



# SEN-STORE APPLICATION OF INTERNET OF THINGS (IOT): A MANIFESTATION OF COLLEGE STUDENT'S BUSINESS SUSTAINABILITY IN FACING GLOBAL ENTREPRENEURSHIP

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**Abstract.** The world of commerce has become a very crucial part of its influence on economic growth. The Internet of Things (IoT) is a breakthrough in the business world in the midst of current technological developments. IoT has increased labor productivity by up to 25% in some sectors such as manufacturing. IoT plays an important role in achieving sustainability by enabling environmental monitoring, energy savings, sustainable supply chain management. The purpose of this study is to see the impact of the implementation of the SEN-STORE application. SEN-STORE, which stands for Sustainable Entrepreneur Student Incubator, has a very significant role in promoting sustainability on campus. The results of this study show that there are various factors that lead to the failure of business sustainability. The Sustainability Entrepreneur Student Incubator (SEN-STORE) application can improve the sustainability of student businesses in the university environment through 5 features namely Assessment, E-Incubator, E-Reporting, My Partners, and Discussion Forum.

**Keywords:** Internet of Things, Sen-Store, Entrepreneur, Incubator

## 1 Introduction

Internet of Things (IoT) is a concept that describes various physical devices, objects, or systems interconnected through the internet network and have the ability to collect, transmit, and share data. In other words, IoT allows objects around us to communicate and interact with each other and with other objects. IoT has opened up new potential in optimizing various aspects of life and business, but it also poses challenges related to security, privacy, and data management. With the continuous development of technology, IoT is expected to continue to play an important role in an increasingly connected and intelligent world, especially in the fields of economy and business. The Internet of Things (IoT) is a technology that allows various devices, such as smartphones, lights, machines, and more, to talk to each other over the internet. This can affect us by promoting more convenient and efficient human activities. For example, we can remotely adjust the temperature in our homes with our smartphones, or we can alert a store when we need a certain product. According to McKinsey, IoT has increased labor productivity by 25% in some sectors such as manufacturing. The automated monitoring and data-driven repairs provided by IoT can improve operational efficiency. Thus, IoT is a smart technology that makes life better and business smarter.

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R. Martini et al. (eds.), *Proceedings of the 7th FIRST 2023 International Conference on Global Innovations (FIRST-T3 2023)*, Advances in Social Science, Education and Humanities Research 830,

[https://doi.org/10.2991/978-2-38476-220-0\\_9](https://doi.org/10.2991/978-2-38476-220-0_9)

Sustainability is important in the business world due to the significant environmental impacts of corporate activities and climate-related challenges. Businesses that don't prioritize sustainability can experience higher costs, regulatory conflicts, and diminished brand image. The Internet of Things (IoT) plays an important role in achieving sustainability by enabling environmental monitoring, energy savings, sustainable supply chain management, efficient transportation, and wiser resource management. With this, IoT helps businesses to reduce negative impacts on the environment, meet the demands of environmentally conscious consumers, and create long-term value while managing the risks associated with climate change.

SEN-STOR, which stands for Sustainable Entrepreneur Student Incubator, is an application that houses MSMEs in various universities, where local products from universities will be marketed globally. This application also has a very significant role in encouraging sustainability in the campus environment. In an effort to support the development of entrepreneurship among students, the app utilizes the Internet of Things (IoT) in its operations to achieve various sustainability goals. Through this approach, SEN-STORE can monitor and manage campus resources more efficiently, which can help reduce environmental impact. In addition, SEN-STORE can encourage students to develop sustainable products and services that can utilize IoT technology to optimize resource use, reduce waste, or improve efficiency. Furthermore, SEN-STORE serves as a liaison between students and sustainability partners, facilitating collaborations that can strengthen the positive influence of sustainability in campus entrepreneurship. As such, it is not only a business incubation tool but also a catalyst for creating sustainable solutions, generating new jobs, and alleviating unemployment, ultimately contributing to the fulfillment of wider sustainability goals.

Students from tertiary institutions are considered impactful resources in promoting global entrepreneurship as they bring creativity, innovation and youthful vigor that are vital to stimulating economic growth and global change. They have invaluable access to knowledge, resources, and facilities provided by colleges, which enable them to develop innovative business ideas. In addition, colleges often host entrepreneurial mentoring programs, training, and incubation platforms that help students turn ideas into business realities. Their ability to collaborate, network and learn quickly is also invaluable in the ever-changing global entrepreneurial ecosystem. Students are often determined to achieve their goals, ready to take risks, and have global insights that enable them to design sustainable and inclusive solutions. All of this makes them strategic agents of change in promoting impactful entrepreneurship on a global level, creating jobs and driving innovation around the world.

Managing a business on a global level comes with many challenges, including navigating through the complexities of international regulations and laws, competing in an ever-changing environment with intense competition, dealing with currency fluctuations, and understanding cultural and language differences. However, amidst these challenges, there are also abundant opportunities, such as access to a wider market, a much larger potential market share, rapid technological innovation, as well as the potential for significant business growth. SEN-STORE, as a business incubation tool for entrepreneurial students, can play a key role in helping students face and capitalize on these challenges and opportunities. Through the provision of resources, training, and guidance, SEN-STORE can help students understand and comply with international regulations, improve their business management skills, and prepare them

to compete in a competitive global market. In addition, by connecting students to global networks, SEN-STORE can facilitate collaboration, knowledge exchange, and access to investors, business partners, and international markets. As such, it can also help with global market monitoring, allowing students to keep up with market trends and make smart decisions. SEN-STORE can also encourage the use of technologies such as the Internet of Things (IoT) in student-developed products and services, which can enhance their marketability. Lastly, SEN-STORE can be an intermediary that helps students forge international partnerships with organizations that have a sustainability focus and global presence, paving the way for beneficial collaborations. In doing so, SEN-STORE helps student start-up businesses to face the challenges and capitalize on the opportunities of doing business on a global scale, creating jobs and making a meaningful contribution to the growing global economy.

The Internet of Things (IoT) opens the door to communication between devices and systems, providing tremendous potential in optimizing life and business. Sustainability is a key element in the modern business world, and IoT plays an important role in achieving this goal by enabling environmental monitoring, wise resource management, and energy efficiency. Applications like SEN-STORE support student entrepreneurship and play a role in mitigating environmental impacts while facilitating business growth on a global level. Despite the challenges, it is expected that SEN-STORE will continue to house MSMEs in various tertiary institutions and that the tertiary institutions' products will be marketed globally through the SEN-STORE app.

## 2 Literature Review

The Internet of Things (IoT) is a structure in which objects, people are provided with an explicit identity and the ability to move data over a network without requiring two-way human-to-human source-to-destination or human-to-computer interaction (Burange & Misalkar, 2015). Internet of Things (IoT) is a very promising scientific development to optimize life based on smart sensors and smart devices that work together through the internet network (Keoh, et al., 2014).

Sihombing (2012) explains that entrepreneurship is one of the goals for many students, especially young people after completing their studies. This is because entrepreneurship provides several advantages, such as being able to manage one's own profits, self-satisfaction, independence, and results that are as desired. The majority of businesses that emerge in today's modern era tend to be utilized through online media, which is now called e-commerce. Start-ups, described by Sheung (2014) are business methods followed by technological trend innovation. Pateli & Giaglis (2005) state that the accelerated growth of Information and Communication Technology (ICT) is able to increase trends that change traditional businesses or encourage the establishment of new businesses (starups) that tend to take advantage of technological opportunities.

Beier (2016) states that the marketing process in the digital world must also be understood by digital start-up owners. Digital marketing can generally be defined as the integrated use of digital technology. Another definition also describes targeted and measurable communication aimed at acquiring and retaining customers and at the same time building deeper relationships with them (Wymbbs, 2011). Online marketing can

now be done with new technologies such as smartphones and supporting applications (Tiago and Verissimo, 2014).

The SEN-STORE app, as a business incubation tool for entrepreneurial students with a focus on sustainability and global marketing, has various features and functionalities that support students in facing challenges and capitalizing on opportunities in running a business on a global scale. The SEN-STORE app will have a platform that supports users in utilizing Internet of Things (IoT) technology to monitor and control various aspects of their business. This will include environmental monitoring, resource management, and energy efficiency.

The app will be an online marketplace that connects products and services managed by entrepreneurial students from various universities. Users can browse sustainable products and contribute to global sustainability. The app will provide access to various educational and training resources to help students understand international regulations, business management, and sustainability. This includes training modules, webinars, and other educational resources.

The SEN-STORE app will facilitate connections between entrepreneurial students and the global network. It will enable collaboration, knowledge exchange and access to investors, business partners and international markets. The app will provide advanced market analysis tools, allowing students to follow market trends, analyze data, and make smart decisions in marketing their products globally. To address logistical challenges in global business, the app will facilitate supply chain management, including shipment tracking, inventory management, and logistics process optimization.

The app will provide tools to manage business finances, calculate currency fluctuations, and make global financial projections. This will assist students in managing their profit margins. To overcome cultural and language differences in doing global business, the app will provide resources to learn and communicate effectively in a cross-cultural context. The app will have a number of tools to help students understand and comply with sustainability standards, including guides on green products, waste management and sustainable business practices.

SEN-STORE will intercede for students in forging international partnerships with organizations that have a sustainability focus and global presence, paving the way for beneficial collaborations. The SEN-STORE app will be a key tool that assists entrepreneurial students in facing and capitalizing on challenges and opportunities in global business. It will provide the support, training and resources needed to build a sustainable business and compete in a tight global market. With a focus on IoT technology and sustainability, the app will be key in preparing students to create a positive impact in the ever-evolving global economy.

### 3 Research Method

Based on the chosen title, the research subjects are 10 business owners of start-up businesses from 2 universities used as samples, namely State Polytechnic of Sriwijaya and Bina Darma University which run the Student Entrepreneurship Program (PMW). The following is a list of names of these MSME owners:

**Table 1.** Business Startup Entrepreneurs

No.	Business Name	Owner	Location	Student Descriptive
1.	Burger	Oktavia Kurnia Putri	Jalan Kapten Abdullah No. 83 Plaju, Palembang	Active
2.	Kopi Petrik Merah	Desi Elyani	Jalan Mayor Salim Batubara, Sekip, Palembang	Active
3.	Sambal Bakar Jotos Pakjo	Rama Wijaya	Jalan Puncak Sekuning, Gang Family 2 No. 112, Palembang	Active
4.	Pempek Kentang	Indah Pratiwi	Jalan Kebun Bunga Km. 9 Lorong Nusa Indah Palembang	Active
5.	Kue Oleh-oleh Harum	M. Mardhotilla	Jalan P.A.K Abdurrohim Lorong Roda No. 831 Talang Semut, Bukit Kecil, Palembang	Active
6.	Dapur Ita	Romita	Jalan Kembang No. 087 Kelurahan Kebun Bunga Kecamatan Sukarame, Palembang	Active
7.	Kedai Nasi Bakar Ayam Batubara	Ahmad Rahmathallia	Jalan Lunjuk Jaya, Lorok Pakjo Kecamatan Ilir Barat I, Palembang	Active
8.	Kosan Studio	Lana Saputra	Jalan Puncak Sekuning Gang Family 2 No. 112, Palembang	Active
9.	Konveksi dan <i>Merchandise</i>	Marsella Putri	Jalan R. Soeprapto No. 11 Bukit Besar, Palembang	Active

No.	Business Name	Owner	Location	Student Descriptive
10.	<i>Eco-Print Colection</i>	Annisa	Jalan Srijaya Negara No. 2 Bukit Besar, Palembang	Active

#### 4 Result and Conclusion

The output product of this research activity produces an entrepreneurial incubator application in achieving business sustainability (Sustainable Entrepreneur) which is planned to be named SEN-STORE standing for Sustainable Entrepreneur Student Incubator, an application that is used as a means of business incubation for universities and entrepreneurial students in supporting entrepreneurship development in the campus environment to facilitate young entrepreneurs to create new jobs and alleviate problems related to unemployment. SEN-STORE will be designed in the form of a web-based application. Highlighting the entrepreneurship program with the concept of Sustainable Entrepreneur Student Incubator combined with PMW (Entrepreneurial Student Program), an entrepreneurial program focused on State Polytechnic of Sriwijaya students in an effort to overcome several challenges related to the phenomenon of business failure. The entrepreneurship development program in Higher Education is implemented in the form of a Student Business Incubator which is a program with a mission to encourage the sustainability of entrepreneurship development among students, through an integrated program involving the Incubator management lecturers, resource persons and entrepreneurial institutions outside the campus. The Student Business Incubator explores entrepreneurship coaching to students who are starting new businesses and alumni.

The design of this SEN-STORE (Sustainable Entrepreneur Student Incubator) is described in the following flowchart (see Fig. 1 and Fig. 2).

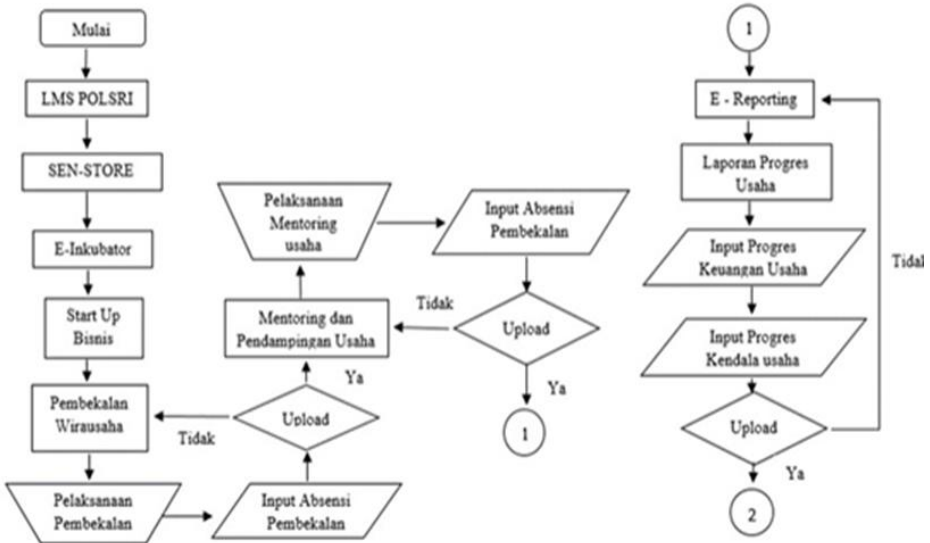


Fig. 1. Flowchar of SEN-STORE Application System

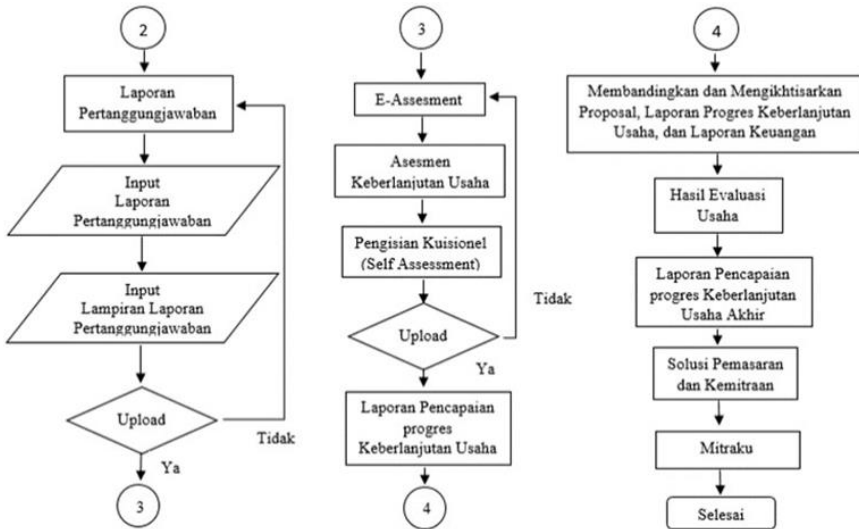


Fig.2. Flowchart of SEN-STORE Application System

The following is the display at the proposed SEN-STORE (Sustainable Entrepreneur Student Incubator) application (see Fig 3 to Fig. 9).

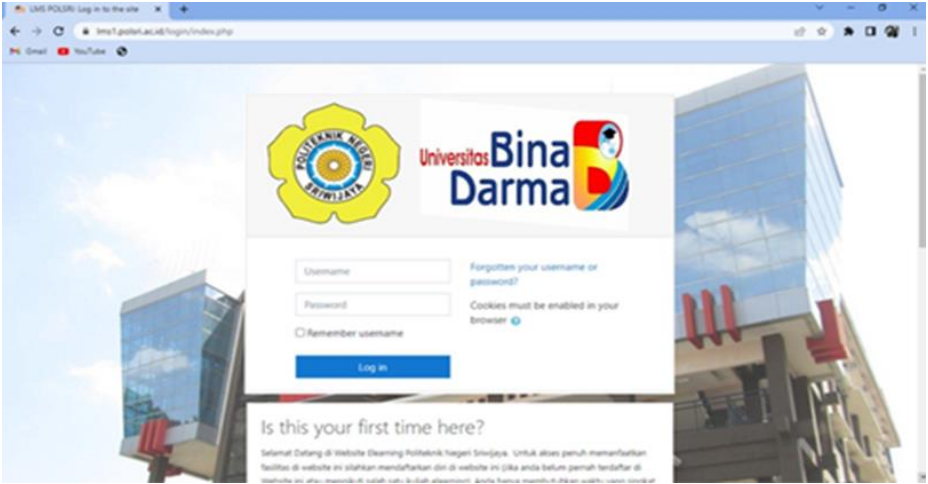


Fig. 3. App Home View

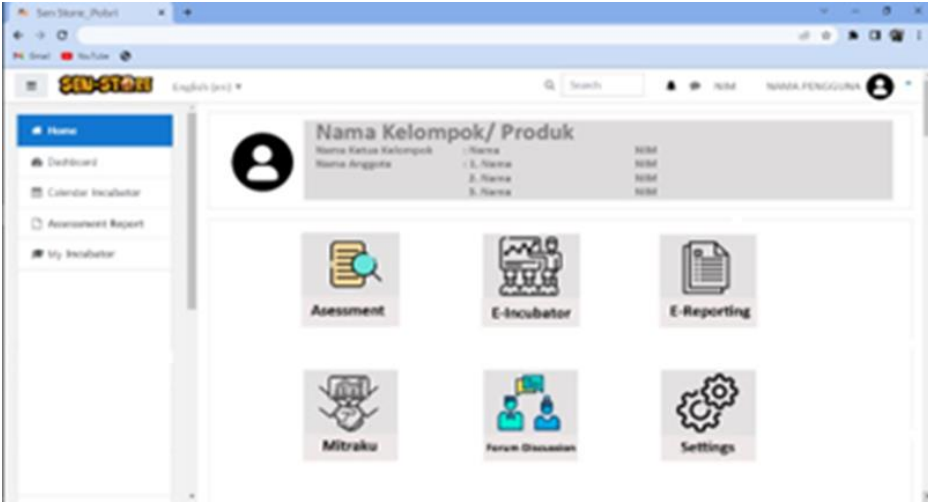


Fig. 4. Application Dashboard Display



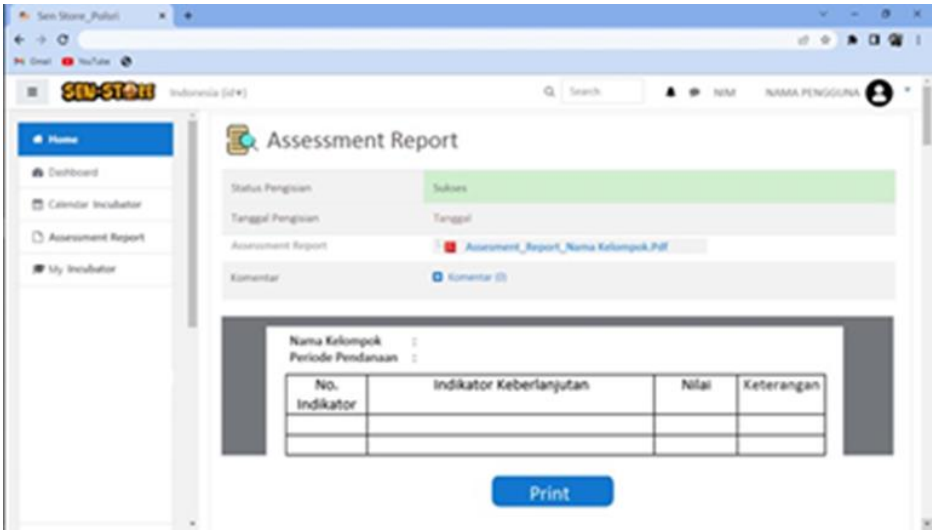


Fig. 5. Assessment Feature Display

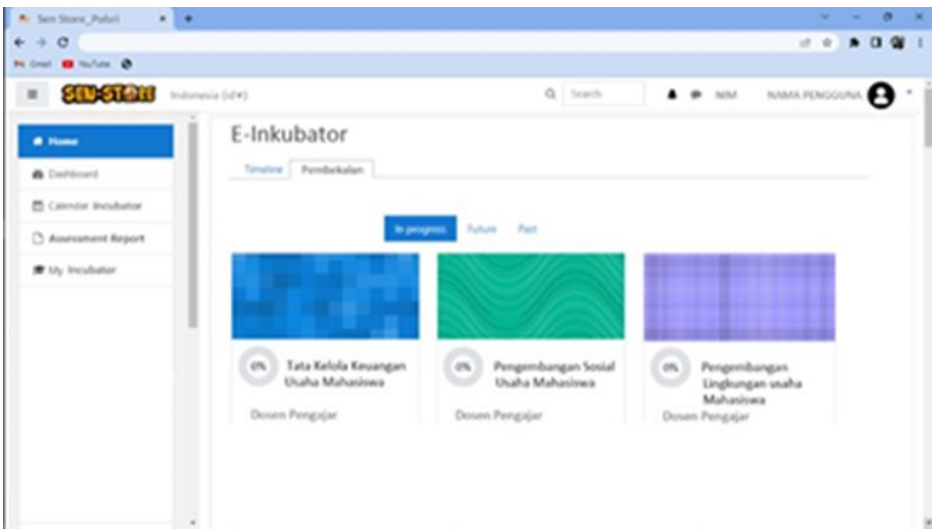


Fig.6. E-Incubator Feature Display

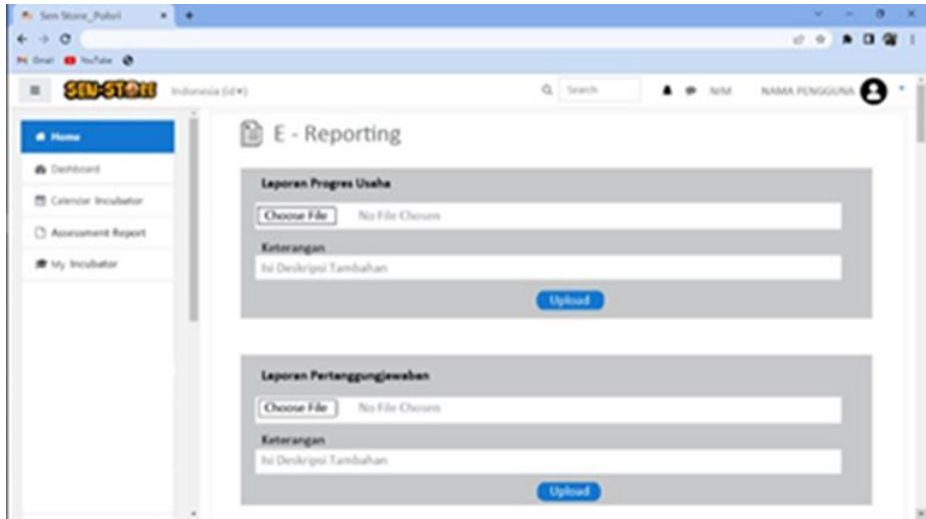


Fig. 7. E-Reporting Feature Display

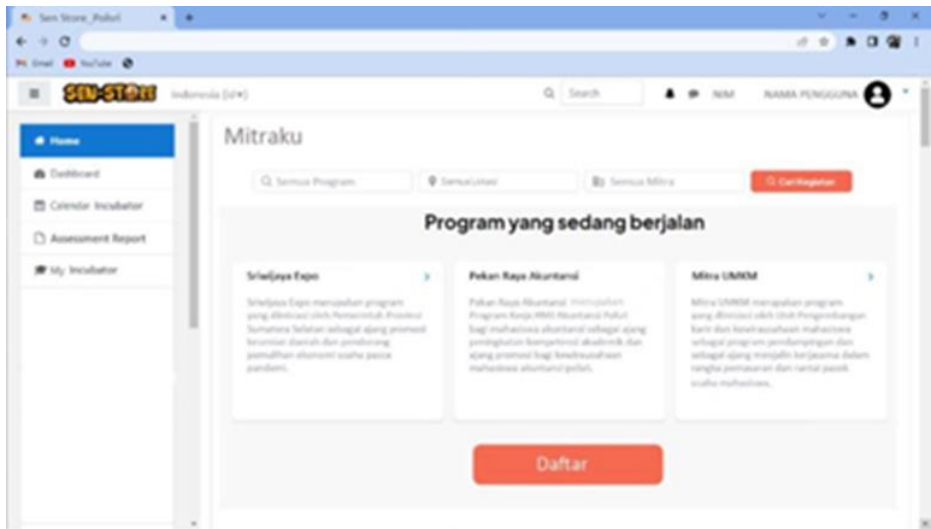


Fig. 8. My Partner Feature Display

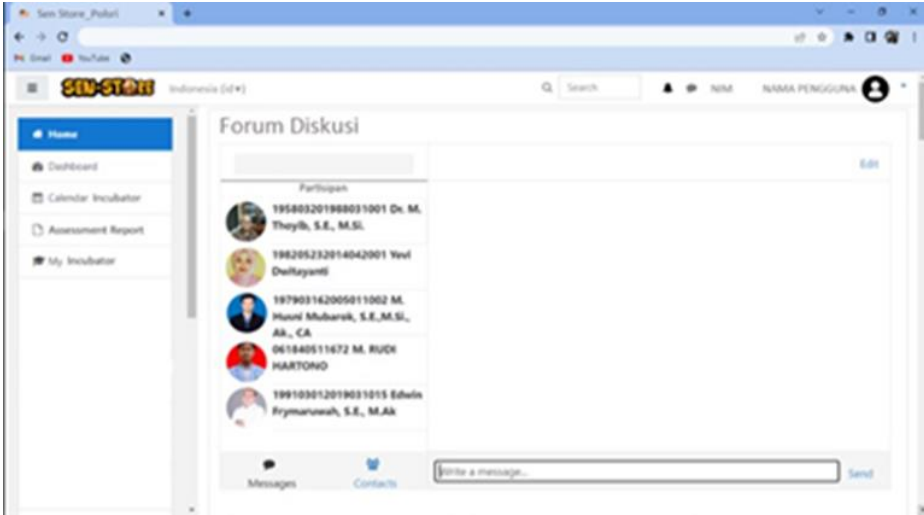


Fig. 9. Discussion Forum Feature Display

## 5 Conclusion

From the previous description, it can be concluded that:

1. To find out the failure of student business sustainability in the university environment, interviews with the in-depth interviews method are conducted. Based on the results, various factors cause the failure of student business sustainability in the form of difficulties in marketing products, lack of support from the environment around entrepreneurial students, difficulties in business management, and lack of supervision and mentoring.
2. The process of designing the Sustainability Entrepreneur Student Incubator (SEN-STOR) application system in improving the sustainability of student businesses in the university environment consists of planning, data analysis, system development, implementation, and evaluation consisting of five features namely E-Incubator, E-Reporting, Partners, and Discussion Forum.

Based on the results of the discussion and conclusions above, the suggestions in this research are as follows:

1. Entrepreneurial students and institutions can implement the Sustainability Entrepreneur Student Incubator (SEN-STOR) application system to improve the sustainability of student businesses after the Student Entrepreneurship Program (PMW) as a step to improve industry links through the creation of new jobs for vocational education alumni.
2. The student affairs unit of the Higher Education Institution or Polytechnic can form a special unit to implement and manage the application program in an effort to increase the usefulness of the SEN-STOR application during implementation.
3. The student affairs unit at the university or polytechnic is expected to provide a place for entrepreneurial students to market and promote their business products at

either the campus or various events held around the campus or Palembang city in particular.

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