

## A TENTATIVE MODEL FOR AN ONLINE PLACE BRANDING APPLICATION SOLUTION

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**Abstract:** *This paper aims to introduce an automated ranking algorithm by using a software platform, an application for analysing an online place brand's content, in terms of the characteristics of a place brand's identity communicated through official websites. The application was implemented using up to date programming languages and technologies. For the database implementation, MySQL was used together with phpMyAdmin tool. The application was developed using PHP, CSS and JavaScript being used for designing it. This application is not designed for general or public use yet, it is intended for an analysis of brand characteristics added by a user and all the application main functions are described in this paper.*

**Keywords:** *place brands, Cyberspace, application, software platform, ranking brands.*

### 1. Introduction. The History of Cyberspace

The origins of the Internet, or cyberspace as you wish to call it, are to be found in a military research project created by the Defence Department of United States. In 1958 ARPA (Advanced Research Projects Agency) was created to mobilize research resources, particularly from the university world, in order to create military superiority over the Soviet Union. In September 1969 a minor project, a computer network, emerging from one of ARPA'S department called ARPANET was invented. Its purpose was to facilitate "a way of sharing computing time on-line between various computers centres and research groups working for the agency" (Castells, 2001, p.10).

Before 1990, cyberspace was used primarily for e-mails and file-transfers by academics and researchers across the United States of America and was defined by the shared pursuit of science. Nonetheless, by the middle of the decade two major changes occurred: the commercial use (once forbidden across the US) surpassed its academic use and the World Wide Web (WWW), a graphical-hyper textual interface, became the main vehicle for navigating internet sites (Holmes, 2001, p.57).

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From that point onwards, the adoption and usage of the cyberspace has grown very rapidly. For example, there are more than 1 billion publicly accessible Web pages as of January 2000 (likely to have tripled by January 2001). Moreover, the number of other media: e-mail, mailing lists, chat rooms and virtual worlds has expanded greatly and are used by a rapidly expanding population. For example, 377 million people were connected to Internet by September 2000, an 87% increase from 1999 (Dodge and Kitchin, 2001, p.3). Since then, the explosion in number of the Internet users continued to grow. Current reports show that from 2000 until 2017 there has been a 976.4% increase. This means that more than 50% of the world population uses the Internet. If in September 2000 there were 377 million people connected to the Internet, in June 2017 there were over 3.8 billion people (Internet World Stats, <https://www.internetworldstats.com/>).

The term cyberspace first appeared in the English language in a science fiction novel. It represents a virtual place that is both real and artificial at the same time, a new medium of communication, a global space inhabited every day. The origins of cyberspace are to be found in a military research program designed to share computing time between various computers. Throughout time, numerous changes took place regarding the cyberspace. Two of the biggest changes appeared in the 1990s when the commercial use surpassed the academic use and the World Wide Web (www) became the main vehicle for navigating Internet sites. Since then, the usage of cyberspace has grown very rapidly and currently more than 50% of the world population uses it. There are three main characteristics of cyberspace: its spatial expansion, its social component and the fact that it can only be accessed through a physical interface. Cyberspace is only partially physical therefore it represents a different kind of space and it is a digital complement to our atomic world. It can only be accessed through specially designed devices and although originally it was designed to be used for its capacity as a processor, now it has become a communication and social environment and the subject of different topics of research, of destinations or places.

## **2. Defining the Research Objective**

The objective of this research was to develop a software platform, an application for analysing an online place brand's content, in terms of the characteristics of a place brand's identity communicated through official websites. This subject is nowadays of great interest, as "the Internet website is a communication tool which contributes to the promotion and advertisement of a company's or an organization's services and products and it is in fact its mirror" (Constantin and Kavoura, 2016, p. 188) and the medium can be considered "as a low cost and accessible source of data, tools and methods for analysing visual content and it will be more and more popular among tourism researchers" (Nechita et al., 2019).

The application was implemented using up to date programming languages and technologies. For the database implementation, MySQL was used together with phpMyAdmin tool. The application was developed using PHP, CSS and JavaScript being

used for designing it. This application is not designed for general or public use yet, it is intended to analyse the brand characteristics added by a user.

Once created, a user can add the brands needed for the analysis (i.e., to identify and analyze the characteristics of place brand online identity), according to the analysis grid or the coding scheme used on a quantitative research level, by applying the content analysis method to the official sites of the place brands. Under this procedure, the analysis unit was considered “the page” of the official websites of the place brands. The starting point in applying the procedure for establishing the identity characteristics according to the coding scheme, is the site Homepage, because sites of different sizes can be compared in this manner, using the same degree of size, as a measure to “equalize differences between small sites with few links and larger sites with many links” (Hwang *et al.*, 2003, p. 14).

This grid has been implemented with a very simple interface to be used by anyone. Buttons or text fields were created for the input of the variables, the user only having to enter the data according to the research.

Once a brand is added by the user, the score is calculated according to its characteristics. This score is calculated for all four dimensions that need to be analysed (i.e., (1) Brand design or the brand visual presentation, (2) Brand behaviour, (3) Brand information and communication and (4) Site delivery or Exposure of brand features).

Due to the fact that analyzing place brand online identity is relatively new as a scientific field (Florek *et al.*, 2006; Alonso and Bea, 2012; Briciu *et al.*, 2019), a unanimously accepted model was not developed in the branding sphere. Therefore, the methods of analysis used in other fields were adopted. Florek *et al.* (2006) structured a coding scheme in analyzing the characteristics of online place branding identity. The coding scheme contains three elements of the place brand identity: place design, place behavior and place communication. Place design represents “the visual presentation and identification of the place”, place behavior translates into “actions (taken mostly by authorities and citizens) observed in the physical environment” and place communication refers to the “form of communication of a unit with its internal and external audiences” (Florek *et al.*, 2006, p.279). Moreover, a fourth dimension will be added to the coding scheme: the site delivery (Gibson and Ward, 2000), divided into five components: presentation/ appearance, accessibility, navigability, freshness and visibility.

Depending on the score obtained, the brand is added to the diagram of each dimension and to the position obtained. After several brands have been added, the user can analyse the charts, obtaining the necessary information needed.

### **3. Implementation and the Use of the Application**

#### **3.1. Creating the database and the tables**

The database was created by using the phpMyAdmin tool that is included xampp. It has a modern visual interface. Every entry in the database has a unique ID that is auto incremented. The application data was divided into three categories: Admin, User and Site. The phpMyAdmin interface is presented in Figure 1 below:

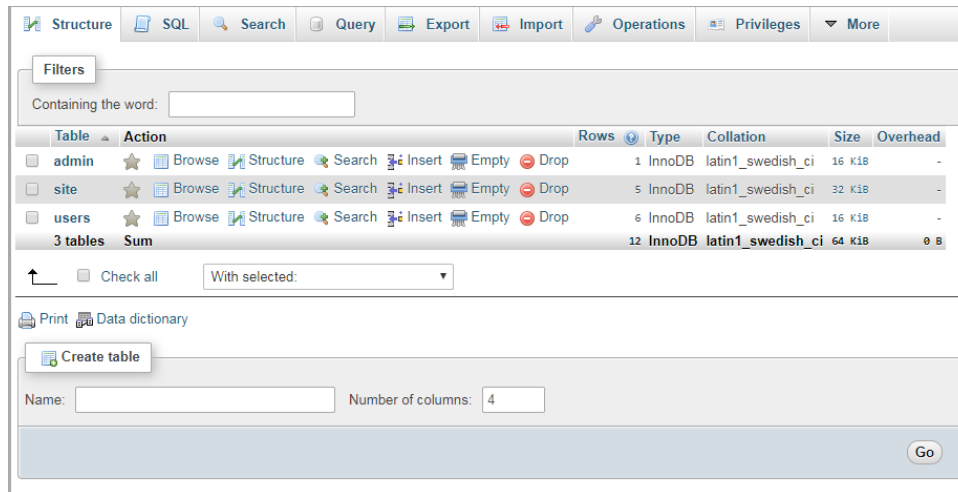


Fig.1. The *phpMyAdmin* interface

From this figure, we can see that the interface is user-friendly for different uses, and we can explore in the horizontal taskbar from the beginning of the page several commands: Structure, Search, Query, Import, Export, etc.

### 3.2. The Login procedure

The in-app login is per session. A session is the time period when multiple PHP scripts, accessed at different times that can store and use shared information. A session starts when a script calls the `session_start` function and ends when the user closes the browser. The code is made to generate a single admin key that is stored in the database in the `session_id` field, and is also stored in a session variable. At each request of a page, it is verified that the `session_id` in the logged-in database is identical to the `session_id` that exists in the session variable, so if the admin logs on Firefox, and after logging on to Chrome, the first request made on Firefox will be sign out and asked to re-log because the session has expired. The login form (Figure 2) has a username and password, allowing the user to try logging in three times, after which it will be blocked.

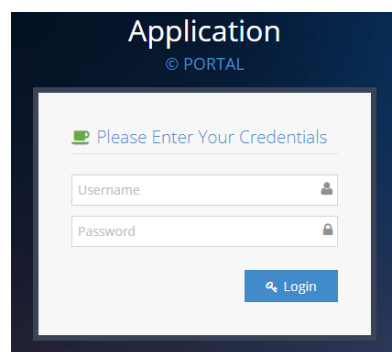


Fig. 2. The Login form

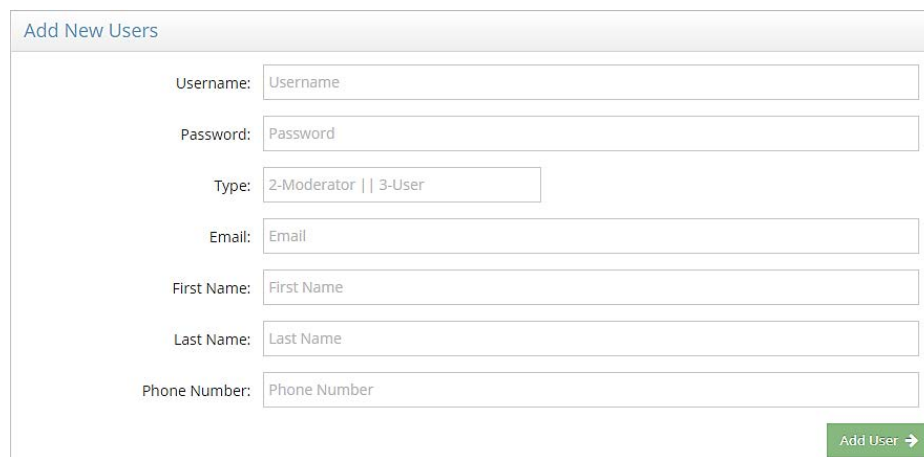
### 3.3. The Admin Section

The admin section is dedicated exclusively to the application manager. In this section a regular user does not have the right to enter or log in. The administration account of the application can only be created from the database by its administrator. The application administrator can add users, and once a user has been added, that account can be disabled by a simple click, if necessary. The administrator also has the right to change the data from an already created account.

By clicking on a user's account from the list of all users, the administrator can see all the brands (sites) he added, also having the right to approve or reject a user-added brand. It is worth mentioning that a brand that is not approved is not taken into account in the analysis.

### 3.4. Adding and Updating Users

As mentioned above, the administrator has the right to add users. Being an application for a particular research purpose, not for the general public usage, it was agreed that not anyone who accesses the app should be able to create an account. The only possibility that an account can be created is if the administrator creates it. The add-on form of a user has the following format and is shown in the figure below (Figure 3).



The figure shows a web form titled "Add New Users". It contains the following fields and controls:

- Username:
- Password:
- Type:  (dropdown menu)
- Email:
- First Name:
- Last Name:
- Phone Number:
- At the bottom right, there is a green button labeled "Add User" with a right-pointing arrow.

Fig. 3. Add New User Form

It can be seen from the figure that a user account contains the following fields: Username, Password, the Type of the User, Email Address, First Name, Last Name and Phone Number. Once these fields have been completed, you can click on the "Add User" button to create and add the user to the application database, and then the user can log in to the application.

### 3.5. User List and Brand List Interfaces

The two interfaces are made with up-to-date technologies and have a "user friendly" character that is easy to use. In the "User List" section, the administrator can see the list of all existing users in the database. Figure 4 shows the "User List" section.

#	Username	First Name	Last Name	Email	Phone	Type	Approved	Actions
7						User	Rejected	<a href="#">Manage User Info</a> <a href="#">Enable User</a>

Showing 1 to 1 of 1 entries (filtered from 7 total entries)

Previous 1 Next

Fig. 4. *User List Section*

As you can see in the above image, the following information is displayed for a user: the ID, Username, First Name, Last Name, Email Address, Phone Number, Type, Status. The ID is a field in the database. It is unique and self-incremented. If a user account is deleted from the database when the next account is created, it will not retrieve the old account ID but it will generate another unique ID.

The Username, First Name, Last Name, Email, Phone, Type fields are filled in with the data added to the user add-on form, completed by the administrator. The "Approved" field shows whether the user account is on or off. In the figure above, we notice that the user is "Rejected". If you click on the "Enable User" button, the user account will be activated.

Two buttons are visible in the last field. The first one, the one that signifies a magnifying glass, leads to the "Manage user info" section, where user-added brands or updated user account data can be viewed. The second button deletes the user from the database.

This interface also allows for several display modes. By modifying the value of the "Display" field, we can choose how many accounts to display on the page, by using the "Previous" and "Next" buttons to navigate through the pages. The interface also contains a Search function, which can easily search for a required value. You can search for example by Phone Number, Email, First Name, Last Name, etc. In the lower left corner, you can see the message: "Showing 1 to 1 of 1 entry (filtered from 7 total entries)". This text changes dynamically depending on search results. In this example, a single object was found in the searchable database, out of 7 present in total. The interface of a user's list of brands is very similar to the list of users. Clicking on an account or the magnifying glass button will open the "Manage user info" page that will contain all the brands added by that user. Figure 5 shows this interface together with its components.

#	Name	Url	Country	Continent	Date	Score Brand Design	Score Brand Behaviour	Score Brand Communication	Score Site Delivery	Active	Actions
1	Visit Transilvania	https://www.visittransilvania.ro	Romania	Europe	24-06-2018	4 pts	5 pts	13 pts	8 pts	Approved	<a href="#">Manage Site Info</a> <a href="#">Disable Site</a>

Showing 1 to 1 of 1 entries

Previous 1 Next

Fig. 5. *User Site List*

As you can see, the layout is the same as the previous interface. The fields in this list are as follows: the brand ID, Name, the site address, Country, Continent, the Date it was added, four score sections for each of the four dimensions of the research project (Brand Design, Brand Behavior, Brand Communication and Site Delivery), Status, Actions. The functionality is exactly the same as the list of user accounts, using Search or Sorting options. Also, from this window the administrator can activate a user-added brand, or disable it if necessary. If we click on the name of the brand, this action will load the site components page, structured on the four sections described above. Note that the administrator can see all the brand features with all user-defined variables, but cannot change any brand attributes added by the user.

This task is active only for the user who added that brand. The administrator can only "reject" the brand if it is not consistent with the analysis procedure, and the changes are to be executed by the user afterwards. Once the brand changes have been made, the administrator can activate the brand back in order to be taken into account in the analysis. A brand can be removed from the database by the administrator by clicking on the delete button in the "Actions" field in the "User Sites List" section.

### 3.6. My Account Section

Once the user account has been created by the application administrator, it can log in using the login form. After logging in, the user has three pages to use as follows: Dashboard, My Account and My Sites. The "Dashboard" page is the app's home page where the user can see the analysis charts for the brands he added. These are calculated based on the presence or absence of certain attributes of the brand. There is also a scorecard with brand scores for each dimension. An example of a table can be found in the figure below.

★ Top 10 By Site Delivery		
#rank	▶ name	▶ points
1	site 4	11 pts.
2	site 5	10 pts.
3	site 2	9 pts.
4	site 1	8 pts.
5	site 8	7 pts.
6	site 7	5 pts.
7	site 9	5 pts.
8	site 10	5 pts.
9	site 3	2 pts.
10	site 6	2 pts.

Fig. 6. An example of scoring table

On the "My Account" page, users can update the data, so they can change their fields containing their email address, First Name, Last Name and phone number. Also, the

password change function by the user was implemented on this page, without involving the administrator in this task as well.

The "My Sites" section of the menu allows the user to add brands to be analyzed. This page is made up of several data entry forms created after the analysis grid used. Also, on this page, the user can see all the sites he added, which can be modified as needed.

### 3.7. My Sites Section

In this section of the user's options, he or she can add a site for analysis. The content of this section is more complex because it is composed of several forms, according to the analysis chart resulting from the initial research. The branding page (Add new site) is composed of two general parts: the generic brand information form (name, URL, country, etc.) and forms for entering the variables of the four dimensions analyzed: Brand design, Brand behaviour, Brand communication and Site delivery/ Exposure of brand features. The interface of the first form is shown in Figure 7 below:

The screenshot shows a web form titled "Add new site". It contains five input fields, each with a label and a placeholder text: "Name: Name", "URL: URL", "Country: Country", "Continent: Continent", and "Slogan: Slogan".

Fig. 7. Add site template

Here you can add generic information about the site added by filling in the following fields: Name, URL, Country, Continent and Slogan. Next, the identity variables for each dimension must be entered. Figure 8 shows the interface for the Brand Design components, the interfaces for the other dimensions being similar, the difference between them consisting only of the variables specific to each dimension.

The screenshot shows the "Brand Design" interface. On the left is a sidebar with four menu items: "Brand Design" (selected), "Brand Behaviour", "Brand Information and Communication", and "Site Delivery/Exposure of brand features". The main area contains six toggle switches: "Slogan: YES", "Logo: NO", "Coat of Arms: YES", "Picture/ Image Gallery: YES", "Maps: NO", and "Flag: NO". A green "Add Site" button with a right-pointing arrow is located at the bottom right.

Fig. 8. The *Brand Design* interface

The user can easily enter the variables using this form, since it was created for easy use with a user-friendly interface. For example, if a brand has the "Slogan" variable in its composition, the user can express it by clicking the button next to the "Slogan" variable.



The button initially has the value "0", meaning "No". Once accessed, the button switches to "1", meaning "Yes".

Note that within the forms in this section of the application, users will still be able to enter the absolute values of the variables, the only difference being considered in how the score will be calculated. This result has been reached because the values of the total scores of each dimension should be as close as possible, and if, for example, a site would use a large number of cookies, the value of the variable would also be very high, and compared to the other dimensions, a much higher score would be obtained, without any justification. For this reason, the choice has been made to weigh the variables that could have high values, reaching their simple dichotomous status of presence (0), or absence (1).

Returning to the functionality of adding brand values along with all of identity variables, after the user has finished setting all variables based on brand values, in order for the site to be added to the database, you must press the "Add Site" button. This will trigger the `addSite ()` function that will make the transition to MySQL. This function has the general configuration as any other add-on function, but since it adds a very large number of variables, it is very long.

Once added, the site will appear in the list of sites added by that user. This list has a similar interface to the list of all users in the Admin section, and consists of the following fields: the brand ID, Name, URL, Country, Continent, Date it was added, Brand design dimension score, Brand behaviour dimension score, Brand communication dimension score, Site delivery/ Exposure of brand features dimension score, Status (Active or Inactive) and Actions (Explore or Delete). The list also allows you to sort brands according to each field, if the number added is large, it is possible to display only one part of the total number of brand records on a page, so you can navigate between the pages in the "Previous" and "Next". The search function is also present in this list, searching in real-time, without the need for a page reload.

If users want to change certain variables or fields of the brand added, they can modify this by either clicking on the brand name or the icon on the Action bar. This action will open a new form of the brand, containing all fields filled in. The user can make the desired changes, and then clicking the Update site info button will update the site's data. This is done with the `updateSite()` function.

Once added, a brand must first be approved by the administrator. Once it is approved, it will be available so that it can be taken into account when calculating diagrams. The administrator may also disable a site at any time if it is not in accordance with the analysis procedure.

### **3.8. Dashboard Section**

The Dashboard page lists the rankings of each dimension, depending on the scores of the brands added or considered by the user. A brand can get a maximum score within the brand construction dimension, but it can also score with a lower score in another dimension. By using this chart, the user will be able to continue the initial research. An example of a diagram is shown in Figure 9 below.

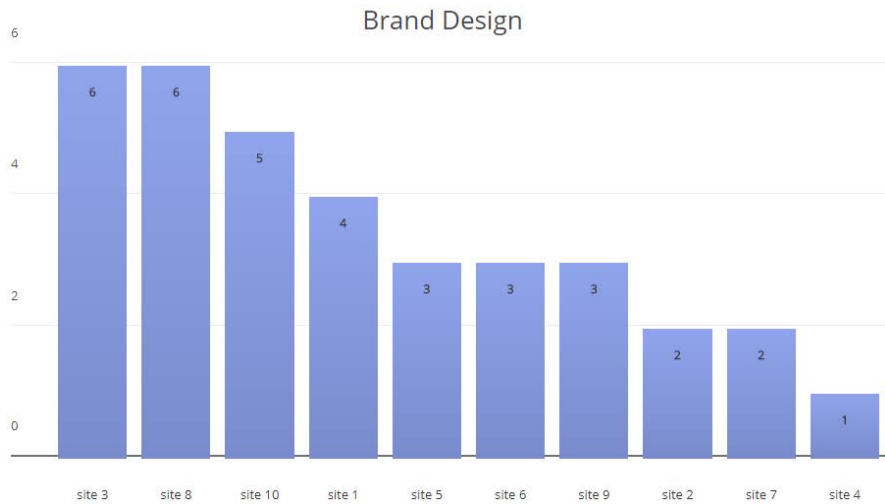


Fig. 9. Diagram example for Brand Design dimension and values

The chart has on the first column the brand with the maximum score for that dimension. Following that, the columns with the scores of each brand added by the user are represented. The chart was implemented by using jQuery's "Graphite" plug-in. The process by which a brand score is saved in the chart is as follows:

- The highest score tag (the top variable [Dimension]) is saved for a variable;
- All other scores are saved ([Dimension]) using other variable;
- execute a for instruction in all elements of the [Dimension] variable and create a string as: ',name\_site':score, ',name\_site2':score2, etc.;
- In the myData variable, the top value [Dimension] and score are saved on the first position, after which, using the PHP language, all the string created is displayed;
- The myOption variable displays the styles for the chart. It displays color, height, width, etc. that can be changed;
- For dialing, use the function "graphite (myData, myOptions, chart)" where the chart is the div ID where the diagram will appear.

The goal of developing this application was to create an easy-to-use digital environment for brand score analysis. By implementing these diagrams, this is facilitated by the application.

### 3.9. The general interface

The general interface was designed using the Bootstrap module and uses the latest updates of the used technologies. CSS and jQuery were used for stylization. Within the general interface, you can find the menu and navigation bar, and the user's homepage is the Dashboard page, which contains the analysis charts.

The menu from which the user can navigate in the application is on the left side of the interface and has the following composition: Dashboard, My Account and My Sites. The menu design is shown in Figure 10.

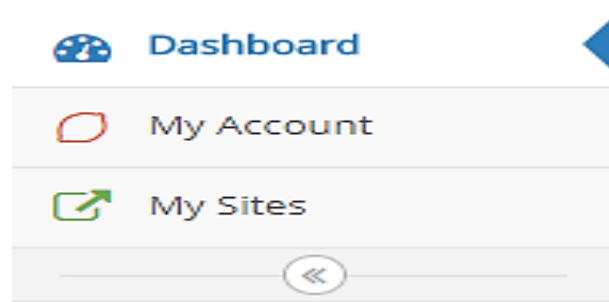


Fig. 10. The menu design

The button that shows two arrows to the left is to narrow the menu if necessary or if this is preferred. Also, this is helpful if the application runs at a lower resolution. If you opt for this style, the menu will become a narrow bar where only the icons of each category will be displayed, and when the mouse pointer is over the icons, a text with the name of that category appears from the menu. It should be noted that this happens automatically if the application detects a very low resolution, without requiring the user to intervene.

The navigation bar shows users exactly where they are located on the site. If the user accesses the My Account option in the menu, the navigation bar will have the following configuration:



Fig. 11. The navigation bar (a)

It can be mentioned that within the site, the section dedicated to the user account is presented now. Instead of the user account, the user name and surname that the user provided to the application manager are displayed (in this case: User Name). If the user accesses the category of adding a new brand or exploring an already defined brand, the navigation bar will have the following configuration.



Fig. 12. The navigation bar (b)

#### 4. Conclusions

This paper presented a proposed automated ranking algorithm by using a software platform, an application for analysing an online place brand's content, in terms of the characteristics of a place brand's identity communicated through official websites.

The application was implemented using up to date programming languages and

technologies. For the database implementation, MySQL was used together with phpMyAdmin tool. The application was developed using PHP, CSS and JavaScript being used for designing it.

The discussion of this application is still open, as the dimensions of the analysis may be changed or improved in the future by adding new users or brands.

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