

CHAPTER 1

INTRODUCTION

1.1 Background

Data from the 2021 SEA e-Conomy report compiled by Google, Temasek, and Bain & Company proves positive growth in all sectors of the digital economy in Southeast Asia where the E-commerce sector itself is the sector with the highest growth[1].

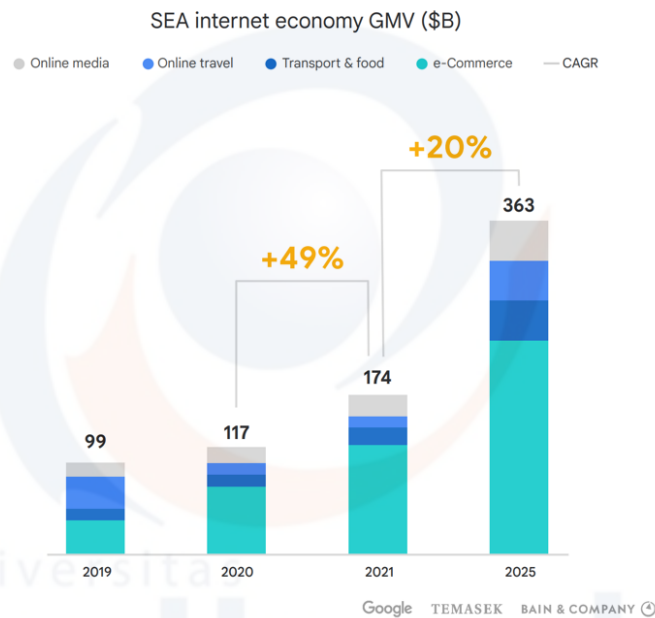


Figure 1.1 Digital Economic Growth in Southeast Asia (SEA e-Conomy)

Figure 1 above shows the growth of the digital economy in Southeast Asia in the last year recorded GMV (Gross Merchandise Value) or the total value of digital economic sales in Southeast Asia rose 49% where the total sales value in 2020 was \$ 117 billion and in 2021 total sales from digital economy in Southeast Asia to \$174 billion. The growth of the digital economy is also predicted to reach \$363 billion by 2025.

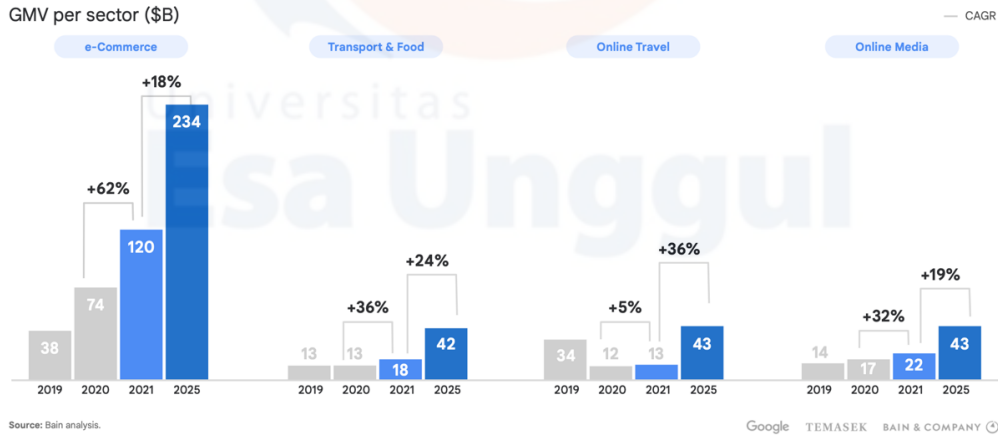


Figure 1.2 Digital Economic Growth in Southeast Asia in Each Sector (SEA e-Conomy)

The growth of the digital economy in Southeast Asia is led by sales growth in E-commerce where the total value of sales has almost doubled year-on-year, from \$74 billion in 2020 to \$120 billion in 2021. E-commerce is also predicted to have the highest sales growth in 2025.

One of the methods that many do in conducting electronic trading transactions on the web is online auctions. According to Ignatius Untung, Chairman of the Economics and Business Sector of the Indonesian E-Commerce Association (IDEA) in the national auction work meeting, the potential for auctions in the E-commerce industry is very promising. This is also supported by the development of E-commerce which is experiencing strong growth [2].

Many websites such as Ebay, and Priceline.com conduct auctions on the web to bring together bidders and asset owners for the various products auctioned. According to Baikeurikar et al, the online auction method provides an opportunity to both buyers and sellers. Where online auctions provide a platform to sell products in a fast and time-controlled way but also at competitive and flexible prices [3].

However, the electronic auction system still has many disadvantages, one of which is in terms of security and trust between the parties who conduct the auction. In electronic auction systems the most critical security issue is the lack of trust between such parties as sellers, buyers and auctioneers. Coalitions, anonymity, and the connectedness of the online environment can lead to wrong transactional behavior such as buyers being able to unilaterally cancel auctions or refuse to pay the asking price, or fraud committed by sellers to increase the price of items at auction [4].

Fraud that often occurs in electronic auctions today is found in various platforms providing electronic auctions, such as Shill Bidding, Multiple Bidding, Unilateral Cancellation, and others [5], [6].

In addition, in electronic auction systems transaction records and personal data of auction participants are stored in a centralized database so that they are vulnerable to manipulation, data loss, and data theft committed by irresponsible parties [7].

With the implementation of smart contracts, data will be stored in a decentralized manner. The data shared is only information needed to make transactions such as the addresses of the sender and recipient and the amount of funds sent. Smart contracts work as third parties or auctioneers who will automate auction transactions.

Based on this, a decentralize application based on blockchain technology is designed that is integrated with smart contracts on the Ethereum network to automate the auction process so as to avoid fraud in the electronic auction process.

1.2 Problem Identification

The identification of the problems that will be discussed in this Final Project proposal are:

1. How to build a decentralized online auction application system
2. How to involve blockchain technology in building an electronic auction system so that it can avoid fraud

1.3 Research Objectives

This research aims to:

1. Develop a decentralized electronic auction system using blockchain technology
2. Avoiding fraud or manipulation in electronic auction transactions by using blockchain technology

1.4 Limitations of Problem

Based on the background stated above, the scope can be identified as follows:

1. Analyze transaction process of traditional auction.
2. Designing an electronic auction system in a decentralized manner using blockchain.
3. Develop an electronic auction system in a decentralized manner using blockchain.
4. Analyze the built system.

1.5 Research Benefits

The benefits of this Final Project are as follows:

1. Avoid fraud from irresponsible bidders who refuse to make payments or unilateral cancellations.
2. Reducing the existence of fraud committed by asset owners as a fictitious bidder.
3. Avoid having certain bidders raise prices in auctions to lure genuine buyers into entering high prices.
4. Prevent irresponsible parties from trying to tamper with the data of bidders.
5. Prevent irresponsible parties from trying to enter the system to manipulate the results of the auction.
6. Increase transparency in the auction process

1.6 Thesis Writing Systematics

The systematic writing is conducted to make the final project report writing easier. The systematics of writing is consist of:

CHAPTER I INTRODUCTION

This chapter explains matters consisting of background, problem identification, goals, problem limitations, benefits, and systematics of writing a Final Project report.

CHAPTER II LITERATURE REVIEW

This chapter contains theories related to the development of DApps using blockchain technology for the development of electronic auction systems.

CHAPTER III RESEARCH METHODS

This chapter explains the explanation of the methods used for system development.

CHAPTER IV RESULTS AND DISCUSSION

This chapter contains the results of the design and development of an electronic auction system using Ethereum smart contracts based on blockchain technology.

CHAPTER V CONCLUSIONS AND SUGGESTIONS

This chapter contains the conclusions of research in system development and suggestions for maximizing subsequent research.