

**The influence of digital business courses on the interest of
informatics students to build startup**

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Abstract

University usually pursues three main objectives: technology transfer, promotion of entrepreneurship, and commercialization of research. The other goal is to maintain an entrepreneurial spirit, responsibility and financial support. Research based company technology (startups) is becoming increasingly important in today's competitive economy. Higher education can connect human resource needs, talents, technology, capital, and knowledge to foster an entrepreneurial spirit, accelerate Startup development and reduce unemployed university graduates. The respondents are 162 informatics students. From the results of the study, it was found that several game applications, e-commerce, IoT, web designers and e-learning were the

startups that were most chosen by Informatics students.

Keywords: startups, informatics, entrepreneurship, university.

1. INTRODUCTION

East Kalimantan is one of the provinces in Indonesia; this province will become the capital city of Indonesia in 2024. The province is divided into seven districts and three cities. Samarinda is the capital city which consists of 10 districts which are divided into 59 villages (BPS, 2010). After COVID-19 hit all countries around the world, human activities changed a lot. All activities related to public services are carried out online, work from home, study from home, and shop from home. Including sales of meat products, fish, seafood, chicken, vegetables and fruits can be ordered from home, and will be delivered directly to the house fresh and guaranteed quality, without having to bother going to the market anymore. This opens new business, business and job opportunities for students who graduate from the Faculty of Engineering, especially Informatics to help people in their respective areas. In addition to helping local small and medium enterprises (SMEs) and Local Government, students will also have the opportunity to have a Digital Business startup business, and develop into a creative and creative industry.

The incubator is part of the commercialization of science and technology activities managed by an institute at the university (Eva S. et al., 2016). University incubators usually pursue three main objectives: technology transfer, promotion of entrepreneurship, and commercialization

of research. The other goal is to maintain an entrepreneurial spirit, responsibility and financial support. Research based company technology (startups and Digital Business) is becoming increasingly important in today's competitive economy. Facing this challenge, local governments, local business people, and universities must work together to promote and develop business incubators in their regions. Many business and technology incubators started on campus, because campuses have the potential to be business and technology incubators, so they can birth too many startups and digital economies. Higher education can connect human resource needs, talents, technology, capital, and knowledge to foster an entrepreneurial spirit, accelerate Startup development, Digital Business and reduce unemployed university graduates (Noha AH., 2020).

However, it is very unfortunate that business incubators and digital business, startups are still centered on the islands of Java and Sumatra, while the island of Kalimantan is not very popular, as evidenced by the results of a research survey, the island of Kalimantan only has 24 startups (Digital Business) and it is also predicted that they can survive only 10 percent. In the study, it was stated that of the 100 startups that were established, only 20% were able to survive (M. Andy et al., 2020).

There are many opportunities for graduate students from the Faculty of Engineering, especially the Informatics Study Program to build a Startup which helps MSMEs that are currently having difficulty selling products, due to the massive spread of COVID-19. In addition, campuses are required to design and carry out an innovative and creative learning process in an

optimal, and relevant manner keep up with the times, including the spirit of entrepreneurship through the Digital Business and Startup. So that graduates can "Link and Match" with the needs of society, needs of the industrial world and the world of work and flexible to follow future changes (Dirjend DIKTI Kemendikbud, 2020).

One easy way to introduce students to the Startup and business opportunities Digital Business is through a final project or thesis. Usually in thesis making students will focus and seriously study, read literature, observe and collect data relevant to the research, until finally making a solution application, according to the problem-solving solution offered, and has been proven from the results of research. It is time for the applications they produce in their thesis to become opportunities new ventures for themselves and creating creative and innovative jobs for society, such as e-commerce, e-learning, startups, Digital Business, control systems or sensors, robotic and other applications.

The final project or a thesis is the final obligation of every undergraduate or bachelor's degree student, before they graduate and are eligible to use a bachelor's degree. In the final project, students usually focus more on certain fields according to their abilities and expertise in the workplace later. Many SMEs can be helped to make simple e-commerce applications as their platform for promotion, marketing and delivery of home merchandise them safely, quickly and securely. These MSMEs has been chosen for used as a final project by several Engineering Faculty students. There are several problems with SMEs that will be helped. There is an

overproduction of chicken, fish and seafood products. Meanwhile, market demand decreased because many economic sectors such as restaurants, hotels, catering businesses and other businesses were not operating. Prices for chicken, fish and seafood have fallen significantly. The increase in production costs was due to distribution constraints due to the closure of several access roads and time restrictions. Consumers reduce activities outside the home. They choose to save money in times of crisis. Floods are also one of the causes of problems in Samarinda.

The form of learning activities can be done inside and outside the study program. Based on the Global Entrepreneurship Index in 2018, Indonesia has a score of 21% of entrepreneurs from various fields of work, or rank 94 out of 137 countries surveyed. Meanwhile, according to research from the IDN Research Institute in 2019, 69.1% of millennial in Indonesia have an interest in entrepreneurship, but this potential has not been managed properly (Dirjend DIKTI Kemendikbud, 2020). Campus policy encourages the development of student entrepreneurial interest with learning activity programs that are in accordance with the requirements, regulated in the academic guidelines issued by College. The objectives of the entrepreneurial activity program include: provide students who have an entrepreneurial interest to develop early and guided efforts and addressing the unemployment problem that generates intellectual unemployment from among scholars.

Startups constitute an important aspect of a nation's economic growth. They contribute to job creation and economic development at both regional

and national levels. A startup is a company working to solve a problem where the solution is not obvious and success is not guaranteed. All Startups have the features such as; innovation, age, growth, risk, flexibility, problem solving, scalability, and work team. There are 6 different types of Startups: lifestyle Startups, small business Startups, scalable Startups, buyable Startups, and large company Startups.

2. MATERIALS AND METHODS

2.1. A Knowledge Management Model

Higher education can connect talent, technology, capital, and knowledge to foster an entrepreneurial spirit, accelerate company development technology-based, and accelerate the commercialization of technology. Figure 1 is a plot strategy of starting an online business, a knowledge management model that is able to encourage strategy development in digital business (José S and David M., 2017). A knowledge management model that is able to encourage strategy development in digital business. Innovation and creativity are needed for creating creative ideas in startup business and the Digital Business. Startup business methods are followed by technological trend innovation.

As reported by Business Insider (Garrett J. B. and Henry A., 2019). PitchBook processes data to compile universities that produce Startup founders and receive funding from investors. Top Start-up ranking in the World 2021 and top Start-up ranking in Indonesia 2021 (Figure 2).

2.2. Business Incubator, Startup and Digital Business

Business incubation is a business development process within a certain period of time where the business is still new and on a small scale or startup. The purpose of business incubation is to monitor the growth and prospects of a business that is being developed. If the business is considered to have potential and promising in the future, then the startup business will be massively developed. In the business incubation process, a business incubator is needed. The definition of a business incubator is a company/institution that design a program for coaching new businesses that are being developed.

Incubators are part of science and technology commercialization activities managed by an institution in a university. University incubators typically pursue three main objectives: technology transfer, promotion of entrepreneurship, and commercialization of research. Another objective of the incubator is to maintain an entrepreneurial spirit, responsibility and financial support to students. Research technology based companies, also known as startups and the Digital Business, are becoming increasingly important in today's competitive economy. To face these challenges, local governments, local entrepreneurs, and universities work together to promote the development of business incubators in their areas. Many business and technology incubators start from the campus, because the campus has the potential to become a business and technology incubator, which will produce many startups and the Digital Business (Eric et al., 2019; Carmela et al.,

2011).

2.3. Factors that influence the success of the Startup

A Startup business must be able to take advantage of existing knowledge. By utilizing the services provided by the incubator, service users (tenants) can improve the weak side of the entrepreneurial aspect. The assistance provided by a business incubator can in the form of; business capital, concepts, and initial product manufacturing. Business incubator activity program focused on tenant coaching, including: stage selection, tenant selection and coaching tenant. Several studies identified 21 critical factors for a startup's success grouped into three categories (organizational, individual and external) and 4 stages the development that the startup will go through (seed, start, growth and expansion) (Saheed, 2017; Wahidmurni et al., 2019). Other research findings suggest that curriculum design can motivate ability critical thinking in students and can generate creative business ideas. Activities like Brain storming and mind mapping can be used to stimulate students' potential ideas to be entrepreneurial. The results of other studies indicate the course material factors, factors training / courses and demographic factors have a significant effect on interest variables entrepreneurial students. Figure 3 shows the factors supporting success a Startup business.

The success of digital entrepreneurs is influenced by several characteristics described as follows: Ability to lead, Ability to delegate, Team expertise, Ability to anticipate risks and make decisions, Professional in finance, Confident in the business or business, Age that should not be too

young and have role models or business mentors, Having expertise in marketing and communication, Able to choose the right colleague or partner, Be persistent in developing skills and knowledge related to online business, Dynamic and human in various obstacles, Having experience and ability in industry, products and markets, Often attend digital business training. The success of digital entrepreneurs is influenced by several Knowledge described as follows: Marketing management, Financial management, HR management, Operational management, Distribution channels, Academic Experience, Business capabilities, Business plans, Social skills of the entrepreneur. Technology; Technological resources, Technological/business capabilities, Product Innovation, Science and technology policy. Capital; Initial capital, Government support, and Venture capital.

The basic concept of an incubator is an institution that provides a minimum of 7 activities: 1) Space, 2) Shared office facilities, 3) Services containing marketing, finance, production, technology and others, 4) Support in the use of technology and business research and development, 5) Skills development; training, formulation of business plans, HR management and others, 6) Business capital and how to get capital access to financial institutions, 7) Synergy in creating adequate local and international business networks (Cohen, S., et al., 2019).

3. RESEARCH METHOD

3.1. Research and Incubator Stages

- a. Determine research samples and respondents; breeders, traders and SMEs who live around Samarinda as partners in the final project of students from Faculty of Engineering, in Mulawarman University.
- b. Product and new discovery
- c. Business potential Analysis
- d. Designing prototypes and mobile applications.
- e. Perform testing and repairing
- f. Provided mentoring and training in business incubators stages

3.2. Data Collection

The research respondents were 162 informatics students (Figure 4). The method used is distributing questionnaires and assessing the products presented, demonstrated and produced by students in the Informatics study program, Faculty of Engineering at Mulawarman University. Data collection methods in the study used questioners and interviews. Students' final assignments are selected which can become startups to be trained and receive coaching and funding assistance.

The university's business incubator is a program specifically designed to help student startups innovate and grow. Faculties provide work space, tutoring, education, and access to investors for students starting entrepreneurs (Figure 5). University technology commercialization process has 4 stages (Lina et al., 2015). The stages are called invention, evaluation, confirmed invention and decision making. These resources allow startups and innovation ideas to take shape while operating at a lower cost, during

the early incubation stages of a business. The university incubator requires an application process to join and usually requires a commitment for a certain period of time.

3.3. Chicken Products and Behambinan

The design stage is making a use case diagram which functions as a website design framework, to determine which users can do anything in the application. It is important to design application according to the needs of respondents, before the system is built. In this application, an admin can add, save, delete, update and display existing product data in the database to be displayed on the website. The admin can send and receive messages from consumers. He can manage the transaction status, so he has the right to cancel consumer purchases. The last process he also can manage product delivery when the consumer has made a transaction. The process that can be done by consumers; first is being able to display and search for the desired product. The second process consumers can view, add and delete shopping lists that are on the shopping cart page. The third process consumers can send and receive messages from the admin. The final process the consumer can complete the product purchase and payment. It can be seen in Figure 6.

Behambinan is a marketplace application, taken from the local language (hambin), which means to carry or support each other. This application is an effort to turn on the wheels of the community's economy amid the Covid-19 pandemic, specifically considering the improvement of MSMEs in the city of

Samarinda during a pandemic. Accounts registered in the Behambinan application 3.940. Successful Transaction 951. Registered shop/seller 817 (Figure 7).

3.4 Internet of Things Flood Warning System, and Temperature and Humidity Control

Some of the startups works of the students final assignments include; EdTech (Ramadiani et al., 2020), Digital Media, Smart City, Hospitality & Tourism Tech, Life Sciences, Healthcare, Medical Simulation, Cyber, Robotics, Energy and IoT (Ramadiani et al., 2021). This is the example of Internet of Things in Figure 8. In conditions where the temperature increases, the DHT11 sensor will detect the temperature and the humidity that will be displayed on the LCD 16x2, and instruct the water pump to turn on and splash water in the form of water dew through a relay that is set based on the source code on the Arduino ATmega328, this system is also equipped with Buzzer output that is useful as a sign or warning will change to a higher temperature.

4. RESULTS AND DISCUSSION

The final project is the final obligation of every undergraduate student, before they graduate. In the final project, students usually focus more on certain fields according to their fashions, abilities and expertise. The results of the survey on the use of ICT in Samarinda, the use of the internet for e-commerce was 40.95%, which was dominated by online shopping by

93.02%, and online sales by 33.72%. Research objectives; 1) Creating a business incubator at the Faculty of Engineering, Mulawarman University. 2) Assisting and training students who are building the Startup application. 3) Helping Small and Medium Enterprises that have been selected by students, to be used as Final Projects. Research technology-based companies (startups and Digital Business) are important in a competitive economy. Universities are expected to play an active role in producing graduates who are aware of becoming entrepreneurs, creating jobs, and building a strong people's economy. The university is responsible for fostering MSMEs so that they can adapt and increase their income by using information technology and control systems. Build shopping applications, online-based public services, and controllable delivery of goods for various products, so that they can reach consumers quickly, easily and safely. The IoT for flood early warning systems, detection of temperature, weather and humidity and other IoT is expected to be simplified, mass produced and implemented for the benefit of the wider community. It is time for the University to become a business incubator through research, collaboration, and fostering startups.

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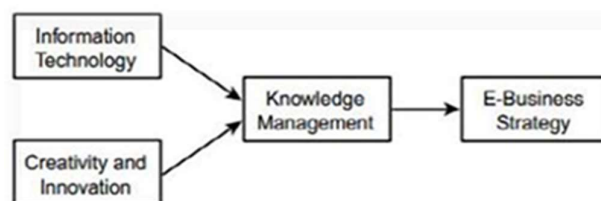


Figure 1. Knowledge management model

Flag	Country	Startups
	United States	69,674
	India	11,970
	United Kingdom	6,049
	Canada	3,164
	Indonesia	2,310
	Germany	2,262
	Australia	2,137
	France	1,548
	Spain	1,394
	Brazil	1,164
	Netherlands	1,011
	Singapore	976
	Israel	945
	Italy	933
	Nigeria	749
	Switzerland	734
	Peru	687
	Sweden	676

Rank	Startup	SR Score	Description	Country Rank
25	Traveloka	86,347 =	Tiket Pesawat Murah - Traveloka.com is an Indonesian flight booking webs ...	1
63	Ruangguru	83,773 =	Ruangguru adalah sebuah website yang menghubungkan calon murid dengan calon guru untuk belajar di bidang apapun - Ruangguru is an online matchmaking platform for st ...	2
87	Uzone Indonesia	82,756 v	Uzone Indonesia - Entertainment portal for you : movie, tv, radio, epps, books, news, music, news upd ...	3
92	Alodokter.com	82,680 v	Alodokter.com plans to be the number 1 healthcare website in Indonesia. We aim to bring medical know ...	4
99	Gilabola.com	82,555 =	Most popular soccer community in Indonesia - Gilabola.com is the most popular soccer community ...	5
109	Mailbird	82,192 =	The Best Email Client For Windows 10 - Mailbird makes it easy to manage all your email ec ...	6
155	Mojok.co	81,085 =	Tempat mojak - Mojok.co is selow media that embodies the writings ...	7
267	Jurnal	79,399 ^	#1 Simple Online Accounting Software - Jurnal adalah layanan software pembukuan online ya ...	8
296	BootstrapMade	79,114 =	Twitter bootstrap themes marketplace - Bootstrapmade - Marketplace to buy or sell premium ...	9
317	IDCloudHost	78,880 =	IDCloudHost is the first SSD Cloud Hosting service in Indonesia with a variety of cloud computing technologies - IDCloudHost is the first SSD Cloud Hosting service ...	10
348	Jakarta Notebook	78,448 =	Jakarta Notebook - Most Wanted Super E-Store. JakartaNotebook.com merupakan salah satu perusahaan O ...	11

Figure 2. Top Start-up ranking in the World 2021 (left) and Top Start-up in Indonesia 2021 (right)

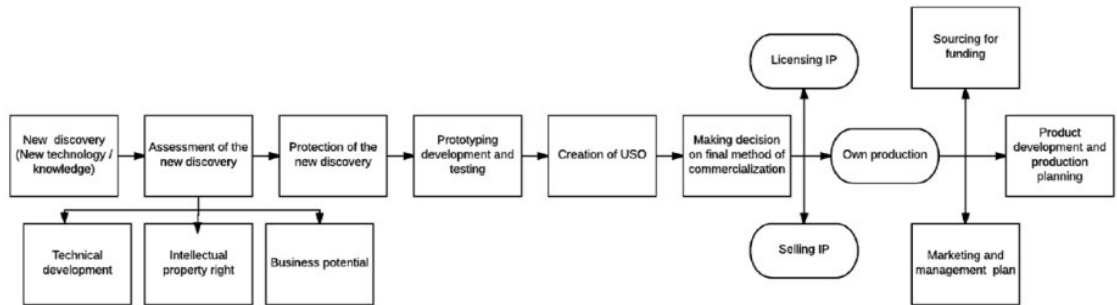


Figure 3. Supporting Factors for Business Success

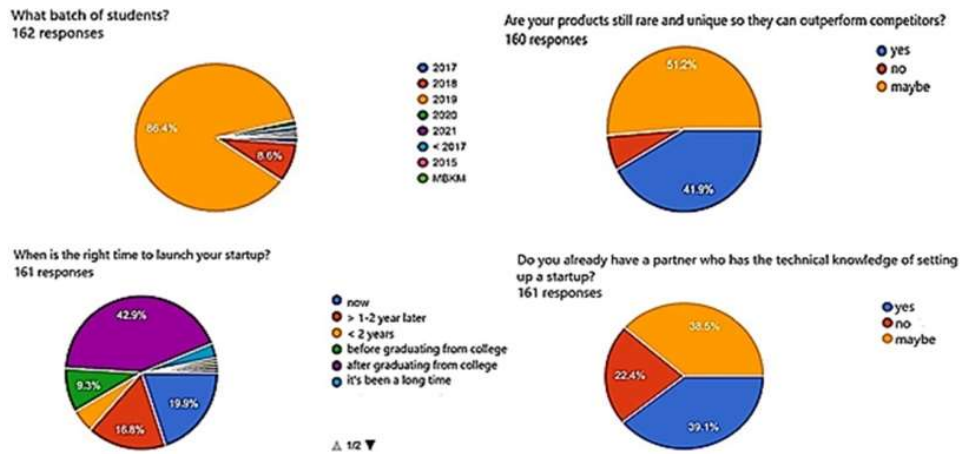


Figure 4 Total of research respondents

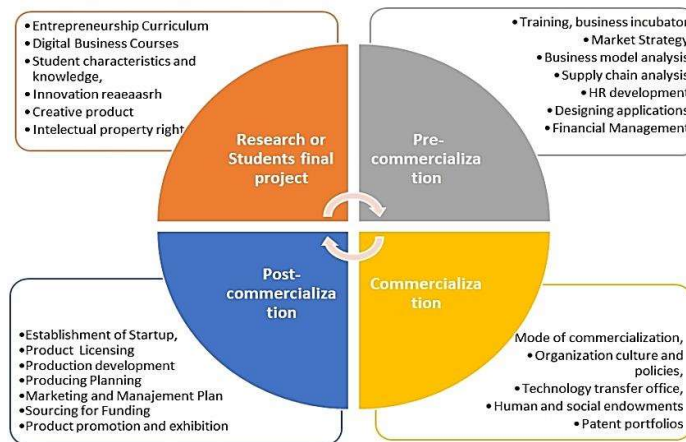


Figure 5. University technology commercialization process to become Startups

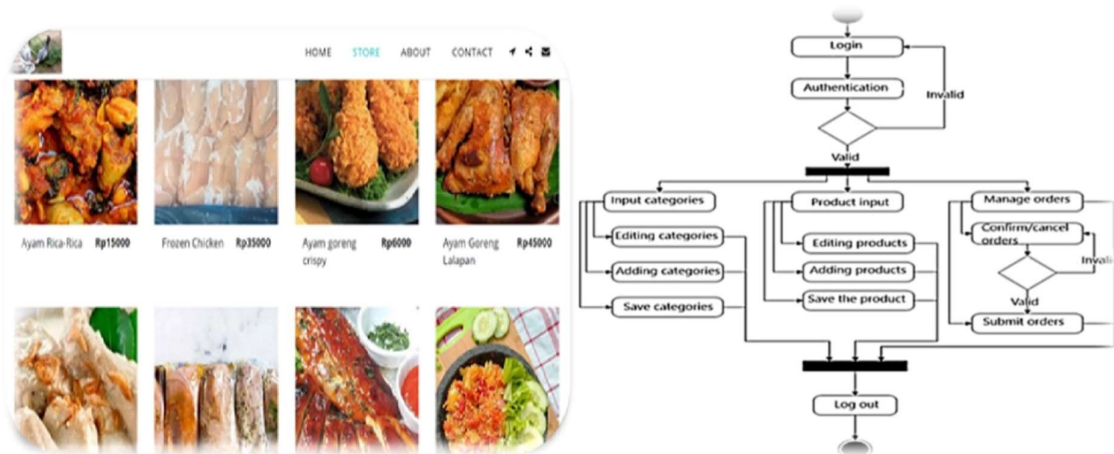


Figure 6. The Chicken Products

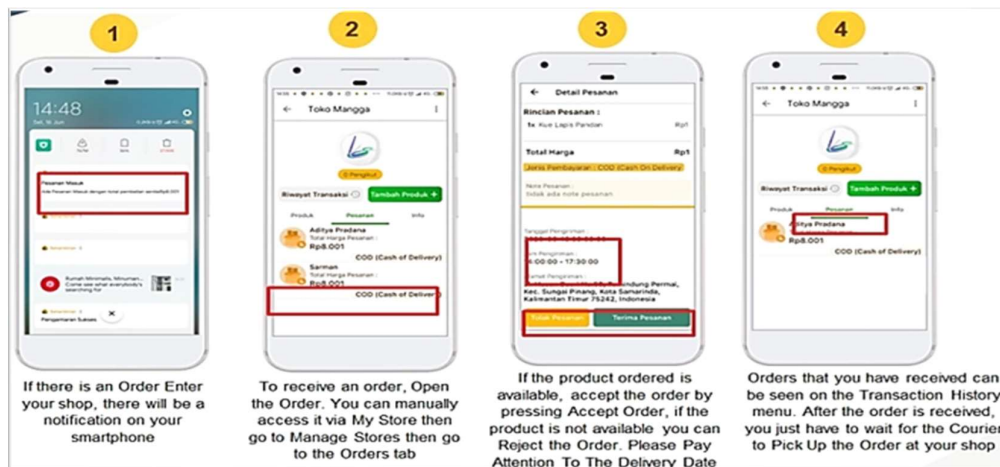


Figure 7. Behambinan

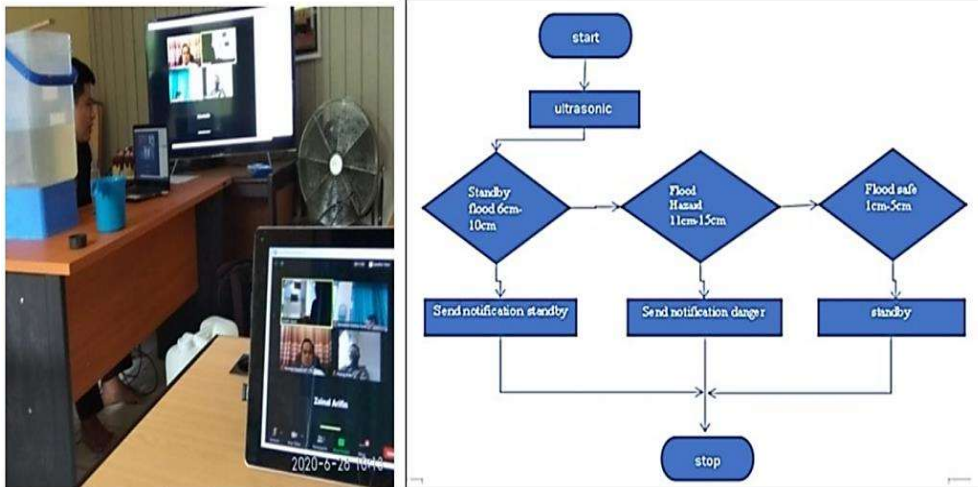


Figure 8 Flood Early Warning Systems