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IMPROVING THE MANAGEMENT OF ACTIVITIES AND EMPLOYEE HEALTH USING A WEB APPLICATION

Adilé-Elena NEMOIANU, Sara-Simina BODEA, Maria-Roxana ENE, Denisa-Roxana SIMA, Sandra-Daniela NEMOIANU, Adrian-Pavel PUGNA

Abstract: *Our research focus is increasing the productivity and performance of the employees. Soon enough we observed that there are little instruments to quantize or measuring this aspect. The next logical step was to create such an instrument. Firstly, we search for similar products, but none offered all the necessary aspects. This article is about our implementation of a software capable to measure the productivity of employees, to compare the values between different management methods, giving us the possibility to make objective assessments for our future research. We also compared our solution to what we found to be used for similar purposes.*

Key words: *activity management, digital notifications, medical prescriptions, medication records.*

1. INTRODUCTION

Web applications are increasingly used due to new functionalities that are constantly created to improve all areas in which a person is involved every day, such as applications for companies, information, medicine, education.

Within companies, because of competition, it is necessary to solve more and more tasks by the employees, which can often cause fatigue that can lead to exhaustion and burnout, especially when the superiors are not aware of that or do not know how to manage those situations. The symptoms for the burnout effect include intense emotional, mental and physical fatigue [1].

According to a study on work-life balance carried out on employees in different sectors in Bangladesh, have been traced difficulties that may arise for working women. It has been found that long working hours and overwork are the main problems that can lead to depression. The resolution contains the management of activities through a flexible work schedule and the division of responsibilities [2].

Workplace processes can be improved through employee assistance software to take care of human capital. EAP *(Employee Assistance Program)* is a software that deals with assisting employees in the workplace. All things that pertain to a person's overall health are treated through these services [3].

A medication management application is necessary because there are more and more people who suffer from various diseases and must take a treatment with several drugs, this phenomenon being called *polypharmacy*. The disease of the century seems to be the depression. Other diseases with a high spread are cardiovascular diseases, diabetes, cancer, hepatitis [4].

Through an event management application, the productivity of work is improved by setting events and prioritizing. Time management is done by clearly setting goals and receiving notifications for not missing deadlines.

Development of employee performance involves time management and is classified by the organization of activities and prioritization. The process is represented in Figure 1, where the web application represents the intermediary between employees and the work environment [5].

Conclusively, to perform objective research in this field we need a software instrument which can cover all these aspects. Not being able to find a satisfactory one, we created it ourselves.

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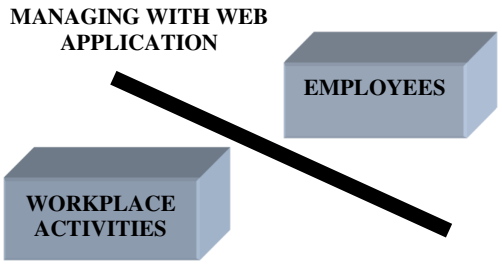

Fig. 1. Diagram of management in application [5].

2. DOMAIN ANALYSIS

Taking multiple drugs at once can be difficult and challenging because a strict and regular schedule must be followed. The procedures used in medicine confirm that patients' response to treatment improves through an active involvement. Web and mobile applications can offer solutions through tools adapted to the needs with an attractive design and functionalities that all together improve the active and constant involvement in the application's plan [4].

The interface of an application can be static, with a single or multiple dynamic feature: [4].

a) The static interface provides the same data to all users and does not receive information from users [4].
b) The dynamic interface allows working with different users, everyone with their personal data and interactions taking place [4].

The most productive and advantageous applications are those with multiple dynamic interfaces because they receive information from the outside and offer services based on them.

The success of an application depends largely on the information presented in the application's description. Users mainly choose an application based on the features they find in the description, and developers seek to highlight the important ones [4].

For this purpose, UX design is used in marketing strategy, which is developed in the description of the application by promoting functionalities. The main conditions that must be met for an accessible, usable design involve: "the communication language used, consistency, short and succinct text content, good appearance and ease of use, captivating images, visual content, good story, easy navigation" [6].

In the present study, three representative applications in the field of event management and medication will be analyzed in detail together with our *To Do List* application.

2.1 *Any Do* Application

The *Any Do* application was created for task management. At first it was accessible to individuals, but with the growth in popularity it designed services for teams in companies. It also has services in the field of medicine for planning and communicating with the patients [7].

The application is integrated on the Cloud and accessible from a web browser, so it does not require local installation. This approach offers advantages in terms of portability and accessibility because users can manage their tasks from any device [8].

2.2 *Care Zone* Application

Care Zone is a specific application for setting notifications for taking drugs individually or in groups, utilized exclusive in Walmart company. The orders for the necessary drugs can also be created in the application [9].

2.3 *MyTherapy* Application

MyTherapy is an application used by patients for medication management. Here one can save information based on which graphs could be created, graphs that are used afterwards by doctors to find more effective solutions [10].

2.4 Comparison between applications

The diagram in Figure 2 shows a comparison between the unique functionalities among the top ones that are included in each of the four applications that were analyzed. The result demonstrates the fact that *To Do List* application contains the largest number of unique functions, namely 55% from total, and is followed by the *MyTherapy* and *Any Do* applications (with a value of 18%), and *Care Zone* (with 9%).

This indicates that the *To Do List* application offers users the widest range of features and capabilities compared to the other applications in the studied sample, which encourages us to consider our software to be a good tool for our upcoming research.

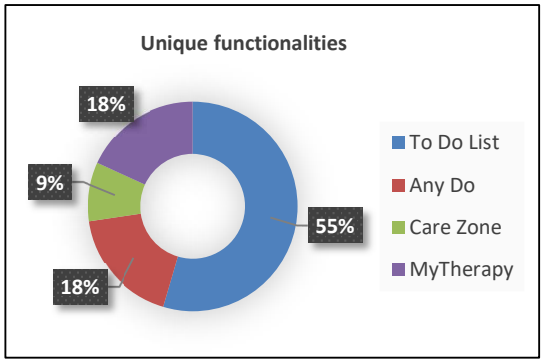

Fig. 2. Unique functionalities diagram.

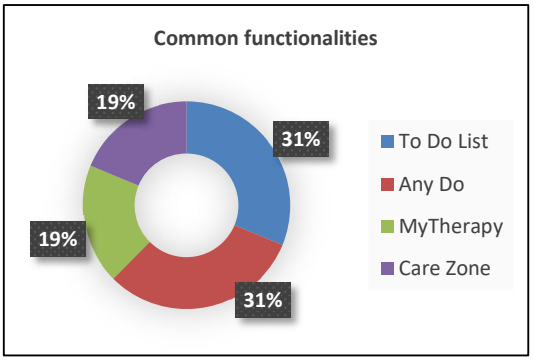

Fig. 3. Common functionalities diagram.

The data in Figure 3 illustrates how many common functionalities the four applications contain. The *To Do List* and *Any Do* applications are specialized in saving events and, in this aspect, contain common functionalities for adding events, notification, planning and viewing tasks on the calendar.

The *MyTherapy* and the *Care Zone* applications offer essential functionalities in the medical field for adding and managing drugs taken by the patients.

A common feature of the two applications is the ability to schedule notifications to remind users to take their medication at preset times.

A common function is the drugs grouping according to various criteria, such as the condition treated or the time of day for administering the medication.

Table 1 summarizes the main functionalities, allowing a comparative evaluation of the key features, strengths and distinct aspects of the three software solutions.

Table 1

Comparative assessment.

	Applications			
Top features from applications	***Any Do***	***Care Zone***	***MyTherapy***	***To Do List***
Custom event addition	X	X	X	X
Desktop notification with title	X			X
Task planning	X			X
Communication with patients	X			
View calendar tasks	X			X
Medication reminders	X	X	X	X
Drug grouping when setting alerts		X	X	
Scan for prospect information		X		
Health record			X	
Graphics generated by artificial intelligence			X	
Desktop notification with information				X
Scheduling tasks with priority				X
View tasks of the day by ascending hour				X
Adding and viewing recipes				X
Download recipes				X
Communication with users				X
Add attachment	X			

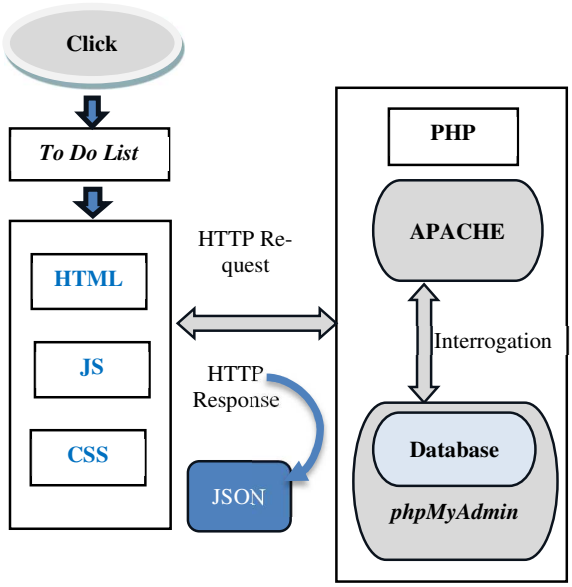

Fig. 4. Diagram representing the application's architecture.

The comparison of the main functionalities offered by these four solutions gives an overview of the key features included in the applications.

3. TECHNIQUES AND METHODS

After conducting a detailed analysis of the functionalities of the applications currently existing on the market, we developed a customized solution that meets the specific needs of event and medication management. This application integrates several web technologies, including XAMPP application for database management. The used technologies ensure a smooth user experience and advanced functionalities. The architecture for communication between client and server is presented in Figure 4.

We used HTML to create the structure of the web pages, CSS to define the visual appearance and presentation features, and JavaScript to add interactivity and logic between the client and server sides.

To manage the back-end aspects, we integrated PHP as a server-side programming language along with a MySQL database management system, which is accessible through phpMyAdmin.

All these technological elements were implemented using the XAMPP platform, which allowed for efficient development and testing of the application.

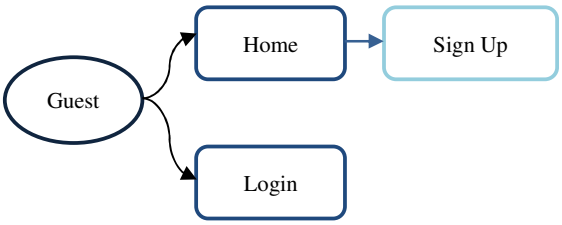

Fig. 5. Diagram representing the main page.

3.1 Presentation of application flow charts

When accessing the *Main Page* of the application, users have access to a basic interface intended primarily for guests who have not yet created an account. This entry page contains information about the main functionalities of the application and the option to subscribe to stay up to date with news.

The *Login Page* presents both the possibility to create a new account and to log in with an existing account. The diagram for the visitors' choice is presented in Figure 5.

After authentication, users enter their personal account, giving them access to several key functionalities:

Profile Page:

- Users can view and edit personal information such as name, email address, profile picture and other contact details;
- Users can choose to delete their account or unsubscribe from the service provided by the application;
- The logout option allows users to log out of the current session securely.

Calendar Page:

- This page provides a calendar interface where users can view scheduled events;
- Events are displayed in chronological order, depending on the schedule;
- Users can edit existing event details such as title, date, and type;
- They can also set notifications to be alerted when needed.

Prescription page:

- Users have access to a gallery of prescriptions, presented in the form of images;
- They can navigate through the available prescriptions to find out the details of a specific prescription and the posology;

- They can be downloaded as an image and can be deleted from the gallery.

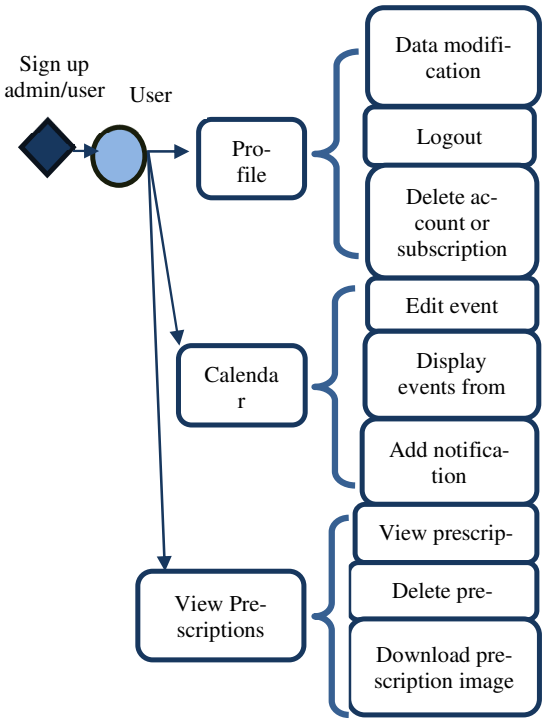

Fig. 6. Diagram representing the pages for admin&user.

The flow of activities for the users and administrator role is represented in Figures 6 and 7.

Users with administrator rights access the application using special credentials: an email address and an administrator password.

The Administrator Login Page:

- Administrators enter their email address and password to identify themselves as users with special rights;

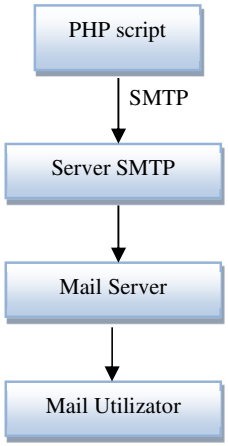

Fig. 8. Pages for user&admin diagram.

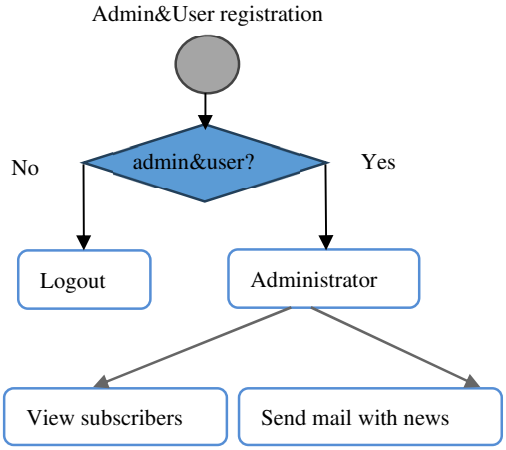

Fig. 7. Diagram representing the pages for admin/user.

- The system verifies the authenticity of credentials and allows access to administrative functions.

The Administration Page:

- Administrators have access to a table displaying all subscribers with their names, emails and date of subscription (signing up);
- From the admin page, users can compose a personalized message to be distributed to the entire subscribed user's database;
- The system ensures that the message is sent securely and efficiently to all recipients.

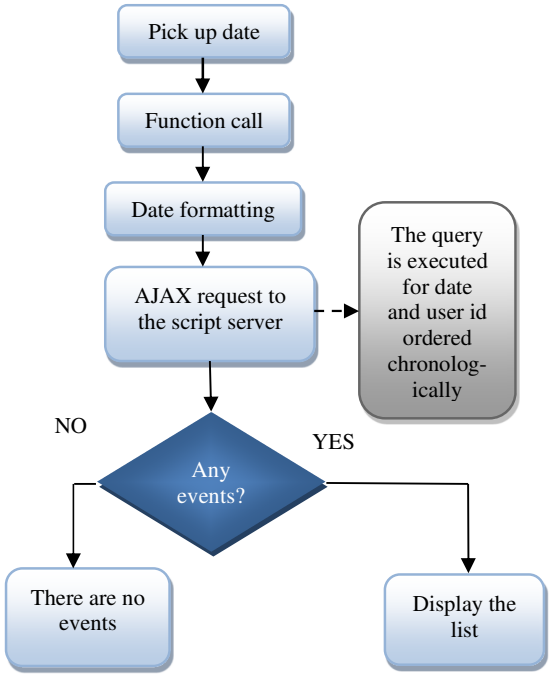

Fig. 9. Viewing the events on a selected day.

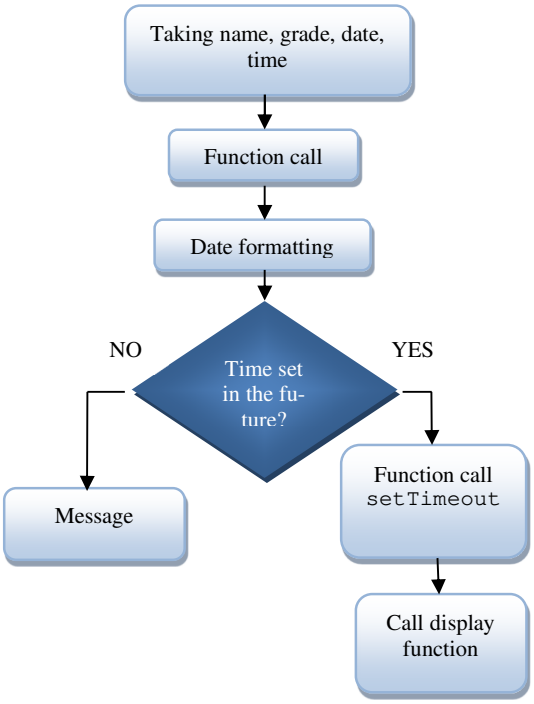

Fig. 10. Diagram of local notification from the app

This admin account architecture allows for user management and effective communication with the entire subscriber community.

3.2 Design application

The GIMP photo editor was used to create a pleasant visual experience for users. The editor has an ability to create clear and properly sized images for the logo and other pictures in the interface.

The procedure involves editing and graphic design. Graphic design is important because combining images with text conveys a message through a marketing method.

An essential graphic package was developed for the web application, which includes essential elements such as the logo, favicon and presentation images.

3.3 Application functions

Figure 8 presents the architecture and functionality of the email sending system. Sending emails for subscriptions and password recoveries uses the SMTP library. A request is created and sent through the SMTP protocol to the SMTP server, which takes the data and transmits to the email address created at the signing up. This email contains the new password.

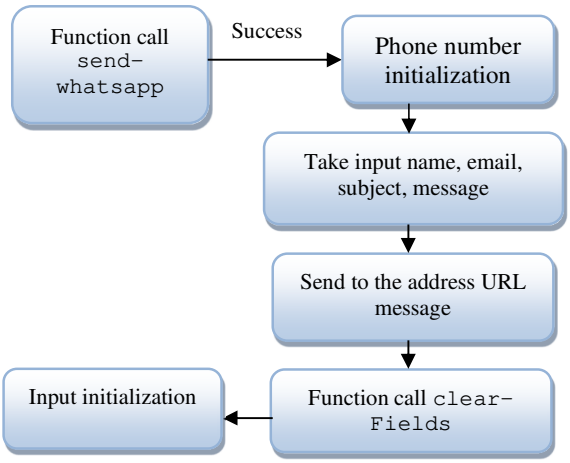

Fig. 11. *WhatsApp* contact function.

Figure 9 shows how the tasks can be visualized in chronologically ascending order.

When selecting a day on the calendar, a function fed with that date is called. Depending on the function, the UTC time stamp is formatted. Then an AJAX request will be sent through and the events of the day, ordered by time, are retrieved. Then, the generated list of events is displayed under the calendar.

Selecting a day will display an agenda with all the day's events and priority levels that provide an overview of the activities' workflow.

The implementation of the notification function is shown in Figure 10. The function created to add a notification was implemented to collect data about name, role, date, time.

The way *WhatsApp* communication function takes the user's data, opens the application and then sends the formatted message is represented in Figure 11. Medical prescriptions are loaded in image format. When viewed, they are presented in a tabular format and have the functions of deletion and download assigned. The diagram for the implementation of this function is shown in Figure 12.

4. RESULTS

The registration page of the application contains mechanisms for validating the entered data, which are tested so that they can be saved on the backend. The name field only accepts a First Name SURNAME format, the email address is checked if it is valid, the password must match

in both their respective fields and the image cannot be larger than 2 MB.

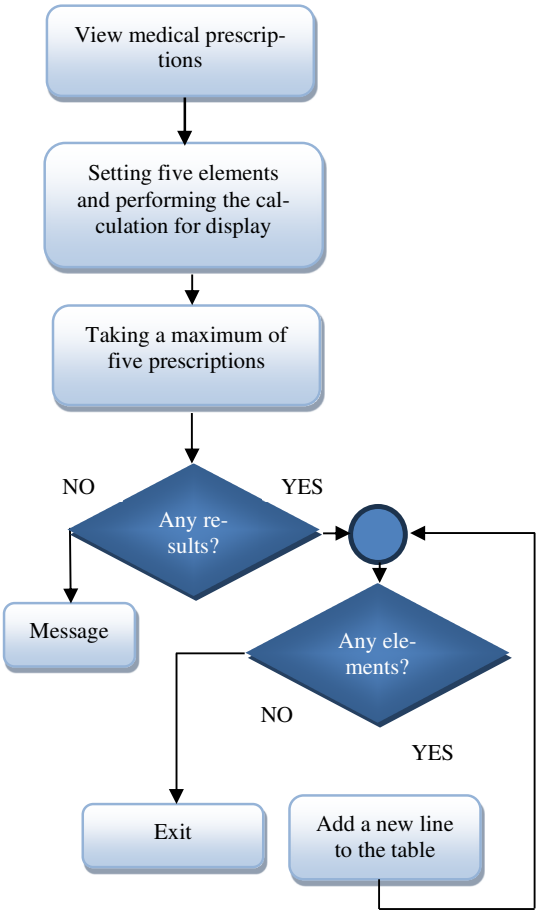

Fig. 12. Visualization of medical prescriptions.

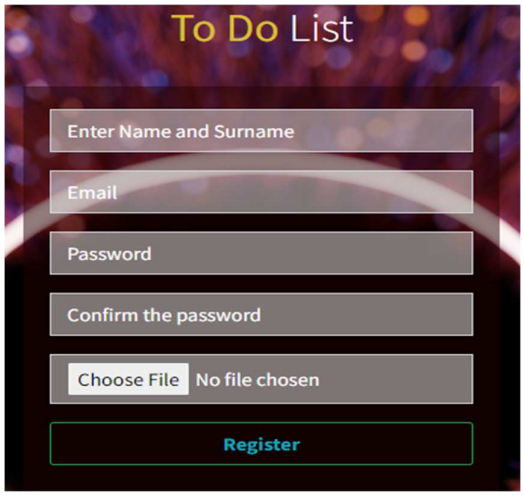

Fig. 13. Registration in To Do List

This page is presented as a screen capture in Figure 13.

These validation measures are typically implemented using a combination of client-side and server-side validation techniques. Client-side validation can provide immediate feedback to the user, while server-side validation ensures that the data meets the application requirements before it is processed and stored.

Figure 14. shows the screen capture of the calendar and the functionality to view the registered events.

The calendar interface provides a clear and intuitive way to view all upcoming events, with different colors to indicate priority levels. Briefly, users can quickly identify high-priority items that require immediate attention, as well as lower-priority events that can be done later.

In the calendar, users can easily navigate between different years to view events that occurred in the past or are planned in the future. This multi-year perspective is particularly useful for long-term planning, as it allows users to get a high-level overview of their commitments over an extended timeframe.

In addition to the forward-looking calendar view, the application also retains a comprehensive history of events. Past events are saved and can be accessed through the calendar interface, providing users with a complete record of their activities and obligations. This historical data can be invaluable for tasks like reviewing past meeting notes, tracking project timelines.

By selecting a day from the calendar, a chronologically ordered list of events (with details) is displayed. The list of events of the day is provided with name, time, note, and priority for a better management of the day's activities.

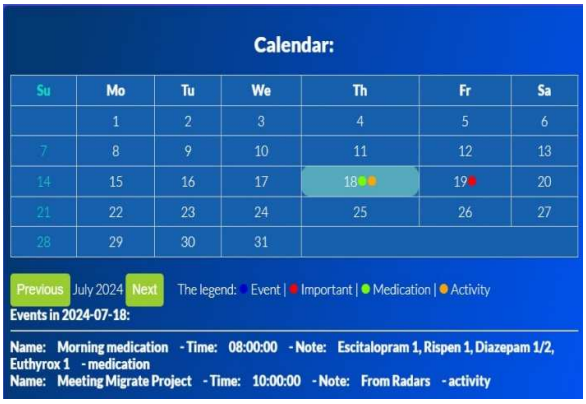

Fig. 14. The application calendar

Complementing the calendar interface, there is a dedicated event list panel, which displays all the appointments, meetings, and tasks that have been added for the current month. This event list provides a more granular view of the user's schedule and is loaded separately for the management of added events through deletion or update operations.

In Figure 15 the functions used for communication in the application are presented. The comunication with the administrators of the application is carried out through *WhatsApp* and the creation of a subscription (signing up) in the application.

By completing the *WhatsApp* form, users of the application create a message that can be sent directly from the *To Do List* application. The sending method involves opening a new page in the browser and uploading the message in a special format. This format is specific to the application and can be recognized by the administrator.

Users are added to the list of subscribers by subscribing to the application. The administrator accesses the personal account based on which he creates the new messages that will be sent to the entire list. In this way, the new updates from the application are sent and a communication of the new functionalities is maintained by email.

Figure 16 and Figure 17 present the function for prescriptions page. The storage and management of medical data is a critical aspect of modern healthcare.

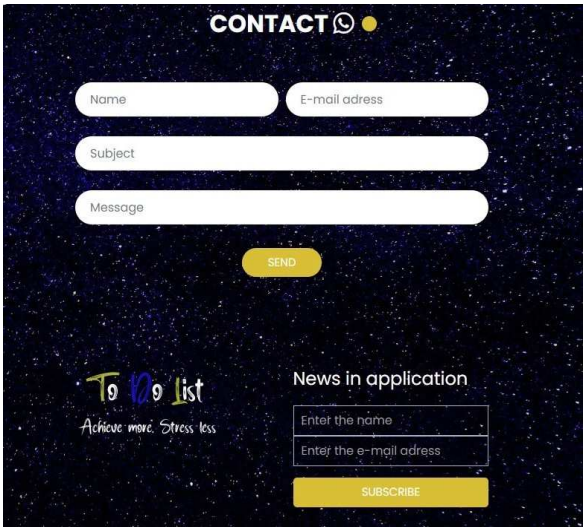

Fig. 17. Contact via *WhatsApp* and subscription

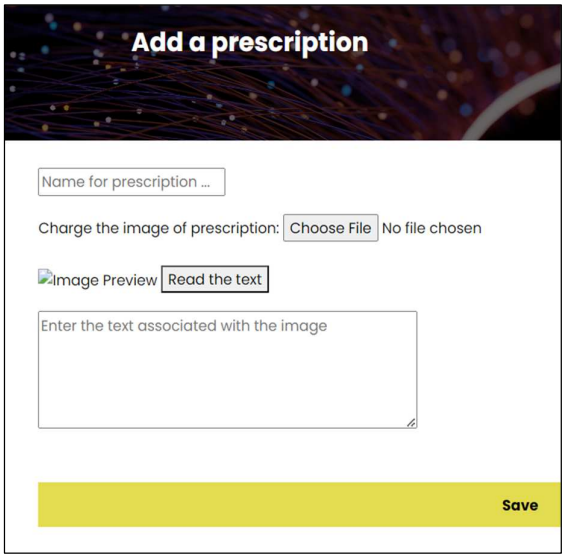

Fig. 15. Adding a prescription in the application.

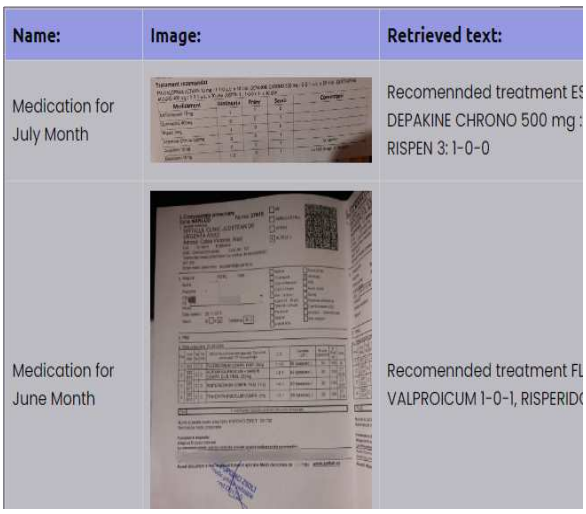

Fig. 16. Viewing the prescriptions in the application.

By storing the patient's medical events locally, application's users can efficiently access and manage medical prescriptions, as well as setting alerts. Many employees today face significant mental and physical health challenges in the work environment.

Users have access to the optical character recognition (OCR) function of retrieving text from the image to ensure that the text from the image is clearly understood. As a benefit, users can automatically extract and analyze the text from the image and save the time that was used for manual writing.

When users add a new prescription, they can simply enter details such as the drug name,

dosage and frequency directly into the application calendar.

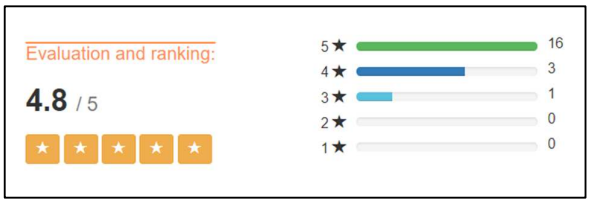

Fig. 18. Users' evaluation of the application

Medical assistance is obtained along with the daily schedule to support the management for professional and personal responsibilities, including healthcare needs.

Figure 18 shows the review functionality. Thus, the users can express their opinion and gather insights about the application performance and the experience of other users.

This feature empowers users to share their honest opinions and assessments about the application in a transparent manner, enabling developers and stakeholders to better understand the application's strengths, weaknesses, and areas for improvement.

5. CONCLUSIONS

The management of activities and health at the workplace is improved by using our web application described in this paper, named *To Do List*. This application addresses problems such as fatigue, stress, overwork, professional burnout and poor activities' scheduling, aspects that have a significant impact on the well-being and productivity of employees.

The key feature of the app is the ability to efficiently manage tasks and prioritize them, based on importance and deadline. This clear view of tasks and workflow helps employees better organize their activities, avoiding overload and ensuring a better balance of tasks, significantly reducing stress and fatigue. In addition, the application integrates functionality for medication management. Employees can add prescription medications to their daily schedule to deal with mental health issues, such as depression or anxiety.

By effectively combining task management tools and medical treatment support, *To Do List* application helps employees find balance and improve their well-being. This leads to increased productivity, job satisfaction and ultimately a healthier and more motivated workforce.

To Do List application meets users' needs with custom account features, event saving features managed by priority, display and preview features with notification setting.

The page for viewing medical prescriptions allows the listing of all drugs and verification by retrieving the text from the image. Medical events are stored locally for efficient alert setting and secure prescription saving.

The role of the application is to improve adherence to the daily schedule and to reduce the risk of skipping certain (important) activities.

Classifying events by importance improves the quality of management for the daily schedule. Saving medical prescriptions brings progress in the medication record creating automatically the vents related to medication plan, which can be optimized by the app.

Maybe the most important aspect is the ability of the app (based on logged data) to assess the performance of the employees by measuring the time taken to perform a certain batch of tasks. Different management scenarios can be objectively evaluated, which led us to believe that our goal to create not only a useful tool for task management, but also an investigation tool for our future scientific research in the field of human resources was attained. This article may be seen as a practical approach to creating such a valuable tool, but we are convinced that this is a very necessary step for our future scientific work (and, hopefully, for other researchers).

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Îmbunătățirea managementului activităților și a sănătății angajaților folosind o aplicație web

În acest articol este tratată crearea unui instrument software pentru managementul activităților și a sănătății angajaților unei companii. Comparația mai multor aplicații web a generat cele mai eficiente facilități de management, fiind prezentat un model care conține funcții de creare a evenimentelor, vizualizarea evenimentelor zilnice (ordonate cronologic și prioritar), emiterea notificărilor în funcție de tipul lor, actualizarea rețetelor medicale, precum și actualizarea și stocarea prescripțiilor medicale. Cel mai important aspect este că aplicația permite evaluarea obiectivă a eficienței angajaților, putând compara diferite scenarii de management, ceea ce o transformă într-un instrument esențial pentru cercetările noastre științifice ulterioare în domeniul resurselor umane.

Adilé-Elena NEMOIANU, PhD. student, Politehnica University of Timișoara, Faculty of Management in Production and Transportation, adile.nemoianu@student.upt.ro, +40 (767) 117 272, 14 Remus Street, Timișoara 300191, Romania.
Sara-Simina BODEA, Postgraduate student, Politehnica University of Timișoara, Faculty of Automation and Computers, sara.bodea1@yahoo.com, +40 (742) 798 181, 2 Vasile Pârvan Blvd., Timișoara 300223, Romania.
Maria-Roxana ENE, PhD. student, Politehnica University of Timișoara, Faculty of Management in Production and Transportation, ene.mariaroxana@yahoo.com, +40 (728) 252 292, 14 Remus Street, Timișoara 300191, Romania.
Denisa-Roxana SIMA, PhD. student, Politehnica University of Timișoara, Faculty of Management in Production and Transports, denii.sima@yahoo.com, +40 (757) 734 339, 14 Remus Street, Timișoara 300191, Romania.
Sandra-Daniela NEMOIANU, Postgraduate student, Aurel Vlaicu University, Faculty of Engineering, sandranemoianu@yahoo.com, +40 (751) 198 174, 2 Elena Drăgoi Street, Arad 310330, Romania.
Adrian-Pavel PUGNA, PhD., Professor, Politehnica University of Timișoara, Faculty of Management in Production and Transports, adrian.pugna@upt.ro, +40 (745) 500 234, 14 Remus Street, Timișoara 300191, Romania.