Prototype Design of Project Based Learning Technopreneurship Tenant Business Performance Assessment Platform

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Abstract. In response to Indonesia's Ministry of Education, Culture, Research, and Technology's drive to enhance entrepreneurship in higher education via Regulation Number 3 of 2020, the 2022 Independent Entrepreneurial Program (WMK) was initiated to cultivate student potential and innovation. This research focuses on creating a website-based prototype for assessing WMK PBLT PPNS tenant business performance, employing the VS Code application, Laravel framework, Agile development method, and PHP programming language. Through mockups and use case diagrams, the system design is refined, with the European Foundation for Quality Management 2020 model employed for external tenant business performance assessment. The prototype incorporates a use case diagram illustrating actions of Admins, Validators, and Users, showcasing sequential activities from login to data processing, and a class diagram delineating system structure. This Agile-developed prototype, utilizing PHP programming with VS Code and the Laravel Framework, aims to facilitate efficient tenant business performance assessment within the WMK PBLT PPNS program, aiding program organizers effectively.

Keywords. Design, Prototype, Technopreneurship, Performance.

1. Introduction

Indonesia generates more than 700,000 unemployed graduates every year. Tens of millions of Indonesians are openly unemployed and this has been a burden on the state for years. The number of unemployed in 2011 reached 8.32 million or 7.14 percent of Indonesia's population. This figure is obtained from BPS data for 2010 which has been cross-checked. While the total population of Indonesia in 2011 reached 237.8 million, while the workforce was 116.5 million. Job opportunities for them are 108.2 million. Economic growth in 2009 amounted to 4.5%. That figure rose to 6.1% in 2010 and increased to 6.4% more in 2011. Naturally, this condition is the biggest motivation for the government, policymakers, and universities to produce prospective entrepreneurs, and increase the number of entrepreneurs and SMEs in

M. U. H. Al Rasyid and M. R. Mufid (eds.), *Proceedings of the International Conference on Applied Science and Technology on Engineering Science 2023 (iCAST-ES 2023)*, Advances in Engineering Research 230,
https://doi.org/10.2991/978-94-6463-364-1_108

Indonesia [1]. The government and regional governments are obliged to encourage university graduates to become creative entrepreneurs in processing the wealth of agricultural, plantation, and fishery natural resources (Mopangga, 2015) that are oriented towards added value so that they have higher economic value, and produce resilient SMEs. Certainly, this effort will gradually reduce the unemployment rate, and increase economic growth and people's welfare.

Facing the industrial revolution with a high level of competition at this time, graduates from tertiary institutions are required to have academic knowledge, thinking skills, management skills, and communication skills (Hasanah & Ngr, 2017). A synergy will be seen through how graduates are able to find solutions quickly to every problem they experience. Their attitudes and ways of thinking are expected to be constructive and pragmatic, namely to act creatively. This ability can be implemented by everyone, especially if you have studied at a university. Definitively, creativity is a form of unity consisting of three main elements that exist in humans, namely: thoughts, feelings, and skills [2]. Within the mind element are fantasy, recognition, and logic. The elements of feeling are affective, artistic, and matching. The element of skill is talent, bodywork, and experience. Therefore, so that students are able to reach a creative level, these three elements strive to be optimal in entrepreneurship lectures and other supporting programs [3].

Education and training, mentoring, and learning from experience are significant building blocks of entrepreneurial learning [4]. Learning can be seen as a process of change and formation of knowledge, skills, attitudes, and abilities of an entrepreneur, either through education, training, mentoring, or experience. Technopreneurship is a form of collaboration between entrepreneurial abilities by developing technology as a support to increase the value of products, both goods and services [5] [6]. The aim of this technopreneur education is to present an exploratory study that examines the development of students' entrepreneurial skills over time in various learning methods [7]. As well as to overcome the challenges of globalization, management capabilities and capabilities in the field of science and technology, and improving the quality of human resources. The purpose of this journal review is to serve as a reference for readers as a renewal of technopreneur education and to improve students' technopreneur abilities to research a topic.

In order to support the achievement of increasing the target number of entrepreneurs at the tertiary level, the Ministry of Education, Culture, Research and Technology (Kemendikbud Ristek) is guided by the Regulation of the Minister of Education and Culture (Permendikbud) of the Republic of Indonesia Number 3 of 2020 concerning National Higher Education Standards mentioned in article 14 paragraph 5 regarding the form of learning in the form of entrepreneurship, has stipulated the implementation of the 2022 Independent Entrepreneurial Program (WMK) as a means to develop student potential, innovation, creativity, and capacity.

The WMK 2022 program is a part of the Merdeka Learn Kampus Merdeka (MBKM) program which is specifically for tertiary students to learn to collaborate, act and

serve, and develop themselves to become prospective entrepreneurs to help develop the Indonesian economy. Through the WMK program, students are expected to become agents of change who help improve the quality of the community's economy and become agents of drive in providing innovative solutions to create jobs through student business opportunities and development, as well as become pioneer agents (agent of creator) to foster new entrepreneurial potential in Indonesia [8].

The WMK 2022 program is implemented by 17 selected tertiary institutions throughout Indonesia consisting of universities, institutes, and polytechnics. In implementing the WMK 2022 program, the Surabaya State Shipping Polytechnic (PPNS) became 1 of 17 tertiary institutions selected as organizers, under the auspices of the PPNS Business Incubator as the main organization in facilitating incubation activities as well as developing innovation and entrepreneurship, the implementation of the WMK PPNS program carries the "Project Based Learning Technopreneurship" (PBLT), namely an entrepreneurial program that is packaged into a form of project-based learning. PBLT PPNS focuses on producing products or services, which are relevant to the study program of the program participants.

PBLT is carried out in odd semesters (semester 5 and semester 7) in groups of 3-5 program participants as tenants with a total of 103 business groups consisting of PPNS internal and external students and assisted by 80 experienced mentors. The PPNS PBLT implementation lasts for 1 semester with the recognition of a maximum number of Semester Credit Units (SKS) of 20 credits and has referred to the MBKM program policy within the Ministry of Education and Culture. The purpose of this research is to design or create a prototype of a website-based WMK PBLT PPNS tenant business performance assessment platform developed using the VS Code application and the Laravel framework with the Agile development method and the PHP programming language.

The definition of a platform is a digital container that is widely used by humans for various purposes [9] [10] [11]. In simple terms, the notion of a platform is a container that is used to run a system in accordance with the program plan that has been made. For example, for online learning activities, the platform used is digitization-based [12].

An information system is a system consisting of several subsystems or components of hardware, software, brainware, data, and procedures for carrying out input, processing, output, storage and control that transform data sources into information [13] [14]. It can also be defined as a system within an organization that meets the needs of transaction processing, supports operations, is managerial, and strategic activities of an organization, and provides certain external parties with the necessary reports [15]. The information system consists of components which he refers to as building blocks. These building blocks are then divided into Input Blocks, Model Blocks, Output Blocks, Technology Blocks, Database Blocks, and control blocks [16]. In general, a website is understood as a group of pages consisting of several pages containing information in digital form, be it text, images, or animations, which

are provided via the internet so that they can be accessed from all over the world who have an internet connection. The website was originally an information presentation service that used the concept of hyperlinks [17] [18], which made it easier for surfers or internet users to search for information on the internet. Information presented on the web uses the concept of multimedia, information can be presented using many media, such as text, images, animation, sound, or film [19].

According to Bharamagoudar, the website is a collection of web pages that are interconnected and the files are interrelated [20]. The web consists of pages or pages, and a collection of pages called the homepage. The homepage is at the top, with related pages below it. Usually, each page below the homepage is called a child page, which contains hyperlinks to other pages on the web.

2. Literature Review

2.1. European Foundation for Quality Management (EFQM)

The European Foundation for Quality Management was founded in October 1989 with the aim of creating an "excellence model". Bringing together experts from academia as well as industry specialists, the EFQM excellence model was created in the same year. The main objective of the EFQM Excellence Model is to improve the competitiveness of European companies and aid the long-term growth of European countries. As a result, the model is the embodiment of an independent non-profit organization dedicated to assisting its members in their quest for excellence [21].

The EFQM Excellence Model is one of the most widely used management frameworks in the management world, as it has been adopted by global corporations, SMEs, public entities, as well as private organizations. It is used in all sectors, from petrochemicals to manufacturing and across similar sectors. The EFQM model has become a model for companies across Europe, and has also been used to build a culture of performance and innovation for a long time (Shaaban & Hassan, 2021). The EFQM Excellence Model received its first award in the European Quality Award in 1992, the model was then modified in 1999 and revised again in 2003 [22].

Since its introduction in 1991, the EFQM model has been recognized as a global structure that helps organizations manage change and improve organizational performance. The model is general and applicable to organizations regardless of size, scope, or business sector and has been adopted by thousands of entities around the world [23]. The EFQM model is regularly updated to respond to the dynamics and trends of the global and business environment.

2.2. Programming

Programming is a word that comes from the word program. A program is a set or collection of written instructions created by the person who creates the program (programmer) using a programming language. The activity of creating a program is

called programming. So programming is a process or activity in making both writing testing (debug), and maintaining (maintenance) an instruction in the form of codes that a computer can understand [24].

3. Methodology and Implementation

In this process, researchers will use the VS Code application to develop co [25], the Laravel framework as a backend framework [26], and the PHP programming language to implement business logic [27]. Agile methods will assist Researchers in managing projects more adaptively to changing needs and user feedback [28]. Researchers continuously communicate with the development team and stakeholders to ensure that the resulting platform meets expectations. The object of this study focuses on the application of a tenant business performance assessment system for the Merdeka Entrepreneurial Program Project Based Learning Technopreneurship Surabaya State Shipping Polytechnic. In this study, the authors used an exclusive approach to the Business Incubator of the Surabaya State Shipping Polytechnic as the related party organizing the Merdeka Entrepreneurial Program Project Based Learning Technopreneurship to obtain the data needed in the system design process.

3.1. Determination of Assessment Method

This stage is the most important stage, namely determining the assessment method to be used in the process of assessing the business performance of WMK PBLT PPNS tenants. At this stage, the author uses an external assessment method using the European Foundation for Quality Management 2020 model as a business performance assessment method [23]. EFQM 2020 is a framework/framework used to assess business performance with the aim of assisting business people in achieving excellence and planning vision and mission in the long term [29].

3.2. Programming

After determining the system development process, determining the criteria, determining the sub-criteria, to determining the weighting of the assessment to be used in the prototype system. The next stage is the programming stage which is carried out using the PHP programming language and with the MySQL database.

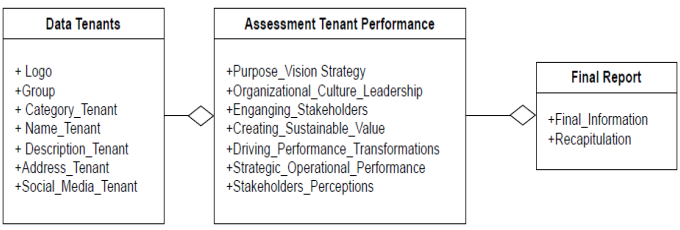


Figure 1. Relationship Database for WMK PBLT PPNS Tenant Business Performance Assessment 2022

3.3. Data Collection Techniques

In this study, the authors used an exclusive approach to the Business Incubator of the Surabaya State Shipping Polytechnic as the related party organizing the Merdeka Entrepreneurial Program Project Based Learning Technopreneurship to obtain the data needed in the system design process.

3.4. Research Tools

The research tools used in this study include components used in compiling research, data processing, and system design consisting of software and hardware

4. Result and Discussion

4.1. Assessment Determination Process

The assessment model used in the 2022 WMK PBLT PPNS Tenant Business Performance Assessment Information System is the 2020 European Foundation for Quality Management (EFQM) model, there are several stages in the process of determining this assessment, starting from determining the dimensions of the 2020 EFQM assessment, determining the 2020 EFQM Criteria, determine the EFQM 2020 Sub Criteria, and determine the weighting of the assessment using the RADAR model. Based on the calculation results of the final assessment of 23 WMK PBLT PPNS tenant business groups, each assessment category is weighted so that the final result can identify the level of business performance in accordance with the EFQM 2020 guidelines. The guide refers to the EFQM 2020 model which consists of 3 dimensions, 7 criteria, and 32 assessment sub-criteria, and using the RADAR weighting model (Result, Approaches, Deployment, Assessment & Refinement). The results of the business performance assessment of WMK PBLT PPNS tenants were obtained through a prototype business performance assessment platform for WMK PBLT PPNS tenants which can be accessed on the https://businessperformancetoolswmkpbltppns.site page. The details of this assessment contain business performance assessment data from 23 WMK PBLT PPNS tenant respondents using the EFQM 2020 model and the weighting of the RADAR assessment.

TABEL I.

Total Value of Overall Business Performance of WMK PBLT PPNS Tenant Respondents 2022

Total Value of Overall Business Performance			
R1	889,2	**R13**	894,4
R2	913,6	**R14**	878,2
R3	863,1	**R15**	863,4
R4	842,9	**R16**	914,6

R5	889,8	**R17**	904,5
R6	865,8	**R18**	922,2
R7	1000	**R19**	891,9
R8	877,8	**R20**	1000
R9	876,8	**R21**	924,7
R10	870,4	**R22**	900,6
R11	839,4	**R23**	933
R12	871,1		
Average: 897			

4.2. Prototype Design of Business Performance Assessment Information System Tenants WMK PBLT PPNS

1. Use Case Diagram

The figure below is a use case diagram of the WMK PBLT PPNS 2022 tenant business performance assessment information system which consists of a series of actions each carried out by actors such as Admins, Validators and Users. Use case diagrams are a type of diagram in UML (Unified Modeling Language) that are used to describe interactions between actors (entities or users) and the system being developed. As shown in the use case diagram above, the actor is represented by a human image or an object. Meanwhile, system features or functions are represented by use cases. The use case is a visual representation of a sequence of actions or activities carried out by actors in the system as shown in Figure 3.9, there are 3 actors whose respective roles are tenants, validators as secondary admins, and also super admins as the main admin. The Use Case also displays the sequence of activities carried out by each actor starting from account login, data entry, data processing, to account logout. In addition, the display of the Use Case Diagram can also be broken down into a separate view of each actor as follows:

a. Use Case Diagram Admin

The Admin Use Case Diagram is a graphical representation that describes the interaction between the admin (user with admin role) and the system in the context of use and different functions from other actors such as validators and tenants. This diagram shows the appearance of the admin as an actor and actions consisting of functions that can be performed by the admin in a business performance assessment system consisting of logging in, accessing tenant profiles, updating tenant profiles, viewing tenant profiles, accessing tenant assessments, inputting tenant assessments, validate the tenant assessment, view the results of the tenant assessment, add user accounts, delete user accounts, update user passwords, and logout, as shown in the following figure.

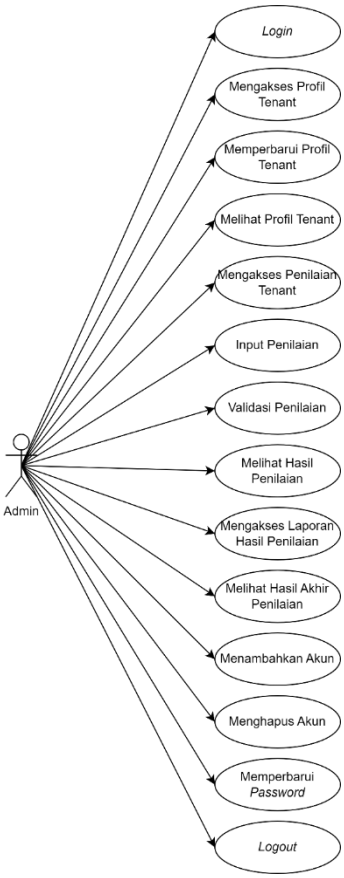


Figure 2. Use Case Diagram Admin

b. *Use Case Diagram Validator*

Use Case Diagram Validator is a graphical representation that shows the interaction between a validator (a user with a validator role) and a business performance assessment system. This diagram describes the functions that can be performed by the validator in validating the assessment results from tenants. Examples of features that can be included in the Use Case Diagram Validator are validator logins, viewing assessment results, providing validation or rejection, and submitting assessment reports. This diagram helps visualize the workflow and interaction between the validator and the system in the assessment validation process, as shown in Figure below.

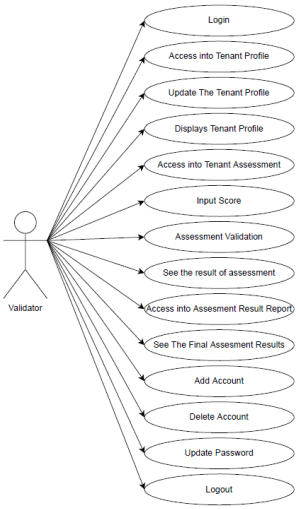


Figure 3. Use Case Diagram Validator
(Authors, 2023)

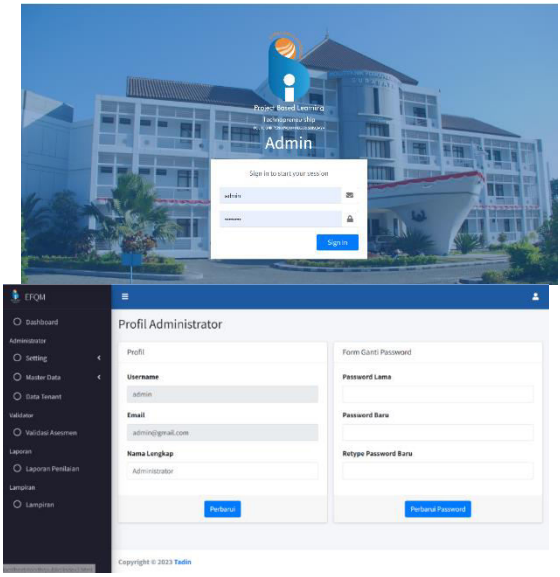
c. *Use Case Diagram Tenant (User)*
Tenant (User) Use Case Diagram is a graphical representation that describes the interaction between tenants (users with tenant or user roles) and a business performance assessment system. This diagram shows the functions that tenants can perform in the system. Examples of features that can be included in the Tenant (User) Use Case Diagram are account registration, logging in, filling out business performance assessments, viewing assessment results, and downloading assessment reports. As shown in the following image.

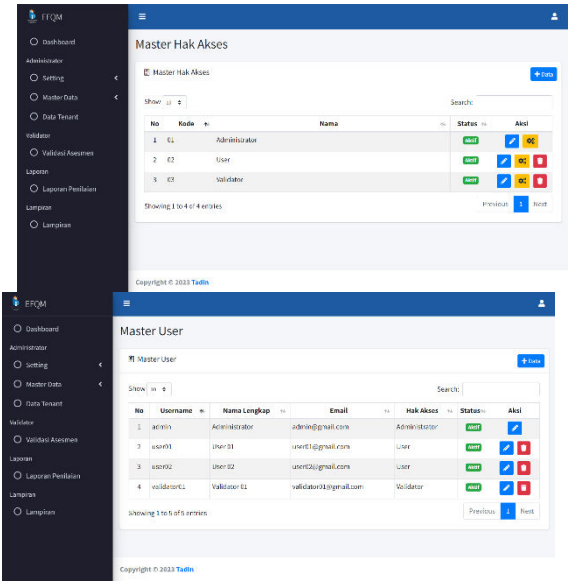
2. Class Diagram

The image above displays a class diagram of the WMK PBLT PPNS 2022 tenant business performance assessment information system. A class diagram is a type of diagram used in object-oriented programming to represent the structure of the information system that is being built. As shown in the picture above, this diagram contains classes that exist in the system that are connected to each other. In the class diagram, classes are represented by a box consisting of three parts: class name, attributes, and methods. The class name is placed at the top of the box, the attribute is placed in the middle, and the method is placed at the bottom of the box. Then, the relationships between classes are identified and represented in the form of arrows connecting one class to another. The purpose of making this diagram is to be used as a guide in the development of information systems and to facilitate communication between developers in the development team, making it easier to understand the structure of the system being built.

4.3. Prototype Display of Business Performance Assessment Information System Tenants WMK PBLT PPNS

Prototype Display of Business Performance Assessment Information System Tenants WMK PBLT PPNS is divided into 3 classifications of actors, each of which has its own role in the operation of information systems. These actors each have accounts consisting of Admins (Program Managers & Mentors/Validators), and Users (Tenants). The following is a view of the Admin account. At the stage of showing the flow of using this prototype, the author socializes it to respondents online via a zoom meeting.





5. DISCUSSION

Based on the assessment table, the total business performance value of 23 WMK PBLT PPNS 2022 tenant respondents is shown, with details of the value of respondent 1 of 889.2, the value of respondent 2 is 913.6, the value of respondent 3 is 863.1, the value of respondent 4 is 842.9, the value of respondent 5 is 889.8 , the value of respondent 6 is 865.8, the value of respondent 7 is 1000, the value of respondent 8 is 877.8, the value of respondent 9 is 876.8, the value of respondent 10 is 870.4, the value of respondent 11 is 839.4, the value of respondent 12 is 871.1, the value of respondent 13 is 894.4, the value of Respondent 14 is 878.2, Respondent 15 is 863.4, Respondent 16 is 914.6, Respondent 17 is 904.5, Respondent 18 is 922.2, Respondent 19 is 891.9, Respondent 20 is 1000, Respondent 21 is 924.7, Respondent 22 as much as 900.6, and the value of respondents 23 as many as 933.

The average total performance score of the 23 respondents was 897 and can be categorized as "Orientation on Integrated Quality Management" or the category with the highest level with an assessment ratification of >800-1000. That is, the final value of business performance from 23 WMK PBLT PPNS 2022 Tenant respondents shows that the business they are running has adopted an integrated approach in its quality management, tenants have been able to place quality as the core of all business processes and decisions, with the aim of achieving excellence in all operational aspects.

To continuously improve performance, businesses run by tenants have been able to implement a quality management system that is well integrated and focuses on implementing best practices to achieve optimal performance results. Thus, it is hoped that the 23 respondents with business performance levels who have achieved the

"Orientation on Integrated Quality Management" category will continue to maintain and improve the quality and sustainability of this performance. Details of the business performance assessment results of 23 WMK PBLT PPNS tenant respondents can be accessed via the Google Drive page which can be accessed at the following link. https://bit.ly/HasilPejianPerformaBisnisTenantWMKPBLTPPNS.

The assessment of tenant business performance for the WMK PBLT PPNS program was carried out using a prototype platform for assessing the business performance of tenants for the WMK PBLT PPNS program. System business processes are described using Business Process Modeling and Notation (BPMN). The design of the prototype platform was carried out using the Agile development model, the PHP programming language with VS Code tools and using the MySQL database, and the Laravel Framework. This prototype is intended to help make it easier for WMK PBLT PPNS program organizers to assess tenant business performance and can be accessed via the link https://businessperformancetoolswmkpbltppns.site.

6. Conclusion

The business performance assessment activity for the WMK PBLT PPNS tenant program is carried out using the European Foundation for Quality Management (EFQM) 2020 model which consists of 3 assessment dimensions which are divided into 7 assessment criteria and reclassified into 32 Assessment sub-criteria which are used as the main reference in assessment in research This. Meanwhile, the weighting of this assessment is carried out using the RADAR model which is an acronym for Result, Approach, Deployment, Assessment & Refinement. The assessment of tenant business performance for the WMK PBLT PPNS program was carried out using a prototype platform for assessing the business performance of tenants for the WMK PBLT PPNS program. System business processes are described using Business Process Modeling and Notation (BPMN). The design of the prototype platform is carried out using the Agile development model, the PHP programming language with VS Code tools and using the MySQL database, and the Laravel Framework. This prototype is intended to help facilitate the organizers of the WMK PBLT PPNS program in assessing tenant business performance.

In future research, it is recommended to add other methods such as Key Performance Indicators (KPIs) in assessing business performance to improve the accuracy of the assessed business performance. In future research, it can expand the scope of research by increasing the number of aspects to be studied, so that research does not only focus on assessing business performance. It is hoped that the Prototype Platform for Business Performance Assessment of Independent Entrepreneurial Tenants at the Surabaya State Shipping Polytechnic can be used to assist in assessing the business performance of tenants for the WMK PBLT PPNS program. The prototype of the Business Performance Assessment Platform for Independent Tenant Entrepreneurs at the Surabaya State Shipping Polytechnic can be developed in the form of a mobile phone application.

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