The Use Of Smart Contracts For Third-Party Comparison Web Logistics

Nataniel Albert Angstein[1, a)] and Joniarto Parung, [2, b)]

Author Affiliations
12 Department of Industrial Engineering, University of Surabaya, Raya Kalirungkut, Surabaya 60293, Indonesia

Author Emails

a) nataniel241299@gmail.com
b) Corresponding author: jparung@staff.ubaya.ac.id

Abstract. As the global economy continues to grow, more companies are outsourcing their logistics activities to third-party logistics (3PL) providers. This is because consumers have a high demand for various types of goods delivery, including for small and large packages, light and heavy items, and so on. As a result, package delivery services have become more competitive, offering a range of services to meet these diverse needs. However, this increase in competition has also made it more important for consumers to carefully consider their options and choose a delivery service that is efficient, cost-effective, and reliable.. The solution is to use a logistics recommendation system and smart contracts that allow consumers to easily determine and order logistics services according to their needs. Therefore, in this study the author want to state that this paper as proposed paper.

INTRODUCTION

Along with the development of global economic services, the subcontracting of logistics activities on the part of 3PL is increasing (3). According to a survey of about 2,000 executives by (5), more than 45 percent of shipping and transportation logistics and 39 percent of warehouse logistics are outsourced to 3PL providers, given the trend regarding logistics subcontracting policies that will continue to grow (7). The complexity of the services provided by 3PL will later contribute to the development of the industrial world in the future (3). However, in an era of increasingly fierce competition, only service businesses that have high quality can compete in the global era (14). To continue to grow, 3PL must conduct a review related to the proportion of performance value to improve service competencies to be more responsive to consumer needs (26). Consumer needs are an important reason for the development of 3PL services (15). Service Provider is required to always develop service innovations to achieve customer satisfaction (2).

Along with the high public demand for the delivery of goods, thus the marketing of goods delivery services has also increased. The very high public needs for various forms of delivery of goods, from light to heavy or small or large volumes, the types of goods delivery services offered by these services are increasingly varied. However, now there have been many packages delivery services that compete in providing the best service with the distance of adjacent places. Third Party Logistics (3PL) is an outside company that provides outsourcing services in the form of logistics services to companies to integrate, coordinate, and manage functions in the supply chain management chain. 3PL faces great pressure in meeting consumer needs, as consumers demand a high level of their delivery time and place at a low price (4). According to (12) that the delivery of goods is estimated to be 40% or as many as 28 respondents feel dissatisfaction in the selection of delivery services to be used. It can be said that the problems that occur on average during the process of shipping goods. This dissatisfaction occurs because there are no supporting facilities for selecting delivery services that will be used effectively and efficiently, thus making consumers feel dissatisfied with their choice

because it is not in accordance with what is desired. In addition, consumers also complained about not being able to minimize the shipping costs. This is because they do not know the factors (weight of the shipment, form of packaging, the expedition chosen, the length of time chosen, and so on) that can affect the total shipping costs, as well as the price variance offered by the delivery service, both delivery of goods in small and large capacities. Consumers also often complain about the complicated process in the process of ordering logistics delivery services so that consumers prefer to use logistics delivery services that are "commonly" used instead of those that suit consumer needs. Along with the development of industry 4.0, blockchain technology can be used to solve existing problems. The solution is by using a logistics recommendation system and smart contracts that allow consumers to easily determine and place orders for logistics services according to their needs. According to (9) "The recommendation system is a method of providing recommendations by predicting the value of an item for a user and then presenting the item with the highest predicted value. A smart contract is a computer program that has self-verification, self-executing, tamper-resistant properties. The concept of smart contracts was proposed by Nick Szabo in 1994. This allows executing code without third parties. A smart contract consists of value, address, function, and state. Therefore, in this study, the author aims to apply smart contracts to the logistics service comparison website so that consumers can choose and order logistics services more easily.

Based on the background that has been described above, the problem can be formulated in this study, namely, how to make recommendations for the choice of third-party logistics services in real time, transparent and acceptable to all stakeholders by using the website as a facility.Finding recommendations for logistics services using smart contracts to make it easier for freight forwarders / customers to make selections and ordering logistics delivery services. Previous research serves to analyze and enrich the discussion research, as well as distinguishing it from the research that is being carried out. Deep the study included five previous research international journals that related to the concept of brand image.Comparing the results of relevant and previously conducted research that can be shown from the differences in some of the existing characteristics. The journals include; (Andika. 2017) Determination of goods delivery services using the filter feature application in the online shop service system and didn't use smart contract. (Arumugam et al. 2018) The use of IOT in smart logistics using smart contracts to propose a solution smart logistics that encapsulates smart contracts, planners logistics, and monitoring of asset conditions in the Chain Management area Supply. (Prause. 2019) Use of smart contracts for smart supply chain to know how and to what extent smart contracts and blockchain technology can facilitate the implementation of collaborative business structures for sustainable entrepreneurial activities in smart supply chains.

LITERATURE REVIEW

Third party logistics (3PL) is an outside company that provides outsourcing services in the form of logistics services to companies to integrate, coordinate, and manage functions in the supply chain management to facilitate the handling of resources, production processes, and distribution of finished products that are ready for sale (13). While outsourcing is a job that is in an agency / company, but is done by parties from other companies, who have expertise in a certain field of work. The position of the third party or 3PL between the first party and the second party, so it can be concluded that the third party is a person or party as a substitute for the first party, who is bound by an agreement, employment contract, law, and so on. This third party oversees handling the flow of goods as a substitute for the sender or receiver, so it can be said that the third party can play the role of the first and second parties. Usually, 3PL service providers sell services in the warehousing and transportation departments or are tailored to the needs of the service users. 3PL providers can also contribute to improving customer satisfaction and provide access to international distribution networks (3). The most frequently cited risks are associated with loss of control over logistics functions and loss of internal capabilities and customer contacts (24). However, it is common for shippers to use a mixed strategy regarding logistics and maintain important logistics activities (e.g., order management) at home (16). Although it is reported that 3PL users increase their flexibility with respect to market changes (investment) and demand (volume flexibility), the lack of response to customer needs is also referred to as outsourcing problems (25). However, cost reductions do not always materialize due to unrealistic cost structures proposed by service providers (27); and even if realized, it can be offset by the provider's margin (16). Evaluating cost savings can be difficult due to the sender's lack of awareness of internal logistics costs. Indeed, the outsourcing option can be chosen to provide an indication of in-house costs and serve as an external benchmark for logistics efficiency (28).

The basic way for TPL providers to add value is to achieve operational efficiency at a higher level than others (especially customers) will be able to and thus provide a better performance/cost ratio. Most TPL providers excel in a

niche way to add this value, as this is the core of their business. The driver for value creation in this case is primarily the factor cost, which is usually lower than the cost of the customer. One example of added value through operational efficiency is to run a warehouse efficiently. Good facilities, equipment and operational skills are required. In more advanced examples in this category, such as coordinating a number of logistics activities, skills in the field of information technology (IT) are also required, since coordination is generally achieved through IT devices.

Although not as large as some industries have expected, the Third-Party Logistics (TPL) industry is currently large in size and experiencing rapid growth. Therefore, it is worth studying on your own, also because of the different requirements placed on logistics in such a comparison service as transport. The challenge TPL providers face is providing services that add more value to their customers' businesses than their own customers can achieve. From the previous section, it's clear that services and solution providers have different ways of adding value to their customers. Service providers need to find customers whose requirements match the standard services they offer. This will allow providers to benefit from increased economies of scale, risk sharing and leveling volatility. New resources from additional clients can be used to improve efficiency, since management's attention is not spread on many different logistics operations, and to further increase the margin and performance/cost ratio provided.

Customer expectations are a form of trust from customers by having their own standards in assessing a product before buying it (8). According to (11), there are three levels of customer expectations, namely:

a. Will Expectation, is an average level and quality that is predicted based on all the information obtained. When a customer says, "this service can fulfill all my wishes", it means that the service is better than they previously predicted.

b. Should Expectation, is everything that is felt by customers as they should get so that a transaction process will arise.

c. Ideal Expectation, is everything that will happen at the best of circumstances. So, it can be said that if customer expectations have been met, customer satisfaction will be achieved. Satisfaction can be interpreted as an effort to fulfill something desired. The word satisfaction or satisfaction comes from the Latin satis (good enough or adequate) and facio (do or make). Viewed from the perspective of consumer behavior, the term customer satisfaction has become a central concept in marketing theory in providing a product and has become one of the goals for business activities.

According to (9) "The recommendation system is a method of providing recommendations by predicting the value of an item for a user and then presenting the item with the highest predicted value. This system was originally a method of information filtering, a method of filtering information because of too much information on the internet and media. The user enters some information into the system, for example, what he likes or does not like. The system then creates a user model based on input from the user. This user model is then used by the system in computing to sift through so much information availableand will generate recommendations to be presented to the user."

A smart contract is a computer program that has self-verification, self-executing, tamper-resistant properties. The concept of smart contracts was proposed by Nick Szabo in 1994. This allows executing code without third parties. A smart contract consists of value, address, function, and state. It takes a transaction as input, executing the appropriate code and triggering an output event. Depending on the state of the implementation logic of the function is a change. Since 2008 when blockchain technology emerged through the Bitcoin cryptocurrency. The importance of smart contract integration from blockchain technology is an area of focus to develop because it provides peer to peer transactions and databases can be maintained publicly in a secure manner in a trusted environment. Smart contracts are traceable and immutable. All transaction information is present in the smart contract and executed automatically. The Solidity programming language is used to implement smart contracts across various blockchain platforms. Some of the characteristics of smart contracts are:

- Smart contracts are machine-readable code executed on a blockchain platform
- Smart contracts are part of one application program
- Smart contracts are event-driven programs
- Smart contracts are autonomous once created, do not need to be monitored
- Smart contracts are distributed

RESEARCH METHODOLOGY

The research method serves to focus the research so that throughout the course of the study, the steps carried out are systematic and structured to achieve the research objectives. The following is the research methodology used in this study. There are 3 questions for research question: how smart contract can be used on the logistic service

comparison web, how to decide the logistics service to choose, and last will the use of smart contract on the comparison web make is easier and shorter for the order process. From 3 questions above we must found needed data like (smart contract usage data, price and location data from 3pl, and running time data from the website). How steps to find the data and expected results are include too.

RESULT AND DISCUSSION

This research has found that it is possible to implement the use of smart contracts in a third-party logistics comparison website. This system utilizes a website as a facilitator to help consumers select and order logistics services for their goods. The goal of this research was to create a recommendation system for logistics services using smart contracts and a website as a facilitator, in order to make it easier for consumers to choose the best logistics service for their needs.

CONCLUSION

Smart contracts are a promising technology in providing a transparent 3PL supply chain, but many barriers and challenges still hamper its popularity in logistics supply chains. However, smart contracts with their main characteristics: decentralization, anonymity, transparency, and traceability, can change the traditional comparison web for the better. Comparison web for 3PL using smart contract resulting in transparency and full so customer can be helped when they are confused about choosing a third-party logistics service without the need for intermediaries who extend and complicate the process of ordering third-party logistics services. not only consumers but logistics service providers are also helped to get customers who match the target they want In future research, we plan to continue the creation of TPL peer webs using smart contracts. It is hoped that this research can help future research that discusses the relationship or implementation between smart contracts, third-party logistics, and comparison web.

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