A Literature Review of Sustain Enterprise Resource Planning

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Abstract. The study aims to review the literature in Sustainable Enterprise Resource Planning (S-ERP) published from 2016-2018 and presenting insights and directions for future research. Articles are collected from Science Direct and ProQuest to generate the metadata analysis, and also to present insights and directions for future research. The study selected 5 papers and find that research on Sustainable Enterprise Resource Planning reveals that Sustainable Enterprise Resource planning is a concept that integrates all over the company with considerable profit, people, and the planet. The Sustainable Enterprise Resource Planning is a concept that has not been implemented on the company or in a real environment. This study presents a comprehensive but straight forward conceptual model, concept and framework of Sustainable Enterprise Resource Planning. The findings and future research directions of the study offer new research on the implementation of the case study to the company or in a real environment.

1. Introduction
Enterprise Resource Planning (ERP) system is an enterprise-wide package that integrates all necessary business area in the organization become a single system with shared data [1]. Previously the organizations do the business process with the separated functional field, each functional has separated departments and every department is isolated from another department. Therefore there is no data transparency and integration between departments. This is the main cause of lack understanding about the big picture of the system on each individual in the organization and we call it silo effect [1]. ERP is the concept that can solve the problem of the silo effect. To implementing an ERP system, the organization needs high cost, effort, and preparation [1]. An organization will get internal benefits like the integration of a single source of data, common data definition, real-time system, increased the productivity, reducing cost, improved internal communication and external benefits like improved customer service, order fulfillment, communication to supplier or customer, increased sales and profit [2]. During the implementation of the ERP system, the organization will face any problems that influence or destruct the system itself. However, the organization needs to regard effective sustainability [3]. Sustainable enterprise resource planning system is an important concept to manage the sustainability business because of the ERP scope that involves an entire business process in an organization. The organization will need multidisciplinary skills, coordinated effort, and adequate knowledge to implement sustainable ERP.

2. Sustainable Enterprise Resource Planning (S-ERP)
A new class of information system, namely the S-ERP system, has emerged to address the integration issues in sustainability implementation. S-ERP system is important as a holistic solution to support sustainability initiatives. It enables to integrate sustainable business function, process, and data into a single platform [4]. S-ERP is an information system driven by sustainability consideration that covers all aspects of the value chain. It’s a holistic, integrative, and comprehensive solution for solving a segregation issue that emerges in sustainability practices [5]. The philosophy of the S-ERP system is based on the Triple Bottom Line (TBL) which are profit, people, and the planet. Profit refers to the economic value created by the organization. People refer to equitable and valuable business practices toward labors, communities, and regions in which an organization conducts its business and planet refers to issues related to the environment [6].

3. Method

This study followed a systematic process of retrieving data from reliable sources. A systematic literature review begins with the definition of appropriate keywords which are being used in searching and retrieving the literature from databases as well as presents the analysis of the literature [7]. A systematic review employs a pre-defined protocol to identify relevant and trustworthy literature [8]. The current study adopted a four-step method in a similar approach including identifying the data, screening initial data, determining eligibility, and finally the inclusion of the data. The aim of collecting this data is to generate the metadata analysis and also to present insights and directions for future research. The study collected data from Science Direct and ProQuest databases, and determine the eligibility using Scimago Journal Rank.

3.1. Identification of Data

The data were collected from Science Direct and ProQuest. The search covers the papers published from 2016 to 2018. In the beginning, the study uses the keywords ‘Sustainable Enterprise Resource Planning’. The initial search keywords were limited to the title of the paper, and the keywords. At first, 190,419 papers were derived using those combinations of keywords, but not limited to specific keywords.

3.2. Screening initial data

The initial search using advanced search and the result was limited to article titles or scholarly journals, last 3 years publication, and English language only. As a result, 14,643 papers remained as articles after initial refinement and it is finally chosen.

3.3. Determining eligibility

For metadata analysis, the study selected 920 papers from the Science Direct and ProQuest database which are indexed by Scimago Journal Rank. To present insights, the study selected 5 papers from the Science Direct database which are most relevant to Sustainable Enterprise Resource Planning. The keyword used in the advanced search was ‘Sustainable Enterprise Resource Planning’ and limited to article title or scholarly journals only. Again, the study included published papers from 2016-2018.

3.4. The Inclusion of the data

The study included 920 papers from Science Direct and ProQuest databases for metadata analysis which are indexed by Scimago Journal Rank, as well as 5 papers to present the insights and directions for future research about Sustainable Enterprise Resource Planning. Thus, the study confirms that the data are derived from reliable sources.

4. Metadata Analysis

4.1. Metadata Analysis
This section presents the descriptive statistics based on 920 papers of keyword ‘Sustainable Enterprise Resource Planning’. This metadata analysis will contain publication of 920 papers by years, journals, and common words.

4.1.1 Publications by year

![Publication by Years](image)

**Figure 1.** Number of Publications by Year

Figure 1 shows that the publications on Sustainable Enterprise Resource Planning (S-ERP) from 2016 onwards, it is clear from the figure that there is exponential growth until today. Moreover, the trend line also indicates an increasing pattern, which implies that the literature on Sustainable Enterprise Resource Planning (S-ERP) is still growing. In the year 2017, 296 papers were published, in 2018, 394 papers were published, which is the highest number of papers as compared to previous years that just 230 papers in the year 2016. This concludes that there is increasing concerns and interests in the Sustainable Enterprise Resource Planning (S-ERP) topic.

4.1.2 Publications by journals

| Number of paper | Journals                                      |
|-----------------|-----------------------------------------------|
| 905             | Journal of Cleaner Production                 |
| 15              | International Journal of Sustainability in Higher Education |

Table 1. Number of Publications by Journals

Table 1 showed in the year 2016 till the year 2018, Journal of Cleaner Production published 905 papers, and International Journal of Sustainability in Higher Education published 15 papers about Sustainable Enterprise Resource Planning (S-ERP). The most published papers are included in the Journal of Cleaner Production that means the Journal of Cleaner Production can be ranked as the number one journal due to its impact, completeness, and popularity. Moreover, the insights and directions for future research also use papers from the Journal of Cleaner Production.
4.1.3 Most common words used in the title

Table 2. Number of Most Common Words Used

| Words       | Number |
|-------------|--------|
| Sustainable | 237    |
| Enterprise  | 4430   |
| Resource    | 1176   |
| Planning    | 1397   |
| ERP         | 98     |
| Industry    | 1481   |
| Management  | 4240   |

We are using wordart.com (a free open-source online software to conduct text search and word cloud), the most common word used in Sustainable Enterprise Resource Planning (S-ERP) publications was determined. Referring to Table 2, we use googletrends.com (a web search graph statistics that display the popularity of search topics in a given time period) to calculate how many words are accessed. We collect data for the past year from 14 January 2019 - 6 January 2019. It is found that most common words used in the title are 'enterprise' which is 4430 times, followed by 'management,' 'industry,' 'planning,' and so on. Figure 2 represented the word cloud which is derived from the software, highlighting the most common words in bigger and bold fonts, while other relatively less common words appear in smaller fonts. This word cloud is an easy approach to identifying the most common words used in publications.

Figure 2. Word cloud most common on S-ERP

4.2. Qualitative

4.2.1 Previous Research S-ERP

4.2.1.1 Framework S-ERP. This study takes aspects of sustainability, decision making and project management to improve the S-ERP framework. This is needed to create a broad S-ERP framework where practitioners can later implement S-ERP. The S-ERP framework is a combination of important aspects and is part of the S-ERP master plan. Important players from every level of the organization have an important role in the S-ERP Framework. The key players have their respective roles in
implementing the S-ERP system. The S-ERP framework has a sustainable triple bottom line that harmonizes with business processes. In the system implementation phase, aspects of decision making and sustainability are highly considered. With the involvement of all key players in each organization, it will provide a more effective S-ERP implementation and effective assimilation.

4.2.1.2 Sustainable ERP Implementation, The initial stage is the same as the pre-implementation stage. This stage is getting permission to start an S-ERP implementation project. The main objective of the stage is to find out the wishes of stakeholders so that the course of this initial phase can be in accordance with the wishes of the company or stakeholders in the company. In the implementation process there are 3 stages, namely planning, implementation, and closing. The stage which describes the entire business process of the company, namely the planning stage where the stage must include the identification of all business processes from the beginning to the end so that the process of implementing the S-ERP system can be completed properly. Then the implementation phase where the phase tries to translate the company's business processes into the S-ERP system where the specifications obtained at the beginning of the planning phase are immediately applied. Then the last phase is the closing phase where the phase is the process of solving all things related to the implementation of the S-ERP business process where in this process there is an obligation that is fulfilling all existing contracts that have been done before determined process planning then after the implementation process the next step is post implementation. Post implementation at the initial stage is a go-live process where the results of implementing business processes into the S-ERP system are first run. Then if go-live is successful then proceed to the post implementation completion stage. Then the final stage is the stage of monitoring and coordination between processes where each business process that has been implemented using the S-ERP is controlled as well as possible and looks at the performance and progress of the S-ERP implementation in the company.

4.2.1.3 Evaluation of S-ERP framework Implementation, There are 2 frameworks in S-ERP where the first framework is implementation of sustainability where sustainability consists of a sustainability segment consisting of environment, economy, and society. Then the decision-making segment consisting of strategic levels, tactical levels, and operational levels. Then in the implementation of the system has 2 aspects, namely the strategic level and level of implementation. The level of strategy is a framework for implementing the system where the organization needs a business case to determine the strategy to be carried out and the implementation of the meeting. Strategy level activities are activities carried out by top management member. Then the operational level of implementation of sustainability also considers routine value chain operations. One activity is related to sustainability assessment, such as the Life Cycle Assessment (LCA) method. Based on this belief, a sustainable value chain is considered as an operational level to describe operational activities within the framework of sustainability implementation.
4.2.2 Future Research S-ERP

On this research, we use a literature review for the explanation of the paper. We collect all journals that have a correlation with our topic and generate it to become this research.

The need for exploration of development in the ERP master plan to define various more potential fields in the S-ERP framework for further studies [9].

then in the S-ERP roadmap, it is necessary to have a very in-depth evaluation and analysis of case studies in implementing the S-ERP roadmap and in the future become lessons for practitioners in implementing S-ERP [10], then for further research there is a need to implement the S-ERP roadmap into the case study and the need for qualitative analysis studies [11].

This study has several limitations. First, because this study collects data from ProQuest and Science Direct, this database does not include all journals. Thus, many excluded papers have the potential to raise concerns about generalization. Second, research collects data from an objective perspective through keyword search and not through subjective reviews for screening and short lists. Although filtering data with subjective judgments is sometimes useful, however, this approach has the potential to lead to biased results. Finally, future studies can use different ways to filter journals using other tools or use some software that can filter journals.

As for the direction for future research, another prospective study is the application of an S-ERP framework in a number of organizations as a case study. This study will be useful for practitioners because it will show the results of implementing a framework in a real environment and for future studies can use different citations and network analytics software to do further analysis.

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5. Conclusion

From the study above we can conclude that sustainable enterprise resource planning already has the system, the concept from above to bottom. The sustainable enterprise resource planning is the system that not only concludes about the IT, but it's also about the whole system that connected to profit, people, and the planet. Also, sustainable enterprise resource planning on the future should be implemented to the real environment and some of the case studies.

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