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Internship Management System (IMS)

USING IMS TO IMPROVE THE RELATIONSHIP BETWEEN INTERNSHIP SEEKERS,
EMPLOYERS AND PROFESSORS

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This research is a result of many years of a valuable practical experience in the field of Information Technology, Programming, Databases, Telecommunication and Management and is completed from candidate, Hyrmet Mydyti.

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Sincerely,

Hyrmet Mydyti

Abstract

The main goal of this master thesis is to research demands and practices on internships and to develop a web application in compliance with these demands and practices. Relevant web application role introduces portion of internship management system functionalities. The Internship Management System (IMS) is a key fragment of communication between students, educational institutions and businesses (S-B-A) and is a powerful mean to improve the digitization of processes related to internships. The Internship Management System (IMS) will facilitate many processes between the counterparts. Internships will ease the process of discovering talents fitting the internal culture of the companies and increasing the companies' productivity. And, the internship will assist educational institutions being market-oriented by making students prior to their graduation to be better informed with the requests of the market and being aware of their skills and abilities.

In this master thesis, we give different perspectives and approaches on practices of internships, design patterns and frameworks and on reinforcing the communication between the three above mentioned pillars (S-B-A). Questionnaire surveys are used as a methodology for conducting this research. Businesses are the subject of the study and the gained information provide a better observation of the study.

The design pattern is chosen as a trend in software development as best suited implementation for the internship web-based portal as an outcome of this study. Laravel framework was implemented providing the set of libraries and classes to offer easiness and flexibility.

Keywords

Internship, Design Pattern, Framework, Technology, Model-view-controller (MVC), Laravel, Questionnaire, Stata, PHP, Bootstrap, CSS, HTML, JavaScript, MySQL.

Declaration of originality

I declare that this thesis is based on the research results and studies found by myself. References from other research studies and reports by any other researcher are mentioned properly. This thesis, neither in whole nor in part, has been previously submitted for any degree.

Hyrmet Mydyti

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1 Introduction

Nowadays, it has become highly important to attend an internship because it ultimately increases the chances to find a job after graduation and to easily fit in the market. Educational institutions have goals and interests to create opportunities for their students to easily penetrate into the market. Educational institutions through internships will ease the process of informing students with requests of the market and making them aware of their skills and abilities. Companies/businesses offer practical skills and experience opportunities for students. Companies/businesses through internships will ease the process of discovering talents fitting the internal culture of the company/business and increasing the entity's productivity. The educational institutions and the companies/businesses have a common aim to offer internships for the students as an opportunity in increasing the chances to compete for jobs.

The issue of a system offering linkages between these three pillars (S-B-A) has resulted to be highly important for this research. Because of the absence of an internship management system, the linkage of the three pillars (S-B-A) is difficult and it is time-consuming.

Internship Management System (IMS) is a mean to ease the process in exploring and seeking professional learning experience, especially for the students, to enhance the process of bringing new energies, as well as in developing and in discovering talents that fit the internal culture of the company/business. The benefits of outcomes are a reduction in time and effort.

This master thesis also describes the research methodology in understanding the needs of the market and best suited implementations of design patterns, frameworks of internship management systems and building a web-based internship portal - as an outcome - that provides a facility to interns for searching new internship positions and provides the option to the companies for posting their internship advertisements. This web-based portal is a bridge between internship seekers, employers, and professors.

1.1 Problem Statement

Educational Institutions and businesses/companies certainly use emails as a mean of communication in the context of internships. Job portals are next mean used to offer internship opportunities to the students. Actual communication is time-consuming and not proper since it is not a centralized system, business-oriented and student-oriented. In the context and the region where we are living, we do not offer a good communication environment for counterparts due to the lack of internship management system.

The lack of management of the internship system has many disadvantages, as a result, the businesses/companies use different sources to find an intern. Educational institutions do not have any system to ease the processes of internship application and attendance. Thus, the purpose of this study is to overcome some of the obstacles because of the lack of a centralized management system in the context of internships.

1.2 Research Objectives

The main goal of this master thesis is to study the expectation of businesses, students, universities towards an internship management system and implementation of an internship management system. The objectives of the master thesis are as following:

- To identify important factors towards the expectation of web-based internship management system.
- To study different perspectives on internship management system. To build and implement an internship web-based portal.
- To determine the reliability of the system by selecting the best trends and technologies.
- To strengthen linkages between students, educational institutions and businesses.

1.3 Research Questions

Currently, the management system of student internships is not digitalized. There are some potential problems that could be emphasized as following:

- The increasing number of students and the necessity to attend internships.
- Limitations of time and effort in the process of guidance, monitoring and administrating.
- Difficulties of the three pillars (S-B-A) due to the lack of the internship management system and manual processes.

In order to tackle the above-mentioned problems, this study poses the following main research questions:

- What challenges are faced by the three parties' students, Institutions and employers? What are the challenges that we consider as solvable or difficult to overcome, and how can we strategize effective solutions?
- How do institutions, employers, and students benefit from the advertisements of the internships in the web-based portal?
- How to analyze and design the systems that can improve the management of the internship? Which trends and technologies can influence an Internship Management System (IMS)?

These research questions are mapped with the research objectives of this study, which are used to develop Internship Management System (IMS) offering the digitization of the internship application processes and will facilitate many processes for the interested pillars (S-B-A). The proposed solution intends to solve the highlighted issues by investigating design patterns and frameworks, and to understand what is best suited for the internship management system.

1.4 Project Methodology

After the preliminary requirements were acquired, through the literature review and the conduct of a survey, the application is developed by using the MVC software development method and object-oriented PHP language. The Laravel framework - PHP based language framework - is evaluated as the preferred choice and was used to develop the internship management system.

Various implementations, verifications, tests are performed for each phase and the SWOT analysis is conducted for the produced system.

1.5 Scope and Structure

The scope of the web-based internship portal is to advance the system architecture and software development implementation. The entire system architecture is designed, but some issues are intentionally left open as questions that could be posed in a future research development.

The thesis consists of six main chapters. At the beginning of the thesis, the abstract of the study is provided. Chapter 1 provides a detailed introduction to the study, its problem statement, research objectives, research questions, project methodology, scope and structure, and significance of the study. Chapter 2 is divided into three sections based on the topic of the related work as a) the internship as a facilitator, b) the design patterns and c) the web technologies and frameworks. Chapter 3 provides the detailed research methodology, research design, sampling and instrument, analysis, and findings and survey results. Chapter 4 provides software structure, implementation and testing techniques of the software system. The chapter 5 provides the conclusion of the study and future work. And, the last chapter, provides references cite in this thesis.

1.6 Importance of the Study

Internship Management System (IMS) is a management system to provide guidance for students, storing information, monitoring and administering the parties of an internship program. The web-based system will increase efficiency by advertisements of the internships. Therefore, this master thesis performs a study on the expectations towards web-based internship management system. The web-based management system can foster the productivity of students, increase the performance of efficiency within businesses and can improve the quality of education in universities.

The outcome of this research is a web-based internship portal. Students can seek for internships based on their education and skills, while employers can post internship vacancies. This system is characterized as a user-friendly, easy and flexible system.

This web-based internship portal has five components:

(1) The advertisement component; (2) the company component; (3) the intern seeker component; (4) the professor component; (5) the administrator component

Students can register, modify, search and apply for the internship. Students can add data on their profile, update their profile, etc. Companies can create and update their company profile, as well as advertise by posting internship vacancies. Professors can create and update their profile, bring in contact businesses with the internship seekers, and vice-versa.

Furthermore, the obstacles that already exist can be resolved by using this web-based system. Beside the ease that the system provides in finding internships, it reduces the cost and time for businesses and educational Institutions.

2 Related Work

2.1 Introduction

There is extensive literature regarding the set-up of very complex and structured applications with design patterns. This master thesis compiles selected research papers that are related to internship as facilitator and various design patterns, frameworks and web technologies in the implementation of IMS's. It brings the scientific data and information from the scholarship together to achieve the main goals of this research.

2.2 Internship as Facilitator and Bridge

Researchers have shown different perspectives and concepts related to internships by implementing programs and technologies of modern trends. The consulted research papers give insights on the internship as a concept in general, the process of searching, getting and conducting an internship, and the ways of implementation to strengthen the linkages between educational institutions, businesses and students.

Ruggiero D., and Boehm J [1], in their paper *Design and Development of a Learning Design Virtual Internship Program*, illustrate the process of the creation of international virtual internship programs. These programs are created as an online education for non-traditional students and have been occurred as a need for practical internship placement for adults that have limited possibilities due to their physical location and other obstacles. For the same issue, authors Medeiros R. A. et al. [26], give their perspective in their *paper Using Virtual Internships as an Innovative learning technique*. These programs are a bridging theory and practice by the use of modern trends of technologies. Virtual internships offer similar benefits as traditional internships, strengthening their academic learning, increasing their self-confidence and providing an opportunity to establish professional connections. It is very important to mention the benefit from virtual internships, reduction of the need for relocation or unnecessary travel. Two insights on the value of virtual learning, constructivist paradigm and the Col framework lend credence to

the value of virtual internships to bridge the gap between the digital learning classroom and the workplace. As for the implementation of this program, the VAT (Virtual Attachment Theory) has been applied to three cohorts of virtual interns and have been analyzed the patterns of communication, work quality, and relationships between the parties. A secure attachment is achieved by clear communication between clients, mentors, and interns. And, internships met all of the criteria that ended in completed projects.

On the other hand, Shin Y., Lee K., Ahn J. and Jung J. [2], through their study on the *Development of Internship & Capstone Design Integrated program for University-Industry Collaboration*, present a program with the aim to enhance the collaboration between industry and university and give solutions in solving problems. Authors in their research consider difficult the process in checking the progress and status of each student, problem the short internships for the students and problem in finding the proper real field problems by the University. Internship & Capstone Integrated program gives students the opportunity to experience real problems in advance before graduation. Students, by attending ICIP, are provided with the chance to complete research in various field and the chance to learn how to create a business case to fund their project. Capstone projects demonstrate how incorporates student's knowledge and skills and experiential learning and practice. Educational institutions are reflecting on industry requirement and are giving attention to train human resources to increase professionalism, creativity, active thinking, various knowledge, management skills, adapt to organizational culture, and communication skill. The beneficiary of the project is industry by obtaining solutions to their problems and being provided with a better understanding by students and educational institutions. The next beneficiary of the project are educational institutions by building a relationship with Industry and gain insights from industry on education system. Authors Steele A., Cleland S. et al. [27], also give their perspective on Capstone Projects in their paper *ICT Capstone Projects and Internships: Analysis of Work Environment Characteristics*.

Moreover, Galeano N., Menendez R., and Cantu F. [3], *Developing Research Skills in Undergraduate Students through an Internship Program in Research and Innovation*, promote

research and innovation to undergraduates by contributing in creating products and as a result, have an impact on economic development. Internship in Research and Innovation Program is the model that promotes research and innovation. IRIP has the objectives as: apply the scientific method to the solution of research problems, write scientific technical reports and papers, apply the method of invention and development of patents, and contribute as co-inventor of patent and other intellectual property products. Benefits of IRIP's program are participation in applied research or technology development projects that aim to create and apply new knowledge, attainment of significant knowledge during the development of research projects using leading technologies, connection with scientists in national and international institutions, a competitive advantage in their professional education and life plan and development of several skills. And, it provides an approach, which uses Research-Based Learning (RBL) techniques, to incorporate undergraduates in research. In this paper, three approaches are revealed in detail as a stand-alone, attachment and inserted. This is the Tecnológico de Monterrey's KBD model key strategy in transforming the university into a research university. This strategy enhanced the development of intellectual capital, the design of research products, the promotion of entrepreneurship, and the education of undergraduate students.

Another crucial study for this thesis was that of McGill T., Koppi T., Armarego J. [4] on the *ICT Industry Involvement with ICT Education and Research in Universities: Industry Perceptions*. Through this paper the authors demonstrate the strong interrelationship between industry and education and research in universities. Based on this paper the involvement of industry in curriculum design, the attendance of short courses in university by providing applied research opportunities, and the intertwining of the academic education with the industry practices are the key elements towards the establishment and the strengthening of linkages between university and industry. It is moreover highlighted that the engagement of the students in industry, during the studies, affects directly the achievements of the students. It recommends more opportunities for interaction between students and industry and academic staff and it recommends the development of ongoing relationships. It evinces, by taking into account the industry's views, the achievement of potential benefits associated with strengthening the industry linkages. And, in this context, this study provided with the reflection of an opportunity to gain input from ICT

professionals across a broad range of organizations. It is considered an opportunity to strengthen linkages by the accreditation of courses which provides an opportunity for industry associations and professional bodies in the provision of valuable input into the curriculum. The next role leading to strengthening the linkages is by offering curriculum and content advice, guest lectures, and support in obtaining student projects and sites for internships.

A valuable study carried out by Costa-Lobo C., et al., [5], with paper *Human interaction skills and employability at information technology internships*, where they give feedback on the advantages of human interaction skills development while attending information technology internships. The aim of this study is gathering evidence of human interaction skills and evaluating the significance of these experiences in promoting employability after the information technology internships. Findings and analysis result in the importance and advantages of development of human interaction skills as following motivation and interest in the activities developed, interpersonal relationship, cooperation in the company activities, assiduity, ease of knowledge apprehension, compliance with norms, insertion in the work environment, productivity, initiative, ability to take responsibility, creativity in proposing solutions, and self-confidence. Development of human interaction skills contributes to widening the analysis of its effectiveness in terms of future research and actions in regard to the transition from Higher Education pathways to the Labor Market. In this context, authors suggest mainly the improvement of communication between teachers and students, creation of psychoeducational interventions, psychological counseling centered in the training, increase the level of practical experiences, helping to identify the strengths and weaknesses of students.

2.3 Design Patterns

Design patterns are a trend in software development and researchers have shown different perspectives related to the implementation of design patterns in systems of different areas. We have analyzed few research papers regarding this part that will help us in the process of designing and analyzing the advantages of design patterns and implementation of design patterns. In this part of related work are included attractive scientific papers:

Niculescu V. [6], in paper *A Design Pattern Perspective on Data Structures*, mainly analyses how design patterns can be used for data structures implementation and present the advantages of design patterns. The paper presents behavioral, structural and creational aspects of patterns. With the new perspective on design pattern, the author highlights that it can provide separation between concepts, re-usability, storage, independence, and others. In case of designing complex object-oriented systems, it illustrates how is being relied on composite objects along with class-based inheritance. Also, the author classifies behavioral patterns, one of many patterns, for better communication and interaction, dynamic interfaces, object composition, and object dependency. And, models of data structures that apply the behavioral design patterns are Iterator, Template Method, Visitor, Strategy, Comparator, and State. Structural patterns classify for the better composition of classes and objects into larger structures. And, models of data structures that apply the structural design patterns are Fly-weight, Bridge, Adapter, Decorator, and Composite. Creational patterns classify for better instantiation, abstract behavior, and hide instantiation and composition details. And, models of data structures that apply the creational design patterns are Abstract, Factory, Singleton, and Builder. Moreover, authors [28][29][30][39][40][41], extend the study by classifying patterns, giving challenges, addressing issues, trends, and give a new approach and directions on design papers in their papers.

On the other hand, Knox J., [7], in paper *Adopting Software Design Patterns in an IT Organization: An Enterprise Approach to Add Operational Efficiencies and Strategic Benefits*, study software design patterns by exemplifying with definitions, classifications, and benefits. The main focus of the study examines the delivery of benefits and efficiencies in an IT organization by the usage of design patterns. The author selected a great number of papers to provide patterns in different context and multiple-perspectives on design problems. According to the research, to gain efficiency, software patterns must be applied by a software business that is made by networks of contributors who function efficiently and supportively to be able to produce the products, applications, and services on time. It is highlighted the system quality requirements, like reliability, usability, maintainability, cost, and development time, have to be determined during the design phase of the development process. Flexibility and extensibility, purpose-based classification approach, delivery speed, and software quality improvement are

benefits presented throughout the selected literature and features mentioned obviously provide and promote efficiency and benefits to the organization. Design patterns are highlighted as a tool of innovation and software development as a strategic weapon focused on standardized technology and the emergence of the architecture of business modularity. It also indicates the patterns can be leveraged as a vehicle for improving software development team collaboration and mentoring. The research gives a strong emphasize that IT realization of the benefits and efficiencies can be achieved only through adoption and implementation of software design patterns at an enterprise level.

Moreover, Khomh F. and Gueheneuc Y. [8], *Design Patterns Impact on Software Quality: Where Are the Theories?*, report and reflect the impact of design patterns, conferring outcomes reported about design patterns. Parts of paper elaborate on the remarkable developments of the research community and explanation of design patterns. Within these parts are exemplified problems that the community is coping with. Many tremendous research studies on all types of patterns are pointing out the diverse range of experiential designs produced interesting results about patterns. This paper gives suggestions, specially dedicated to the research community interested in patterns. The first suggestion given is about the research community to pursue research works on the direct impacts of patterns on developers, e.g., through the use of eye-trackers. The second suggestion about is about the research community to pursue research works on the analyses of developers' logs collected and on the usages of patterns to identify inefficient activities and help developers. The third suggestion given is about to raise the levels of abstraction of programming languages with patterns to promote appropriate patterns as programming-language building blocks. The fourth suggestion given is about the research community seizes the chances given by its research outcomes to propose a theory of patterns. These theories should describe patterns that impact positively quality, others that do not impact positively quality and certain types of patterns exist for certain software artifacts.

Another crucial study for this thesis was that of Prusty Sh. et al. [9] on *University Management System Using Model-View-Controller (MVC)*. In this paper the authors elaborate on the creation of a University management system that is dedicated to the University needs. It is a

system that overcomes the obstacles of paper-based practices of the prior system. It stresses that the system is user-friendly, secure, reliable and fast management system. The system enables the university to assist in better utilization of resources by being well design for strategic planning purposes. It is structured, in the management level, by including students, faculties, registrations, courses. It also includes the remote access feature by enabling to better manage resources. Through this automation system, entities are able to maintain data, records, instructions, and student's information within the University. MVC (Model-View-Controller) is an architectural pattern, selected with the latest technology, in developing web-enabled application and client-server technology.

In the paper *The Design and Realization of Library MIS Based on MVC* , authors Li J., Meng F., and Wen X. [10], build a management system based on the MVC paradigm on the basis of research on the library management system. The development principle and advantages of the MVC pattern are stated throughout the paper. MVC, software architecture model, is considered as an advanced paradigm, with intention in designing Web application, which delivers the most basic analysis method for the application model structural, a clear designing for products, and delivers canonical reference for software engineering. JSP, JavaBeans, Servlet and JDBC technology is used to design the MVC architecture, library management system. In this case, JSP is used to demonstrate web pages, JavaBeans is used to accomplish business models, JDBC is used in accessing database and Servlet is used to control the data transmission and function call between foreground and background. The software development process based on the MVC pattern is also discussed. It highlights how the MVC design pattern separates the calculating model of the software from the interface constitute and can build and use multi-views. As for the system design and implementation, the library management system accomplished the modules of user login, basic business, DB management, and information query. The main advantages of the use of MVC pattern are the reduction of the complexity in architectural design, an increase in flexibility and maintainability of code, and enhancement of the development efficiency of the system.

In paper, *The Development of Online Shopping System Based on the MVC Pattern*, authors Yiping Sh. [11], elaborate on the development process of the online shopping system by being adopted with the MVC design pattern and SSH framework technology. The main characteristics that the system achieve are loose coupling, simplicity in code development code, maintainability, and extensibility. The shopping system comprises of the function as browse, purchase, the shopping cart, order management, and search functions. It also includes shopping online and browsing features. It highlights that the system uses SSH open-source framework, by integrating their own core technology advantage. It offers usability with a simple and unified interface, stability and reliability.

In paper *A Web System for Farming Management*, authors Climaco G. et al. [12], use Model-View-Controller (MVC), software architecture, to design the web system and is implemented by using interdisciplinary research project management (IRPM) concepts. MVC pattern here is seen also suitable to be adopted to develop web services. As for the tools and techniques, in this system are used Java as a programming language, Hibernate as object-relational, PostgreSQL as Database. This web system is used for farming management and with the intention to support farmers and increase the production and logically is split into three representation parts: biophysical, the technical, and the decision support sub-system. This system also strengthens linkages between the farming family and the technicians. With these concepts, EESTO web-based system is created. EESTO consist of four user's classes: the system's administrator; the production system coordinator; the technician; and the farmer. This system is considered to contribute to the development of economically endangered communities. Authors Hapsari K. R., Azinar W. A., Sugiyanto [31], also proves importance of MVC architecture implementation and give their perspective on implementation of MVC architecture in financial systems in their paper *Architecture Application Model View Controller (Mvc) in Designing Information System of Msme Financial Report*.

In paper *MVC Design Patterns in the Airport Power Supply Monitoring Equipment Troubleshooting of the Application of the System*, authors Xiaobin W. et al. [13], introduce an implementation of MVC in the airport. MVC proves that it is very popular and applicable in all the

areas. The system offers a troubleshooting feature for the power supply equipment for aircraft ground electricity check. The very important characteristics that make this system useful are the improvement of software maintainability and expansion. What makes this system helpful, which is designed with MVC architecture, is the equipment maintenance personnel to be proactive in finding the cause of problem otherwise it causes delay to the normal flight work. This way of identifying issues and find fault reason and the effectiveness of the system made this system to be widely implemented in multiple airports.

A very substantial comparison of design patterns and evaluation, in context of usage, categories, and key elements of design patterns is performed by Hameed M. et al. [14], in their paper, *MVC Software Design Pattern in Web Application Development*. They consider that implementation of design patterns in web application offer reusability and consistency and flexibility, and much more as speed, scalability, and security. The comparison of categories of design patterns is grouped as creational, offering flexibility, structural, offering inheritance and behavioral patterns, offering communication between objects. This study elaborated well the circumstances of the selection of appropriate design pattern. Best practices of design patterns are also a very gainful topic, more precisely best practices of Creational Design Pattern, Behavioural Design Pattern, and Structural Design Pattern. And, by comparing of the best approach of design patterns, as between MVC, Factory and abstract, MVC is considered as the most popular approach in web-based application development for its reusability, flexibility, easiness, and manageability.

Taleb M., Seffah A., and Abran A., [15], on their paper *Pattern-Oriented Architecture for Web Applications* occur with a very detailed study on issues of web design and solutions with pattern-oriented architectures of these issues. Issues tackled are (1) decoupling the different aspects of Web applications such as business logic, the user interface, the navigation, and information architecture, and (2) isolating platform specifics. Authors consider three pattern-oriented architectures important in their paper as (1) MVC model (3-tier architecture), (2) model Core J2EE patterns (5-tier architecture) and (3) Zachman model (multi-tier architecture). MVC structures web applications that have significant processing requirements. A 5-tier architecture

and Multi-tier architecture are also presented and their strengths and weaknesses are illustrated in detail. Authors address few issues on these architectures and proposed six categories of patterns for Web applications to resolve many recurring Web design problems. The proposed patterns are navigation, interaction, presentation, visualization, interoperability and information patterns.

2.4 Frameworks, Web Technologies in implementation of IMS

Frameworks, web technologies are an important perspective in implementation software development and researchers have shown different perspectives related to the implementation of frameworks and technologies in systems. These research papers will ease the process in defining the framework and web technology by attending the trends of technology illustrated in research papers. In this part of related work are included attractive scientific papers:

Yannuar Y., Hasan B., Abdullah A. G., Hakim D. L., and Wahyudin D. [16], in their paper *Design and implementation of web-based internship information system at vocational school*, design a web-based internship information system by using a method, Design Science Research Methods (DSRM), to collect data. PHP, Bootstrap, CSS, HTML, JavaScript, MySQL database, and Apache web server is a technology used to develop this system. The results of the research assure that the system can be used as a support for the internship program. As for our research interest, internships as a program show the enhancement of the relationship between school and workplaces, and internship information system results as a facilitator guidance process between students, teachers, and coordinators.

On the other hand, Nguyen A. C., Xu M.[17], through their study on the *Making an Internship Management System More Usable*, elaborate the improve of the usability of an existing internship management system. They provide us with issues and solutions by relying on advanced research methods and collected data. The methods used for identifying problems are ethnographic study, data analysis of system statistics and support errands, usability testing and heuristic evaluation. And, the answers and solutions from these findings are grouped as: speak the user's language, provide consistent and correct information, make functions and buttons

visible, inactivate buttons and dropdowns and not hiding or showing empty ones and consider users with disabilities.

On the other hand, author Xue L. [18], in paper *Design and Implementation of University Students Internship Employment Tracking System Based on MVC Framework* discusses how the developing mode of Web application based on MVC pattern overcome the traditional development model. The author analyses the current development status of internship management system by describing details of the user requirements and functional structure, the user-centered interaction design issues in the application. With the system proposed and implemented, it incorporates the practice management process and the practice teaching system; the algorithm is described where it considers performance optimization and convenience of using to the whole process. As for the tools and techniques, in this system are used Java as a programming language and SQL as Database.

Moreover, authors Adetiba E., Matthews V., Egunjobi V., Olajide A., in paper *Development of e-SIWES Portal: A Web based Platform for Student Industrial Work Experience Scheme (SIWES) Management* [19], elaborate a web-based dynamic platform that digitized many processes for the students, lecturers, and industry-based supervisors in order to find and attend an internship (work experience). Supervisors will assign immediately the students begin their industrial training and ease their monitoring in real-time. The web-based platform enhances the manual tasks of activities such as registration, dissemination of information, filling the logbook for students' day-to-day activities and supervision/assessment by lecturers and industry-based supervisors. PHP, CSS, HTML, JavaScript, MySQL database and Apache web server is a technology used to develop this system.

Another crucial study for this thesis was of that of authors Nair P. S., Binu T. [20], Muthaiyan M., on the *Web Application for University Internship Program Management*. Through this paper the author presents an internship program to conduct and administer with the aid of a software application to keep track of the students, faculties, academic progress, etc. The software is developed using PHP, MySQL, JavaScript, HTML, and CSS. An algorithm used in the software is elaborated to allocate all the students of a particular internship semester to stations

of their preference. By this software, all manual processes are replaced as managing and administering processes of an internship by University side. Moreover, authors [35][36][37][38], extend the study on Management Systems in Education sector, and give a new approach in their papers.

In paper *E-Portfolio Web-based for Students' Internship Program Activities* [21], authors Juhana A. et al., result in creating a web-based e-Portfolio which facilitate students in documenting the results of their work and aid supervisors in monitoring process during the internship. The research instrument used in this research is questionnaire and showed that e-portfolio features can be used according to the users' needs. E-portfolio is recommended to be used to overcome the issues and its features are useful in providing an effective means of consulting.

In paper *Android Application to Enhance Performance of Internship Program Implementing Cloud Computing Platform and Infrastructure* [22], author's Chopvitayakuna S. aim is to improve the performance of a mobile application by developing a new system to manage the internship program. The new system of Internship Program Management, the new version of the mobile application is more agile, less cost and more productive by implementing Cloud computing platform and infrastructure. All data are handled and stored on Mobile Cloud Server. The author elaborated the new mobile transactional system that modified its background system from a local database and web server to Mobile and Database Cloud server using Microsoft Windows Azure Platform. When storing data, services use SQL database. The new application provides efficient management and the computing performance of this system is utilizable and more efficient due to the character of Cluster and Grid of the Cloud computing platform.

A paper of Majeed A. and Ibtisam Rauf I. [23], *MVC Architecture: A Detailed Insight to the Modern Web Applications Development* is included as one of papers, as we provided numerous studies in the thesis, by tackling the implementation of MVC in modern applications. The main contribution of this study is providing a holistic view of each layer of the MVC and main functionalities and advantages of the MVC. MVC, Model view controller architecture, is presented an architectural pattern usually used in web-based applications and used as a standard

design pattern. MVC, as stated, consist of three layers. It is a typical implementation for E-commerce web applications, and it refers to online selling and purchasing of good as amazon.com. The author highlights the functionality of model, view, and controller as a backbone of implementation, and as an important part before determining the architecture. The advantages of MVC implementation are considered to be as control of the complexity of the application, not use of server-based forms, test-driven development approach, use front controller pattern, and support of rich routing communications. Moreover, authors [32][33][34], extend the study on Mode-View-Controller frameworks implementation, and give a new approach in their papers.

Jacksi K., et al., [24], in the paper Student Attendance Management System occur with a detailed study on an attendance management system designed to track student's activity in the class. The main issue tackled is attendance management in educational institutions. Authors address a few issues in this paper and propose a system offering the process of monitoring attend students by saving time and effort. The system manages by keeping track of students. The system, web-based application, analyses the data and displays statistics. The important features of the developed system are user-friendliness, easiness, simplicity of GUI. The technologies and tools used to implement are Model, View, and Controller (MVC) - based framework, Laravel, and JavaScript, jQuery and AJAX have used.

Management Information System is a trendy and modern information system and the author Chen S. [25] demonstrates, in paper *Understanding of the Management Information System Based on MVC Pattern*, advantages and disadvantages of this system. MIS builds an effective and efficient working flow by utilizing comprehensive methods to manage information. In this study, gives evidence of the MVC framework and ASP.NET's practical implementations, the way of split the pages and database access framework, reducing the coupling during the process. The author pretends the construct of MVC makes the system more flexible, and the code could be more robust, stronger, so as to design good scalability and easy maintenance of the software.

3 Research Methodology

3.1 Research design, sampling and instrument

Empirical methodologies are used to conduct this research. Questionnaire surveys are conducted to benefit from a highly diverse sample of respondents: businesses/companies from three different countries – Kosovo, North Macedonia and Albania – are the subject of this study. The data of this study were obtained by distributing the self-completed questionnaires to respondents, through social and professional networks. Probability and simple random sampling technique were implemented for the selection of samples for each simple random. The simple random sample means that every case of the population has an equal probability of inclusion in sample [45]. In our research, simple random sampling is used as a sampling technique where every business, regardless of its size, has the chance of being selected in the sample. The table 1 below shows the calculation of this selection.

Table 1: Calculation for Sample Selection (Simple random)

	Micro-sized Business	Small-sized Business	Medium-sized Business	Large-sized Business
Number of businesses in the sample	61	17	10	12
Proportion of the sample	$\frac{61}{100} = 0.61$ $\approx 61\%$	$\frac{17}{100} = 0.17$ $\approx 17.00\%$	$\frac{10}{100} = 0.10$ $\approx 10.00\%$	$\frac{12}{85100} = 0.12$ $\approx 12.00\%$

The purpose of conducting this survey is to study businesses viewpoints of the current situation related to interns and their expectations towards a web-portal for internships. This sampling design has included all sizes of businesses. The survey, which was conducted through the collection and analysis of 100 questionnaires, took place from the end of June to beginning of July 2019. The questionnaires were prepared by Google Forms and distributed to businesses via viral networks. The gathered first-hand data from the filled in questionnaires were extracted in the .csv file, and evaluated and used for the purposes of this thesis.

3.2 Analysis and findings

Through the data collected from the survey several types of analysis were performed. The intention of conducting the data analysis is to attain answers to the research questions. The questions, the data analysis and the achieved results are listed below.

Question 1: Business' Size

The figure below shows the respondents' answer about the size of the businesses. The respondents had to select one of four choices: a micro-sized enterprise (< 10 employees), small-sized enterprise (<50 employees), medium-sized enterprise (<250 employees) and large-sized enterprise (>250 employees).

It is very important to cite and should be noted that the survey covered all the sizes of businesses and their realization makes the results of the survey more reliable.

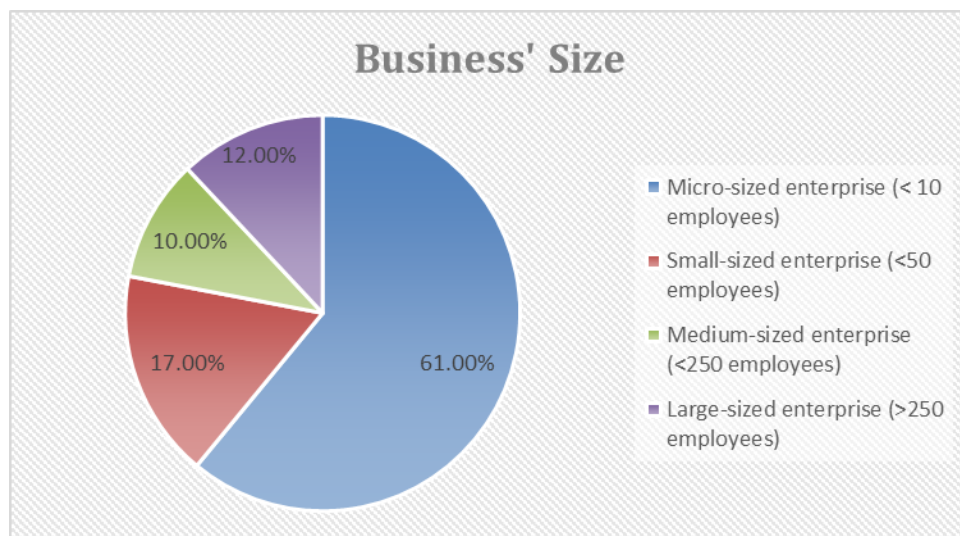


Figure 1: Pie Chart for Business Size

From the pie chart above, it can be seen that most of the businesses are small-sized businesses. The chart shows that about 61.00% of respondents are of a micro-small size business, 17.00% of respondents are of small-sized business, 10.00% of respondents are of medium-sized business and 12.00% are of large size business.

Question 2: Business' Expertise

The pie chart in Figure 2 (see below) shows that a range of business expertise of the respondents is diverse. The highest percentage of the respondents' expertise are of the Services (11.00%), Information Technology (8.00%), Sales (7.00%), Health (6.00%), Law (5.00%), Accounting (5.00%), Agriculture (4.00%), Construction (4.00%), Software Development (4.00%), Bank (4.55%) fields.



Figure 2: Pie Chart for Business' expertise

Given the diverse concentration of businesses expertise, this part of the survey results proves that grouping of the business activities should be considered in any solutions or strategies to be proposed in the future.

Question 3: Practice of Employing Interns in the Businesses

In the question of whether the interns were employed in businesses, the latter were able to respond with one of the options as True, False and other. More than half (55.00%) of the respondents declared that they were employing interns in their practice. Almost another half of the respondents (39.00%) stated to not employing interns and 6.00% of the total of respondents signed *Other* as the third alternative of answers to the above cited question.

Given the concentration of the employment of interns by businesses, the results of this section prove that only half of the businesses benefit from the interns and vice-versa.

Question 4: Interest in Employing Interns in the Businesses

From the pie chart in Figure 3 (see below), it can be noted that most of the respondents true and maybe with (82%) from the total of respondents. The chart shows that about (49.00%) of respondents are utilizing interns, (32.95%) of respondents are ready to use interns. Other respondents answered no, as of an answer type false and definitively no, with a total of 18 respondents (18.00%).

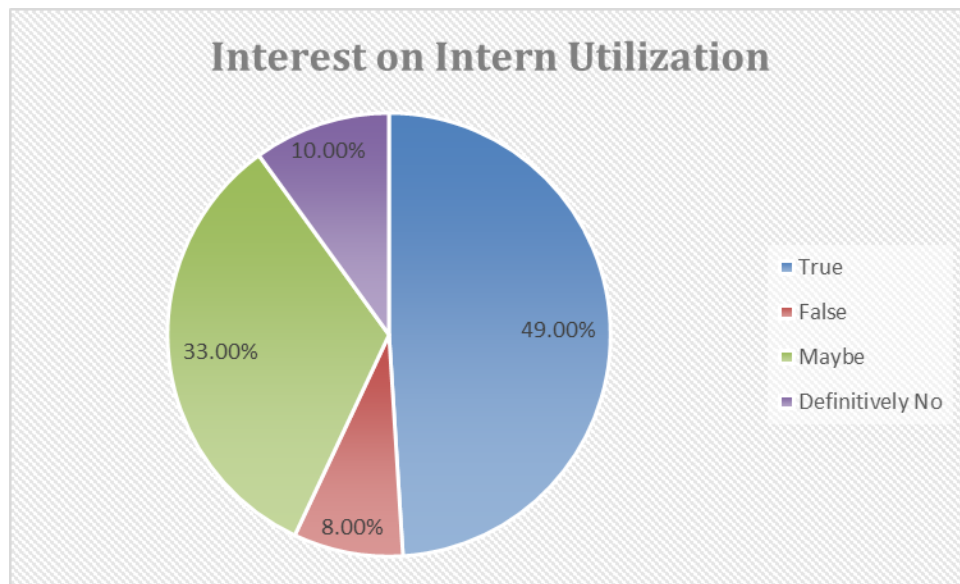


Figure 3: Pie Chart for Respondents' Interest in Intern Utilization

The results of this data analysis imply that the businesses, in general, are either employing or expressing an interest in the employment of interns. Given the concentration of interest and readiness to employ interns in the practice, it can be stated that the intern employment is an important process that should be closely scrutinized and considered in future solutions and development strategies.

Question 5: The Biggest Challenges in Employing Interns

Figure 4 shows the respondent's type of challenges in employing interns. As it is seen in the pie chart below, the approach to start working with interns is a challenge for businesses and (34.11%) of them reported it is an issue. 26.36% of the respondents stated that supervising interns is another challenge. Whereas, for 21.05% of respondent's payment of interns is a real issue and on the other hand for 19.38% of them the lack of the interns in the market is a challenge that should be seriously tackled. And, only 2.33% of the respondents reported other challenges.

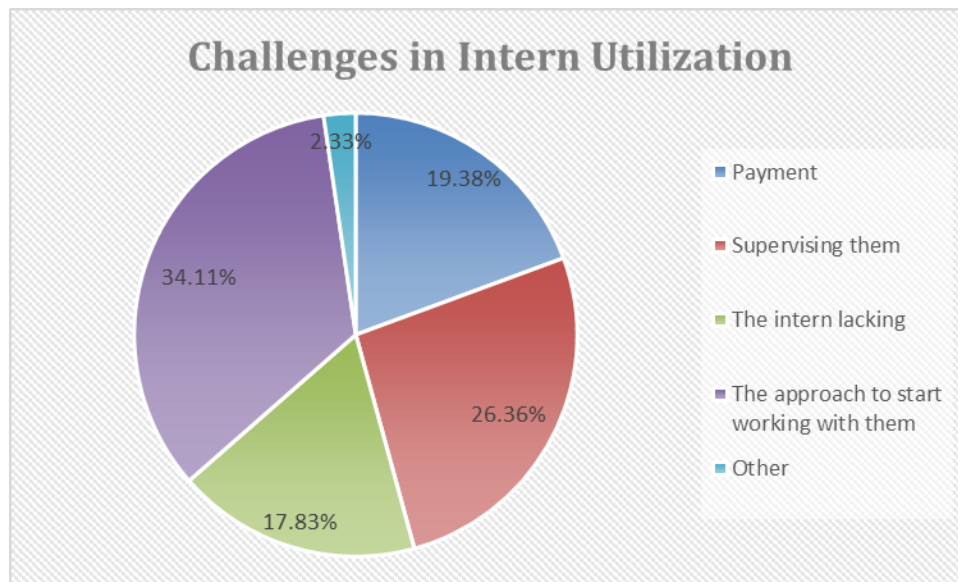


Figure 4: Pie Chart for Businesses' Challenges in Utilizing Interns

Given the distributed concentration of a type of business challenges on the employment of interns, it could be stated that businesses need a serious examination of their challenges and the researchers should collaborate with the businesses more closely in order to have their feedbacks involved in future development strategies.

Question 6: The Appropriate Mediums/Channels in Finding Interns

For the pie chart in Figure 5 below represents the businesses' mediums/channels for finding interns. Most of the businesses reported for using established contacts to find interns (29.77%). Job portals are another medium used by businesses (25.19%) for finding interns. The company website is also used as a medium for finding interns of (21.37%). The total respondents who answered the other options (career service, newspaper, and et cetera) are around (23.66%).

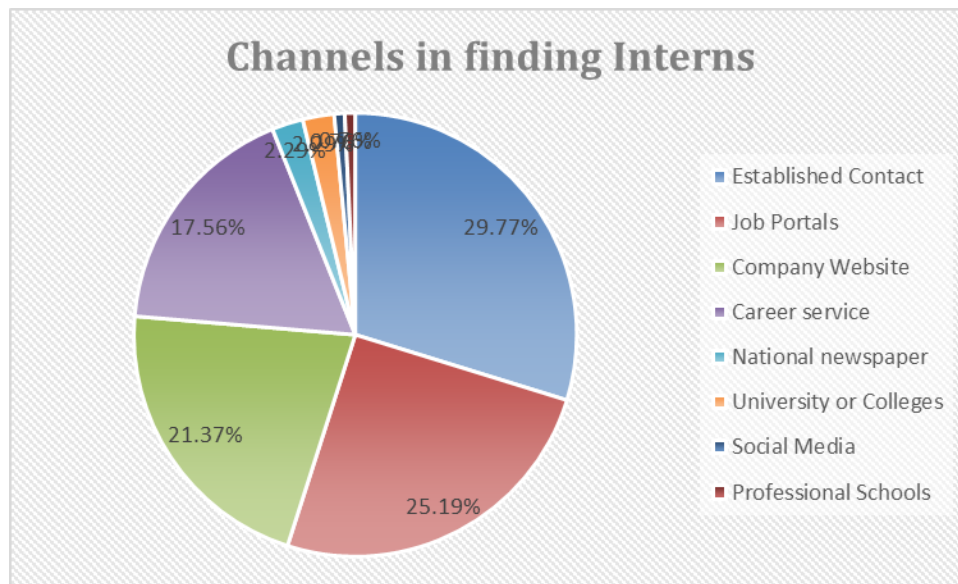


Figure 5: Pie Chart for Mediums/Channels for finding interns

In general, businesses use all channels to find interns. It is proven that half of the options selected are digital mediums as a source used to find interns. The expectation to suggest businesses will take place by offering digital solutions for finding internships.

Question 7: Preference for performing an interview with the intern is

The answers to this question represent the respondents' methods of performing an interview with interns. Majority of the respondents perform in-person interview of (82.00%). Only (10.00%) of the respondents answered in performing interviews by online application, and (6.00 %) of the respondents answered in using assessment centers in interviewing and (2.00%) responded in using the phone in interviewing interns.

Given the dense concentration of in-person interview used by businesses to perform an interview, it proves that direct contact is the source of interviewing an intern. In any solutions with a suggestion to be brought, interns should consider and not underestimate direct contact when being interviewed.

Question 8: *The working hours in utilizing interns are*

The answers to this question represent the respondents' preference for interns working hours. Half of the respondents responded for half time intern utilization and it is of (50.00%). And, the other half of the respondents answered full time (50.00%).

Given the equal concentration for intern working hour's utilization, it proves that there is an equal business need for full-time and half-time interns. In any solutions with suggestions to be brought, interns should consider two types of an intern job position.

Question 9: *The preferred and needy season to utilize the interns are*

Figure 6 below shows the intern seasons' utilization by the respondents. Most of the respondents (41.03%) responded for summer season intern utilization.

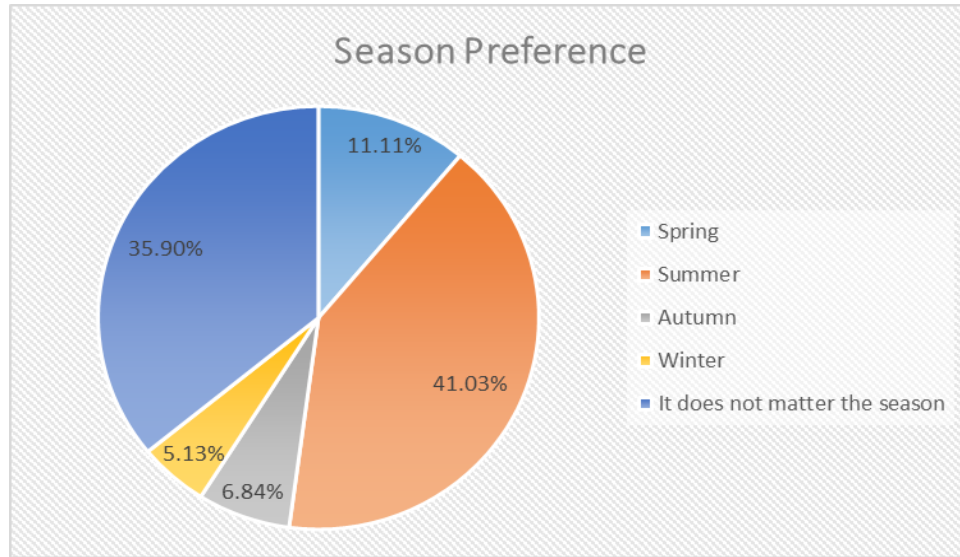


Figure 6: Pie Chart for Respondents' Season Preference on Intern Utilization

And, respondents of (35.90%) answered that it does not matter the season of intern utilization. The other percentage of (23.08%) on preference responded for autumn, spring and winter seasons on intern utilization.

Given the concentration for the season on intern utilization, it proves that there is a business need for utilization of interns more on summer season. In any solutions with suggestions to be brought, interns should consider mostly the probability (more than 50%) in the summer season to perform internship.

Question 10: *For a position, the number of applications of interns is about*

The answers of the businesses to this question represent a range of numbers of intern applications for an intern position. Most of the respondents responded for 1-5 interns apply for an intern position of (74.00%). And, (26.00%) of respondents answered the other options of answers (5-10, 10-20, >20, and not applicable).

Interns are expressing interest in obtaining an internship. Given the concentration of interest in obtaining an internship by businesses, it proves that interns are showing interest in the attendance of an internship.

Question 11: Rate the level of satisfaction of the actual situation of the internship process

For the pie chart in Figure 7 below represents the businesses' *level of satisfaction of the actual situation of the internship process*. The percentage of rating is as: (16.00%) for poor, (19.00%) for fair, (43%) for average, (12%) for good, and (19%) for excellent.

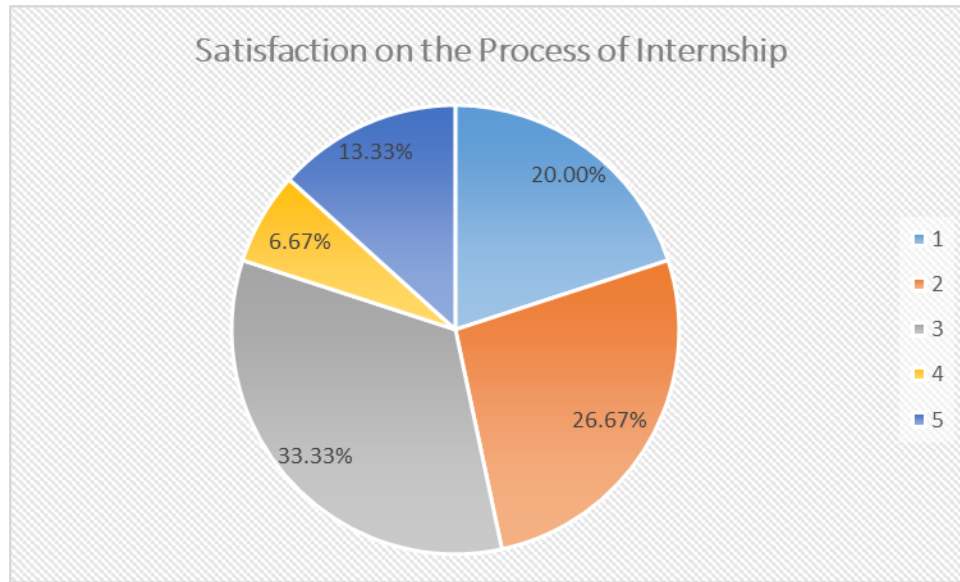


Figure 7: Pie Chart for Satisfaction on the process of internship

Given the concentration of the actual situation of the internship process, it proves that there is mostly an average/fair satisfaction of the actual situation. This is not a satisfying rate and must be considered any solution to this process.

Question 13: The most valuable skills for an intern are

Figure 9 shows the preference for intern skills of the respondent. As seen in the pie chart below, the drive and commitment skills of interns are the most preferred option by businesses (37.50%). Passion and intellectuality is another option preferred by businesses (27.2%). Interpersonal skills of interns are the next option preferred for businesses (25.00%). Academic records and intelligence is the last preferred option for businesses (10.23%).

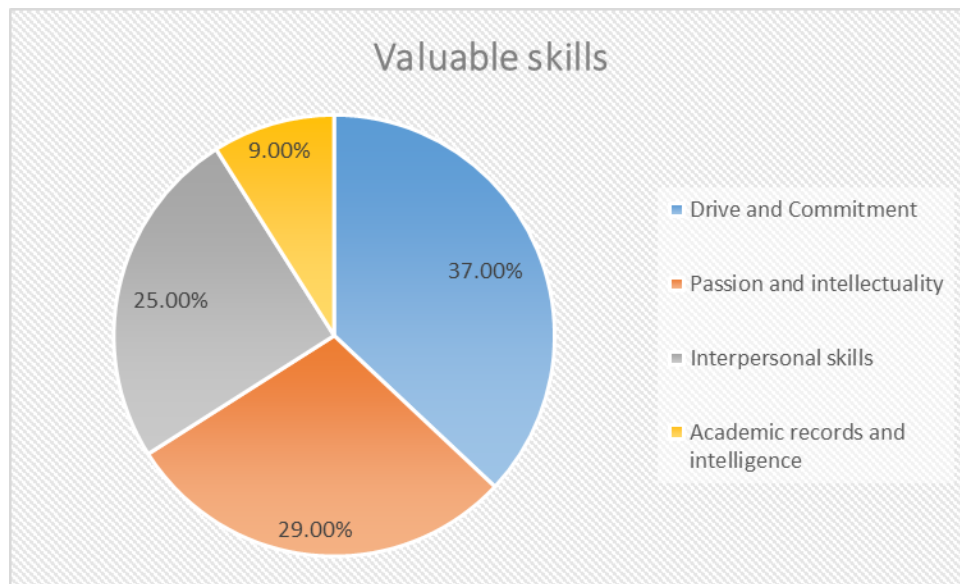


Figure 9: Pie Chart for Preference on Intern Skills

Businesses are expressing interest in intern' skills especially when they begin the internship. Students must provide more than theoretical knowledge. Given the distributed concentration, it proves that skills are very important and must be taken into consideration in any solutions to be brought.

Question 14: *Language is an important factor*

The answers of the businesses to this question represent businesses' preference on the intern language competences. Most of the respondents responded for a positive answer on the importance of language and it is of (76.00%). And, the other percentage of the respondents answered for no importance of language (24.00%).

Businesses, in general, are expressing an interest in intern languages competencies. Given the concentration of interest in language competences by businesses, it proves that language competences are very important and must be considered in any solutions to be brought.

Question 15: An internship web-portal would help in overcoming some of the obstacles

Figure 10 below shows the need for internship web-portal. Most of the respondents responded for the need of internship web-portal (87%). And, the other percentage of the respondents answered for no need (10.00%) and answered for maybe (3.00%) for internship web-portal.

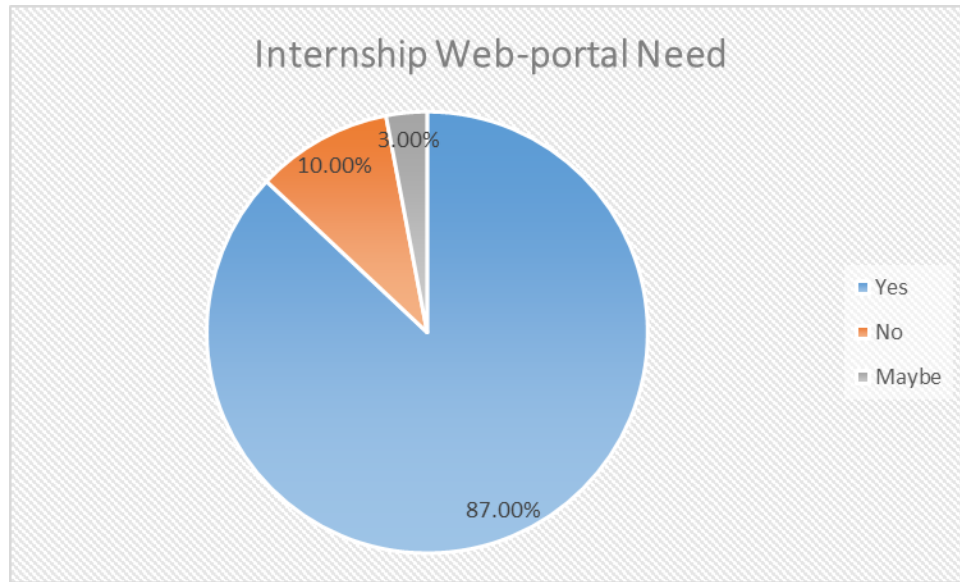


Figure 10: Pie Chart for Internship Web-Portal Need

We used the survey data to analyze the relationship between businesses' size and the need for a web-portal. We performed analysis and tests as linear regression with Stata, statistical software for data science. We conducted this analysis between these two variables based on 100 observations.

We conducted linear regression analysis to predict the need for a web-portal variable based on business's size variable. The basic regression equation stands as:

Equation 1

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \xi; \dots (1)$$

Y is dependent variable, X is independent variable, ξ is error term; β_1/ β_2 measures the effect of X_1/ X_2 on Y. The constant term (β_0) measures the value of Y if both X_1 and X_2 are zero.

Based on linear regression analyze, the regression equation can be written as:

Equation 2

$$\text{Need for Web Portal} = 1.001 + .0924 \text{ Business' Size ... (2)}$$

For every unit increase in the Business' Size, the need for internship web portal increases by .0924 units holding all other factors constant.

Table 2: Regression Results

```

Source | SS df MS Number of obs = 100
-----+----- F( 1, 98) = 5.05

Model | .953382866 1 .953382866 Prob > F = 0.0268

Residual | 18.4866171 98 .18863895 R-squared = 0.0490
-----+----- Adj R-squared = 0.0393

Total | 19.44 99 .196363636 Root MSE = .43433
-----

Q15 | Coef. Std. Err. t P>|t| [95% Conf. Interval]
-----+-----

Q1 | .0923821 .0410932 2.25 0.027 .010834 .1739301

_cons | 1.000179 .0833087 12.01 0.000 .8348556 1.165503
-----

```

The **Prob> F** value (0.0268) is less than 0.05 indicates a relationship between the set business size' and the 'need for web-portal' variables. The value Prob > F-value is the p-value for the goodness-of-fit test, which tests the null hypothesis that all of the model coefficients are 0.

R squared is 0.0490 which shows that the business size' variable included in the model is able to explain 49% of the variation in the dependent variable. On the basis of the R-squared value the overall strength between the business size and the need for internship web-portal is measured.

The ***P-value*** (0.027) is less than the significance level (0.05), which indicates that our results are statistically significant. The coefficient has a statistically significant impact on the need for internship web-portal variable.

We are 95% confident that the business size'; variable has some effect on the need for internship web portal variable.

Statistic, t, is 2.25 for the coefficient of business size, highly significant. We can say that business size variable has a statistically significant effect on the need internship for web portal.

Table 3: Percentage by grouping

Business Size	Need web portal	No/maybe need for web portal
Micro-sized enterprise	90.16%	9.84%
Small-sized enterprise	100.00%	0.00%
Medium-sized enterprise	50.00%	50.00%
Large-sized enterprise	83.3%	16.7%
Total	87.00%	13.00%

All the small-sized enterprises responded for the need of internship web-portal (100%). Most of small-sized enterprises (90.16%) and large-sized enterprises (83.3%) responded for the need of internship web-portal. And, half of medium-sized enterprises (50%) responded for the need of internship web-portal.

Businesses, in general, are expressing interest in internship web-portal. Given the dense concentration of a need for an internship of web-portal by businesses, it proves that internship web-portal can give solutions to many questions raised in this survey. Businesses answered the question regarding the business' expectation towards web-based internship management system.

3.3 Survey Results

The questions incorporated in the empirical survey have covered a wide range of aspects – from the challenges to the options of solutions of some obstacles. The analysis of the data provided through the answers of the respondents has provided an essential feedback.

The list below demonstrates some of the conclusions brought about the survey analysis:

- This survey is reliable because it covered all the sizes of businesses;
- Diverse businesses expertise reported on the internship process;
- Businesses do employ interns and have adequate feedback on internship processes;
- Businesses are employing and expressing an interest in intern employment;
- Businesses report on various challenges, such as supervision and/or lack of interns, intern retribution, etc.;
- Digital mediums are used as a source to find interns;
- In-person interview – direct contact – is the preferred method of interviewing an intern;
- There is an equal business need for full-time and half-time interns;
- The business' need for employment of interns for both summer and winter seasons;
- Interns are showing interest in attending an internship;
- The current situation of the internship process is mostly in an average/fair satisfaction level;
- Preference for intern education is diverse;
- Diverse valuable technical skills are very important besides the theoretical knowledge;
- Language competences are highly important;
- A web-based internship portal is welcomed by the businesses.

4 Software Structure and Implementation

The countries in the region do not provide internship management system for all type of interested parties such as the educational institutions, businesses, and the students. Non centralized systems are used as a type of communication. As an outcome of this study, we will provide an Internship web-based portal as an outcome and serve as a bridge. This model will contribute to all parties and reflect positively by providing linkage between educational institutions, businesses, and students.

This section describes the detailed implementation of the internship web-based portal, methods used to develop the system, the structure of the software.

4.1 Purpose

The purpose of this software system is to facilitate the process of application and advertisements of internship positions for internship seekers and businesses. This contribution goes to all the countries of the region and the web-based portal is to build a system for facilitating seek of the internship. As a new approach, the model aims to be a bridge as a way of collaborating and accessing information between internship seekers, businesses and professors. The main objective of the web-based portal is to set communication between pillars (S-B-A). This communication can be achieved by setting the infrastructure and mechanisms that will provide a qualitative connection by using the design pattern approach modeling as a modern approach. The benefits of the modern design pattern approach are easiness, reliability, flexibility.

Students can apply for any position without any need of login or with the need to login in order to benefit more from the system. Companies must log in in order to post their internship advertisements and seek internship seekers according to the skills and education. Professors can offer support to both parties, students and businesses.

4.2 Scope

The internship web-based portal aim is to present a user-friendly web-based portal that mainly advertises the internship vacancies and digitizes many manual processes.

The solution of our model runs on an open-source Laravel platform and following MVC architectural panel. This non-complex architecture is comprised of Models, Views and Controllers. The most important benefits expected and what the system offers are:

- Security by building the authentication and authorization system
- Speed
- Easy maintainability
- Reduced loading time

This scope is composed by these modules:

- *Advertisement Module*

This main module delivers capabilities for internship seekers. All the concept of this system is appeared mainly on this module by searching for internship advertisements and posting internships. Internships seekers also can apply for an internship position without the need for registration.

- *Intern Module*

This module delivers capabilities for the applicant by registering and filling the application with their skills and educational details. They can also edit or delete their data. Internship seekers, through login in, will be able to search and contact companies and professors by using the data provided in this system.

- Company Module

This module delivers capabilities to employers interested in hiring new interns for the vacant positions. An employer can advertise and internship position also can update or delete the data of the advertisement. In this module, companies are provided in this system with professors and internship seekers profiles.

- Professor Module

This module delivers capabilities to professor interested in offering support to internship seekers and to companies in hiring new interns for the vacant positions. A professor can register, can update or delete the data of its profile. In this module, professors are provided in this system with companies and internship seekers profiles.

- Administrator Module

This module delivers capabilities for the administrator of the software system who has all the privileges. The administrator manages and maintains the data filled through modules of the software system. This module has four modules as user management, role management, permission management and parameterization. Administrator will be able to show, edit and delete a user. Administrator will be able to add, show, edit and delete role. Four type of roles have been created as intern, company, professor and admin role. Permission are created of type as of list, create, edit and delete. Parameterization module offers creating, editing, viewing and deleting functions for the countries, sectors, language, university, skills and titles.

4.3 System Design

The web-based internship portal is designed to meet the requirements of the market. The system design of portal is based in few principles as: new approach and observation offering linkages between parties, new approach by using MVC design pattern, as a modern approach, usability to the end-users and responsive design interface. Web-based portal facilitates the process in finding the right candidates that fulfil their requirement. Figure 11 presents the system design of the project.

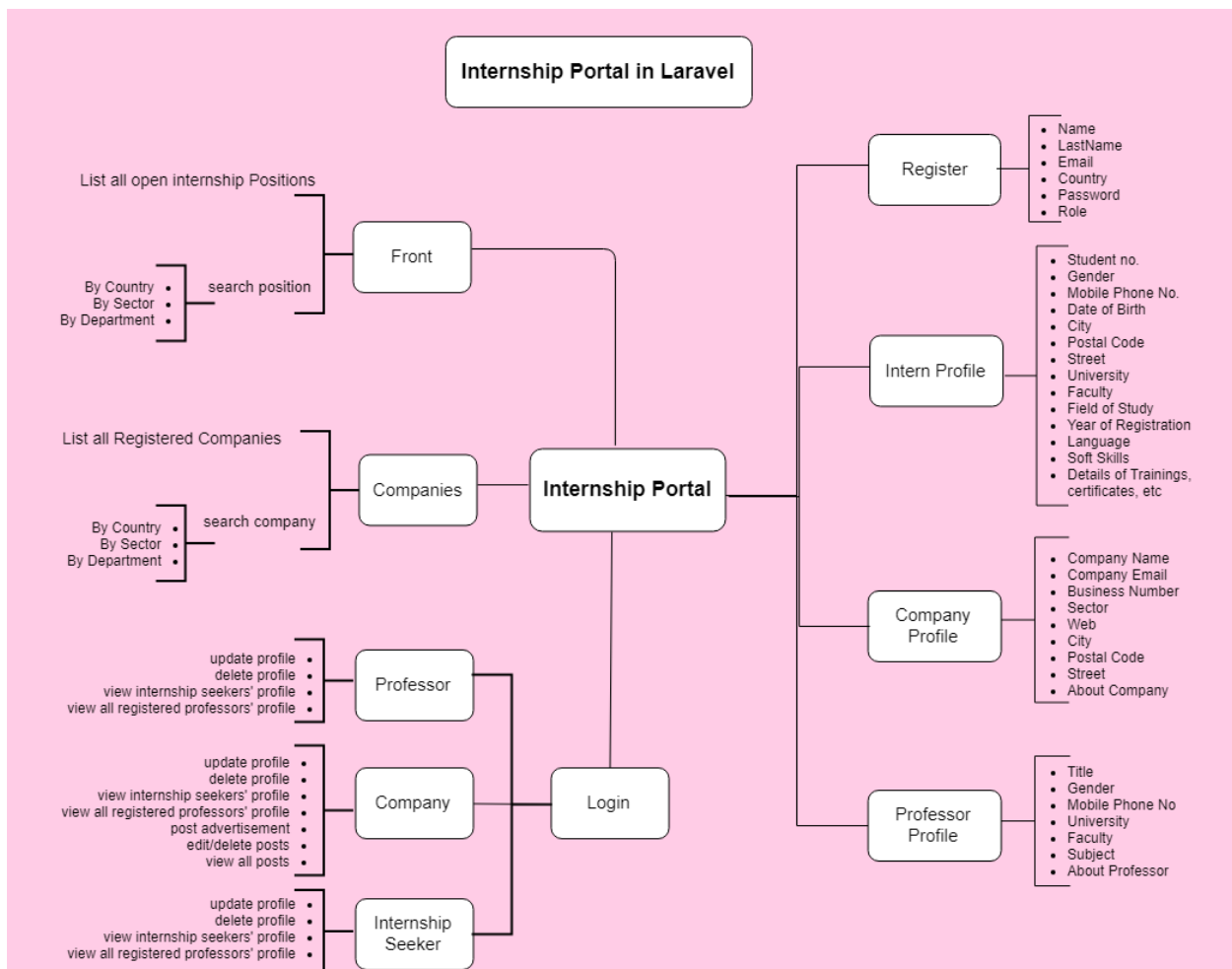


Figure 11: Functionalities and modules

Through the schema in the figure, we illustrate the internship seekers, professors, companies' modules and administrator module capabilities. Administrator module delivers control capabilities and full privileges to an administrator for the system.

The goal of the system was to deliver an easy web-based internship portal that meets the expectation of internship seekers and businesses. The schema of the web-based portal is easy to catch. The system offers two kinds of access, the one that supports registering and the other that does not support registering. All type of users can find the portal easily accessible and user-friendly. The normal accessing, without registering, is very useful for the parties that do not want to share their data.

4.4 Front Page

The front page of the web-based internship portal has the title links for the internship position posted. All the open internship positions have the detailed information on advertisement as description, payment, end date of advertisement, and duration of the internship, and on company as details of the contact. Figure 12 presents the front page of the web-based internship portal. The front page holds the available internship open positions, and the search criteria provide the option of country, sector and department of type selection. Also, the front page holds the available information on companies, and the search criteria provide the option of country and sector of type selection. The user has other option as registering, logging and option of switch to the preferred language since it will be used by countries of the region.

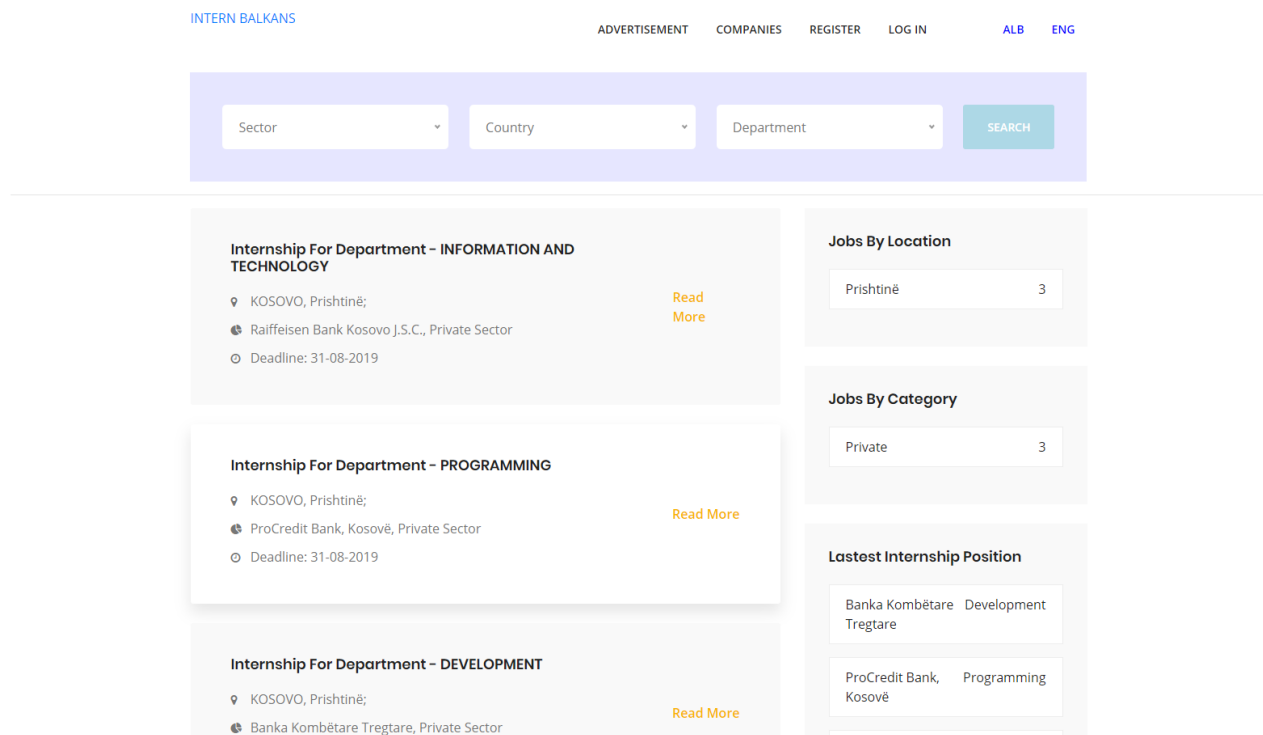


Figure 12: Front Page

The registration of the normal user is not obliged and anyone can access the web portal. The employer (companies) have to register in order to post new advertisements.

4.5 Companies Page

The companies' page of the web-based internship portal has the title links for the companies registered in system. The page holds the detailed information on company as company name, company email, business number, sector, web, city, postal code, and street and about company.

Figure 13 presents the front page of the web-based internship portal.

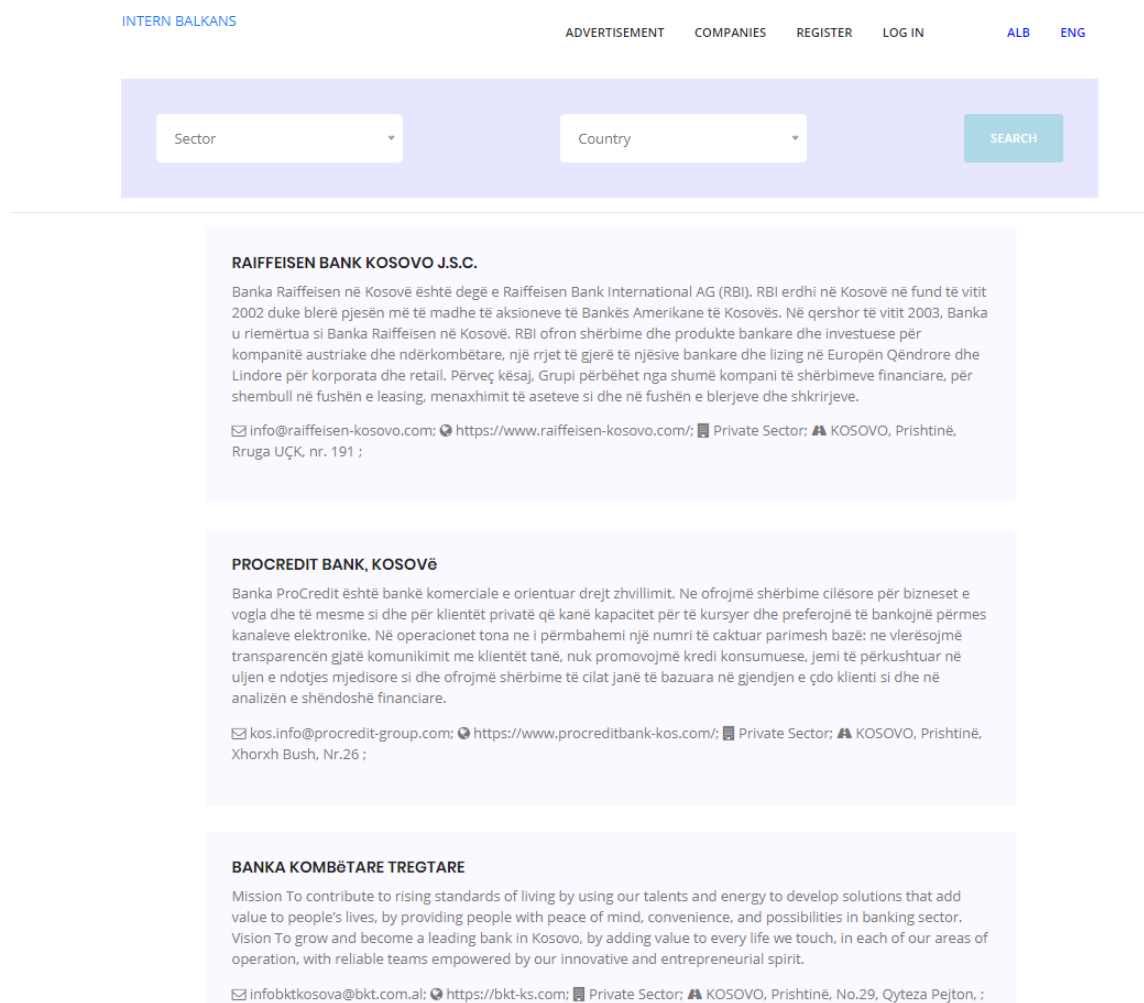


Figure 13: Companies' Page

4.6 Post Details Page

The Post Details Page holds all essential data on internship open position advertisement such as *company name, department, city, sector, contact name, contact last name, contact email, mobile phone, duration, start date, payment, advertisement start date, advertisement end date, requirements, responsibilities and description*. The figure below shows the page, as a sample, of one of the internship positions advertised on the web portal.

Show Post Back

Company Name: Raiffeisen Bank Kosovo J.S.C.,
Department: Information and Technology,
City: Prishtinë,
Sector: Private,
Contact Name and Lastname: Company User,
Contact Email: info@raiffeisen-kosovo.com,
Mobile Phone No.: 383 49 222 222,
Duration: 6 Months,
Start Date: 01-10-2019,
Payment: 250 Euros.

Description and Responsibilities:
Upon selection of learning experience/project, the IT Intern will be expected to follow a designated timeline for completion while executing IT projects and/or IT support. IT Intern will be expected to work through all IT work assigned to glean real-world, business experience in Information Technology. IT Intern may shadow IT Manager in conducting various project and/or support related IT tasks. IT Intern will attend a scheduled project and internship experience review meeting with the IT Manager a minimum of 1 time a week.

Requirements:
Must be 16 years old. Pursuit of college or vocational degree preferred, but not required Career focus in nonprofit, history or related field desired Strong interest in non-profit organizations Proficient in Outlook, Excel, and Word (Microsoft Office) Proficiency in Windows 7 and Windows 10 Operating Systems preferred Knowledge in a Windows Active Directory Environment preferred Experience with VM Ware virtual machine architecture preferred but not required.

Additional Notes:
A choice from several IT-related work projects. Based on student's field of study/interest, a select number of optional projects will be available to choose from to benefit student's generalist and/or specialist academic interests. Projects may require research, development, and writing with review and input from the IT Manager. Intern will be provided both hands-on and observational experiences working within a small IT Department to include workstation and/or server upgrades, network administration, IT project management, and other general IT duties.

Advertisement Start Date: 23-08-2019,
Advertisement End Date: 31-08-2019.

Figure 14: Internship advertisement detail page

This page contains all the necessary information about the Internship advertisement where the user can view the post.

4.7 New Post and Posts' Page

In order to post a new internship position, companies of the public, private sector or NGO clicks New Post button after logging in. By clicking this button, the relevant page gets open and companies fill all the data required related to the open internship position, in order to inform the internship seeker about the internship position.

The image shows a web form titled "New Post" with a "Back" button in the top right corner. The form consists of several sections, each with a label and a red asterisk indicating a required field:

- Company Name ***: Text input field containing "Teb Banks".
- Department ***: Text input field containing "Add".
- City ***: Text input field containing "Pristine, Gradanice".
- Sector ***: Dropdown menu with "Private" selected.
- Contact Name and Lastname ***: Text input field containing "User bank".
- Contact Email ***: Text input field containing "info@teb-kos.com".
- Mobile Phone No. ***: Text input field containing "Add".
- Duration ***: Text input field containing "E.g.: 6 Months".
- Start Date ***: Text input field with a placeholder "DD-MM-YYYY".
- Payment ***: Text input field containing "E.g.: 200-300 Euros".
- Description and Responsibilities ***: Large text area with a placeholder "Description and Responsibilities".
- Requirements ***: Large text area with a placeholder "Requirements".
- Additional Notes**: Large text area with a placeholder "Additional Notes".
- Advertisement Start Date ***: Text input field with a placeholder "DD-MM-YYYY".
- Advertisement End Date ***: Text input field with a placeholder "DD-MM-YYYY".

A "Submit" button is located at the bottom left of the form.

Figure 15: New post page

The data to be filled out are classified as mandatory and not mandatory with (*) sign. In order to update or delete the post, the company should login first and perform all the necessary actions. Figure 15 displays the new post page with its fields to be filled out, which are related to internship positions to be advertised on the web portal.

The posts' page holds all the posted advertisement page as in figure 16.

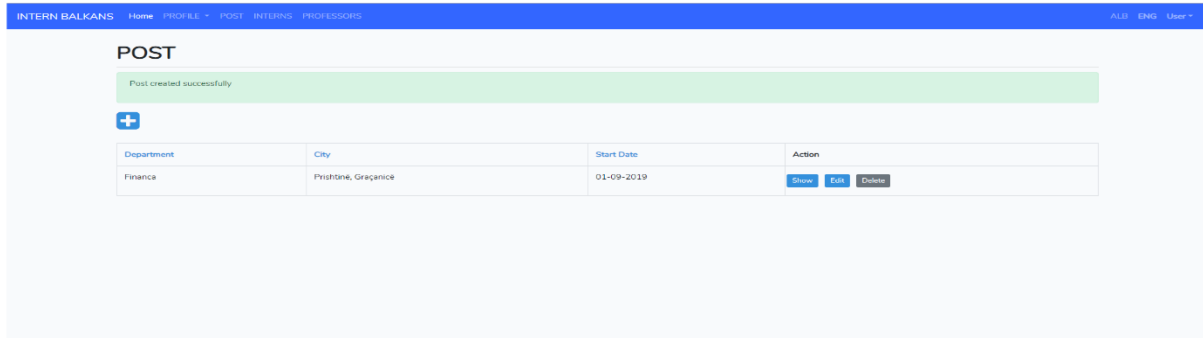


Figure 16: Post' Page

4.8 Registration

Employers, professors and internship seekers can register and use the advantages of the system. At the beginning they can fill out only the elementary data as *name*, *last name*, *email*, *password* and *role*. The role is very important data to be filled out. Figure 17 displays the Add User page when the user clicks the button.

INTERN BALKANS

ADVERTISEMENT COMPANIES REGISTER LOG IN ALB ENG

Company Registration

Back

Name *

Last Name *

Email *

Country *

Select

Minimum 9 characters (at-least 1 Uppercase, 1 Lowercase, 1 Numeric and 1 special character.) *

Confirm Password *

Roles

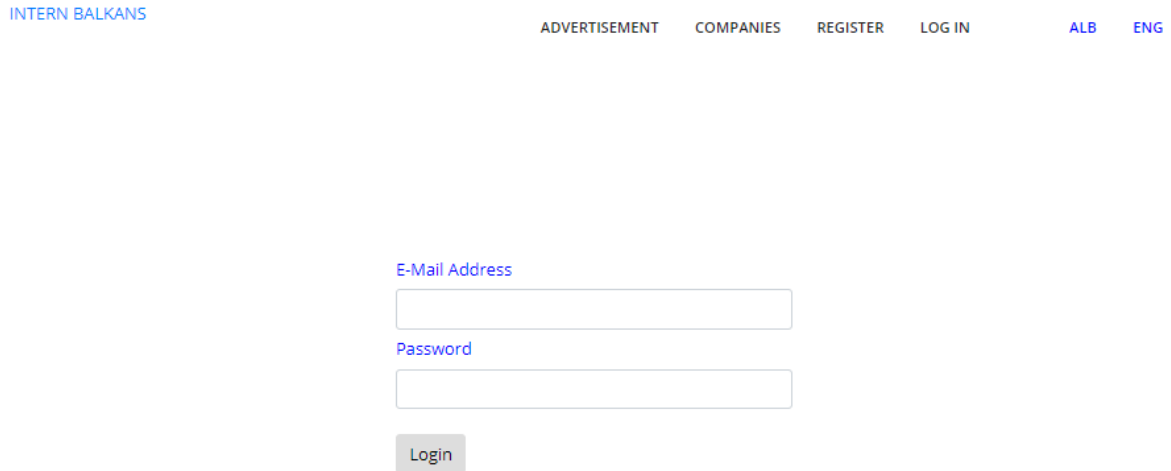
Company

Submit

Figure 17: Add User details Page

4.9 Login

After the process of user registration, user is able to login by entering credentials provided during the registration phase, and to authenticate. The figure below illustrates the Login page when the user clicks for login.



INTERN BALKANS

ADVERTISEMENT COMPANIES REGISTER LOG IN ALB ENG

E-Mail Address

Password

Login

Figure 18: Login page

4.10 Registered Users

Users have two options, to access as registered users or non-registered users. The non-registered users can surf and seek for internship positions and all the necessary data related to the open positions. And, the seek option is the key feature of this web-based portal. Also, the non-registered users can surf for companies' profile details. Registered users, after logging in with the credentials, have more rights to the web-portal by using the benefits of the management system. The user can register as business (employer), internship seeker and professor, and they can update/delete the relevant data of their own profiles. By using this membership, users have advantages in comparison to normal users, such as:

- All type of users can create their profile by providing detailed data;
- All type of users can modify password as a security requirement;
- All type of users can view, modify or deactivate their profile; All type of users can logout and get back the front pages;
- All type of users can have more control on the system as compared to open users;
- Employers can post new internship positions and update or delete their posted open internship positions;
- Employers can view all its internship opening advertised;
- Employers can view registered students' profiles and contact them directly;
- Employers can view professors' profiles and contact them directly to ask for support in finding students;
- Professors can view internship seekers' profiles and contact them directly in case there is an internship position;
- Students can view professors' profiles and contact them directly to ask for support in finding internships;

4.11 Profile Pages

An important process is the relevant profile data registration. Each of the three users of this system has to provide data regarding their profile.

As it is shown in the figure below, the internship seekers have to provide data regarding their *student ID number, gender, mobile phone, date of birth, mobile phone, date of birth, city, postal code, street, university, faculty, field of study, year of registration, language, soft skill and details of training, certificates, etc.*

The screenshot displays a web form titled "Intern Registration" with a "Back" button in the top right corner. The form is organized into several sections, each with a red header:

- General Data (HYRMET MYDYTI)**: Contains fields for "Student Number" (text input), "Gender" (dropdown menu), "Mobile Phone No." (text input), and "Date of Birth" (text input with format DD-MM-YYYY).
- Address Details**: Contains fields for "City" (text input), "Postal Code" (text input), and "Street" (text input).
- Education and Training**: Contains fields for "University" (dropdown menu), "Faculty" (text input), "Field of Study" (text input), and "Year of Registration" (text input with format DD-MM-YYYY).
- Language**: A dropdown menu with options: English, Albanian, Macedonian, and Turkish.
- Soft Skills**: A dropdown menu with options: Digital, Organizational, Initiative, and Analysis.
- Details of Trainings, Certificates, etc.**: A large text area for providing details of trainings and certificates.

A "Submit" button is located at the bottom left of the form.

Figure 19: Intern Profile Registration

The companies/businesses provide information on *company name, company email, business number, sector, web, city, postal code, and street* and *about company*, as illustrated below.

Company Registration Back

General Data (USER BANK)

Company Name *
Company Name

Company Email *
Company Email

Business Number
Business Number

Sector *
Select ▼

Web
Web

Address Details

City *
City

Postal Code *
Postal Code

Street *
Street

Company Details *

About Company

Submit

Figure 20: Company Profile Registration

The professors (academicians) provide details by filling out the fields as *title, gender, mobile phone, university, faculty, subject*, and *about professor* (see the figure below).

Professor Registration

[Back](#)

General Data (AGIM BINA)

Title *

Gender *

Mobile Phone No. *

Enrollement

University *

Faculty *

Subject *

About Professor *

[Submit](#)

Figure 21: Company Profile Registration

The system offers options of update and delete data of their profile.

4.12 Authentication, security, log activities and permission features

Implementation of security features is set in application level in order to prevent security vulnerabilities such SQL injection, cross-site request forgery (CRF) and cross-site scripting (XSS). Usage of Eloquent is a value to a system by increasing the chances of a secured application. Also, generation of the encryption key is a value by protecting cookies of the application by producing encrypted strings and hashes.

CSRF method is included in all forms to validate all the requests by CSRF protection middleware. The VerifyCsrfToken middleware verifies the token of the request input matches with the token stored in the session. This validation process protects our application from the chances of a cross-site request forgery (CSRF) attacks whereby unauthorized commands are performed on behalf of an authenticated user.

Security login is added to system (authentication). Authorization system is added to system as well. By a middleware is checked the user's role permission and authorized user's requests. Through the concept of authorization is created the administrator module and through the concept of authentication is created login access for registered users.

The software system performs many operations and it tracks all the operations. The tracking activities facilitates the process of analysis and the process of maintenance. Activity Log module inside the software system is an address in case of issue with keeping track of functions performed. The module consists of Activity Model and Activity Trait Method. These models provide the option of tracking while performing specifically create, update, delete and login operations and activities in database.

4.13 Google Analytics

Google analytics (GA), as a Google API, is used for the internship web-based portal. The aim of using GA is to answer the questions about user behavior. Advantage of using this powerful tool is the easiness of implementation without intervention in code. GA reports give a real time feedback on usability and makes comparison for different periods of usability. It also has offered many effective reports in order follow the behavior of user.

Through the GA implementation, this type of statistics can be generated that track user patterns by reporting on session, page views, pages/session, bounce rate, new sessions. The figure below displays the number of daily visitors.

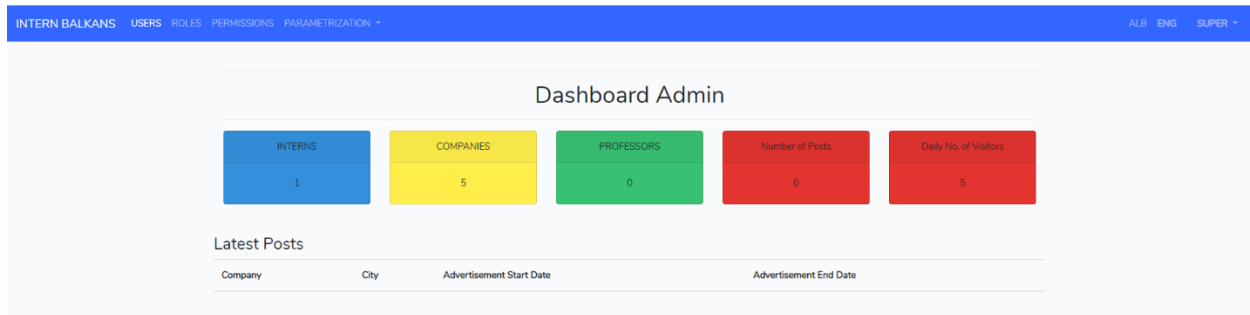


Figure 22: Report on Google Analytics

4.14 Usability Testing

Usability evaluation is one way of ensuring that interactive systems are adapted to the users, their tasks and that there are no negative outcomes of their usage. Usability evaluation is a fundamental step in the user centered design process of any interactive system be it a software, a web site or any information and communication technology or service. The goal of a usability evaluation is to assess the degree to which a system is effective (i.e., how well the system's performances meet the tasks for which it was designed), efficient (i.e., how much resources such as time or effort is required to use the system in order to achieve tasks for which the system was design), and favors positive attitudes and responses from the intended users [46].

Testing is the process of executing an application or program with the intent to identify bugs and errors in the system. It is the key phase to ensure that the system runs successfully and meets business and technical requirements. Every project needs a test plan and test strategy in order to test the entire system or module of the system.

The key points of testing are:

1. Launch the application operated acceptably as for every client's requirement;
2. Ensure that the application has no error and is user friendly with right validations;
3. Verify that all the modules of application work properly and is ready for production.

The black box testing is a software testing method used to examine the internal structure, design, and implementation of web application and web user interfaces (UIs), according to the test plan.

4.14.1 System Usability Testing

Usability testing is one of the many techniques that can be used to identify problems of a software or product. The testing provides quantitative and qualitative data from real users who have performed the real tasks with the product. Usability testing benefits both the users and the organization involved. Among the benefits include users feeling satisfied interacting with the product; hence, resulted in achieving their goals effectively and efficiently [47].

The testing was performed on all modules of the system to find incorrect or missing functions, interface errors, errors in data structures or external database access, behavior or performance errors and initialization and termination errors. The following activities were performed and tested:

- Flexibility of Web portal in different browsers
- Validation method
- Registration process
- Responsiveness
- Login as process and login as intern / professor / employer

The system remains to fulfil the expectation and requirements of the user. The interface, usability and performance are vital aspects of the good performing web application. It is important that user gives a feedback during the process of testing.

The table 2 below displays the test steps performed, expected results and outcomes.

Table 4: Testing Results

Steps Taken	Expected Results	Outcome
<p>Flexibility of Web portal in different browsers to be tested.</p> <p>Three web browsers as Chrome, Firefox and Internet Explorer were selected.</p>	<p>Condition to be met, all pages to be loaded without over-flow.</p>	<p>The process of testing flexibility of application is completed successfully with no overflow.</p>
<p>Validation method to be tested by adding valid and non-valid data.</p>	<p>When non valid data entered, validation should show error and accept right input.</p>	<p>The process of testing the validation, by filling out all application fields, is completed successfully.</p>
<p>Login as process and login as intern / professor / business to be tested. Deliver all type of data to login page in order to catch any error or bug.</p>	<p>Login process must be valid only for registered users as intern / professor / employer by entering credentials.</p>	<p>The phase of testing login process as all type of roles is completed successfully.</p>
<p>Responsiveness in different platforms, devices as mobile, tablet and computer.</p>	<p>The application should be responsive in all devices.</p>	<p>The phase of testing application responsiveness in all devices is completed successfully.</p>
<p>Registration process to be tested.</p>	<p>The process of registration must function properly by entering basic data as username and valid email address.</p>	<p>This phase of registration is completed successfully.</p>
<p>User Satisfaction during testing process.</p>	<p>Businesses, Professors and Businesses reported for their satisfaction during the testing process.</p>	<p>Passed</p>

5 Research Conclusion

This chapter contains the conclusions of the research study. The reflections for completing this research are included in the first part of this chapter. The future studies are the second part of this chapter and they include the future possibilities of research studies for similar topics.

5.1 Conclusion

In this master thesis, we researched needs and gave different perspectives and approaches, practices on internships, design patterns and frameworks and we developed an application conform the researches and selected best suited design pattern and framework.

A web-based platform is set by implementing the principles of an MVC pattern-based framework for Web application software systems. The management system is expected to be able to reduce manual processes and be a beneficial tool for all counterparts for a better communication environment.

The major goal of the related-work reviewed was to understand the perspectives of internships of researchers and implementation of design patterns and frameworks. For this, several online internships portals were analyzed such as: www.internships.com, www.internabroadusa.com, www.internjobs.com. The system involved the design and the development of the web-based application. The main challenge for implementing this system is the complexity of its architecture. Laravel framework used as the backend tool which is very profitable in many contexts. It provides flexibility, reliability, and manageability by using MySQL and PHP. The biggest advantage of using Laravel is the opportunity to utilize libraries and classes.

Students will be one of the key beneficiaries of this platform beside to the educational institutions (public and private) and businesses/companies. This system can be used in all the countries of the region lacking this kind of tool. The results of the empirical study do also support these statements.

In general terms, and to conclude, it is recommended to have an administrator per country, who would maintain and amend the system.

5.2 Future Studies

In the future, it is intended to get user feedbacks, in long term, regarding the facilities this system provides and to set AI concepts in implementation. In this way, the quality, use-friendliness and automation of the system will be improved, reinforced and automatize students' and companies' profiles. Furthermore, the continuous examination of the system would ensure that the user expectations are met.

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Appendix 1: Questionnaire

1. Your company can be considered as:

- Micro-sized enterprise (< 10 employees)
- Small-sized enterprise (<50 employees)
- Medium-sized enterprise (<250 employees)
- Large-sized enterprise (>250 employees)

2. Your main area of expertise is:

- Accounting
- Administration
- Agriculture
- Architecture
- Art & Design
- Auditing
- Bank
- Biotechnology
- Construction
- Consultancy
- Economy
- Education
- Electronics
- Finance
- Health
- Hotelier
- Information Technology
- Law
- Logistics
- Management

- Marketing & PR
- Mechanics
- Media
- Non-governmental services
- Pharmacy
- Production
- Sales
- Services
- Science & Research
- Security
- Software Development
- Telecommunication
- Tourism
- Translation
- Other

3. You practice utilizing interns in your business:

- True
- False

4. You have interest in utilizing interns in your business:

- True
- False
- Maybe
- Definitely NO

5. The biggest challenges in utilizing interns are:

- The approach to start working with them
- Supervising them

- Payment
- The intern lacking

6. The appropriate mediums/channels for finding interns are:

- Career service
- Company Website
- Established Contact
- National newspaper
- Job Portals

7. Preference for performing an interview with the intern is:

- Online application
- Online test
- Phone interview
- Assessment center
- In person interview

8. The working hours in utilizing interns are:

- Full Time
- Half Time

9. The preferred and needy season to utilize the interns are:

- Summer
- Spring
- Winter
- Autumn

10. For a position, the number of applications of interns is about:

- 1-5

- 5-10
- 10-20
- >20

11. Rate the level of satisfaction of the actual situation of the internship process:

- 1
- 2
- 3
- 4
- 5

12. The most valuable and preferred education background for an intern are:

- Computer Science
- Electrical Engineering
- Information Management
- Law
- Business and Economics
- Social Sciences
- Languages, Cultures and Communication
- Mathematics
- Other _____

13. The most valuable skills for an intern are:

- Academic records and intelligence
- Passion and intellectuality
- Interpersonal skills
- Drive and Commitment
- Other _____

14. Language is an important factor:

- Po
- Jo

15. An internship web-portal would help in overcoming some of the obstacles:

- Po
- Jo

Appendix 2: Implementation Code (partially)

User Controller

```
<?php

namespace App\Http\Controllers\Internship;

use Illuminate\Http\Request;
use App\Http\Controllers\Controller;
use App\Usercopy;
use App\User;
use Spatie\Permission\Models\Role;

use DB;
use Hash;
Use View;

class UserController extends Controller
{
    public function index(Request $request)
    {
        $search = $request->get('search');
        $search2 = $request->get('search2');
        $field = $request->get('field') != '' ? $request->get('field') : 'name';
        $sort = $request->get('sort') != '' ? $request->get('sort') : 'asc';
        $data = User::select('users.*')
            ->where('users.name', 'like', '%' . $search . '%')
            ->where('users.lastname', 'like', '%' . $search2 . '%')
            ->orderBy($field, $sort)
            ->paginate(20)
            ->withPath('?search=' . $search . '&search2=' . $search2 . '&field=' . $field);
    }
}
```



```

return view('superadmins.users.index',compact('data'))
->with('i', (request()->input('page', 1) - 1) * 10);
}

public function create()
{
$roles = Role::pluck('name','name')->all();
return view('internships.register',compact('roles'));
}

public function store(Request $request)
{
$this->validate($request, [

'name' => 'required',
'lastname' => 'required',
'email' => 'required|email|unique:users,email',
'password' => 'min:6|regex:/^(?=.*{3,})(?=.*[a-zA-Z])(?=.*[0-9])(?=.*[\d\X])(?=.*[!$#%]).*$/|same:confirm-password',
'roles' => 'required'

]);
$input = $request->all();
$input['password'] = Hash::make($input['password']);
$user = User::create($input);
$user->assignRole($request->input('roles'));
\LogActivity::addToLog('User Created','users');
return redirect()->route('users.index')
->with('success',trans('sentence.usercreatesuc'));
}

public function show($id)
{
$user = User::find($id);
return view('superadmins.users.show',compact('user'));
}

public function edit($id)
{
$user = User::find($id);

```

```

$roles = Role::pluck('name','name')->all();
$userRole = $user->roles->pluck('name','name')->all();
return view('superadmins.users.edit',compact('user','roles','userRole'));
}

public function update(Request $request, $id)
{
$this->validate($request, [
'name' => 'required',
'lastname' => 'required',
'email' => 'required|email|unique:users,email, '.$id,
'password' => 'min:6|regex:/^(?=.*{3,})(?=.*[a-zA-Z])(?=.*[0-9])(?=.*[\d\X])(?=.*[!$#%]).*$/|same:confirm-password',
'roles' => 'required'
]);

$input = $request->all();
if(!empty($input['password']))
{$input['password'] = Hash::make($input['password']);}
else
{$input = array_except($input,array('password')); }

$user = User::find($id);
$user->update($input);
DB::table('model_has_roles')->where('model_id',$id)->delete();
$user->assignRole($request->input('roles'));
\LogActivity::addToLog('User Updated','users');
return redirect()->route('users.index')
->with('success',trans('sentence.userupdsuc'));
}

public function destroy(Request $request, $id)
{
$user = User::find($id)->delte();
\LogActivity::addToLog('User Deleted','users');
return redirect()->route('internships.index')

```

```
->with('success',trans('sentence.userdelsuc')));  
}  
}
```

Log Activity Helper

```
<?php  
namespace App\Helpers;  
use Request;  
use App\LogActivity as LogActivityModel;  
class LogActivity  
{  
    public static function addToLog($subject, $from_table)  
    {  
        $log = [];  
        $log['subject'] = $subject;  
        $log['from_table'] = $from_table;  
        $log['url'] = Request::fullUrl();  
        $log['method'] = Request::method();  
        $log['ip'] = Request::ip();  
        $log['agent'] = Request::header('user-agent');  
        $log['user_id'] = auth()->check() ? auth()->user()->id : 1;  
        LogActivityModel::create($log);  
    }  
    public static function logActivityLists()  
    {  
        return LogActivityModel::latest()->get();  
    }  
}
```

```
<?php  
namespace App;  
use Illuminate\Database\Eloquent\Model;  
class LogActivity extends Model
```

```

{
    protected $fillable = [
        'subject', 'url', 'method', 'ip', 'agent', 'user_id'
    ];
}

```

Localization Middleware and Language Sentence

```

<?php
namespace App\Http\Middleware;

use Closure;
use App;

class Localization
{
    public function handle($request, Closure $next)
    {
        if (session()->has('locale')) {
            App::setLocale(session()->get('locale'));
        }

        return $next($request);
    }
}

```

```

<?php
return [
    'emailaddress' => 'E-Mail Adresa',
    'actual' => 'Status',
    'jobsloc' => 'Pozitat sipas lokacionit',
    'jobscat' => 'Pozitat sipas kategorisë',
    'latestpos' => 'Shpalljet më të reja',
    'readmore' => 'Lexo më shumë',
    'deleteprofile' => '<FSHIJE PROFILIN>',
    'changepassword' => 'NDËRRO FJALËKALIMIN',

```

'sectorepdsuc' => 'Përditëso Sektorin',
'allcompanies' => 'Kompanitë',
'editcompany' => 'Edito Kompaninë',
'profilepdsuc' => 'Përditëso Profilin',
'editintern' => 'Edito Praktikantin',
'professorcreatesuc' => 'Profesori u krijua me sukses',
'interncreatesuc' => 'Praktikanti u krijua me sukses',
'home' => 'Hyrje',
'postno' => 'Numri i Postimeve',
'showsector' => 'Shfaq Sektorin',
'showpermission' => 'Shfaq Lejen',
'editsector'=>'Edito Sektorin',
'newsector'=>'Shto Sektor',
'editcountry' => 'Edit Shtetin e ri',
'createcountry' => 'Krijo Shtet të ri',
'advertisement' => 'Shpallje',
'interfor' => 'Praktikë për departamentin - ',
'showpost' => 'Shfaq Postimin',
'postdelsuc' => 'Postimi u fshi me sukses',
'deactive' => 'Deaktivizo',
'newpost' => 'Postimi i ri',
'advstart' => 'Data fillestare e Shpalljes',
'advend' => 'Data përfunduese e Shpalljes',
'editpost' => 'Edito Postimin',
'postupdsuc' => 'Postimi u editua me sukses',
'postcreatesuc' => 'Postimi u krijua me sukses',
'expayment'=> 'P.sh.: 200-300 Euro',
'exmonths'=> 'P.sh.: 6 Muaj',
'department'=> 'Departamenti',
'fullname'=> 'Emri i Kontaktit',
'contactemail'=> 'Emaili i kontaktit',
'duration'=> 'Kohëzgjata',
'datestart'=> 'Data e Fillimit',

'payment'=> 'Pagesë',
'descr_respons'=> 'Përshkrimi dhe Përgjegjësitë',
'requirements'=> 'Kërkesat',
'notes'=> 'Shënime shtesë',
'post'=> 'POSTO',
'subject'=> 'Lënda',
'enrollment'=> 'Angazhimi',
'aboutprofessor'=> 'Rreth Profesorit',
'showtitle'=> 'Shfaq Titullin',
'titleupdsuc' => 'Titulli u editua me sukses',
'editttitle' => 'Edito Titullin',
'titlecreatesuc' => 'Titulli u krijua me sukses',
'newtitle'=>'Shto Titull',
'title' => "Titujt",
'selectlogo' => 'ZGJEDH LOGON E RE',
'change' => 'Ndërro',
'profileupdsuc' => 'Profili u editua me sukses',
'companyupdsuc' => 'Kompania u editua me sukses',
'companycreatesuc' => 'Kompania u krijua me sukses',
'companyname'=>'Emri i Kompanisë',
'companyemail'=>'Emri i Kompanisë',
'businessno'=>'Numri i Biznesit',
'sector'=>'Sektori',
'web'=>'Web-i',
'logo'=>'Logo-ja',
'companydetails'=>'Detajet e Kompanisë',
'aboutcompany'=>'Rreth Kompanisë',
'companyreg'=>'Regjistrimi i Kompanisë',
'professorreg'=>'Regjistrimi i Profesorit',
'tologin'=> 'LOGOHU',
'editprofile'=> 'EDITO PROFILIN',
'showprofile'=> 'SHFAQ PROFILIN',
'profile'=> 'PROFILI',

'select'=> 'Selekto',
'generaldata'=> 'Të dhënat Gjenerale',
'addressdetails'=> 'Detajet rreth Adresës',
'educationtraining'=> 'Edukimi dhe Trajnimet',
'interns'=> 'PRAKTIKANTËT',
'internships'=> 'POZITAT E LIRA',
'professors'=> 'PROFESORËT',
'companies'=> 'KOMPANITË',
'internbalkans'=> ' INTERN BALKANS',
'showskill'=> 'Shfaq Aftësinë',
'skillupsuc' => 'Aftësia u editua me sukses',
'editskill' => 'Edito Aftësinë',
'skillcreatesuc' => 'Aftësia u krijua me sukses',
'newskill'=>'Shto Aftësi',
'skill'=>'AFTËSITË',
'albania'=> 'Shqipëria',
'kosova'=> 'Kosova',
'macedonia'=> 'Maqedonia',
'showcountry'=> 'Shfaq Shtetin',
'countryupsuc' => 'Shteti u editua me sukses',
'editcountry' => 'Edito Shtetin',
'countrycreatesuc' => 'Shteti u krijua me sukses',
'newcountry'=>'Shto Shtetin',
'showuniversity'=> 'Shfaq Universitetin',
'universityupsuc' => 'Universiteti u editua me sukses',
'edituniversity' => 'Edito Universitetin',
'universitycreatesuc' => 'Universiteti u krijua me sukses',
'newuniversity'=>'Shto Universitetin',
'showlanguage'=> 'Shfaq Gjuhën',
'alb'=> 'Shqip',
'eng'=> 'Anglisht',
'mac'=> 'Maqedonisht',
'languageupsuc' => 'Gjinia u editua me sukses',

'editlanguage' => 'Edito Gjuhën',
'languagecreatesuc' => 'Gjuha u krijua me sukses',
'newlanguage'=>'Shto Gjuhën',
'showgender'=> 'Shfaq Gjininë',
'male'=> 'Mashkull',
'female'=> 'Femër',
'genderupdsuc' => 'Gjinia u editua me sukses',
'editgender' => 'Edito Gjininë',
'gendercreatesuc' => 'Gjinia u krijua me sukses',
'newgender'=>'Shto Gjini',
'add'=>'Shto',
'fullname'=>'Emri dhe Mbiemri i Kontaktit',
'studentno'=>'Numri i Studentit',
'gender'=>'Gjinia',
'photo'=>'Foto',
'phoneno'=>'Nr. Mobil i Telefonit',
'datebirth'=>'Data e Lindjes',
'city'=>'Qyteti',
'postalcode'=>'Kodi Postar',
'street'=>'Rruga',
'university'=>'Universiteti',
'faculty'=>'Fakulteti',
'field'=>'Fusha e Studimit',
'yearreg'=>'Viti i Regjistrimit',
'softskills'=>'Aftësitë',
'details'=>'Detajet e Trajnimit, Certifikatave, etj.',
'internreg'=>'Regjistrimi i Praktikantëve',
'intern'=>'PRAKTIKANTË',
'company'=>'Kompani',
'professor'=>'Profesor',
'register'=>'Regjistrohu',
'submit' => 'Ruaj',
'back' => 'Prapa',


```
'no' => 'Nr',
'logout' => 'Dalje',
'login' => 'Hyrje',
'users' => 'PËRDORUESIT',
'roles' => 'ROLET',
'permissions' => 'LEJET',
'language' => 'Gjuha',
'show' => 'Shfaq',
'edit' => 'Edito',
'delete' => 'Fshij',
'usermng' => 'MENAXHIMI I PËRDORUESVE',
'name' => 'Emri',
'lastname' => 'Mbiemri',
'email' => 'Email-i',
'roles-sm' => 'Rolet',
'action' => 'Veprimi',
'searchusername' => 'Kërko Emrin e përdoruesit',
'searchuserlastname' => 'Kërko Mbiemrin e përdoruesit',
'search' => 'Kërko',
'rolemg' => 'Menaxhimi i Roleve',
'create' => 'Krijo',
'permissionmg' => 'Menaxhimi i Lejeve',
'searchprm' => 'Kërko Lejet',
'password' => 'Fjalëkalimi',
'conpassword' => 'Konfirmo Fjalëkalimin',
'createnewuser' => 'Krijo Përdorues të ri',
'deterpassword' => 'Minimum 9 karaktere (të paktën nga 1 shkronjë të madhe, 1 shkronjë të vogël, një numër,
1 karakter special)',
'update' => 'Përditëso',
'edituser' => 'Edito Përdoruesin',
'showuser' => 'Shfaq Përdoruesin',
'userdelsuc' => 'Përdoruesi u fshi me sukses',
'usercreatesuc' => 'Përdoruesi u krijua me sukses; Ju lutem, logohuni dhe plotësoni te gjitha fushat e
nevojshme për të proceduar më tutje',
'userupdsuc' => 'Përdoruesi u përditësua me sukses',
```

```
'createnewrole' => 'Krijoi Rol të ri',
'rolecreatesuc' => 'Roli u krijua me sukses',

'editrole' => 'Edito Rolin',
'roleeditsuc' => 'Roli u editua me sukses',
'roledelsuc' => 'Roli u fshi me sukses',
'showrole' => 'Shfaq Rolin',
'createnewpermission' => 'Krijoi Leje të re',
'guardname' => 'Simbolizim',
'editpermission' => 'Edito Lejen',
'permissioncreatesuc' => 'Lejeja u krijua me sukses',
'permissioneditsuc' => 'Lejeja u editua me sukses',
'permissiondeletesuc' => 'Lejeja u fshi me sukses',
'dashboardadmin' => 'Paneli i Admin-it',
'percount' => 'Numri i Lejeve',
'comp_no' => 'Numri i Kompanive',
'intern_no' => 'Numri i Studentëve',
'acad_no' => 'Numri i Profesorëve',
'latestposts' => 'Postimet e Fundit',
'dateadded' => 'Data e Shtimit',
'countries-sm' => 'Shtetet',
'countries' => 'SHTETET',
'parametrization' => 'PARAMETRIZIMI',
'newcountry' => 'Shtet Shtetin',
'codecountry' => 'Kodi i Shtetit',
'country' => 'Shteti',
'countrycreatesuc' => 'Shteti u krijua me sukses',
'searchcountry' => 'Kërko Shtetin',
'editcountry' => 'Edito Shtetin',
'countryupdatesuc' => 'Shteti u editua me sukses',
'showcountry' => 'Shfaq Shtetin',
];
```

Professor Create View

```
@extends('professors.layouts.app')

@section('content')

<div class="col-lg-1"></div>

<div class="col-lg-10 container-fluid">

  <div class="row">

    <div class="col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-md-3 offset-lg-3">

      <div class="pull-left">

        <h3>{{ trans('sentence.professorreg')}}</h3>

      </div>

      <div class="pull-right">

        <a class="btn btn-md btn-secondary" href="{{ route('professors.index') }}">{{ trans('sentence.back')}}</a>

      </div>

    </div>

  </div>

  <div class="alert alert-danger">

    <strong>Whoops!</strong> There were some problems with your input.

    <ul>

      @foreach ($errors->all() as $error)

        <li>{{ $error }}</li>

      @endforeach

    </ul>

  </div>

  @endif

  @if (\Session::has('success'))

    <div class="alert alert-success">

      <p>{{ \Session::get('success') }}</p>

    </div>

  @endif

  <form action="{{ route('professors.store') }}" method="POST" autocomplete='off' enctype="multipart/form-
  data">

    @csrf
```

```

<div class="row">

<div class="form-group form-group-lg col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-
md-3 offset-lg-3" style="color:red">

<hr>

<b>{{trans('sentence.generaldata')}} ({{ strtoupper(Auth::user()->name) }} {{ strtoupper(Auth::user()-
>lastname) }})</b>

<hr>

</div>

<input name="user_id" type="hidden" value="{{Auth::user()->id}}">

<div class="form-group form-group-lg col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-
md-3 offset-lg-3">

<strong>{{ trans('sentence.title')}}<span style='color:red'> * </span></strong>

<select name="title" id="title" class="form-control" required>

<option value=''>{{ trans('sentence.select')}}</option>

@foreach ($titles as $title)

<option value="{{ $title->id }}" {{(old('title')== $title->id)? 'selected':''}}>{{ $title->name }}</option>

@endforeach

</select>

</div>

<div class="form-group form-group-lg col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-
md-3 offset-lg-3">

<strong>{{ trans('sentence.gender')}}<span style='color:red'> * </span></strong>

<select name="gender" id="gender" class="form-control" required>

<option value=''>{{ trans('sentence.select')}}</option>

@foreach ($genders as $gender)

<option value="{{ $gender->id }}" {{(old('gender')== $gender->id)? 'selected':''}}>{{ $gender->name
}}</option>

@endforeach

</select>

</div>

<div class="form-group form-group-lg col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-
md-3 offset-lg-3">

<strong>{{ trans('sentence.phoneno')}}<span style='color:red'> * </span></strong>

{!! Form::number('phoneno', null, array('placeholder' => trans('sentence.phoneno'),'class' => 'form-
control')) !!}

</div>

<div class="form-group form-group-lg col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-
md-3 offset-lg-3" style="color:red">

```

```

<hr>
<b>{{trans('sentence.enrollment')}}</b>
<hr>
</div>

<div class="form-group form-group-lg col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-
md-3 offset-lg-3">
<strong>{{ trans('sentence.university')}}<span style='color:red'> * </span></strong>
<select name="univ_id" id="univ_id" class="form-control" required>
<option value=''>{{ trans('sentence.select')}}</option>
@foreach ($universities as $university)
<option value="{{ $university->id }}" {{(old('univ_id')== $university->id)? 'selected':''}}>{{ $university-
>name }}</option>
@endforeach
</select>
</div>

<div class="form-group form-group-lg col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-
md-3 offset-lg-3">
<strong>{{ trans('sentence.faculty')}}<span style='color:red'> * </span></strong>
{!! Form::text('faculty', null, array('placeholder' => trans('sentence.faculty'),'class' => 'form-
control')) !!}
</div>

<div class="form-group form-group-lg col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-
md-3 offset-lg-3">
<strong>{{ trans('sentence.subject')}}<span style='color:red'> * </span></strong>
{!! Form::text('subject', null, array('placeholder' => trans('sentence.subject'),'class' => 'form-
control')) !!}
</div>

<div class="form-group form-group-lg col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-
md-3 offset-lg-3">
<strong>{{ trans('sentence.aboutprofessor')}}<span style='color:red'> * </span></strong>
{!! Form::textarea('details', null, array('class' => 'form-control', 'minlength' => 3, 'maxlength' => 1000))
!!}
</div>

<div class="col-xs-6 col-sm-6 col-md-6 col-lg-6 offset-xs-3 offset-sm-3 offset-md-3 offset-lg-3"
style="margin-top:1%">
<button type="submit" class="btn btn-md btn-secondary">{{ trans('sentence.submit')}}</button>
</div>
</div>

```

```

</div>
</form>
</div>
<div class="col-lg-1"></div>
@endsection

```

Routing – web.php

```

Route::get('/', function () {
    return view('welcome');
});
Auth::routes();
Route::get('lang/{locale}', 'Internship\InternshipController@lang');
Route::get('logActivity', 'HomeController@logActivity');
Route::group(['middleware' => ['auth']], function() {
    Route::resource('/roles', 'Superadmin\RoleController');
    Route::resource('/users', 'Superadmin\UserController');
    Route::resource('/permissions', 'Superadmin\PermissionController');
    Route::resource('/professors', 'Professor\ProfessorController');
    Route::resource('/interns', 'Intern\InternController');
    Route::resource('/companies', 'Company\CompanyController');
    Route::resource('/countries', 'Superadmin\CountryController');
    Route::resource('/genders', 'Superadmin\GenderController');
    Route::resource('/sectors', 'Superadmin\SectorController');
    Route::resource('/languages', 'Superadmin\LanguageController');
    Route::resource('/universities', 'Superadmin\UniversityController');
    Route::resource('/skills', 'Superadmin\SkillController');
    Route::resource('/profiles', 'Intern\ProfileController');
    Route::resource('/cprofiles', 'Company\CprofileController');
    Route::resource('/pprofiles', 'Professor\PprofileController');
    Route::resource('/titles', 'Superadmin\TitleController');
    Route::resource('/posts', 'Company\PostController'); }); >>>>>

```

Configuration File, Google Analytics

```
return [  
  'view_id' => env('GOOGLE_ANALYTICS_VIEW_ID'),  
  'service_account_credentials_json' => storage_path('app/analytics/service-account-credentials.json'),  
  'cache_lifetime_in_minutes' => 60 * 24,  
  'cache' => [  
    'store' => 'file',  
  ],  
];
```