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Abstract

The current paperwork is made to describe the necessity of a web application development named eChirie.ro specialized in renting niche from real estate domain, following the economic impact of this project in today's Bucharest society.

What we realise through this application it's to bring upfront the professionalism in real estate renting domain with online houses presentation, in this way we intend to absolve the client of the time spent visiting the houses in person and in Bucharest busy roads, offering him online presentations which includes pictures, video recording, possibility to compare two houses in case of indecision, add to favorites for future views and a rate mark given by company's agent.

Keywords: Bucharest renting niche, electronic business, e-commerce web application, real estate market, online houses presentation.

1. HOW E-COMMERCE HELPS PEOPLE TO SAVE TIME AND MONEY?

Actually, in Romania, the real estate market is paused due to the decrease number of sold houses. When we talk about real estate domain, most of us inevitably think of selling or buying properties, but just a few of us are thinking of the renting domain, which is a real estate part also.

The situation is caused to insignificant earnings compared to the sales market, resulting a lack of professionalism because all of the real estate agencies should offer complete or specialized services for a certain category, thing never or just a few times meet in our country as we will see further.

Here is the point where our project is acting, to improve this lack of professionalism by offering specialized and oriented rental services, but not classic services, just online e-commerce services in the country's capital. In this way we offer to the customer data and information about rental properties through the website application and the customer has the possibility to choose according to his thinking the best service for him. After that he should contact the website administrator to close the deal. It's

made this way, as a B2C (Business to Customer) business type, which is expanding in present here in Romania.

As long as there are a lot of online stores, just to one click away, to be successful, an online store should achieve the customer's faith. To transform the customers from simple customers to dedicated customers the website should offer some facilitates as: simplicity in using the website, attractive design to catch the visitor's eye, a high standard quality services, thing made through the notation system used by our agents who visited all the houses, acting like surveyors as Worth (2003) describes them. Also, the website must fulfill the customer needs and offer him a back-office support system, very well tuned, a mechanism found in the Contact page with contact form, answering all possible questions in a timely manner.

Basically the company's image is built behind the store and in time it is gaining customer confidence, which will go on that website for new orders.

A website should ensure timely delivery of products ordered, in this case to ensure the accuracy and quality of services.

Also contributing greatly to the company's image is the ability of product delivery on time. Customers will receive products ordered on time, otherwise, most renounce from doing another order. Therefore most online stores have made substantial investments to ensure that products ordered come in soon, expected services are reserved. Some websites offer customers the opportunity to see progress made control (tracking).

This application is addressed to those persons currently located in Bucharest, which is quantitatively the largest rental market. In time we intend to extend the applicability of application and other older universities cities in the country, like Cluj-Napoca, Iasi, Timisoara etc., relying on students in the country need to be accommodated in these cities.

"If you are live in an urban area with low wages and low house prices, it is clear that it does not score highly on the list of urban amenities: both firms and households find it undesirable. If you live in an urban area that has both high level of wages and high house prices, it is clear that it scores highly on the list of urban amenities." (McDonald and McMillen, 2007). That's way we choose Bucharest as a starting point for this web application.

Due to the political and economic status that the capital has, here focuses most of temporary migrant population in the country, through this referring to the province students coming to study in state or private universities, skilled and unskilled workers, people who are at the beginning of life and need a

home for a period of several years, foreigners who need accommodation for a period of several years, companies seeking their new location and so on, so all these people need help in finding a house as Ratcliffe et al. (2009) sustain .

2. WHO BENEFIT OF ECHIRIE.RO SERVICES?

According to data from the Romanian Ministry of Education and Youth, and the General Department of Police, in Bucharest operate 34 state higher education institutions with 184 faculties and 18 private higher education institutions with 80 faculties. Thus about 700,000 students were enrolled in the academic year of 2007-2008, over four times more than in 1989, mostly, 493,000 respectively, being in state education.

There are 235,000 students that benefit from study sponsorships from the state and 258,000 that pay the study fees.

Private higher education includes 120,000 students for normal study cycles, and 60,000 for open and distance education.

Universities did not increase the number of assured accommodation places in proportion to expansion of number of students, so that each year thousands of students have to seek accommodation. This situation is not a feature of Romania, because neither Western systems, such as France for example, does not provide accommodations for all students.

According to the Ministry of Education in 2007-2008 academic year there are 115,959 places available as campus accommodations, with about 6,200 more than in 2006. Corroborating the data supplied by Bucharest Police, approximately 60% of the total number of students residing in the capital city, the remaining 40% is provincial. This is the target pursued by us, those provincial students.

Analyzing the data further, from 40% of provincial students, that being 280,000 students, 116,000 students stay campus accommodations, excluding another 10% of the 280,000 (28,000), which is supposed to be housed with relatives or friends, there remain approximately 136,000 students who had to find rented accommodation.

Regarding foreign workers in the capital, they recorded a number of 1,470 in 2009, according to data for Realitatea.net the Romanian Immigration Office (ORI), in addition to them yet about 50,000-70,000 people working temporarily in the capital should be added, 500 new companies emerging every year and seeking their establishment and others who simply live in rented apartments, so there are about 75,000 applications for rental and aggregating demand and rental levels among students (136,000), the

Bucharest have 211,000 applications for rental. This number is our target market. We must take into account that every year is a new wave of student prospects, so the target market will be dynamic with periodic changes, but is hovering around 200,000 anyway.

Great Britain House of Commons-Communities and Local Government Committee (2007-2008) also took in consideration the increase of rented houses, so this is not a particular issue and the demand in this domain it's everywhere, the role of eChirie.ro being to improve those rental services and to satisfy the customers' needs.

This study was made to know the exact dimensions of market demand as well as future customers and set a target to achieve in the first year of implementation.

3. COMPETITION

In Romania, in electronic businesses exist just several websites specialized in rentals, they are:

- www.inchirieriap.ro
- www.einchirieriapartamente.ro
- www.e-inchirieriapartamente.ro
- www.apartamente.ro
- www.apartments.ro
- www.vanzari-inchirieri.ro

The last three are websites specialized both in rentals and sales of apartments, so not only specialized in the renting niche, but are of great importance due to placement on the front page using the Google search engine.

The first three of the above websites represent my direct competition. Analyzing these websites, their strengths are the experience they acquired while working on the specialized market and most importantly, placing the first two pages on Google when searching by keywords: "rent apartments Bucharest". These are the most used keywords to find rental housing in the capital.

However, these websites also have many weaknesses which can be seen from a simple access, opinion shared by Van Dijck (2003) also. Their main weakness is the lack of professionalism in presenting the information. Almost all the information is presented without a specific pattern, it is simply available for the user to see on the whole website page, without complying with a prior organization and this is confusing for most customers.

Another aspect to note is the page structure, as on one page there are things presented, which can never be accessed, for example on the website www.e-inchirieriapartamente.ro. It presents on the main page a questionnaire for people to vote what they are interested to rent, with three options to answer: flat apartment, two bedrooms or three bedrooms apartment. When people access a specialized website, they do it to find a rental home as soon as possible, not to complete surveys or go to unnecessary pages. Another point is the unattractive and obnoxious design, which has two effects: - Denial of service offered by that website- Rejection the use of the website for rental

We are talking from our own and friends' experience who tried to rent a flat in the past and who encountered common problems.

Through eChirie.ro, as it can be seen bellow in *Fig. 1 – Main page*, those issues are collapsed and the user is attracted to revisit the website anytime he need and to promote it to his social network.



FIGURE 1 – MAIN PAGE

4. DESIGN

As you know, in any domain, the design matters enormously. This is why we gave a great importance to the general looks of the web site for it to be as perceptive, intuitive, simple and elegant as it can be to the end user.

Too many times we confront ourselves with pages filled with useless information or we lose ourselves in details, which is frustrating. This is what we tried to avoid by creating the pages in the simplest manner possible, without useless information and as intuitive as they can be, but giving great importance to details and to the human eye perception (e.g. when search for area, it will appear as selectable just the areas where are houses for rent and also the areas are colored different by urban placement (*Figure 2 – Intelligent zone selection*)).



FIGURE 2 – INTELLIGENT ZONE SELECTION

Elegance comes from the central page layout of the graphic content which includes: the main menu positioned in the right up corner with buttons which when selected give the impression of a binding to the central image (logo), the search menu found in the left and the favorite ads section. Perhaps the most notable graphical element is the transparency of the main frame which allows the user to see a background message.

Also the shade of the dominant colors is remarkable. We chose green because it inspires nature and looks good in the eye of the user, also grey fits in perfectly in the gaps between the main frame and the browser's margins.

5. IMPROVEMENTS OF THE APPLICATION

Since the West line rental niche is better developed than in Romania, we will take the example of British website www.foxtons.co.uk, presenting complex real estate services and is a great example to follow because of the professionalism with which it treats customers and because of the many facilities offered, such as:

- GIS (Geographical Information Systems) services by presenting related information in real time graphical representation on maps;
- Presentation of the dwelling in a 360 ° virtual tour;
- Interactive sketch housing, room presentation and possibility the positioning of mouse zoom in, zoom out;
- House advised evaluation;
- 3D room presentation using 3D Studio Max application.

6. ORIGINAL CONTRIBUTION

The website was designed and built so as to bring something new to market profile and not just another simple presentation website. The website presents the following features:

- **All pages are compressed size:-** The "Home" page is just 59 KB in size, including scripts, images, style sheet, CSS and html;- Page "Find out" is 70 KB, because, in addition, it has an;
- The following pages keep almost all information and data already loaded (scripts, CSS and layouts) in the cache, so all that extra load from one page to another is only HTML document;
- **All the pages are designed to work without JavaScript:** - Although the site uses Ajax, it degrades and works without JavaScript (a phenomenon that is called graceful degradation); - Using the JavaScript menu is more elegant in design, but without using JavaScript, the menu appears. Instead of the menu there has been created a form menu, a typical form of information presentation;- Kuniavsky (2003) sustain thus the User Experience is improved;
- **Security:-** Jolly (2003) recommend us in his book to be cautious when it's about security in an online e-Business, so following his advices I did a little trick in processing the variables, so all variables are tested to comply with a particular format (e.g. to check that the page is a variable received from the web pages); - I wrote all the variables received from users who are not

trusted with `_nv` prefix ("Non valid" variable Unchecked); - Once you are verified, data is written to prefix `_v` ("Valid") and always used only when using SQL variable `_v` prefix (variable trust), so there cannot be security bugs, is a convention to prevent SQL injections; - I used regular expressions to validate data ;• **Anti spam:** -I set a default action URL of pages: Example: if the browser is trying to amend contact page URL at the end of the address instead of "contacts", with a special "contact2" I set to refer to my home page (Home). - The mechanism of this validation is used to prevent SMTP injections (Simple Mail Transfer Protocol) used by spammers, otherwise you can use the form on the site for sending email to random addresses, which is not recommended;

- **Use AJAX:-** Changes are made only on the current page, working with one page, all other changes (e.g. search) are made by sending and receiving messages to and from the server; - Due to Ajax, the left side of the page (Search menu) remains the same when browsing from page to page, because XML was used and thus less data is sent to the server, most of the page (layout) is already loaded in cache and an XML document is used to send the remaining information to the server;• **Contact form:-** Uses the same technique as the search, if your browser supports Ajax, to go further with Ajax, if not done normally: the data is sent as a normal form; - Validation of form on the server are:

Example: if the expanding field of "telephone" data is entered in the wrong format (letters instead of digits), AJAX function collects and sends data from the form on the server, they are validated with PHP function and a response is sent back in JSON format, specifying the fields with errors in different colors and sends error message resulting in interactivity, since everything is on one page.- If the browser (client) is not supporting Ajax then it loads another page and tells what went wrong there (like "The page cannot be displayed");

- **Cookies:-**To compare the real estate properties, some of them must be added to favorites. To enable navigating from one page to another a cookie lasting 14 days is used;
- **Image Preloading:** - Use automatic loading cache when loading the site, the pictures is used in the search frames to improve the user experience (User Experience), where poor Internet connectivity is found;
- **Layout without tables:-** Layout is made without tables, as is normally done, using only CSS, as you can see bellow in Figure3 – Apartments comparison;- The large main image and the logo, are made with the same color as the background color (gray);- Accessibility Standards;

Example: when clicking on a page, we are taken to that page and the page name changes color. -the page cannot be clicked again.



FIGURE. 3 – APARTMENTS COMPARISON

7. CONCLUSIONS

In an era of communications and information, the need for finding information quickly is essential, therefore, in any field communication via the Internet has become increasingly important because of easy and quick accessibility. With this growing need for increased information and the development of online business, everything is finding a niche in a field or specialization in a particular market. I tried to combine these two aspects to create a web application developed in PHP programming language because this language is open source so much faster finding everything I needed to build the application.

Creating the documentation in advance and then following the plan made in carrying out this website were the main strengths, such as we have learned to work systematically and also have the satisfaction of the successful completion of the initial plan.

This application is intended to be implemented in a real business project in the future, because we need a website specialized in rentals in the capital market, and we did our best we could to capture all the

customer's needs. So the visiting of the website leaves a pleasant impression to the user and invites to be revisited as many times.

By combining the technologies used we have tried to capture better data and dynamic interaction between them, but also user interaction. Nowadays more and more emphasis is placed on the visitor - web interaction, because the customer is always the ultimate decision-maker and a good impression on his side is defining the future business, especially since the business is based online, because here the application itself has the heaviest word to say in the company, it being the company image.

The web application will be made as to the meaning of its improvement and adding new components to please the customer and also will follow an intensive marketing campaign to promote and expand user knowledge.

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