

INCREASING BUSINESS SURVIVAL RATE WITH DATA INTEGRATION BUSINESS STRATEGY AND TECHNOLOGY COMMERCIALIZATION

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Abstract: Technology commercialization is a series of processes from the development and marketing of a technology that is designed to reach a point that can be applied to a production or consumption activity so that it can generate profits. The success or failure of the commercialization of technology-based businesses is influenced by several factors, including the capacity of startups as technology-based entrepreneurs, mentors who accompany them, incubation centers that carry out the incubation process, and value of the Technology Readiness Level (TKT) of commercialized technology products. This study explains the increased startup business survival rates with data integration of business strategies and technology commercialization. This research was conducted in exploring the problems and conducting a BPMN analysis of East Java startups, analyzing survival rate, making information system prototypes, and analyzing data integration and business strategies. The results showed that Usability Testing received an assessment of 87% consisting of 86% Essay of Use aspect, 88% Easy of Learning aspect, 86% Satisfaction aspect, and 89% Usefulness aspect. So, information system design is included very worthy category. The largest percentage of business problems by the HRM (24%) and Operations (24%) therefore need attention for solutions.

Keywords: survival rate, startup, macroeconomics, SWOT, prototype

INTRODUCTION

Entrepreneurship is the new normal era (Covid-19) and is an important thing to be developed for a country. According to Deputy Bidang Koordinasi Ekonomi Digital, Ketenagakerjaan, dan UMKM (2020), in order to strengthen the resilience of the national economy, several indicators have been targeted, namely an increase in the national entrepreneurship ratio by 3.9% and the growth of new entrepreneurs by 4% in 2024. Optimizing this needs to be facilitated with regulations and support to help and facilitate the community in entrepreneurship. So that a good national entrepreneur-

ship development pattern is required in order to form a better business climate. This is supported by the RPJMN which makes entrepreneurship a priority program (Deputi Bidang Koordinasi Ekonomi Digital, Ketenagakerjaan, dan UMKM, 2020). Entrepreneurship development carried out by public and private parties needs to be equipped with an ecosystem that can support the development and strengthening of motivation to do entrepreneurship, which is grown from formal and non-formal education into a sustainable developing business.

The role of various pillars of entrepreneurship, including financing, resources and infrastructure, market access and education, and

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training, has a strong influence in increasing entrepreneurial activity. The development of business digitalization and the importance of business incubation are indispensable for entrepreneurial activities to increase the impact of entrepreneurship on economic growth. According to Deputi Bidang Koordinasi Ekonomi Digital, Ketenagakerjaan, dan UMKM (2020), the development of national entrepreneurship needs to consider the norms of entrepreneurship development, including focusing on entrepreneurial initiatives, strengthening the capacity and prospects of new entrepreneurs, emphasizing entrepreneurial independence, creating an entrepreneurial ecosystem that supports innovation and creativity and emphasizes business growth and business sustainability.

Based on Table 1, to support the development of National Entrepreneurship, there are pillars of the Entrepreneurship Ecosystem in Indonesia. These pillars are in the form of

legislation and government policies related to entrepreneurship, one of which is Presidential Regulation no. 27/2013 concerning Entrepreneurial Incubators because Incubators are considered to have a role in assisting the entrepreneurial mentoring process. According to the Direktorat Jenderal Pendidikan Vokasi (2020), Vocational education is a learning process that prepares students to enter the workforce after completing their studies. According to (the Ministry of Research and Technology, 2020), a Business Incubator is an institution that fosters mentoring, mentoring, and development services to help the growth of profitable and sustainable technology-based startups companies. Business Incubators are usually also owned by a university to incubate Tenants consisting of students, lecturers, and college alumni. Increased entrepreneurial insight through incubation program so that students can read market segmentation, market position placement, determine

Table 1 Pillars of the Entrepreneurship Ecosystem in Indonesia

Pillars of the Entrepreneurship Ecosystem	Description
Government regulations and policies related to entrepreneurship	<p>Laws and regulations:</p> <ul style="list-style-type: none"> • UU No. 25 /2007 on Investment • UU No. 20 / 2008 on SMEs • UU No. 40/2009 on Youth • UU No. 1/2013 on Microfinance Institutions • UU No. 3/2014 on Industry • UU No. 7/2014 on Trade • UU No. 23/2014 on Regional Government • UU No. 24/2019 on Creative Economy • UU No. 11/2020 concerning Job Creation • Presidential Decree No. 27/2013 on Entrepreneurial Incubator <hr/> <p>Development plan:</p> <ul style="list-style-type: none"> • Number 18 of 2020. National Mid-Term Development Plan 2020–2024 • Regional Medium Term Development Plan (RPJMD) • Ministry/Agency Strategic Plans 2020–2024, particularly those related to entrepreneurship development.

Source: Deputi Bidang Koordinasi Ekonomi Digital, Ketenagakerjaan, dan UMKM (2020)

advantages of their products, and compete in the market (Maulana et al., 2017). The role of this incubator is very much needed because the mentoring of entrepreneurs (incubation) plays an important role in entrepreneurial develop-

ment, especially for vocational start-ups in the East Java region. Based on the factors in the field, the main problems can be broken down to find out specific problems using BPMN analysis. From this activity, it was found that the

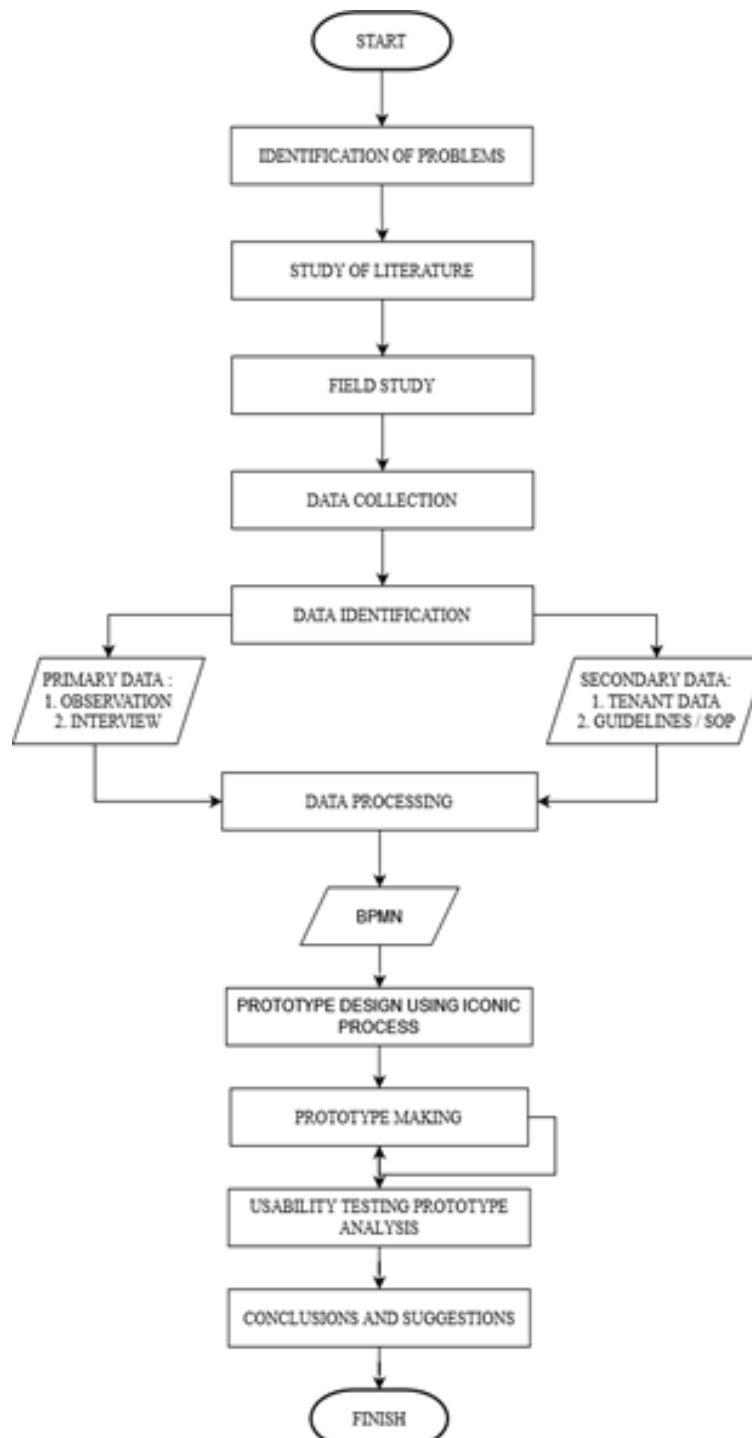


Figure 1 Research Flowchart

main issues faced by Tenants can be minimized by placing an LO/mentor to assist the Vocational Strat Up by the business field of each Tenant. So that when Tenants experience problems in their business, they can be handled appropriately by experienced mentors in that field. Technology commercialization is a series of processes from developing and marketing a technology designed to reach a point where the technology can be applied to a production or consumption activity that generates profits (Siegel et al., 1995). Many technological products have been developed and researched by researchers in recent years. These research products have the potential to be commercialized. The selection of the right commercialization model greatly affects the success of the marketed products (Sutopo et al., 2013). The success of marketing technology products is also determined by entrepreneurs who commercialize them. For entrepreneurs to be successful, Casson et al. (2006) revealed that entrepreneurs are required to obtain information and skills regarding processing, new innovation op-

portunities, market potential and changes, risk assessment, managerial skills, and capital increase, as well as trying to increase the survival rate so as not to lose competitiveness in the new normal era. An in-depth analysis of these factors can evaluate the choice of the right business strategy in conducting technology commercialization.

METHOD

This research will be carried out for one year. The entire research process will be divided into several stages, namely:

1. Initial Study in East Java Vocational Startup
2. Initial Data Recap
3. Survival Rate Analyst
4. Making Information System Prototype
5. Positive impact of data integration and business strategy

The research object is focused on Vocational Startups in East Java. The stages of research carried out for eight months can be explained by the flowchart diagram (Figure 1).

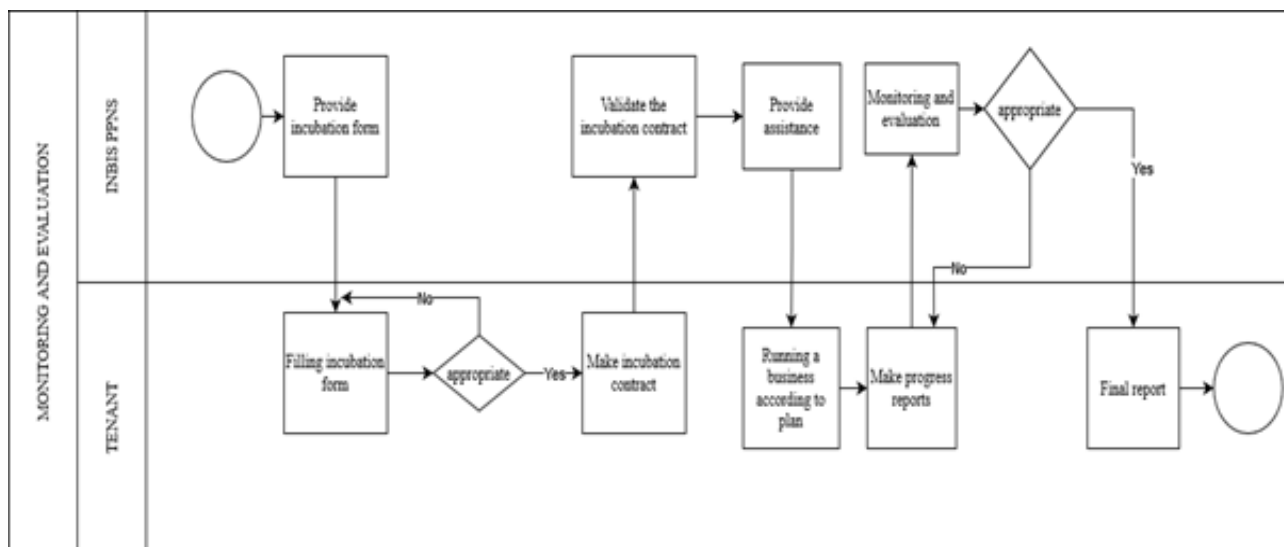


Figure 2 BPMN Monitoring and Evaluation Business Incubator
Source: Processing Results (2021)

In this study, the target to be achieved during the first two months is the formulation of primary and secondary data collection parameters. Furthermore, in the fourth month, it is targeted that a field study of start-ups in the East Java region is carried out, and a recap of the initial data be obtained. In the fifth and sixth months, data processing is carried out. The data is processed for Business Process Modelling Nation (BPMN). The analysis is also continued with Value Chain Analysis. And then, in the 7th month of the study, results are written reports, and materials are written in journals and national seminars.

RESULTS

Business Strategy in the New Normal Era

Business Incubator Startup incubation activities to improve business strategy in the new normal era, one of which is by conducting Monitoring and Evaluation (Monev) to develop the Vocational Startup business. Figure 2 shows the Business Process Modelling Notation (BPMN) of the Monev activities in the Business Incubator. The movement started with the Business Incubator providing an incubation form in the form of a google form. Then the Vocational Startup will fill out the form and upload the required documents. The Business Incubator will ensure the correctness and compatibility of data and documents with the Vocational Startup. If there is a discrepancy, it will be corrected. After confirming that it is appropriate, the Vocational Startup will make an incubation contract document, and the Business Incubator will ratify it. With a contract, the Business Incubator will assist according to the needs and programs run by Vocational Startup. Vocational

Startup then runs its business according to the plan. After that, the Vocational Startup needs to make a progress report, and Monev will be carried out. Vocational Startup needs to improve the progress report, and by the end of the Vocational Startup program, will make a final report. Based on the Monitoring and Evaluation (Monev) process implemented in the Business Incubator, this research will design an information system that helps the Business Incubator in the Monitoring and Evaluation (Monev) process to develop Business Incubator Vocational Startup. Business Process Monitoring and Evaluation Information System (Monev) Business Incubator consists of Registration, Profile, Information, Monitoring and Evaluation, Files and Attachments, Achievements, Cash Book, and Files and Graduation.

Functions Related to the Design of a Vocational Startup Information System Prototype

The existing functions related to the design of the Vocational Startup information system consist of Admin and Startup. The following is an explanation of each part.

Business Incubator Manager

In the Vocational Startup Information System, the manager or coordinator of the Business Incubator will be the Admin. The manager will manage data from the Vocational Startup and provide the information needed by the Vocational Startup. Then the manager of the Business Incubator is also tasked with conducting Monitoring and Evaluation (Monev) and providing assistance or coaching on the business development of the Business Incubator Vocational Startup.

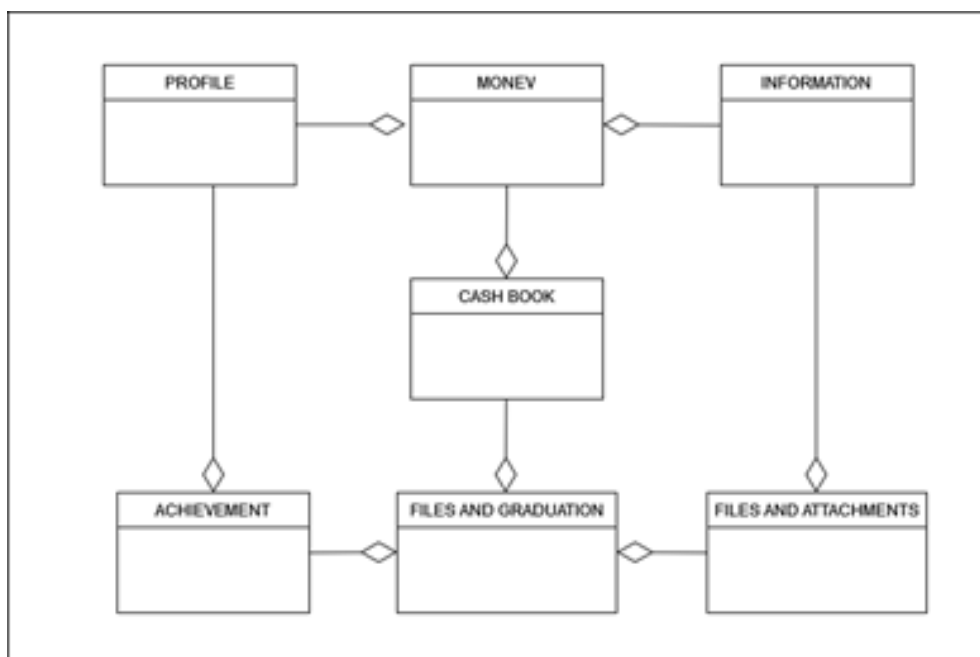


Figure 3 Domain Modelling System
Source: Processing Results (2021)

Vocational Startup

In this information system, the Vocational Startup will become the user of the information system as a Startup. Vocational Startup needs to provide the data required by the Business Incubator. In addition, Vocational Startup must participate in a series of activities such as Monitoring and Evaluation (Monev) and mentoring or coaching carried out by the Business Incubator.

Design of Vocational Startup Information System Prototype

The process of designing a prototype of a Business Incubator Vocational Startup Information System using the Iconix Process. The Iconix Process design consists of Domain Modelling, Use Case Diagrams, Robustness Diagrams, Sequence Diagrams, and Class Diagrams.

Figure 3 is the modelling domain of the Vocational Startup Information System to be

designed; several objects in the domain model diagram consist of Profile, Information, Money, Cash Book, Files and Attachments, Achievements, and Files and Graduations.

Use Case Diagram

Use case diagrams are interactions or dialogues between the system and actors, including the exchange of messages and actions performed by the system. The system provides an overview of several actors, use cases, and interactions in the designed system. Actors in this Vocational Startup Information System are Startup and Admin. Figure 4 is a Use Case Diagram of the design of a Vocational Startup Information System. Based on the use case diagram, the robustness diagram and sequence diagram will be designed according to the use case of each actor in the Vocational Startup Information System.



Figure 4 Use Case Diagram of a Vocational Startup Information System
Source: Processing Results (2021)

Class Diagram

Figure 5 is a Class Diagram of a Vocational Startup Information System. A class diagram shows the interaction between classes in a system, a diagram that visualizes each course created. This class diagram shows the relation-

ship between types and explains each class used. Through class diagrams, it can be seen the attributes that exist in the class, as well as the operations that can be performed by each class. The class diagram is a barrier between systems. In other words, a class is an interface or window of an application.

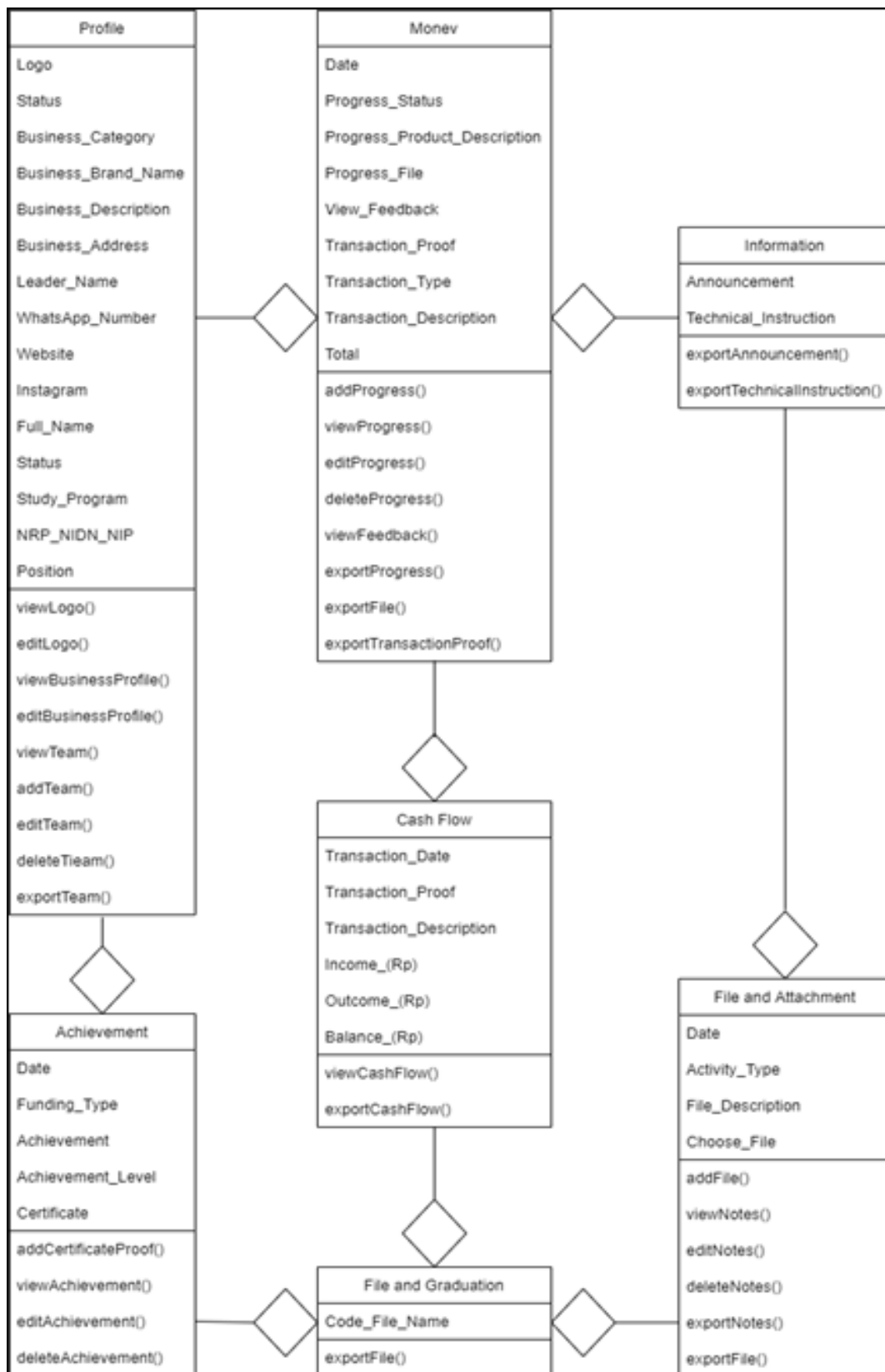


Figure 5 Class Diagram of Vocational Startup Information System
 Source: Processing Results (2021)

Display of the Prototype of the Vocational Startup Information System

The prototype of the Vocational Startup Information System consists of 2 accounts, namely the Startup account and the Admin account. The prototype of the Vocational Startup Information System can be opened via the link <https://inbis.aftermeet.id/>. Here are some views of the Vocational Startup Information System

consisting of the login page, the main Startup page, and the main Admin page.

Vocational Startup Survival Rate Increase

One of the ways to increase the survival rate is through the Vocational Startup Information System. The benefits of the Vocational Startup Information System include helping the incubation process, monitoring the evaluation

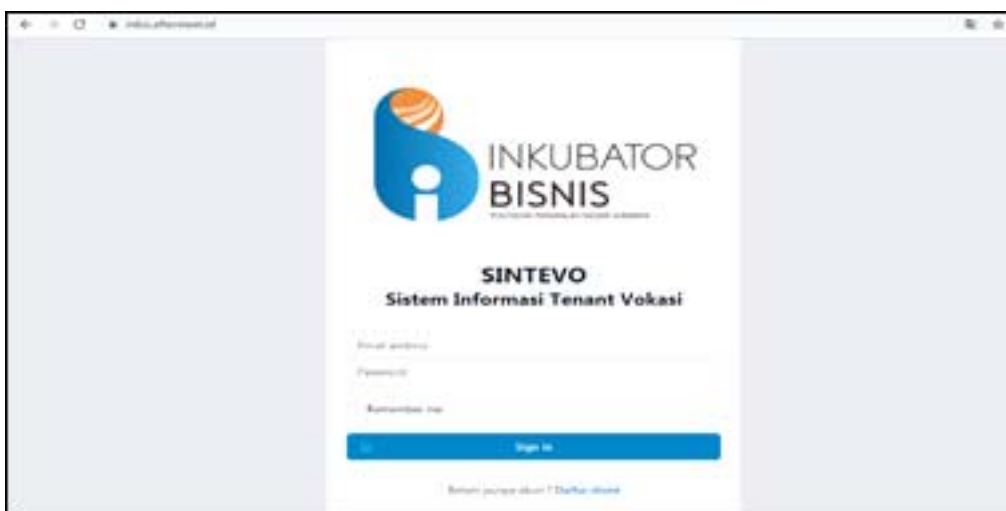


Figure 6 Login Page (Startup)
Source: Processing Results (2021)

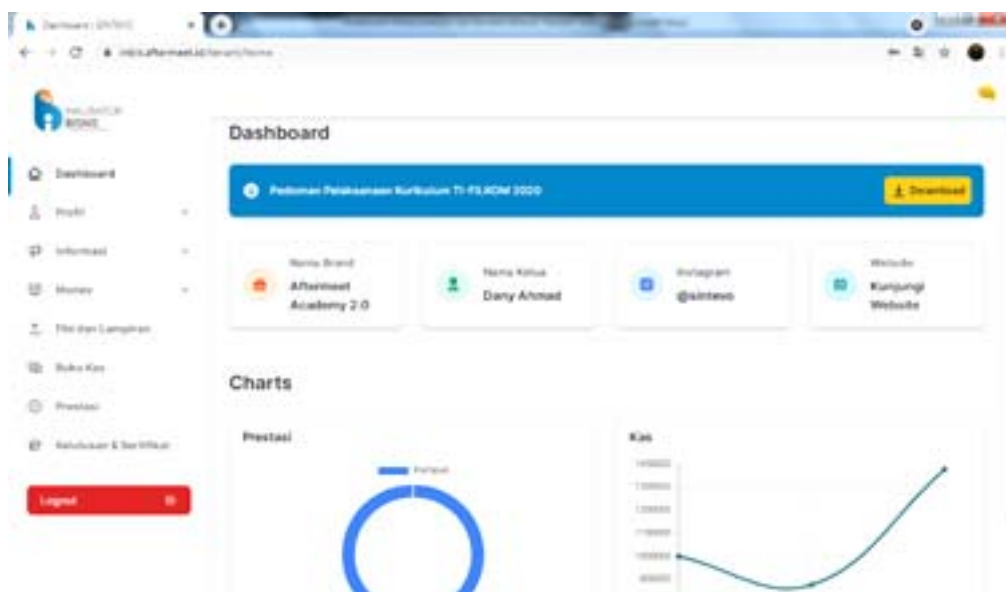


Figure 7 System Main Page (Startup)
Source: Processing Results (2021)

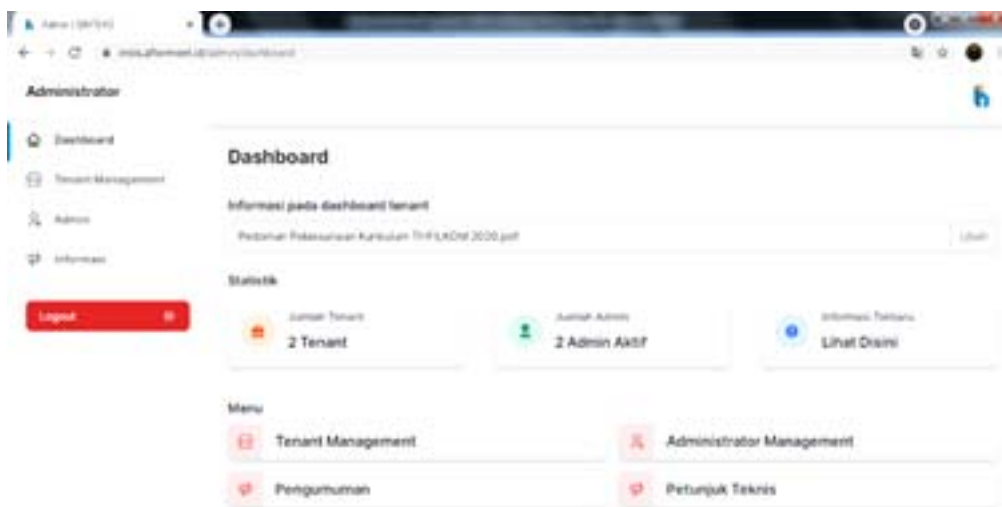


Figure 8 Main Page (Admin)
Source: Processing Results (2021)

of business development, and creating a good business strategy for Vocational Startup in the new normal era. Because seeing the importance of the Vocational Startup Information System, usability testing measurements were carried out on the information system.

Usability Testing Measurement

The Usability Testing questionnaire used in this study adopted the questions on the USE Questionnaire, which contained four aspects, namely Ease of Use, Ease of Learning, Satisfaction, and Usefulness. The questionnaire used includes a list of questions that are grouped based on these aspects of usability measurement. Before carrying out Usability Testing, respondents had accessed the Vocational Startup Information System at the <https://inbis.aftermeet.id/> link first. After trying the system, respondents filled out a questionnaire by assessing 1 to 10 on the system's usability with a rating scale using the Rating Scale. The Voca-

tional Startup Information System Questionnaire is conducted online using a Google Form which can be accessed at the link <http://bit.ly/KuesionerSistemInformasiINBISPPNS>. Respondents filled out online questionnaires. Figure 9 shows that the number of respondents in this Usability Testing is 31 respondents consisting of 20 representatives of each Business Incubator Vocational Startup and 11 Business Incubator managers.

After collecting Usability Testing data, then the total value obtained is calculated. The total value is obtained from calculating the results of the respondents' overall answers on the usability aspect multiplied by each value according to the predetermined Rating Scale, namely the value 1 to 10. While the expected value is obtained from the highest score on the Rating Scale, which is 10 multiplied by the number of respondents multiplied again by the number of questions. On the Usability Testing, as many as 12 questions. After knowing the value obtained, it will calculate the percentage between the

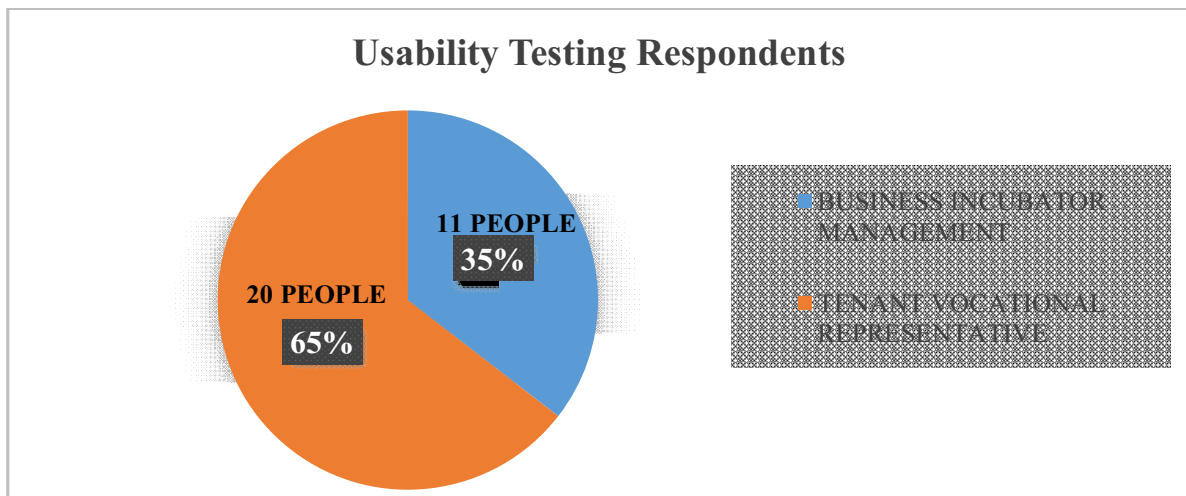


Figure 8 Main Page (Admin)
Source: Processing Results (2021)

total values obtained compared to the total expected value. After that, an assessment will be obtained, and the eligibility category can be known. The classification of eligibility categories can be seen in Table 2.

Assessment of Easy of Use Aspects

The Easy of Use aspect is used to measure the ease of the system when used by users. Based on the Usability Testing according to the results of all the questions, on the Easy of Use aspect of the Vocational Startup Information System, it got an assessment result of 86%, so it was included in the very feasible category, and it could be interpreted that the system was very easy to use by users.

Easy of Learning Aspect Assessment

The Easy of Learning aspect is used to measure the ease of the system to be learned by users. Based on the Usability Testing according to the results of all the questions, on the Easy of Learning aspect of the Vocational Startup Information System, it got an assessment result of 88%, so it was included in the very feasible category, and it could be interpreted that the system was very easy to learn by the user.

Satisfaction Aspect Assessment

The satisfaction aspect is used to measure user satisfaction with the system. Based on the Usability Testing according to the results of all

Table 2 System Eligibility Category

Value (%)	Classification
<20	Very Inappropriate
20 – 40	Not Feasible
40 – 60	Enough
60 – 80	Worthy
> 80	Very Worthy

Source: Kusuma et al., (2016)

the questions, on the Satisfaction aspect of the Vocational Startup Information System, it received an assessment result of 86% so that it was included in the very feasible category, and it could be interpreted that the user was very satisfied with the system.

Assessment of Usefulness Aspects

The usefulness aspect is used to measure the usability of the system. Based on the Usability Testing according to the results of all the questions, on the Usefulness aspect of the Vocational Startup Information System, it got an assessment result of, 89%. It was included in the very feasible category and it could be interpreted that the system was very useful.

Usability Testing Assessment

Table 3 shows the results of the Usability Testing of the Vocational Startup Information System obtained from all scores obtained from four aspects, namely Easy of Use, Easy of Learning, Satisfaction, and Usefulness. Based on the results of calculations from 31 respondents consisting of 20 representatives of each Vocational Startup and 11 managers of the PPNS Business Incubator, the total value was 3238. When compared with the expected value of 372

values (31 respondents with 12 questions) with the expected value is 10 (the largest value), so that the total expected value is 3720, then the Usability Testing of the Vocational Startup Information System gets an assessment of 87%, so it is included in the very feasible category. Therefore, the results of the evaluation of the Vocational Startup Information System using Usability Testing are obtained that the system that has been created is included in the very feasible category for use. In addition, after receiving feedback from respondents on the Vocational Startup Information System, a Frequently Asked Questions (FAQ) menu was added, which was used to provide the Vocational Startup opportunity to ask questions or feedback and then get a response from the Business Incubator manager.

Survival Rate Increase

Based on the results of data collection through the Vocational Startup Information System, several business constraints were found. These constraints relate to Sales, Human Resource Management (HRM), Operations, Marketing, Technology, and Finance. Constraints related to sales by 14%. Constraints related to HRM are 24%. Obstacles related to Operations by 24%. Constraints related to marketing

Table 3 Usability Testing Assessment Results

No.	Aspects of Usability Testing	Many Values (B)	Total Value (C)	Expected value (D = B x 10)	Evaluation (E = (C/D) x 100%)	Eligibility Category
1	<i>Easy of Use</i>	155	1329	1550	86%	Very Worthy
2	<i>Easy of Learning</i>	62	547	620	88%	Very Worthy
3	<i>Satisfaction</i>	62	534	620	86%	Very Worthy
4	<i>Usefulness</i>	93	828	930	89%	Very Worthy
Total Usability Testing		372	3238	3720	87%	Very Worthy

Source: Processing Results (2021)



Figure 10 Obstacles to Vocational Startup Business
Source: Processing Results (2021)

by 19%. Technology-related constraints by 14%. As well as constraints related to finance by 5%. Based on these data, it is known that HRM and Operations have a high percentage, so it is necessary to obtain solutions related to these obstacles. Then based on feedback from Vocational Startups, to increase the Survival Rate, it is essential to resolve these obstacles and add mentoring topics related to Marketplace Management, Finance Analysis, Business Development, Marketing, and Sales. These topics will be optimized with a mentoring scheme integrated through the Vocational Start-up Information System.

DISCUSSION

Based on the results of the research that has been carried out, several conclusions can be obtained, namely:

1. Vocational Business Incubator Startup incubation activities to improve business strategy in the new normal era, one of which is by conducting Monitoring and Evaluation (Monev) of Vocational Startup business development. System business processes are

described using Business Process Modelling and Notation (BPMN). The function that will use the Vocational Startup Information System is the manager of the Business Incubator and the Vocational Startup Business Incubator. Business Process Monitoring and Evaluation (Monev) Business Incubator activities related to Registration, Profile, Information, Monitoring and Evaluation, Files and Attachments, Achievements, Cash Books, and Files and Graduation.

2. The design of the Prototype of the Vocational Startup Information System was carried out to facilitate the incubation and Monev activities of the Vocational Startup. The design is done using the Iconix Process method with several diagrams, namely domain modelling, use case diagrams, robustness diagrams, sequence diagrams, and class diagrams. To make it easier to see the results of the design, the results of the Vocational Startup Information System display are made.

One of the ways to increase the survival rate is through the Vocational Startup Information System. The benefits of the Vocational

Startup Information System include helping the incubation process, monitoring the evaluation of business development, and creating a good business strategy for Vocational Startup in the new normal era. Because of the importance of the Vocational Startup Information System, usability testing measurements were carried out on the information system. Based on the calculation results of the Usability Testing of the Vocational Startup Information System, it was found that this Usability Testing received an assessment of 87%, so that it was included in the very feasible category. Therefore, the results of the evaluation of the Vocational Startup Information System using Usability Testing are obtained that the system that has been created is included in the very feasible category to be used in increasing the survival rate of Voca-

tional Startup. Based on the results of data collection through the Vocational Startup Information System, several business constraints were found. These constraints relate to Sales, Human Resource Management (HRM), Operations, Marketing, Technology, and Finance. Based on these data, it is known that HRM and Operations have a high percentage, so it is necessary to obtain solutions related to these obstacles. Then based on feedback from Vocational Startups, to increase the Survival Rate, it is required to resolve these obstacles and add mentoring topics related to Marketplace Management, Finance Analysis, Business Development, Marketing, and Sales. These topics will be optimized with a mentoring scheme integrated through the Vocational Start-up Information System.

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