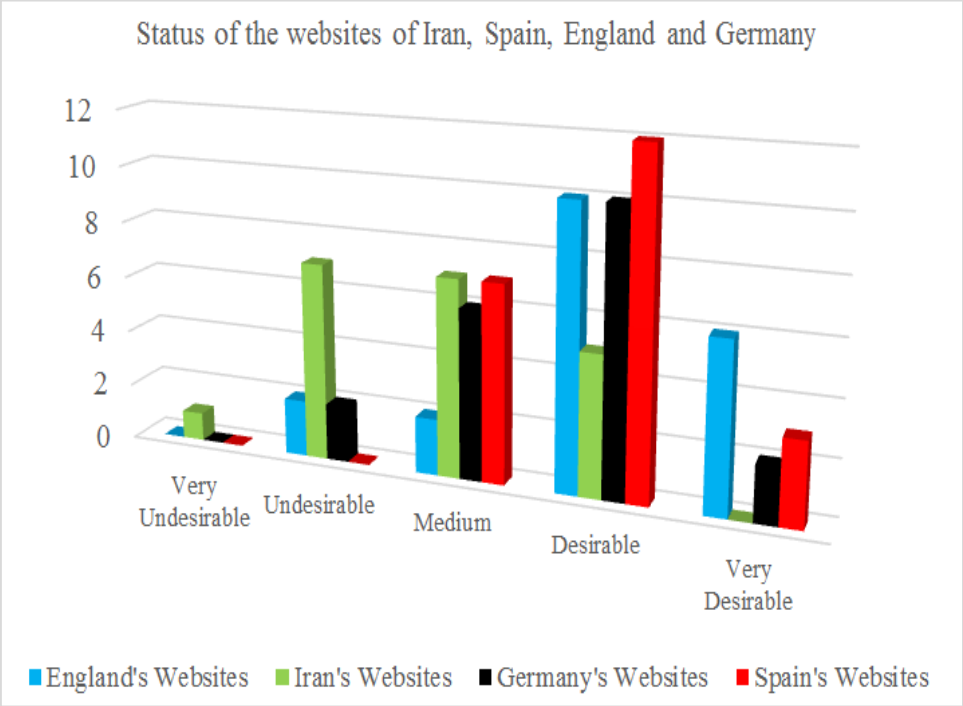

Figure 10. *Comparison diagram of the websites of private sports clubs in Iran, Spain, England and Germany based on the criteria of the Web Assessment Index.*

Based on the Web Assessment Index, Zarban and Asiabad Clubs ranked first with 62 points and Synergy Club ranked last with 19 points, and in Germany, Berlin Tennis Club ranked first with 84 points and Just Fitness Club ranked last with 37 points, and in Spain, Pol Rom Sports Complex ranked first with 90 points and Maspalomas Fitness Club ranked last with 47 points, and in England, Best Club ranked first with 92 points and Air Storm Club ranked last with 37 points.

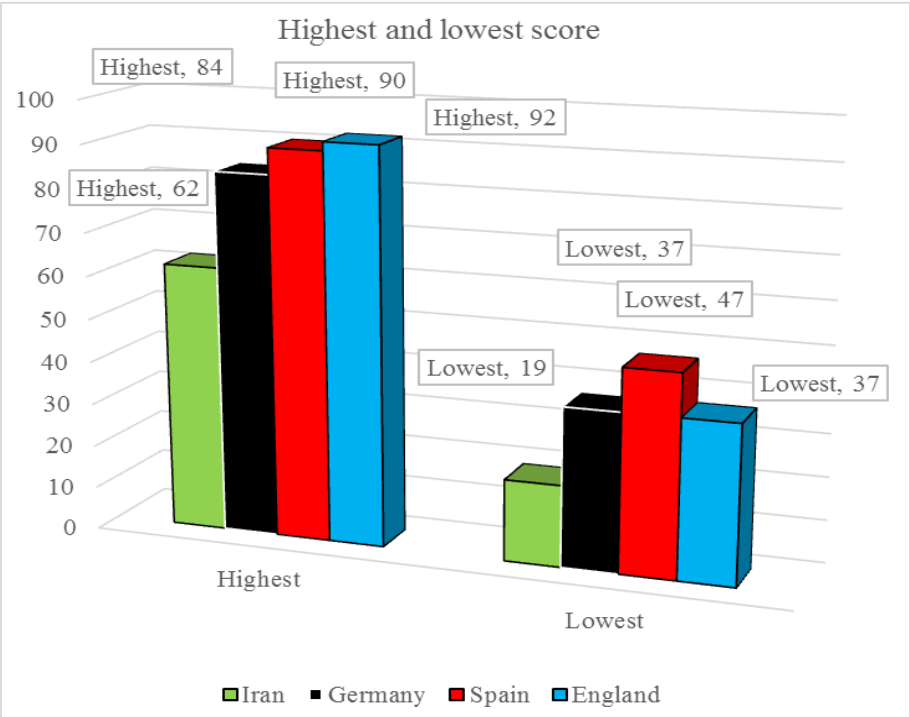

Figure 11. *Comparison chart of the status of the websites of private sports clubs in Iran and selected European countries based on the main criteria of the Web Assessment Index method.*

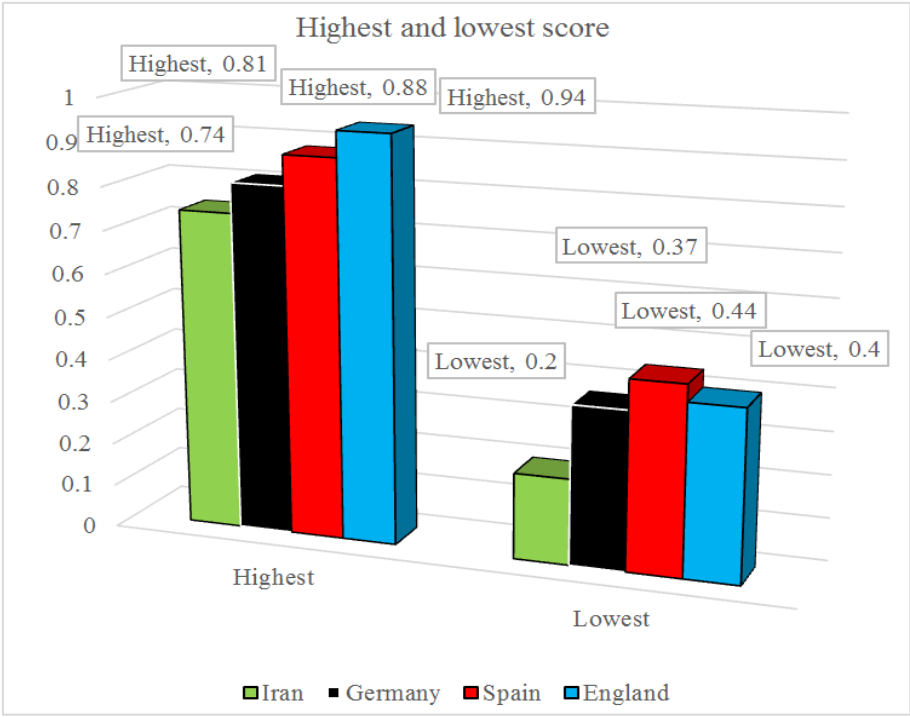

Figure 12. *Comparison chart of the websites of private sports clubs in Iran and selected European countries based on the main criteria of the Web-QEM method.*

Based on Web-QEM criteria, Ayandehsazan Club with (0.74) obtained the highest score and Synergy Club with (0.20) the lowest score in Iran, and in Germany, Rheinland Sports Complex and Berlin Tennis Club with (0.81) the highest score and Luftana Sports Complex with (0.37) the lowest score, and in Spain, David Lloyd Club with (0.88) the highest score and Maspalomas Fitness Club with (0.44) the lowest score, and in England, Best Club with (0.94) the

highest score and Air Storm Club with (0.40) the lowest score.

At this stage, the criteria of both assessment methods were selected and coded (table 18).

Table 18. Determination of criteria and their coding.

Web-QEM Criteria	Code	Web Assessment Index Criteria	Code
Usability	GHU	Accessibility	GHD
Functionality	GHA	Speed	SPD
Reliability	GHE	Navigation	MHT
Performance	KAR	Reliability	NAV
		Content	GHT

In the second phase, the most important and least important criteria were selected (table 19).

Table 19. Selection of the most important and least important criteria.

Degree of Importance	Most Important	least Important
Criteria	Speed	Content

In the second phase, other criteria were coded and also the ratio of the most important criterion and the least important criterion was valued. It means that the most important criterion (speed) is 2 times more important than the usability criterion, and the content criterion is 7 times less important than the usability criterion (table 20).

Table 20. Coding and importance of criteria.

Criteria	Code	Most Important (1-9)	least Important (1-9)
Usability	GHU	2	7
Functionality	GHA	3	6
Reliability	GHE	5	3
Performance	KAR	2	8
Accessibility	GHD	8	1
Speed	SPD	1	9
Content	MHT	9	1
Navigation	NAV	2	4
Reliability	GHT	5	3

In this step, the relative weight of the criteria was analysed based on the standard (table 21).

Table 21. weight of criteria.

Criteria	weight	Criteria	weight
Usability	0.15332198	Accessibility	0.02555366
Functionality	0.10221465	Speed	0.2555663
Reliability	0.06132879	Content	0.03407155
Performance	0.15332198	Navigation	0.15332198
		Reliability	0.06132879

To check the inconsistency ratio, the inconsistency rate table of Mohammadi and Rezaei (2019), the inventor of this model, was used (table 22).

Table 22. maximum rate of acceptable incompatibility index.

[a]BW	2	3	4	5	6	7	8	9
Compatibility Index	0.44	1.00	1.63	2.30	3.00	3.73	4.47	5.23

By default, table 23 has calculated the levels from the least important (1) to the most important (9).

Table 23. Incompatibility ratio threshold.

Criteria [a]BW	3	4	5	6	7	8	9
3	0.2087	0.2087	0.2087	0.2087	0.2087	0.2087	0.2087
4	0.1581	0.2352	0.2738	0.2928	0.3102	0.3151	0.3273
5	0.2111	0.2848	0.3019	0.3309	0.3479	0.3611	0.3741
6	0.2164	0.2922	0.3565	0.3924	0.4061	0.4168	0.4225
7	0.2090	0.3313	0.3734	0.3931	0.4035	0.4108	0.4298
8	0.2267	0.3409	0.4029	0.4230	0.4379	0.4543	0.4599
9	0.2122	0.3653	0.4055	0.4225	0.4445	0.4587	0.4747

Since the compatibility rate of 0.3662 obtained (in Table 24) is less than the incompatibility threshold of 0.4747 from table 23, the comparisons are consistent and reliable.

Table 24. Criteria Compatibility Rate.

Input-Based Compatibility Ratio	Associated Threshold
0.08333333	0.3662

Finally, the criteria were ranked based on their importance degree (table 25).

Table 25. ranking criteria based on importance.

Criteria	Ranks	Criteria	Weight
Speed	1	Functionality	3
Usability	2	Reliability	4
Navigation	2	Reliability	4
Performance	2	Content	5
		Accessibility	6

According to the results, it was determined that the most important criterion in designing private sports clubs' websites is "speed" and in the second place are "three criteria of usability, navigation, efficiency". Also, in the third place is performance capability; in the fourth place, reliability from Web-QEM method and Web Assessment Index method; in

the fifth place, the content criterion; and in the last place, the accessibility criterion.

Considering the two evaluation tools and the similar results of website evaluation, and given the literature and research background and features that are recently done by Google algorithms, the following pattern is presented for optimal design of private sports clubs' websites in a combined form of the two methods and novel algorithms, which is usable in desktop and mobile versions named Web-DANM. This is a combination of the two mentioned tools and new analysis methods, and these are updated by global website design algorithms. Also, its checklist is presented with the main criteria, sub-criteria and their weights.

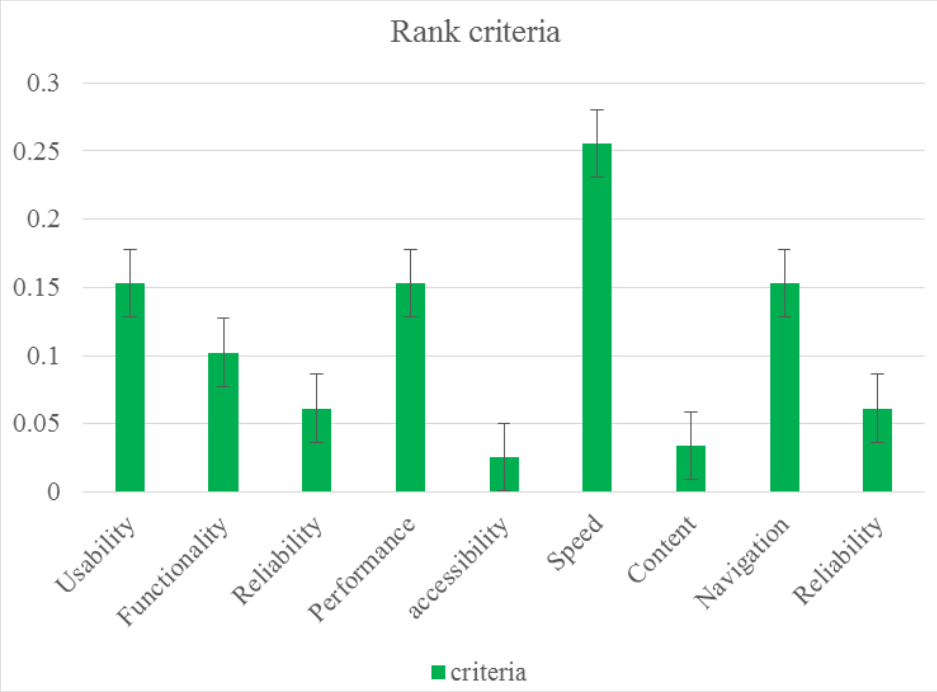

Figure 13. *chart of criteria prioritization based on degree of importance.*

Figure 14. *Web Design Assessment and Novel Methods.*

4. Conclusion

The results of this study are consistent with the results of Iranian studies that have evaluated the websites of sports clothing online stores, the Ministry of Sports, sports federations and sports news websites. Among these researchers can be mentioned [4, 12, 13, 15-18, 21, 22, 25, 28, 30]. In general, the mentioned researchers have evaluated various websites in Iran using similar methods and models and have concluded that given the high costs spent on designing sports websites, the result of website design quality is not desirable and is average to weak, and many factors have not been considered in the design. Some researchers have also added other factors to their own checklists. Since website evaluation checklists are set based on international standards, they typically assess similar factors, which is why the compatibility of research results can be attributed to the relatively similar nature, tools and statistical community. No cases were found in Iranian research that referred to the complete desirability of website design. But in foreign research, very few cases have referred to the complete desirability of the websites they studied. In foreign research, mostly the same factors have been referred to for evaluating different websites, which are in line with the evaluation results of Spain, England and Germany that were done in this study. Among these studies can be mentioned [2, 5, 6, 27, 29]. Also, in this study, one case from England's websites scored 94, which had complete desirability. The likely reason for this difference in the quality of foreign and Iranian websites may be the use of world-class technologies in the hardware and internet infrastructure, or the use of key points, important Google factors and great attention of designers to international standards.

In any case, every website should at least have the main factors to be considered a website and should have other competitive factors in order to withstand and survive in the internet world. Since a website is the showcase of the club but does not have the human and emotional connection between coaches, managers and athletes, the user interface factor fills its place. Therefore, if the user interface is not desirable or at least does not comply with its key design factors, users will hesitate to use that website, which will lead to user dissatisfaction as a customer. Other website design standards also significantly directly and indirectly affect user satisfaction as a customer. For example, if a club website is slow or takes a few seconds to load for the user, it is possible that the user will lose patience and close the website before it is fully displayed. Therefore, speed is one of the important factors in website design, meaning that the website should have an optimal design and use state-of-the-art and powerful hardware equipment based on the website usage so that the website loads at an optimal speed.

Since the selected European countries use state-of-the-art technologies on their hardware and internet infrastructure, they were much better than Iran in terms of speed criterion. Also, the use of CDN, which greatly increases site speed, leads to a good user experience and creates many positive consequences including website security. On the other hand, it greatly helps with website SEO, because this network works so that if a user from Kerman province wants to search for a sports club website, Google displays the website of the club closest to him based on local SEO, then if the website is loaded on the content delivery network, that website will be displayed to the user in less than 2 seconds, because the content delivery network keeps a copy of websites that use it on its servers everywhere, and responds to the user from the nearest server upon user request, and this process has a significant impact on website speed. On the other hand, websites using these networks will have high security. It should also be considered when designing websites that according to statistics, users who use the internet on mobile devices are much more than those who use computers or laptops. Therefore, the designed pages should have the necessary standards specifically for mobile device versions.

Ultimately, given the growing technology in this field and changing user preferences, the old processes cannot be relied upon definitively. Because the competition is very tight and websites need to be constantly developed and upgraded. In this regard, Al-Dulaimi and Al-Mashhadany [1] stated that many criteria currently used to evaluate the quality and performance of websites and various articles are for between 2010 and 2022, and it has been inferred that researchers in previous works paid attention to the performance, structure and multimedia of websites and found it useful for effective website design. But what is clear is that for designing any website in any field of work, these factors change to some extent. Therefore, changes and modifications to all website design factors are constantly needed, and for each culture and country it may be slightly different and somehow local.

Abbreviations

CDN	Content Delivery Network
SEO	Search Engine Optimization
WAI	Web Assessment Index
Web-DANM	Web Design Assessment and Novel Methods
Web-QEM	Web Quality Evaluation Method

Author Contributions

Ali Korooki is the sole author. The author read and approved the final manuscript.

Disclosure Statement

The author declares no potential conflicts of interest. The present study received no financial support from any organi-

zation or institution.

Conflicts of Interest

The author declares no conflicts of interest.

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