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User Interface/User Experience Design of Le Mans 24 Hours History Website for Motorsport Education.

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Abstract

Access to Le Mans 24 Hours endurance racing history content faces limitations in a more structured and comprehensive digital format, although in practice Le Mans 24 Hours brought many innovations and technologies to commercial cars. For example, the book Le Mans: A Century of Passion that archives the 100-year history of Le Mans has only 2500 copies produced, making it out of reach for many. The purpose of this project is to design a user interface (UI) and user experience (UX) website to present comprehensive information about the history of Le Mans 24 Hours as an educational medium. The method used in this study project is a Design Thinking approach that consists of five stages: Empathize, Define, Ideate, Prototype, and Testing. Then produce a prototype of the "Memories du Mans" website that displays historical content, innovations, figures, and iconic cars at Le Mans 24 hours divided into 8 types of pages. Usability Testing results on 16 respondents showed a 100% task success rate, but some pages and tasks had a high percentage of misclick rate, >67% on the car page and averaage duration >106s. This study shows how important it is to apply UI/UX principles in designing an educational platform.

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INTRODUCTION

The 24 Hours of Le Mans, first held in 1923 in the French city of Le Mans, is one of the most famous and influential endurance racing events in motorsport and is the oldest endurance racing event in the world that still takes place today. (Le Mans, 2023). This race is not only a stage for drivers to compete for speed, but also serves as a "laboratory" for car manufacturers to innovate. (FORBES, 2008). Such as, Hybrid technology, Disc Brakes, Fuel Injection, Diesel, to Fog lamps were born from a Motorsport competition that has been going on for 100 years. (Top Gear, 2024). Although the ecosystem of car racing competitions in Indonesia is not as strong as countries in Europe and America, automotive enthusiasts in Indonesia show a strong interest in the endurance racing category. Based on the broadcast of the 2025 6 Hours of Sao Paulo endurance racing event on the Youtube channel of KUY Entertainment, as the license holder for the broadcast of the FIA World Endurance Championship in Indonesia. Shows a total viewership figure of 34 thousand peak views.

Figure 1. FIA WEC replay broadcast on KUY entertainment channel

On the other hand, in 2025 Indonesia successfully held the first International 4-wheeled racing competition at the Mandalika circuit, West Nusa Tenggara, namely the GT World Challenge Asia 2025 which in principle shares similarities with the 24 Hours of Le Mans. Judging from the official broadcast of the Mandalika circuit Youtube channel, and GTWorld, this event received a peak viewership of 639k on the GTWorld channel, and 139k on the official Mandalika circuit channel.

Figure 2. Replay broadcast of *GTWC* Asia

Based on the viewership figures of these two events, it can be concluded that there is a strong interest in national automotive activists in endurance racing

such as the 24 Hours of Le Mans, given that these two events have the same format and principles as Le Mans.

However, in terms of accessing content related to history, fans experience some difficulties, such as limited access to historical content. For example, the book Le Mans: A Century of Passion, which contains an archive of the 100-year history of Le Mans, is only marketed on a limited basis because only 2500 copies were produced by ACO as the organization that houses Le Mans. (Bonte et al., 2006). Content about Le Mans' historical moments is also scattered in various forms of media, such as physical archives, or fragmented articles. (Evens & Hauttekeete, 2011; Hoorens & Rothenberg, 2008). Efforts to preserve and archive the history of Motorsports activities have also received attention and are being promoted in various formats and approaches. (Joseph, 2016)

The development of internet technology has reshaped the way information is disseminated and accessed by the public, giving users the opportunity to obtain data quickly and easily. (Jacksi & Abass, 2019). The development of technology and digital media affects the public's behavior in accessing information. The internet enables instant information exchange, with 5.53 billion global users by 2024. In Indonesia, there are 221 million internet users, ranked 7th in the world, with 79.5% internet penetration. (Annur, 2024; APJII, 2024). In comparison, 97% of teenagers in the US use the internet. According to a data report published by Nielsen Sports titled "*Sports Fandom Is Increasing, Powered by New Digital Platforms, Global Report Finds*", Social media is the most accessed digital platform by users, followed by video streaming platforms and websites.

In an article published by *GTWC America* (2025) stated that digital platforms in the modern era of Motorsports play an important role in interacting and reaching a new generation of fans, with various advantages of digital platforms and combined with storytelling aspects that provide the perspective of Motorsports industry players are key in forming connections and giving fans a sense of participation that fans are also part of Motorsports.

So, based on the data above, there is a need for information media that can help fans or the general public access information related to the history of Le Mans and motorsport quickly and easily. One type of work that is considered capable of unifying fragmented information, providing modularity, and facilitating

access to information is Website UI/UX design.

Websites, as a result of the development of digital technology, offer advantages in presenting information through text, images, and videos with interactive features that enhance user appeal and experience (Jacksi & Abass, 2019; Oh & Sundar, 2015). In addition, the website can be accessed anytime and anywhere without specialized applications, and makes it easy to update content efficiently, creating new opportunities in e-publishing and digital publishing. (Ghorecha & Bhatt, 2013; Pallen, 1995).

However, in developing a good website, it needs to be supported by a good interface (UI), and user experience (UX). The UI (User Interface) component, is the visual aspect and interactivity of a program or product that allows users to interact directly with the website. (Hendra & Riti, 2023).

User Interface (UI) is the visual and interactive component of a digital system that allows users to interact directly with the website. UI serves as a bridge between the system and the user, including elements such as layout, color, typography, and intuitive navigation. (Hendra & Riti, 2023; Jacob, 2003). Effective interface design not only takes into account aesthetic aspects, but also applies basic principles such as accessibility, clarity, consistency, and simplicity as described by Galitz in his guide to graphical interface design. (Galitz, 2007). These principles play an important role in ensuring that the interface is easy to understand and use by different types of users. Thus, a well-designed UI can give a good initial impression and encourage user comfort in browsing the website. (Rifqi & Solicitor Costa Rica El Chidtian, 2023).

Meanwhile, User Experience (UX) refers to the overall perception and subjective response of users when using a website. UX involves aspects of usability, namely the ease with which users can understand, use, and remember the system even if it is not used for a certain period of time. (Hendra & Riti, 2023; Wiwesa, 2021). Good UX design considers user needs, efficiency of use, and satisfaction felt during the interaction process. (Blonteng et al., 2022). In the context of delivering this historical information, it can be packaged by involving gamification elements which can increase user engagement, and user retention. (Widagdo et al., 2024).

UI and UX play complementary roles. A structured and aesthetically pleasing UI design supports comfortable navigation, while UX ensures a seamless

and satisfying user experience. This relationship makes UI/UX a strategic foundation in creating websites that are not only visually appealing, but also effective in conveying information and achieving digital communication goals (Herdiyanti, 2019).

This project aims to produce an interactive and accessible UI/UX design for the Le Mans 24 Hours educational website. And offer a solution in presenting comprehensive Le Mans 24 Hours history information for users. With the target audience aged 18 – 30 years who operates digital gadgets on day to day basis, using or owning motored form of transportation, public or privately owned, and shows interest in automotive subject or Motorsports competitions.

METHODS

The creative process in this study project uses the *Design Thinking* approach. With 5 main stages: Emphatize to explore user understanding and needs, Define to formulate the core of user problems, Ideate to come up with design solution ideas that will be applied, Prototype to design and apply design solution ideas, and Testing to test design solution ideas to audiences or potential users.

In making the UI/UX design of this website, it previously required an analysis of the target audience which in turn was expected to meet the needs of potential users efficiently. Based on the results of the analysis, the target audience is an audience with demographics aged 18 - 30 years, behavior often operates digital gadgets on a day to day basis, often uses public or private transportation, and shows interest in automotive subjects or Motorsports competitions.

RESULT AND DISCUSSION

Based on research using in-depth interviews with 7 respondents, it can be concluded that the majority of respondents show interest and have previously known information about automotive and Motorsport competitions, which are generally Formula One, MotoGP, and NASCAR.

The results of the in-depth interview also found that users expressed interest in the early history of the 24 Hours of Le Mans event at its inception in 1923. Another fact also states that the majority of respondents are interested in cars and their technical aspects, such as engines, fuel consumption efficiency, cooling systems, and hybrid technology. The majority of respondents also agree that Motorsport competitions affect public vehicles used by

the public and are responded positively by respondents. On the other hand, respondents are also interested in the behind-the-scenes stories that happen to teams and crews such as physical challenges as well as competition, and on-track drama although not all the majority showed interest.

Table 1. Question and Answer *In depth Interview*

No	Question	Answer
1	The 24 Hours of Le Mans is one of the most legendary races that lasts for 24 hours non-stop. If you heard about a race like this, what would you want to know first?	The early era of Le Mans began in the midst of uncertainty, with racing competitions that prioritized vehicle endurance in an era of simple technology and circuits (3) Early history, Unlike other racing that focuses on speed, Le Mans emphasizes endurance, where speed is not the only priority. (3)
2.	Imagine you're watching a 24-hour non-stop car race, what do you think would make this event interesting and unique?	Endurance aspect in car technology that lasts 24 hours (1), Weather changes during the race (1), Competency aspect (5)
3.	The 24 Hours of Le Mans is not just about racing, but also about innovation in the automotive world. How do you think this kind of race affects the design and development of the cars we use every day?	Affects all aspects of technology in vehicles (3) Fuel innovation and engine efficiency (2) Cooling system in car engines (2)
4	Some of the technologies invented at the 24 Hours of Le Mans are eventually applied to cars used by the public. What do you think about the relationship between motorsport and the vehicles we use on a daily basis??	Good because many technologies can be applied (1), Good because Le Mans becomes a test field (2), Can affect the comfort and Ergo of the vehicle (1) Good because a technology can be tested before being sold en masse (1) Good because the durability aspect of the car has been tried in competition before being used in public cars that are used with daily frequency (1).

Another finding in the interview process was the fact that respondents with these demographic, interest, and behavior qualifications. Tend to feel more engaged with the material or content presented if there are multimedia visual assets that dominate, and have interactive elements. However, it is also found that respondents also expect text or a short narrative that explains the visual assets presented.

Table 2. Question and Answer *In depth Interview*

No	Question	Answer
1	What elements do you expect to be present first on a website that presents automotive history information?	Archive of photos, images or videos (4), 3D model of competing car (1), Minimalist design that contains a lot of information to minimize distraction (1)

No	Question	Answer
2.	Do you find it easier to understand information presented through videos or photos presented together with a short narrative?	Do you find it easier to understand information presented through videos or photos presented together with a short narrative?
3.	Do you prefer a website that is concise or has interactive elements in it?	Interactive elements (4), Clean and simple look (2), The important thing is to have a neat and clearly structured hierarchy(1).
4.	What do you think is more important, high visual quality but long web loading compensation, or vice versa?	Good visual quality of photos, images, and videos is a must (7)

Taken from the interview results, it can be concluded that the website must have a visual hierarchy and information that is clear, simple, and easily digested by users. So the concept applied to this UI/UX design work is minimalist and monochrome design, where the ideal is to emphasize visual aspects, maintain readability, visual hierarchy and information that is easily understood by potential users. In the process of designing this UI/UX design work, it will also apply various principles that help in organizing visual and information hierarchies. (Yablonski, 2024).

After passing through the 5 stages of the Design Thinking approach, a UI/UX design work "Memories du Mans" was produced, where this design concept collects and compiles information key moments in the history of the 24 Hours of Le Mans in a comprehensive and structured format. In this UI/UX Design "Memoires du Mans" produced 8 pages on this web which were implemented at the Prototype stage, as follows:

1. **Homepage**

This page is the first page that users will see. This homepage contains content and initial information about what the 24 Hours of Le Mans is, and the early history of Le Mans in 1923 and 1955.

Figure 3. *Homepage*

After the content and information, there are 2 CTAs located on the homepage that will lead to the About page which contains more detailed content and information about the 24 Hours of Le Mans. This homepage uses several laws of UX principles, including Fitt's law which is located on the CTA button located in the last section of the page, and this CTA dominates the page

section compared to other elements so that it has a touch target and reach distance that is easily achieved by users. Then the application of Hick's law can be seen from the content mapping which is organized thematically and does not display many buttons, only two CTA buttons in the About Le Mans section, and also the Discover Timeline. This application is intended so that users do not experience overwhelming when browsing the website for the first time.

2. About

Figure 4. *About*

The About page contains more detailed information and content about the 24 Hours of Le Mans. Such as information about the De La Sarthe circuit, Endurance Racing. In this part of the About page, there is an application of several laws of UX, such as Jakob's law and Miller's law. The application of Jakob's law can be seen from the similarity and structure of presenting content or information that matches other article sites or news media channels, this can make it easier for users to explore the page without having to learn a new system from scratch. Miller's law principle can be seen from the narrative presented in blocks of information content sections that are short and easy to digest.

3. Timeline

This page contains information and content about the summary of key moments in the history of the 24 Hours of Le Mans in each era which is divided into 6 eras, namely 1923-1939, 1949-1960, 1980-2000, 2000-2020, 2020 - present.

Figure 5. *Timeline*

Key moments highlighted on this Timeline page include the birth of the 24 Hours of Le Mans, technological developments, regulatory changes, competition between teams and manufacturers, and also innovations in each era. On this Timeline page, there are principles such as laws of similarity, where each timeline era page has

the same hierarchical structure of content and information delivery so that users no longer need to adjust in digesting and reading content or information on each page.

4. Innovation

This page contains and discusses the details of the innovations that were born at the 24 Hours of Le Mans, including fog lights, hybrid engines, turbine engines, environmentally friendly fuels, and others..

Figure 6. *Innovation*

On this part of the page there is an application of laws of UX such as Hick's law, where on this page there are not many branching options that can be done and tend to be linear, making it easier for users to digest content and information chronologically without the need to be confused with additional information or options.

5. Icons

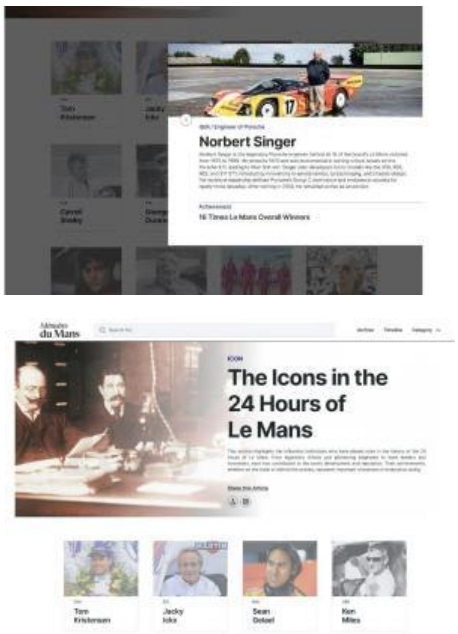

Figure 7. *Icons*

This page explores the influential and famous figures in Le Mans. On this page there are principles such as laws of similarity, and Fitt's law where the laws of similarity principle can be seen from the arrangement of content in the overlay window on each icon choice. This makes it easier for users to review content information quickly and without customization because it has similarities with other icon choices. Fitt's law can be seen from the size of the buttons and icons that are large and organized in one whole block so that they are easily accessible.

6. Cars

This page contains information about iconic vehicles or cars that competed in the 24 Hours of Le Mans, and is divided into 6 sections based on the era on the Timeline page. This car information is contained in an overlay window, and the user is given the freedom to explore the choice of cars with the slider feature.

Figure 8. *Cars*

In this part of the page, the laws of ux are applied which is more or less the same as the icons page, where there is an overlay window that contains information about each car and is organized with the same visual structure and hierarchy as one another, making it easier for users to digest the information presented.

7. Archive

This page contains documentation and photos about the 24 Hours of Le Mans competition which is also divided into 6 sections, based on the era of Le Mans, just like the Timeline.

Figure 9. *Archive*

The principles applied to the following Archive page are Fitt's law and Hick's law. The application of Fitt's law can be seen from the visual placement of archive photos that dominate the screen which also functions as a button to timeline articles according to their respective eras so that they can be easily reached by users. And the linearity of the same information structure proves the application of Hick's law on this page.

8. Search Bar

In the center of the header there will be a search bar where users can enter keywords used to search for the desired information or content, and will display search results, otherwise if the information or content sought cannot be found or the

keywords entered are wrong, the search page is not found and there will be a CTA to return to the Homepage page.

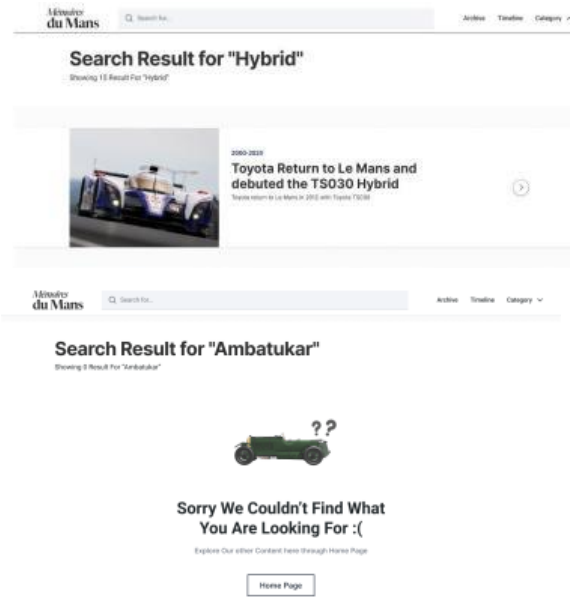

Figure 10. *Search Bar*

The principles of the search results page are the laws of similarity and Hick's law, where there is not much information displayed in the search results card and the hierarchy and visual style are the same on each card, so that users can more easily digest and select search results and encourage exploration without having to do a lot of navigation that could potentially add confusion.

Feedback and Iteration

Furthermore, usability testing was carried out by 16 respondents using the help of the maze platform with indicators of direct success, misclick rate, and average duration. Here are the results of the maze report:

Tabel 3. *report maze*

No	Task	Direct Success	Misclick Rate	Avg. Duration
1	Go to 'About' page	100%	38,5%	54,6s
2.	Go to 'Innovation' page	100%	55,2%	42s
3.	Go to 'Timeline' page	100%	23,8%	39,6s
4	Find an information about 'Audi R18 e-tron quattro'	100%	66,7%	105,1s
5	Find an information about 'Sean Gelael'	100%	47%	91,9s
6	Go to '*Le Mans era 2020-now*' page	100%	32,2%	93,7s
7	Go to 'Archive'	100%	36%	41,3s

Results from usability testing showed that all tasks achieved 100% direct success, but with significant variations in misclick rate and duration. "Timeline" and "Archive" page accesses were the most efficient with an average misclick percentage below 40%, and duration below 45s, indicating an intuitive navigation structure. In contrast, some tasks such as

searching for more specific information like “Audi R18 e-tron quattro” and “Sean Gelael” showed high misclick rates of 66.7% and 47%. Accompanied by a duration above 90 seconds, it indicates a bottleneck in the search system or element visibility. The “Innovation” page task also had a high misclick rate of 55.2%, indicating that the visual hierarchy should be iterated. Indicating that iteration is needed in both design and prototype aspects. Iteration is done on 3 parts of the website, as follows:

Figure 11. Iteration of ‘Cars’ Page

The user feedback obtained on the ‘Cars’ page shows shortcomings in the visual aspect of cars that do not appear clickable, so the iteration applied is to add a hover state to the car name so that it gives an indication that this section of the page is clickable.

Figure 12. Iteration of ‘Icons’ Page

The iteration on the ‘Icons’ page is to add the visual opacity of the photo on each ‘card’ to increase visibility for the user.

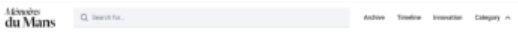

Figure 13. Iteration of Header

A button to the ‘innovation’ page is now added to the header to increase user accessibility and reduce the navigation steps to access the ‘innovation’ page. After completing usability testing with the maze site, users then filled out a post-test questionnaire. The usability test showed the basic function of navigation throughout the website is functioning very well with high percentage of direct success throughout section and page of the website, but on some parts of the website lacking clarity that confuses user during testing. With further iteration adding hover state, increasing visual opacity, and re-positioning a button helps user better to

easily navigate, improve clarity, and reduce confusion during the usage of websites.

After conducting the usability test, the next step is post-usability texting questionnaire. The results of the post-usability testing questionnaire of 7 Likert scale items showed that the average user perception was in the positive category. The overall user experience achieved an average score of 4.43, as well as aspects of information clarity (4.79) and ease of navigation (4.43). Tasks were rated as easy (4.36), while the ease of finding interactive elements was slightly lower (4.14). It is worth noting that some users expressed inconsistencies on the site (score 3.43) and the perception that not all users could learn the system quickly (score 2.86).

CONCLUSION

The study project with the title "User Interface/User Experience Design of 24 Hours of Le Mans History Website as an Education about Motorsport" produces 8 pages that contain content and information about key moments in the history of 24 Hours of Le Mans, including, Homepage, About, Timeline, Archive, Cars, Icons, and Innovation.

The achievement of the UI/UX design testing of this website has good success results, but there are some users who still have difficulty in accessing or navigating in some parts of this website, such as on the 'cars', 'icons', and 'innovations' pages. Then another shortcoming in this UI/UX design study project lies in the non-application of the responsive web design approach, so that it can only run and function optimally on desktop devices. So for the development of further research from the UI/UX design of "Memories Du Mans", it focuses on applying responsive web design so that the website can function optimally on mobile and tablet devices.

REFERENCES

A Brief Introduction to Design Thinking. (2015). In M. G. Luchs, *Design Thinking* (1st ed., pp. 1–12). Wiley. https://doi.org/10.1002/9781119154273.ch1

Annur. (2024). *Individu Pengguna Internet Global Tembus 5,35 Miliar pada Januari 2024 | Databoks*. https://databoks.katadata.co.id/teknologi-telekomunikasi/statistik/131ee92c794e906/individu-pengguna-internet-global-tembus-535-miliar-pada-januari-2024

APJII. (2024). *Asosiasi Penyelenggara Jasa Internet Indonesia—Survei*. https://survei.apjii.or.id/

Blonteng, M. F., Sambul, A. M., & Paturusi, S. D. E. (2022). Analysis of User Experience in University Academic Portal Using System Usability Scale (A Case Study in

INSPIRE Portal of Sam Ratulangi University). *Jurnal Teknik Informatika*, *17*(3), 213. https://doi.org/10.35793/jti.17.3.2022.41270

Bonte, M. et al, Hurel, F., & Ribemon, J.-L. (with Bruere, F., & Waldron, D.). (2006). *Le Mans: A century of passion with the Automobile Club de l'Ouest - Creator and organiser of the Le Mans 24 Hours: Le Mans un siecle de passion avec l'Automobile Club de l'Ouest 1906-2006* (Ltd ed. n217 of 2500). L'Automobile Club de L'Ouest.

Evens, T., & Hauttekeete, L. (2011). Challenges of digital preservation for cultural heritage institutions. *Journal of Librarianship and Information Science*, *43*(3), 157–165. https://doi.org/10.1177/0961000611410585

FORBES, A. (2008). Le Mans: An enduring spectacle-with a serious side. *Petroleum Economist (English Edition)*, *75*(8).

Galitz, W. O. (2007). *The essential guide to user interface design: An introduction to GUI design principles and techniques* (3rd ed). Wiley Pub.

Ghorecha, V., & Bhatt, C. (2013). A guide for selecting content management system for web application development. *International Journal*, *1*(3), 13–17.

GTWC America. (2025). *The Power of Social Media and Digital Marketing in Motorsports | GT World Challenge America Powered by AWS*. https://www.gt-world-challenge-america.com/news/1145/the-power-of-social-media-and-digital-marketing-in-motorsports

Hendra, H., & Riti, Y. F. (2023). PERANCANGAN DAN IMPLEMENTASI WEBSITE DENGAN KONSEP UI/UX UNTUK MENGOPTIMALKAN MARKETING PERUSAHAAN. *Jurnal Informatika Dan Teknik Elektro Terapan*, *11*(3s1). https://doi.org/10.23960/jitet.v11i3s1.3430

Herdiyanti, M. (2019). *Pentingnya Desain UI/UX Dalam Pengembangan Aplikasi Seluler*.

Hoorens, S., & Rothenberg, J. (2008). *Digital preservation: The uncertain future of saving the past*.

Jacksi, K., & Abass, S. M. (2019). Development history of the world wide web. *Int. J. Sci. Technol. Res*, *8*(9), 75–79.

Jacob, R. J. (2003). User interface. In *Encyclopedia of Computer Science* (pp. 1821–1826).

Joseph, P. (2016). A case study of records management practices in historic motor sport. *Records Management Journal*, *26*(3), 314–336. https://doi.org/10.1108/RMJ-08-2015-0031

Le Mans. (2023). *A look back at the Centenary: 325,000 spectators cheer on historic celebration*. 24h-Lemans.Com. https://www.24h-lemans.com/en/news/a-look-back-at-the-centenary-325-000-spectators-cheer-on-historic-celebration-58206

Oh, J., & Sundar, S. S. (2015). How Does Interactivity Persuade? An Experimental Test of Interactivity on Cognitive Absorption, Elaboration, and Attitudes: Persuasive Effects of Interactivity. *Journal of Communication*, *65*(2), 213–236. https://doi.org/10.1111/jcom.12147

Pallen, M. (1995). Guide to the Internet: The world wide web. *BMJ*, *311*(7019), 1552–1556. https://doi.org/10.1136/bmj.311.7019.1552

Rifqi, H. K., & Solicitor Costa Rica El Chidtian, A. (2023). ANALISIS DESAIN USER INTERFACE PADA SITUS WEB DAN APLIKASI VIDIO. *ASKARA: Jurnal Seni Dan Desain*, *2*(2), 98–108. https://doi.org/10.20895/askara.v2i2.1129

Sports fandom is increasing, powered by new digital platforms, global report finds. (n.d.). Nielsen. Retrieved March 8, 2025, from https://www.nielsen.com/news-center/2022/sports-fandom-is-increasing-powered-by-new-digital-platforms-global-report-finds/

Top Gear. (2024, July 25). *Nine ways Le Mans racing tech has filtered into road cars*. Top Gear. https://www.topgear.com/car-news/motorsport/nine-ways-le-mans-racing-tech-has-filtered-road-cars

Widagdo, P. B., Wibawanto, W., & Sugiarto, E. (2024). *Catharsis: Journal of Arts Education*.

Wiwesa, N. R. (2021). User interface dan user experience untuk mengelola kepuasan pelanggan. *Jurnal Sosial Humaniora Terapan*, *3*(2), 2.

Yablonski, J. (2024). *Laws of UX*. O'Reilly Media, Inc.