

Enterprise Resource Planning for Outsource Logistics Companies: A Systematic Literature Review

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Abstract

This research is aimed to give the outsourcing logistics companies a clear view on having information system for their work process, especially Enterprise Resource Planning.

This research is based on systematic literature review of academic journal that can be found in Google Scholar. The review itself based on these topics: information system, enterprise resource planning (ERP), outsource logistics, third party logistic (3PL), benefit of having ERP, critical factors to implement ERP, business sustainability through ERP.

Practically this research will lead outsourcing logistics companies to have a good information system, especially ERP for their work process. Additionally, the outsourcing logistics companies know how to implement the system in the company and prepare things while the system is being prepared.

This research is having a limitation on reviewing the academic journal, only in a period of 2017 to 2022 to have its novelty. It gives future researchers to have a broad result by broaden the period of reviewing time.

Keywords

Information system, ERP, Outsource logistic, 3PL.

1. Introduction

Outsource logistic services; known as Third Party Logistic (3PL) is taking more and more role in various type of industries. Companies are using 3PL services in order to get some benefit such as having more efficiency in transportation, warehouse management and additional services with added value in logistics (Kale, 2021). To be able to give those beneficial things, 3PL companies are encourage increasing their level of services. One of them is by using an information system in their work process. Defined as a compilation of interrelated elements which gather, process, keep and share information in order to make an outcome and manage them in an institution, information system grant their user in having a costs and failure reduction and enhance the information flow between all departments (Kiba-Janiak & Cheba, 2019). Enterprise Resource Planning (ERP) is one of the most advanced information systems currently available for use by the 3PL companies.

The purpose of this research is aimed to give the outsourcing logistics companies a clear view on having information system for their work process, especially Enterprise Resource Planning.

2. Literature Review

Third Party Logistic (3PL) as an outsourcing logistic services company are having increase in demand nowadays. The COVID-19 pandemic situation has changed the way of people or institutions conduct a procurement. The pandemic

also helps to increase the demand for outsourced logistics services especially 3PL, including in Vietnam. 3PL are needed to have a reliable and good distribution times, reduce logistics cost, good networking management and improve customer satisfaction (Wang et al., 2021). In Brazil, they outsourced their logistics activity to be able to lower costs, strengthen their achievement, inflate quality services and boost their customer satisfactory (Da Silva et al., 2019). In India is quite similar. Some institutions especially automobile industry is comfort to use 3PL services to gain their efficient and effective performance. They find out that having outsourced their logistics activity to 3PL can lower the cost regarding stocks and improve the lag of shipment (Kale, 2021). Turkey also fond for 3PL offers. They carefully select where to outsourced their logistics activity to those who could give a competitive cost without neglecting their quality of job (Ecer, 2018). Oil and gas industry in Nigeria also find that outsourced their logistics activity to 3PL is feasible as long as the 3PL can collaborate and manage teamwork between other oil companies and local merchant (Etokudoh et al., 2017). In China, the benefit of having 3PL as outsource logistics is undebatable. But they emphasize on 3PL who has specific asset or resource and technology would succeed in the competition (Yuan et al., 2020).

Along with high demand and benefit of having 3PL as outsource logistics, 3PLs should improve themselves to win the competition and having their business sustain. One of the ways to win the competition for 3PLs is to have reliable information technology. Information technology or information system is a key aspect in having a handle-able and adequate logistics (Setiabudi & Wydiadana, 2019). Having a reliable information technology can affect supply chain performance on winning a competition (Riyadi et al., 2021). Information technology also can be tools to share information needed between user and 3PL as a supply chain management (SCM). By having an information technology as an information management system can support and create an everlasting success to SCM (Jermsittiparsert & Rungsrissawat, 2019). Another important factor by having an information system is creating an integration of SCM and sales and operation planning (Rokonuzzaman, 2018). Therefore, selecting a good and applicable information technology is important to 3PL since it will gave a powerful impact and competitiveness to 3PL companies (Omotayo & Melan, 2017).

Enterprise Resource Planning (ERP) is a consolidated information system that used to help work process in an institution to get more efficient and effective result (Marsudi & Pambudi, 2021). If an institution use ERP in their work process, then the work will become more efficient and effective since it allows the exchange of information and collaboration with all section in the company (Schlichter, Klyver, & Haug, 2020, as cited in Marsudi & Pambudi, 2021). Institution need ERP to build work process management in actual time to compete with others (Shukor et al., 2020). The main reason for using ERP in institution is to coordinate all section in getting a better flow of information exchange between sections in the institution (Rainer & Cegielski, 2013, as cited in Marsudi & Pambudi, 2021). Several research conducted to find the benefit or impact of ERP in supply chain or logistic work. Muscatello et al., 2018, found that regarding logistics cost, ERP systems put different information problems in one institution and arrange them to erase supply chain sub-optimization (Muscatello et al., 2018). Moreover, when ERP system is being enhanced, organization performance would be more escalated. Since it, consolidate vendor into the system. Green supply chain management would increase institution performance (Tarigan et al., 2021).

However, implementing an ERP system is not an easy job. It is a complicated, challenged, pricey and gradually project (Al-Mashari & Al-Mudimigh, 2003; Xue et al., 2005, as cited in Reitsma et al., 2018). In fact, many of the implementing project were fail meet its capacity, cost and time frame (Huang et al., 2004; Mu et al., 2015, as cited in Reitsma et al., 2018). The cause of failure is known as Critical Success Factors (CSF). To increase the possibilities of having a successful project of implementing ERP in one institution, it is important to figure out these CSFs and how they impact the result (Huang et al., 2004, as cited in Reitsma et al., 2018). These CSFs are different in every institution. It is important to study them and find the appropriate CFS to have the project succeed implemented in an institution. According to (Reitsma et al., 2018) there are seven CSFs categorized as crucial according to user viewpoint, which is team member of the project, expertise capabilities, decision-making method, guidance and education, minimum custom-made, software trial and evaluation. Different perspective come from (Aini et al., 2020). They are emphasized more on change management in institution as critical factor for having ERP implemented. Therefore, preliminary communication with workers and staffs should be done to diminish the refusal. To manage the changes, it is important to know what and who have affected by implementing the ERP system. According to (Aini et al., 2020) the impact should take place on person, quality of information, teamwork, institution, support from top level, quality of third party, quality of system, guidance and education, rearrange work process, managing project and ERP adaption. Those aspects categorized as positive impact for successful ERP implementation. (Kiran & Reddy, 2019) has similar critical factor for implementing ERP in SMEs, including strong commitment from institution, support from top level, minimum custom-made system, effective communication within all shareholder, and suitable

ERP software and modules. (Aboabdo et al., 2019) try to broaden the factors to implement ERP in Construction Company and found that there are twenty-six (26) factors would affect the implementation. However, the most critical factors to a successful ERP implementation are appreciation and support from the top level, good guidance and education for users, and the composition of project team member.

3. Methods

This research is based on systematic literature review of academic journal that can be found in Google Scholar. A systematic literature review is an accurate analysis of a research outcomes (Kitchenham, 2004; Okoli & Schabram, 2010, as cited in Iden & Eikebrokk, 2013) . The review itself based on these topics: information system, enterprise resource planning (ERP), outsource logistics, third party logistic (3PL), benefit of having ERP, critical factors to implement ERP, business sustainability through ERP. About nine hundred and seventy-five (975) research papers were found in the Google scholar for the key words information system, ERP, outsource logistics, 3PL, benefit of ERP, critical success factor ERP and sustainable through ERP in a period of 2017 and 2022, but only nineteen (19) papers were used to compile this paper. As seen on the Figure 1.

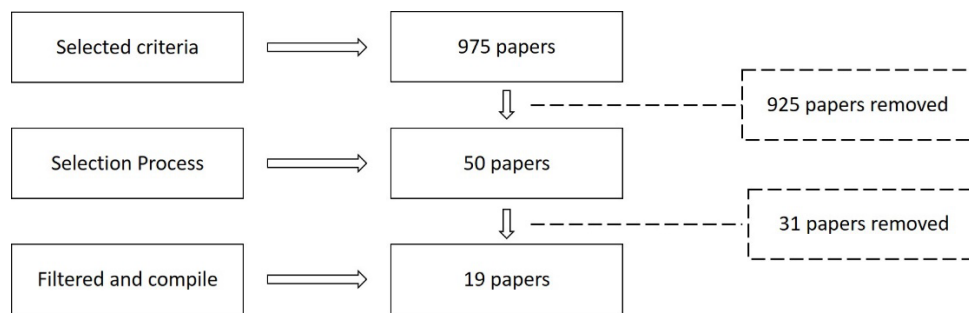


Figure 1. Survey Literature Review Method

4. Data Collection

After searching journals from Google Scholar based on selected criteria, fifty (50) papers were selected and ready for final filter before it being compiled. Eventually, 19 journals were selected to make this Survey Literature Review. The 19 journals can be seen in Table 1.

Table 1. Citation for this research

Classification	Country	Conclusion	Citation
Benefit of 3PL	Nigeria	In Nigeria outsourced logistics activities to 3PL is feasible but to have more benefit the 3PL should collaborate and manage teamwork between other companies akin and local merchant	(Etokudoh et al., 2017)
	Turkey	3PL's selected to outsource logistics activity to give a competitive cost without neglecting their quality of job	(Ecer, 2018)
	Brazil	Institution outsourced their logistics activity to be able to lower costs, strengthen their achievement, inflate quality services, and boost their customer satisfactory	(Da Silva et al., 2019)
	China	To succeed in a competition, an organization choose 3PL to do their logistics activity which has specific asset or resource and technology	(Yuan et al., 2020)
	Vietnam	3PL are needed to have a reliable and good distribution times, reduce logistics cost, good	(Wang et al., 2021)

Classification	Country	Conclusion	Citation
Information Technology	India	networking management and improve customer satisfaction Institutions especially automobile industry are comfort to use 3PL services to gain their efficient and effective performance. They find out that having outsourced their logistics activity to 3PL can lower the cost regarding stocks and improve the lag of shipmen	(Kale, 2021)
	Malaysia	Selecting a good and applicable information technology is important to 3PL since it will give a powerful impact and competitiveness to 3PL companies	(Omotayo & Melan, 2017)
	Bangladesh	Another important factor by having an information system is creating an integration of SCM and sales and operation planning	(Rokonuzzaman, 2018)
	Indonesia	To win the competition, 3PLs has to have a reliable information technology or information system since they are the key aspect in having a handle-able and adequate logistics	(Setiabudi & Wydiadana, 2019)
	Vietnam	By having an information technology as an information management system can support and create an everlasting success to SCM	(Jermsittiparsert & Rungsrissawat, 2019)
Impact of ERP	Indonesia	Having a reliable information technology can affect supply chain performance on winning a competition	(Riyadi et al., 2021)
	USA	ERP systems put different information problems in one institution and arrange them to erase supply chain sub-optimization	(Muscatello et al., 2018)
	Malaysia	Institution need ERP to build work process management in actual time to compete with others	(Shukor et al., 2020)
	Indonesia	The main reason for using ERP in institution is to coordinate all section in getting a better flow of information exchange between sections in the institution so the work will become more efficient and effective.	(Marsudi & Pambudi, 2021)
Critical Success Factor	Indonesia	When ERP system is being enhanced, organization performance would be more escalated increase institution performance	(Tarigan et al., 2021)
	Pakistan	There are seven CSFs categorized as crucial according to user viewpoint, which is team member of the project, expertise capabilities, decision-making method, guidance, and education, minimum custom-made, software trial and evaluation	(Reitsma et al., 2018)
	India	Critical factor for implementing ERP in SMEs, including strong commitment from institution, support from top level, minimum custom-made system, effective communication within all shareholder, and suitable ERP software and modules	(Kiran & Reddy, 2019)
	KSA	There are twenty-six (26) factors would affect the implementation. However, the most critical factors to a successful ERP implementation are appreciation and support from the top level, good guidance and education for users, and the composition of project team member.	(Aboabdo et al., 2019)

Classification	Country	Conclusion	Citation
	Indonesia	The impact of ERP implementation should take place on person, quality of information, teamwork, institution, support from top level, quality of third party, quality of system, guidance, and education, rearrange work process, managing project and ERP adaption. Those aspects categorized as positive impact for successful ERP implementation	(Aini et al., 2020)

From Table 1, people see the benefit and important thing of having 3PL throughout the countries. But 3PL need a suitable system such as information technology to support their work. One of that suitable system that suit 3PL work is Enterprise Resource Planning or ERP. But implementing ERP system is one different challenge to an organization. People need to know the critical factor to succeeded implemented the system. By knowing the critical factor or critical success factor, implementing ERP system in one organization is no longer a big issue.

5. Results and Discussion

5.1. Result

As the result of this survey literature review, journals were classified into several topics and aim to form the research, as seen on Table 2, 3, 4, and 5.

Table 2. Benefits of 3PL

Point	Ecer, 2018	Da Silva et al., 2019	Yuan et al., 2020	Wang et al., 2021	Kale, 2021
Reliable and good distribution time				√	
Reduce logistics costs	√	√		√	√
Good network management				√	
Improve customer satisfaction		√		√	
Strengthen their achievement		√			
Inflate quality services		√			
Gain effective and efficient performance					√
Improve stocks management					√
Improve lag of shipment					√
Asset and technology management			√		

Table 2 tells us what benefit of having 3PL. Most of that research put reducing logistics cost as the most benefit of having 3PL to their organization.

Table 3. 3PL sustainable business through information technology.

Point	Omotayo & Melan, 2017	Rokonuzzaman, 2018	Setiabudi & Wydiadana, 2019	Jermstittiparsert & Rungsrisawat, 2019	Riyadi et al., 2021
Key aspect in having a handle-able and adequate logistics			√		
Affect supply chain performance					√
Sharing information needed between customer and 3PL	√				
Create an everlasting success in supply chain management				√	
Integrate supply chain management with sales and operation planning		√			

Table 3 give us information on why information technology having helps the business sustained. What information technology can do in helping our business last longer.

Table 4. Enterprise Resource Planning (ERP) as a good information technology or system

Point	Muscatello et al., 2018	Shukor et al., 2020	Marsudi & Pambudi, 2021	Tarigan et al., 2021
Efficient and effective work process		√		
Exchange information and collaborate inter section			√	
Erase supply chain sub-optimization	√			
Escalate institution performance				√

Why ERP is a good information technology system for an organization can be seen on Table 4. Having work process more efficient and effective is one of the reasons on having an ERP system.

Table 5. Critical success factor for a successful ERP implementation

Point	Reitsma et al., 2018	Kiran & Reddy, 2019	Aboabdo et al., 2019	Aini et al., 2020
Project team member	√		√	
Expertise capabilities	√			
Decision-making method	√			
Guidance and education	√		√	
Minimum custom-made software	√	√		
Trial time	√			
Evaluation	√			
Change management (person, information, teamwork, institution, top level support, quality 3rd party, quality system, guidance and education, work process, project, ERP adaption				√
Top level support		√	√	
Institution commitment		√		
Communication		√		
Suitable software and module		√		

There are numbers of critical success factor in implementing ERP in one organization. Table 5 helps us to get to know those factors. Top level support is one of the important factors of having ERP system succeeded implemented.

5.2. Discussion

During and after the pandemic situation, the need for outsourced logistics services is increasing. Many institutions could see the benefits of using this outsourced logistics services. The most benefit of using this service is that they can reduce their costs in terms of logistics (Da Silva et al., 2019; Ecer, 2018; Kale, 2021; Wang et al., 2021). With the increasing demand, the opportunity is wide open to enter this services business. In the other hand, competition also increases. Those who can survive within the competition can stay in this business. To able to survive, these service institutions need some tools to win the competition. One of the answers is in information technology. The benefits of using this technology are very clear and have been explained in various studies. One of the most important is the increase in company performance (Shukor et al., 2020; Tarigan et al., 2021). There are many kinds and varieties of these information technologies, for logistics service companies, it is highly recommended to use ERP. Why ERP? Because ERP can make the company's performance more efficient and effective which of course increases the company's performance (Shukor et al., 2020; Tarigan et al., 2021). End of result is that customer satisfaction increases and requests for repeated order will come. Thus, means sustain in this business.

However, ERP cannot simply be implemented in the company. Especially for those which have never used this technology. It's complicated, challenged, pricey and gradually project for implementing ERP in an institution (Reitsma et al., 2018). To succeed using this technology, several critical factors need to be considered before carrying out the project. A lot of research has been done to find out the critical factors in the implementation of this project.

Top level support, sufficient member team, training, guidance and evaluation and also minimum custom on software are some of the critical factor that should be studied well before carrying the project (Aboabdo et al., 2019; Kiran & Reddy, 2019; Reitsma et al., 2018).

6. Conclusion

This literature review tells the demand of outsourced logistics is increasing. Pandemic situation also strengthens this demand. Outsourcing companies or third-party logistics (3PL) have to compete among others to have their business sustain. Moreover, to compete with others, 3PL companies should have information technology or system to escalate their performance. Enterprise Resource Planning (ERP) is the right answer for 3PL to win the competition. With the benefits offered, 3PL companies would increase their performance and decrease cost to get customer satisfaction but take a good care for the critical success factor. Have them studied carefully before decided to have an ERP implementation. Otherwise, winning a competition would never be achieved.

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Biographies

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