

The Effect Of Information Architecture On The Design Of University Library Websites

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Abstract

dy Overview:

The study investigates the architecture of information and how it affects the way digital content is organized in the Central Library of Imam Abdulrahman bin Faisal University. It aims to define the term "information architecture," as well as its components and guiding principles. It also examines the tools used to classify and organize digital content, as well as the fields in which it can be used, discover the weaknesses and strengths of the electronic portal and come up with some recommendations that contribute to the development and enhancement of the role of information architecture in the organization of content.

The study used the descriptive and analytical approach in studying and evaluating the website of the Imam Abdulrahman bin Faisal University Library (E-Library) by using scientific observation and interactive navigation research tools.

One of the study's most notable and prominent findings is the Central Library of Imam Abdulrahman bin Faisal University site successfully integrates the majority of information architecture's elements in terms of introducing the library and its goals, introducing the target audience groups, and designing the site, but neglects to define the site in terms of its origin and purpose.

Study Terminology:

Information Architecture – Information Architects – Digital Content – Organization – Retrieval.**Introduction:**

The massive progress and development of information technology led to information accumulation, which led to the emergence of challenges and obstacles in controlling this amount of information in the digital environment, and since the core of information technology is not a large amount of data but in how to make this information interconnected and control the collection, organization and management of this amount of data in the digital environment, make institutions and organizations specialized in the field of information take a step in the development of tools and systems that help in the organization of digital content and easy retrieval. For this reason, many information institutions have resorted to the development of the processes of organization and classification of digital content through the use of modern methodologies and techniques in the process of organization and retrieval of information, and to provide access to information sources electronically to the beneficiary with ease and ease, hence the role of the information architecture "as a turning point in terms of organization, search, navigation and addressing the contents of websites, which supports the user's easy access to information." On this basis, this study examines the role of information architecture and its impact on the processes of organization, arrangement and retrieval of digital content in digital libraries, taking into account the complementary relationship between organization and information architecture as a detailed framework.

Importance of the study:

Information architecture (IA) is urgently needed to manage this enormous and complex amount of information and redesign those libraries' websites to be more usable and comprehensive to meet the needs of their users. University libraries have changed the nature of their work as a result of technological advancement and the influence of the Internet. They are now present not only in the conventional physical space of the library but also on the Internet through their websites. The websites of these libraries have evolved over the past ten years from simple pages with a few links to more complex sites that

offer direct access to millions of different sources, and in many cases this development occurs without comprehensive planning.

Study Problem:

The field of information and communication technology is in a constant and rapid development and this has been reflected in the form and design of library websites,

so they can no longer rely on a unified design and a certain form, the huge inflation in the amount of content and diversity of information in the digital space created difficulties in organizing and preserving this huge amount of digital information within the traditional web environment, as a result web designers need to keep and maintain modern developments in scientific curricula and scientific experiences technology and to rely on the concepts of information architecture principles as a strong foundation , in order to deliver easily understood content characterized by pleasure and acceptance among readers, researchers and the university members, as well as providing mechanisms for interaction and participation with them.

Despite all the efforts of librarians to satisfy their clients, there are still some critical issues that require a new approach that helps users navigate easily in complex information environments, and redesign library websites to be more usable that meets the needs of beneficiaries. Marsh Haverty asserts that:(IA) design process is one of the most important motivating factors to build information within organizations properly, yet those roles are unclear to many information engineers themselves (Haverty, 2002).).

In order to ensure the success of organizing the information architecture of the websites of university libraries in an optimal way, it is necessary to conduct periodic and continuous evaluation of the method of architecture of their information in order to identify their weaknesses to modify them and identify the strengths to enhance them, and therefore we ask the following question:

What is the reality of the information architecture at the site of the Central Library of Imam Abdulrahman bin Faisal University?

Does it commit to the standards of information architecture in creation and design as a website on the Internet?

Study Questions:

Q: What is information architecture?

Q: What is the importance of information architecture, and what is its importance for the sites of academic libraries?

Q: What are the challenges facing the websites of academic libraries to activate the information architecture?

Q: What is the reality of information architecture at the site of the Central Library of Imam Abdulrahman bin Faisal University?

Q: What are the proposed solutions to enhance the architecture of information in libraries?

Objectives of the study:

The study's objectives are to acknowledge the significance of information architecture and its significance for academic library websites, to acknowledge the difficulties facing academic library websites in enacting the architecture of information through an analysis of the actual academic library architecture as represented on the website for the Central Library of Imam Abdulrahman bin Faisal University, and to suggest some solutions to improve the architecture of information within those websites. **The previous objectives could be formulated in a number of elements:**

- Recognize the concept of information architecture
- The importance of information architecture and its role in organizing digital content
- The reality of information architecture at the site of the Central Library of Imam Abdulrahman bin Faisal University
- Propose some solutions to enhance the information architecture within the library website

Study Methodology:

The study was founded on the descriptive approach and the content analysis approach, where the descriptive approach allowed the analysis of intellectual production and scientific references relevant to the field of research, which enabled us to prepare a list of the axes of evaluation criteria for the

architectural evaluation of the information of the site of the Central Library of Imam Abdulrahman bin Faisal University Technologies and were adopted in the evaluation process, as well as helped us in the analysis and interpretation of the results and express an opinion on them and judge them; while the content analysis approach helped us monitor the content, the site and analyze it in terms of published content and effectiveness, as well as His analysis in terms of the organization of his information and the ways of accessing it as well as the services it provides, which helped us to diagnose and understand the various aspects of the architecture of the information of the studied site.

Data collection tools:

A/ Check list:

It is the primary tool for gathering information, and it includes a list of information architecture criteria that was derived from earlier studies on the topic. The main subjects are: content design standard, content description standard, organization standard, addressing standard, navigation standard, research standard, and information quality standard. It also contains a number of sub-elements.

B/ Regular Scientific Observation:

It is an additional tool to the first one that assisted in data collection by planning routine daily trips to the website under study to find out whether or not there were any signs of the architecture of the information there.

C/ Interactive Navigation:

To match the evaluation criteria compared to the studied site.

D / Some applications available on the Internet have been used to measure the size of the content of the site from internal and external links, the number of pages, their size and the speed of access to the site,

we review as follows: -

- xml- sitemaps.com is a tool to measure the size and number of pages.

- Smallseotools is a tool to measure the number of internal and external links.

- Page speed Insights is a tool to measure the speed of browsing in the site.
- Meta-tags-analyzer tool for analyzing metadata fields.

Information Architecture Concept:

Since Richard Saul's famous title at the 1976 American Institute of Architecture Conference, where the term "architecture" was used, the term of "information architecture," which is currently in use, dates back to the mid-seventies. However, until the mid-nineties of the twentieth century, the term remained dormant. However, starting in 1996, the term reappeared by two library science specialists, Rosenfeld and Morville, and was used. (Rosenfeld L., 2002) .

Some may define it as information architecture or information engineering .Actually they are the names of a single term, which is known in English as "information architecture" which creates diagrams of intuitive browsing elements of software and that aims to organize information within digital products into a coherent structure, which is the preferred structure that people can quickly understand, so as to help the user access the information he needs easily and faster, usually a hierarchical organization, but it can have other structures, such as a federated structure. (Hayek, 2021)

Information architecture has been defined as "a set of aids that match user needs with information resources" (Al-Bunyan, 2018) as "a structure or map of information that allows others to find their own personal paths to access knowledge" (Resmini, 2011) and presents us with the "Web Content Style Guide" More broadly defined of information engineering in the context of website development, it sees information engineering as a field that is primarily concerned with the processes of information organization of information, the planning of the content of pages of the site Page Content Layout, and in more specific and detailed terms at the same time, the functional design of content refers to the processes related to the organization of information and the creation and development: Beyond Data Metadata , classification, navigation, searching, and content layout (Subramanian, 2004))

Both Marvel and Rosenfeld have referred to it as an architectural ecosystem of information and expressed it as follows (on, 2021):

- 1) Context
- 2) Content
- 3) Users



Figure 1: Ecological Information Architecture

Information architecture is part of the user-centered design movement, but focuses more specifically on the underlying structure and navigation elements of the information arena.

Pioneers of the IA information engineering field recognized that the World Wide Web requires a new approach to organize and a structure to help users navigate intuitively in complex information environments. (Rosenfeld L. , 2002)

According to Rosenfeld and Petermoreville, Information engineering is:

- 1- Combining organization, labeling and navigation systems within an information system.
- 2- Structural design of the information space to facilitate the completion of tasks and intuitive access to content.
- 3- The art and of structuring and classifying websites and internal networks to help people find and manage information.

Before organizing and building a library site, it's important for information engineer to have a strong understanding of the following: (Bagley, 2020)

- Content sequence is essential to help users achieve their goals based on a their specific intention
- What content do users need to take those specific actions
- How this content affects users' behavior

- All possible paths or paths that users can follow through screens or pages, even if they are complex or encounter errors
- Any gaps in user flow that do not meet the user's need.

The eight components of information architecture, which can be confused, are as follows, with each job title represented as follows: A 2020 Faller.

Table No. (1) The Eight Elements of Information Architecture

Items	Description
Information Management (IM))	The strategic stage of website development involves planning the organization's approach to information management procedures through composing, generating, storing, and consuming information..
Design Experience (DX)	The employees of the website realized that in order for the site to be genuinely effective, they must look beyond the site to ensure that the material offered is valuable and organized; this can be a reason for developing a useful product.
Information Architecture (IA)	It is how the information on websites and in information networks is arranged. Given that it refers to so many different activities, this phrase is one of the most often used ones.
User Experience (UX))	It covers every aspect of how users interact with website services and user interfaces.
Information Design (ID))	The phrase has its origins in the pre-electronic era, when signs and maps were the main objects of study. In order to communicate textual information, visuals, opinion columns, graphics, videos, and other different types of material, this stage relies on visual and graphic design.
Utility Engineering (UE)	This field focuses on creating models that are beneficial to the user and are close to the concepts of engineering and programming, which aids in finding answers to the issues that users of Internet-based services face.
Interaction Design (ID)	The design of the user interface, which allows users to interact with a website or computer systems, is part of this stage. In order to persuade viewers of the site's quality at this stage, which focuses on their visual reactions, colors, signals, and movement are used. This phase is an application of the information architect's design.

Human Calculated Interaction (HCI)	The first avenue of interest in this stage, which is one of the most in-depth, is how people interact with computer systems and applications, websites, internal networks, and contemporary technology like cellphones.
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The importance of information architecture and its main role in organizing and managing content:

The web is widely used as a source of information and for the dissemination of information by many different public and private organizations.

Kahli reported that "almost two-thirds of users are looking for specific information" (Helen. N, 2011) However, the influence of a website's information structure on a user's ability to navigate this website has been bypassed by many website designers, who tend to focus primarily on the "look and feel" of the website in terms of categorization, differentiation, presentation, and ease of navigation and accessibility.

Information structure not only determines whether users can find what they need, but also affects user satisfaction when finding information becomes too complicated or too slow, at which point people abandon an app or website, and it's hard to bring them back. Forrester Research concluded that poorly designed websites can lose 50 percent of potential sales when people can't find what they're looking for, and that 40 percent of users do not return to the site when their first experience in using the site is negative (Mehran, 2016)

Shelley provides insights for universities that also operate in a competitive market, Students may not return to the university site if their information needs are not met at the initial visit, or if it is difficult to locate the site, a poorly designed website displays a poor institutional image of graduates and potential sponsors. The efficiency and effectiveness of current students and faculty may be affected when the information is not structured in a logical way that is easy for users to handle. Heterogeneous groups Beneficiaries of university libraries, faculty, staff, and partners have diverse needs, some are functional, and some are structural, so libraries seek to meet correctly (Shelley G., 1999).

Zemon points out that 50% of library site managers feel that they are unable to deal with the huge amount of information they receive, so he believes that information architecture improves the performance of institutions, which finds interest from both the institution and customers. He points out that 80% of the cost within libraries goes towards site maintenance, sites that are not formed from a correct structural structure always need new decisions for modification and development, in addition to taking A lot of workers' time to complete tasks related to the development process and the daily problems of the system, so the issue of library locations and information architecture cannot be overlooked or neglected, especially in this digital age where libraries are moving to the virtual world (Zemon, 2001).

The Institute of Information Architecture points out that: Information architecture is an important part of the solution to the problem facing information institutions, whether in terms of increasing and multiplying information, which often comes in an unstructured form that we cannot control, or how to create classifications within a new product, and with this huge amount of information and its multiplication, usability is a decisive factor for the success of academic library sites, which will benefit both customers and beneficiaries (Subramanian, 2004).

The visual appearance and impact of a website is only one aspect of website design, the benefit is the ability of a website to functionally do what it is supposed to do, is another benefit. Usability is often overlooked and on the other side: how effectively a person uses this function.

Subramanian explained that products are usable when a person can know what to do with them and when they can know what's going on. The site may be attractive from a point of view visual, contains all the resources that meet the objectives of the site, but is still not usable in human terms (Subramanian, 2004).

Koman spoke in his user study of nine e-commerce sites that although graphics may have an important marketing impact and a visual impact on the user, graphic design elements have no correlation (positive or negative) with the user's success in finding information, the vital point was how effectively the user navigates the site was more important (Koman , 1998) .

Now, the most important question is, is the information structure of library websites sufficiently structured to enable users to respond effectively to such concerns?

Methods of enhancing information architecture for library websites:

Designing a website needs a large study in addition to preparing and thinking about the fact, its future and its flexibility to use. Web developers often have incomplete projects due to the lack of reliance on a team with experience and specialization in dealing with the site design project from beginning to end.

The website design process goes through two main stages:

The first stage: the stage of building the information of the website.

The second stage: the stage of programming the website.

The first stage of the website design process, which is the information building stage of the website, is as follows: (Qarzir, 2021)

The first step: determine the type of site and its requirements, and in this step, an architect must accurately determine the nature of the institution for which the site is to be built, as there are many types of websites.

The second step: Defining the objectives of stakeholders, which is the institution that owns the website and its main funder, as the institution often sets main objectives for the website and this step aims to clarify these objectives to stakeholders and thus the information architect can draw the outline of the website. The target audience is divided into two parts (Ali, 2021):

- **Primary audience:** It is the basis for creating the site, and it reviews its information periodically.
- **Secondary audience:** It is important but not influential in decision-making.

One of the capabilities that the target audience wants to provide within the site and the information architect must take into account is research and reading tools for PDF files.

Step Three: Determine the goals and expectations of users, website designers often organize the contents of the site

according to their tendencies, trends and ideas, instead of identifying and achieving the needs of the users, who are the main goal of creating the website. The main objective is to arrange the site in a way that corresponds to the expectations of the users and the way they use it. This is done by doing information architects interviews with the main users of the site to identify the desired goals of the site.

Step Four: Determining the content of the website is one of the most important steps on which the success of the site is built, and this step may be carried out by one person or a group of people, which is: the process of scanning and inventorying all documents and information that can be added within the site, studying the content of each document and analyzing this content. (Mehran, 2016)

Richard Wurman presented in one of his interviews in which he talks about the field of information architecture the need to diversify the content displayed on websites between: (Klyn, 2009)

- Texts (books - articles - periodicals - guides - abstracts - letters - conference research).
- Photos and drawings Graphic.
- Databases.
- Advertisements for the latest products on the site.
- PDF and video files.
- Electronic sources of information.

Step Five: Addressing Website Contents: The process of addressing website contents is a form of informational representation, The importance of addressing the contents of the site is the possibility of merging a wide range of information under one name consisting of one or two words that contribute to building the **navigational system of the site, and thus helps not to crowd the main page of the sites** with a lot of information that has an impact on the dispersion of the beneficiary.

Addressing appears in two main forms: text addressing – icons, but the text form is more common despite the ease of dealing with icons by the beneficiary (Khalil, 2019).

There are several criteria that must be taken into account when dealing with website text addressing:

- Be meaningful and clear to the beneficiaries.
- To attract the attention of the users.
- To be identical to the content displayed on the site.
- Be concise, not more than three words.
- Use a unified constructivist approach to the term on all pages of the site so as not to distract the beneficiary.
- The accuracy of the terminology so that it matches the search process.
- **Sixth Step:** Organizing the contents of the website, in this step, the topics identified in the previous plan are arranged and organized and placed in groups related to each other or similar, and the information can be arranged in several ways: (Mehran, 2016)
 - Date order.
 - Alphabetical order.
 - Geographical arrangement.
 - Sort according to the nature of the users (students, faculty members, staff....)
 - Objective order.
 - Hierarchical arrangement.
 - Sorted according to the nature of the source (books, videos, periodicals...).

Step Seven: Create a website map, visual graphs reflect navigation in the main content areas of the site, as they are usually built to resemble maps that show the way in which users can navigate from one site to another section, and sometimes some of them may refer to the relationships between pages on the site (Hayek, 2021).

For the success of the navigational structure of the website, certain conditions must be met: (Dillon, 2002)

- Navigational links directly inform the user of the information he wants to access.
- Customize the content area to display hyperlinks that are related to the website.
- If there are links outside the contents of the site, such as PDF or HTML files, they must be placed as links to the site so as not to cause problems for users whose Internet speed is poor.
- The site page should not be cluttered with many hyperlinks so as not to cause visual clutter to the user.

Each page of the site should contain navigational links to the following information:

- Logo of the site and return icon to the home page.
- Information about the institution that created the site.
- Services provided by the site.
- The possibility of quick search within the site.
- User evaluation of the content of the page.
- User inquiries.
- The address of the institution and telephone numbers.

Step Nine: Create a schematic framework for the website: It is a diagram that shows how to organize the components of the web page, and thus facilitates the work of the information architect when dealing with web designers and developers to convert the information structure of the website from planning to a user on the Internet (Hayek, 2021).

8.1 Create a visual plan of the site, which may include the following:

Website Grid frame: Also known as a page layout or screen layout, it is a visual guide that represents the structural framework of any website. The web framework connects the basic conceptual or informational structure to the site's interface or visual design of the site, and the web framework

helps determine the performance and relationships of different screen templates on the site. The web frame of the website contains the initial illustrations and page structure, which may also indicate how users interact with the website. Having these visual charts at the web designer's fingertips will help him or her in the layout and visual design of the page. The website framework sets design priorities in the presence of different types of competing messages. In addition to websites, web frameworks are used to create prototypes for mobile websites, computer applications, or other screen-based products that incorporate human-computer interaction (Klancar, 2021).

8.2 Identification of navigation and navigation systems:

The browsing system provides a set of elements on the screen that allow the user to move from one page to another within the site, and the browsing design must clarify the relationship between the links it contains so that the user understands the options available to him for browsing the system, general browsing and local browsing.

Criteria for evaluating the information architecture of academic library websites:

Due to the importance of evaluating library websites, the study prepared and developed an evaluation model for academic library websites based on intellectual production and pioneering studies in the fields of website development, user interface design and interactive web design. The following is a presentation of the most important criteria on which the study relied in this field:

First: Standards issued by professional library associations:

The American Library Association (ALA) has issued five standards for evaluating online documents: (Okpala. 2011) (Leganza's, 2010)

1. Accuracy of web Documents.
2. Intellectual responsibility of the document.
3. Coverage of web documents.
4. Novelty of web documents.
5. Objectivity of Web Documents.

The American Association of Librarian Schools (AASL) has also developed a list that includes several questions to evaluate websites, these questions fall under the headings of topics that are criteria for evaluation, which are as follows:

- 1-General information.
- 2- Intellectual responsibility.
- 3- Form and design.
- 4- Navigation.
- 5- Content.
- 6- Performance.
- 7- Link to the subject of the research.

While the American Association of Law Libraries sets a set of standards that include legal information **and it classifies it as follows:**

- Content: includes several elements: coverage, text, format of documents, context, stability, author, references, etc...
- Organization: includes: legal links, arrangement of documents, search features
- Usage and navigation: hyperlinks, ease of use.
- Access: Includes: Commitment, Browser Compatibility.

Second: Standards issued by the academic libraries:
(Barhoumi, 2019)

The University of Wisconsin Library represented the Ohio University Libraries, the University of British Columbia Libraries, and the San Diego State Library.

These academic libraries have agreed on a set of criteria that they have defined as follows:

- Purpose.
- Author.
- Content.
- Modernity.
- Recognition.

The study relied in the evaluation on a model consisting of eight basic criteria, and falls under each criterion a set of sub-elements, namely: (the criterion of intellectual responsibility, the standard of content design, the standard of content description, the standard of organization and ease of use, the standard of addressing, the standard of navigation, the standard of research, the standard of information quality)

Evaluating the information architecture of the Central Library of Imam Abdul Rahman bin Faisal University site:

Intellectual Responsibility:

- **Availability of basic information to the Library:**

A/ Introducing the library and its objectives:

The total number of university libraries is 16 central (3) and affiliated (13) libraries distributed geographically within the university's main campuses in Dammam and the university campuses in different cities in Qatif and Jubail. Despite the recent establishment of the university's libraries, they acquire a distinct and diverse set of information sources, whether printed or electronic, which serve the information needs of all university employees, including undergraduate students and graduate researchers, in addition to faculty members and researchers in accordance with the policy of developing the university's library holdings, whose objectives stem from the vision and mission of the Deanship of Library Affairs.

The Library has defined its objectives to:

- Provide an organized collection of books and periodicals (both print and electronic) that meet the educational needs of students and faculty in order to support the research programs and degrees they award.
- Select, organize and archive learning resources (both print and electronic) needed by undergraduate, graduate and research students.
- Improving the level of information efficiency of the beneficiary community and assisting the academic community in making effective use of information in its many forms.

- Providing assistance to faculty members and students with various mechanisms to provide information, in order to optimize the services of Imam Abdulrahman bin Faisal University libraries.
- Establishing the appropriate ICT infrastructure for all university libraries in order to provide an appropriate service to its beneficiaries.

B /Availability of contact information:

The site provides contact information for the external environment of the library, as it provides the following means:

- Contact Information of the Deanship of Library Affairs Tel: 00966133332804/00966133332829, Fax/00966133330350.

-Email: librarya@iau.edu.sa .

- Electronic media such as: Twitter (@IAU_dla), Facebook (@IAUeLibrary), YouTube.

C/ Availability of the Library News (Updates):

A horizontal bar is available on the site to display the library's developments, which refers the user to the most important news in the library.

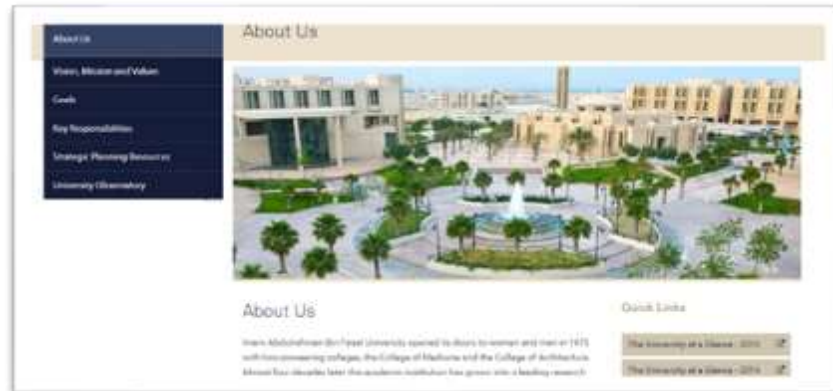
D/ Presentation of Library Policy and Domestic Law:

The Deanship of Library Affairs at Imam Abdulrahman bin Faisal University provides the internal library policy for lending through its website, and it contains:

- The most important services that are provided to students and faculty members.
- Internal and external membership regulations.
- Membership renewal.
- External Circulation Service Policy.
- Special circulation policy for each category of beneficiaries.
- Employee Circulation policies.
- Loan policies for graduate students.
- Penalties for delay and damage to vessels.eneral rules.

1.2 Location Introduction:

Figure (2): Represents the main interface of the electronic library website of Imam Abdul Rahman bin Faisal University



The photo is taken from the website of the library under study.

A/ Using distinctive logo for the site:

The site contains a distinctive logo, which is the logo of Imam Abdulrahman bin Faisal University, and the logo is centered clearly at the top of the site and in all pages of the university's website and for the electronic library as well.

B/Using the electronic name of the site and the availability of the hosting index:

Register the electronic name of the site in short the name of the university in English Imam Abdulrahman Bin Faisal University, (<https://www.iau.edu.sa/ar>), while the hosting index as shown in the link above (sa) the abbreviated version of the Kingdom of Saudi Arabia, i.e. hosting the site in Saudi Arabia.

C/ using a brief about the site:

Information on the date of establishment of the site was not provided, a brief overview of the university's libraries and holdings was provided, in addition to providing an overview of the services provided on the site, such as:

- E-Library
- Simon Unified Search Engine
- Electronic Catalogue
- Digital Repository

D/ The site is available in more than one language:

The website is available in both Arabic and English.

E/ Direct accessibility of the site:

The library's website can be accessed through the library's icon on the university's website, in addition to writing the name of the site (<https://www.iau.edu.sa/ar>), and the site can also be accessed by typing the name of the library in search browsers, in addition to the library's social networking sites.

1.3 Identify the target audience:

The library provides its services to all university employees, including students, faculty members, staff, and researchers.

2 - Content Design Standard:

2.1 Attractive Location:

A/ Color consistency:

The colors of the site are characterized by consistency and vary between dark and light tones, the main background was used in light colors, which added clarity to the texts on the site, and three main colors were chosen for the entire site and are consistent with the university's logo on the site, which is blue, white and beige.

B/ Photos:

The library's website contains many images and symbols expressing the library's topics, and the image icon at the bottom of the site contains an archive of photos and important events of the library.

C/ Clarity of the font:

The font is clear and the sizes vary from (medium, small, and large) according to the titles to distinguish between them according to their importance and readability.

D/ Availability of Sound:

The site contains videos and digital audio files (podcasts).

2.2 No Content Stacked on the Page:

The site attached importance to the elements of content organization, so that the main topics of the Deanship of Library Affairs were placed with vertical navigational links, in addition to the library services, which were placed with vertical

navigational links to reach them, which facilitated access to the services on the site quickly and not distracting the use of the site.

2.3 Unity and stability in the structure of the pages of the site and its general format:

The site adhered to this standard so that the site enjoys a logical and systematic organization of the site for the information and electronic services provided.

4 / the possibility of evaluating the shape and colors of the site interface and rearranging the components to suit each user:

This property does not exist on site.

3. Content Description Standard:

3.1 Technical responsibility:

A/ having information about the website designer:

The website is within the domain of www.iau.edu.sa and other sub-sites (as part of the above-mentioned domain) are owned and operated by Imam Abdulrahman bin Faisal University.

B/ Possibility to contact the website administrator:

The site provides all means to contact the website administrator and the means vary from contact numbers, e-mail and social media.

3.2 Description of the content provided by the Website:

The analysis of the site showed that it is divided into the following main sections:

About the Deanship of Library Affairs: Welcome and About the University Libraries and the services provided such as

- **Electronic Portal:** Which allows the beneficiary to access the electronic resources of the university and search in the databases that the university subscribes to, the electronic portal contains many databases that the university subscribes to through the Saudi Digital Library, the most famous of which are: (Asczad, Dar Al-Manzouma, Al-Manhal) and many foreign databases, and quick links are provided to access the new rules that the university subscribes to in a new way.

-Unified search engine Simone: Allows the beneficiary to search in the library's printed and electronic resources according to the search vocabulary.

-Electronic Index: Allows the user to identify the printed and electronic sources acquired by the university libraries with the possibility of retrieving the entire text.

-Digital Archive: An effective tool that allows the beneficiary to access all scientific production of university employees, whether scientific theses or scientific research published in scientific, local or international journals.

The site also contained a vertical navigation bar for each of the departments, university libraries, services, special collections, library policies, library working hours, in addition to the footer of the site and the text icons it contains for colleges, scientific research, students, and the website, and each icon branches into sub-topics that allow quick access to the beneficiary quickly and easily.

3.3 Identify the style and format of the content:

The content of the site is multiple, including databases and archives of photographs, and the site also includes videos and digital audio files.

3.4 Volume of Website Content Available to users:

Some applications available on the Internet have been used to measure the size of the site's content from internal and external links, the number of pages and their size, we review them as follows:

A/ Number of pages:

The application of measuring the size of the site's content showed us several outputs, as the application showed that the number of pages of the site under study (393 pages), and the size of the pages (19.25MB), and the process of showing the outputs took a lot of time.

B/ Internal and external links:

The following technique was used to measure the internal and external links of the site under study

(<https://smallseotools.com/website-link-analyzer-tool/>); we

show the outputs in Figure (2):

Figure 2 measuring the number of internal and external links



The application shows that the total links on the site are (167), which vary from links in the form of icons and texts, and are divided into internal and external links, the number of external links (21), and the number of internal links (146), and the content of the site is suitable for the number of beneficiaries of the website.

3.5 Does the Site allow the addition of information by the beneficiaries?

The site provides an icon (join the mailing list), which allows beneficiaries to view the newsletters continuously via e-mail, in addition to joining in donations and newsletter of the site and guidance.

3.6 The extent to which the Content supports the services and activities that the Site should provide:

Several positive observations were noted on the library's website, but during browsing the site, we faced several difficulties, such as the difficulty of loading pages on the site, and this is one of the bad things that may affect the beneficiary's visit periodically and continuously to the site, as the speed of Page loading is an important part of the success of the website architecture.

3.7The Arabic version of the site is identical to that of other languages of the site:

The Arabic and English versions of the site match the format and organization of the information and there were no problems browsing in both languages.

3.8 The extent to which the contents meet the needs of the users:

The site provides a variety of electronic services and activities and content that lives up to the level of researchers, students and faculty members at the university, as it provides access to print and non-printed resources in all university libraries in addition to databases and search engines for the library and index.

4. Regulation Standard:

4-1 identifies the type of organizational charts used:

The site relies in organizing its structure on thematic plans, as it divides the main topics on the site, which are fixed and branch out into other sub-topics.

4-2 identifies the type of organizational structure used:

The site is based on the flat hierarchy of the web, as the pages are linked to a center, which is the home page, and through internal various links, access to the rest of the pages and then return to the home page.

5. Standard Addressing:

5.1 Identify the form of labels used in titles:

The site relies mainly on text labels for titles, which did not exceed more than four words, such as: electronic databases, e-books, topics.

5.2 Analysis of the nomenclature used for titles:

A/ Language Used:

The site used a clear and easy language recognized by the users in naming the addresses in it to facilitate access, as an example, we mention the following names: alphabetical list, index, patents.

B/ same name to match the same content:

The labels used for the titles matched the content that falls within them on the site in a clear way that made it easier for the beneficiary to quickly access the information.

6- Navigation standard

6.1 Identification of the navigation systems used:

A. Basic navigation Regulations:

Total navigation systems: The general navigation bar is at the top of the site to indicate the main sections of the content, while the internal navigation bar appears as a drop-down list of the general navigation bar.

B- Utilitarian Navigation System: Appears at the top of the site, and includes new acquisitions 2020, frequently asked questions, asking a question, purchase proposal, site language and links to the library's page with Facebook, YouTube channel, Twitter and Google Plus.

6.2 Advanced navigation Systems: The site uses advanced sailing systems on its page, where specialization and presentation systems are available, social navigation systems and even voloxnomic system.

6.3 Identification of Navigation Aids Used: Not Used in the Site.

7- Search Criterion:

7.1 Study of the search bar on site:

- Search scope: Limited to site content only.
- Search strategies used: The library website allows searching within it using the simple and advanced search strategy.
- Results view: When searching the library site, the search term is displayed as a result and through which the content is displayed.
- Accuracy of results: The site is rich in information, in the case of search, the content appears as a result or similar to it.

7-2Analyzing the method of searching in the automated library catalog:

A/ Scope of Research: The index allows searching in library books, theses, articles and scientific journals.

B/ Search strategies used: The index allows searching within it using the simple search strategy, advanced search, and the multi-criteria search strategy Which allows the following options for the search process, which are (titles, authors, publisher, series, edition, Dewey classification, call number,

summary, all fields), in addition to setting a set of delimiters, where the library defined the search with three options: document type, printed text, or electronic document.

C- Support ways provided to the beneficiary: The index supports the beneficiary through the "help" icon, which provides an explanation of the search steps in the index, and the search options it provides.

D/ How to display the results: If you search in the library index, the search results appear as follows: At first, the index displays the search term and the method of sorting the results in the following order: either by (title, authors, or all fields), then it provides statistics on the number of search results according to each order, and adjacent to each search result, the index allows the ability to display all search results for each method.

Indexing Specifications for Recovered Sources: Indexing Registration consists of each source retrieved from indexed bibliographic data of the source, that the full source title, author's name, printing data, physical description, indexes, number of copies, and call number are stated.

F/ Electronic attachments that accompany retrieved records: Bibliographic records did not accompany the sources of information resulting from the search process in the library catalog any electronic attachments.

G / Accuracy of results: The index is characterized by the accuracy of its results, as we noticed that all the search results were completely identical to what was searched.

7.3 site application to the principles of user interface design:

- The principle of consistency: The interface of the site works in the same format, as clicking on any icon on the site leads to the same result and the same content, even if the process is repeated several times by several parties, or changes its location.

The principle of tolerance: The site did not contain in any of its parts the so-called principle of tolerance.

-Principle of feedback: Feedback between the library and patrons is available on site.

- Availability of the user's portal: A portal is available for the beneficiary of students and faculty members.

Browsing speed: To measure the speed of access and response to the site, we used the PSI tool (Page Speed Insights), which provides measurements of the speed of access to the site, whether using a computer or phone. With one of the notes (slow - medium - fast). The scores are given between 0-100, if it is 0-49, the site is slow to respond, but if it is 50-89, it is medium response and needs to be improved and developed, and finally, if it is 90-100, it is fast. The tool described the site as fast by 97 score.

8- Information Quality Standard

1. **Security:** University of Imam Abdulrahman bin Faisal is committed to protect information resources, which are critical to the academic and research mission, and the university recognizes the role of information security to protect information from threats, and to maintain the confidentiality and loss of information. And to ensure that users have access to the information they need in order to do their job.
2. **Availability:** This standard aims to identify the requirements for availability of information on the site; the site requires members to log in by e-mail or academic number and password and is repeated for documentation. It aims to obtain advantages while searching the database index.
3. **Growth and expansion:** This criterion seeks to identify the ability of the site structure to change and grow in the future, and it was found through the analysis of the site that it is subject to change, expansion and sustainable growth of the structure.

The main results of the study:

- The importance of information architecture lies in organizing this huge amount of digital content in the web through the design of navigation systems within websites and the Internet.
- the Central Library of Imam Abdulrahman bin Faisal University site has achieved elements integration of the intellectual responsibility standard in terms of introducing the library and its objectives, and introducing the target audience groups, but defining the site in terms of its origin and purpose term was neglected.
- Attention was paid to the standard of content design on the site of the Central Library of the University, as the site was

designed in an attractive way characterized by consistency in colors and clarity of colors, and not to accumulate content.

- The content description of the website of the Central Library of the University showed the diversity of the available content, so that it lives up to the level of the university's employees, including students, researchers, faculty members and employees, and the site was characterized by the sequential logical organization of information and services.

- The site consists of (393 pages), page size (19.25 MB), and it contains (167 internal links) and (21 external links), and these percentages are excellent for the content provided to the beneficiaries of students, researchers and faculty members.

- The site was organized on the flat classification of the web, as the pages are linked to a center, which is the home page, and through internal hyperlinks access to the rest of the pages and then return to the home page.

- The site uses advanced navigation systems, in addition to the index, which contains both advanced search and simple search.

- The site supports the principle of consistency, tolerance and feedback, and also pays attention to the standard of information quality in the design of the user interface.

The most important recommendations:

- Adding the information architecture course within the curricula of the library and information science or information science.

- Develop tools and methods for organizing information that is used through the web to search and retrieve information effectively and quickly, which are: (taxonomy, ontology, and foxonomie methods)

- Add a questionnaire with different periods to evaluate the target audience surveys about the site continuously.

- Providing site services and making them available to beneficiaries outside the university, including researchers and students of other universities, for a small fee, to benefit from it in modernization and maintenance operations.

- Adding facilities for people with special needs, such as voice search for the blind, the possibility of enlarging letters for the

visually impaired, Siri technology in the special catalog of the library on the site for reading for the deaf and dumb, and the possibility of changing the shape of the site by the user.

References:

1. Al-Bunyan, R. F. (2018). Reem Faisal Al-Bunyan. Information architecture for government agencies websites: an evaluation study. Faculty of Arts, Cairo University.
2. Bagley, K. (2020). Information Architecture Process: How to Create the Best UX. Retrieved from Blue Fountain Media: <https://www.bluefountainmedia.com/blog/information-architecture>
3. Barhoumi, C. (2019). Evaluating the Effectiveness of University Web Site Design Based Hierarchical Information Architecture Technique. Taibah University(18), pp. 466-495.
4. Benson, A. C. (2001). Complete Internet Companion for Librarians. New York: Neal-Schuman Pub.
5. Dillon, A. (2002). Information Architecture in JASIST: Just Where Did We Come From. Journal of the American Society for Information Science and Technology, 53(10), p. 821.
6. Faller, P. (2020). Top 5 Content Inventory Tips for Information Architecture. Retrieved from INFORMATION ARCHITECTURE: <https://xd-adobe-com.translate.goog/ideas/process/information-architecture>
7. Haverty, M. (2002). Information Architecture without Internal Theory: An Inductive Design Process. Journal of the American Society for Information Science and Technology(10), p. 839.
8. Helen, N, E. (2011). Library Portals and Information Architecture: Librarians emerging Info architects. Journal of library & Information Science, 1(2).
9. Jennifer D ., W. H. (2008). The Role of Information Architecture in Designing a Third-Generation Library Web Site. the Utah State University: College & Research Libraries.
10. Kelsey, D. R. (2002). Analysis of Web-Based Information Architecture in a University Library: Navigating for Known Items. Information Technology and Libraries, 4 (21), pp. 69-158.
11. Klancar, B. P. (2021). An Excellent Beginner's Guide to Information Architecture. Retrieved from Careerfoundry: <https://careerfoundry.com/en/blog/ux-design/a-beginners-guide-to-information-architecture/>
12. Klyn, D. (2009). Conversation with Richard Saul Wurman. Retrieved from <http://wildlyappropriate.com/?p=781>.
13. Koman, R. (1998). Helping users find their way by making your site 'smelly. Retrieved from WEBREVIEW.COM: <http://Webreview.com/wr/pub>

14. Leganza's, G. (2010). information architecture (Vol. 10). Forrester Research.
15. McManus, M. (2009). What is information engineering? Retrieved March 26, 2010, from <http://www.maya.com/the-feed/what-is-information-architecture>
16. Nielsen, J. (1999). User interface directions for the web Communications of the ACM. 1(42), pp. 65- 72.
17. Okpala., H. N. (2011). Library Portals and Information Architecture: Librarians emerging Info architects. International Research: Journal of library & Information Science, 1(2).
18. Resmini, A. a. (2011). A Brief History of Information Architecture. Journal of Information Architecture, 3, pp. 33–48. Retrieved from <http://journalofia.org/volume3/issue2/03-resmini/>.
19. Rosenfeld, L. (2002). Information Architecture: Looking Ahead. Journal of the American Society for Information Science and Technology ., 53(10), p. 875.
20. Rosenfeld, L. (2002). Information Engineering: Looking Forward. Journal of the American Society for Information Science and Technology, 53(10), p. 875.
21. Shelley G., R. B. (1999). The impact of information architecture on academic web site usability. The Electronic Library, 17(5).
22. Subramanian, S. (2004). An Introduction to Information Architecture. Retrieved from <http://articles.sitepoint.com/article/information-architecture>
23. Toms, E. G. (2002). Information Interaction: Providing a Framework for Information Architecture. Journal of the American Society for Information Science and Technology, 53(10), pp. 855–62.
24. Zemon, M. (2001). The librarian's role in portal development: Providing unique perspectives and skills. C&RL News. Retrieved from http://www.ala.org/ala/mgrps/divs/acrl/publications/crlnews/2001/jul/ALA_print_layout_1_169488_169488.cfm
25. Scarlet names. (2021). Information Architecture E-Learning Sites: An Evaluation Study of the Model Platform in Eastern Algerian Universities. Al-Resala Journal for Human Studies and Research, pp. 115-117.
26. Al-Fateh Ahmed Al-Amin and Yasser Mahmoud Al-Hajj. (2022). Information architecture based on homogeneous databases. Sudan: Master Thesis, University of Al-Neelain.
27. Rehab Fayez Sayed. (2016). Information architecture in the virtual environment: an evaluation study of children's educational site. Journal of the Arab Center for Research and Studies in Library and Information Sciences, vol. 6 (vol. 3).

28. Samira Khalil. (2019). Taxonomie and a Course in Information Organization in the Arab Digital Environment. Scientific Journal of Libraries, Documents and Information, p. 185.
29. Samira Khalil. (2019). Taxonomie and its role in organizing information in the Arab digital environment. Scientific Journal of Libraries, Documents and Information(1), p. 185.
30. Talal Al-Zuhairi. (2017). Tools for classifying and organizing digital content in the Internet environment. Iraqi Journal of Information Technology, vol. 1 (vol. 8), p. 101.
31. Manal Elsayed Ali. (2021). The First Virtual Forum of the Association of Specialized Libraries, Gulf Branch. Information architecture as a future extension of the field of libraries and information.
32. Maysa Mahrous Mehran. (2016). Basic components of information organization systems within information architecture: an analytical study. International Journal of Library and Information Sciences (vol. 3, p. 2), pp. 115-117.
33. Hiam Hayek. (2021). Information Architecture and Navigation Elements: New Information Architecture. Retrieved from <https://cutt.us/FHChq> Grammatically reviewed by Eslam Hamdy 20 1208408209