



Use Of The Ward And Peppard Method In Planning Strategic System Information: *Systematic Literature Review*

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Abstract. *Strategic planning of information systems needs to be used, because it can support business strategies in organizations or companies in order to achieve business goals more quickly. One method that can be used in strategic planning of information systems is the Ward and Peppard method. This method has a clear framework and also has analysis techniques that focus on business needs & information technology for the future. The purpose of this study is to see the use of the Ward and Peppard method in strategic planning of information systems. The method used in this study is a literature study. The results of this study are that the Ward and Peppard method in strategic planning of information systems can be used as one of the preferred methods that can be used in carrying out strategic planning of information systems in various sectors of life.*

Keywords: *Strategic, Planning, Information, Systems*

1. INTRODUCTION

The development of information technology today is very fast and also significant, which makes changes in the role of technology in the business world or organizations. Information technology that cannot support current business needs needs to be aligned with the strategy and goals of the organization so as to form a strategic planning formulation for information systems. (Karsana et al., 2019) .

Strategic planning of this information system has now become one of the keys to achieving company goals. Determining success in this company is the need for timely, relevant, and accurate information. Therefore, strategic planning is needed to be able to identify the objectives of the company's information system that must be met in the coming year. In various work sectors, this information technology continues to provide changes in a better direction. Its presence in a company requires the application of technology to improve its performance (Chayati et al., 2020) .

One of the strategic planning methods of information systems used is the Ward and Peppard method. This method is a comprehensive method, where this method first starts from the assessment and utilization activities of the current situation both in the business environment and the IS/IT environment. This business environment includes the internal business environment and the external business environment (Permana, 2019) .

Several previous studies on the use of the Ward and Peppard method in strategic planning of information systems. Research (Karsana et al., 2019) using the Ward and

Peppard method. produced 4 proposed information systems for the next 3 years, namely Graphic Design IS, Customer Relationship Management IS, Payroll IS and Services IS.

The study (Salakory & Wijaya, 2021) used the Ward and Peppard method. The results of this information system strategic plan are in accordance with the Maluku Province PUPR which produces a mapping of 4 quadrants which produce recommendations for proposed information system applications, namely the DPUPR profile website, letter archive SI, copyright SI, highway construction SI and water resources SI.

Research (Kusuma & Ghozali, 2019) uses the ward and peppard methods. Producing *Information System Strategic Planning* (ISSP) documents in assisting the Subang Regency DLH related to the Field of Sanitation Waste Management & B3 Waste to achieve strategic plans for the next 5 years.

Research (Kristiawan & Manuputty, 2022) uses the Ward and Peppard method. The results of the Gallery Group in its business processes have implemented assistance from IS/IT. This IS/IT greatly reduces the burden on the company's performance, but there are still many business processes that have not been implemented using IS/IT.

Research (Vido Rional Aprinda, 2022) uses the Ward and Peppard method. Producing a recommendation in the form of an application portfolio containing a proposal for an information system that adapts to the needs and conditions of the Slingbag Salatiga company. The proposal is mapped into 4 quadrants, namely the strategic quadrant related to marketing IS, the key quadrant related to employee attendance IS, the support quadrant related to upgrading the head of warehouse IS and *High potential* related to financial IS.

Research (Suryadi & Roestam, 2021) uses the Ward and Peppard method. The results can be seen weaknesses, strengths, opportunities and threats by adding the IFE and EFE matrices used in evaluating internal and external factors in DISPERINNAKER. In addition, the main and supporting activities can also be identified.

The purpose of this *systematic literature review* is to see the use of the Ward and Peppard method in strategic planning of information systems. By looking at various previous literature sources related to the use of the Ward and Peppard method, it helps strategic planning of information systems.

2. LITERATURE REVIEW

Strategic Planning

Strategic planning is a management instrument. Like other management instruments, strategic planning is used for one purpose, namely to help the organization carry out its duties well by focusing on organizational resources, ensuring that elements in the organization are directed towards the same target by working synergistically, and adjusting the direction of the organization to respond to changes in the environment (Pajar Septianto et al., 2021) .

Strategic planning of information systems is the process of identifying a portfolio of information system applications on a computer that will later support the organization in implementing business plans and can realize its business goals. This planning will later study the influence of IS/IT on business performance and the contribution in choosing strategic steps. (Lah et al., 2019) .

Ward and Peppard Methodology

Ward and Peppard's methodology begins with past IS/IT conditions that have little benefit for the company, which is then continued by capturing business opportunities and also increasing the company's competitive advantage (Cres et al., nd) . The IS/IT strategy planning stages in this method consist of input stages and output stages. The following are the input stages of internal business environment analysis, which include aspects of current business strategy, such as the organization's vision, mission & goals, the organization's business activities & processes and the resources it has. (Johannis et al., 2019)

- a. External business environment analysis, which includes aspects of competition with other organizations or companies. The external business environment can spur companies to advance and compete, but can also cause obstacles and even threats to the survival of the organization.
- b. Internal IS/IT environment analysis includes the IS/IT conditions in the organization from a current business perspective, knowing the software and hardware used.
- c. External IS/IT environment analysis, which includes the development of technology trends, opportunities for utilization, and the use of IS/IT by competitors. This analysis is used to gain an understanding of IS/IT developments outside the organization that can have an impact on the organization or company.

Meanwhile, the output stage is a part that is implemented with the aim of producing a strategic IS/IT planning document, the contents of which consist of (Wandikbo & Sitokdana, 2019) :

- a. Business IS strategy, which includes how each business unit will utilize IS/IT to achieve its business goals, application portfolio, and information architecture overview.
- b. IT strategy, which includes policies & strategies for managing technology and IS/IT human resources.
- c. IS/IT management strategy, which includes elements that are generally applied throughout the organization, in order to ensure the consistency of the implementation of the required IS/IT policies. Several analysis methods that can be used in IS/IT strategic planning in this methodology include SWOT analysis, canvas business model, and value chain analysis.

3. RESEARCH METHODS

In this *systematic literature review*, the literature study method is used. Literature study is an approach to research that is carried out by searching for references based on theoretical foundations that are relevant to the case or the problems found. These references can be searched from journals, books, research report articles and internet sites (Rizky & Sugiarti, 2022) .

Research Stages

In this literature study there are several steps taken to obtain related research data and analyze it. In Figure 1 are the stages of the research.

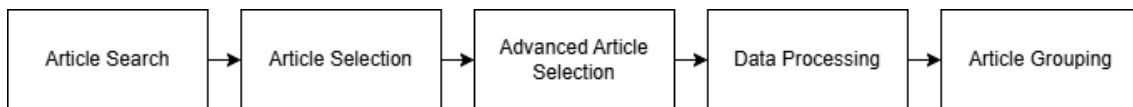


Figure 1. Research Stages

The following is an explanation of the steps taken to obtain research data.

- a. Conducting an Article Search
Conducting an article search using Google Scholar. With *the keyword* "Using the Ward and Peppard method in strategic planning of information systems" the search year is the last 5 years, namely 2018-2022.
- b. Making Article Selection
Conducting article selection by looking at the title of the article and also reading the abstract of the article. After the title and abstract are appropriate, then the download process is carried out.
- c. Performing Advanced Article Selection

Then, a selection of further articles is carried out by reading the article from the title to the conclusion of the research. Then, an article is selected that is appropriate for the research to be used in writing the article.

d. Grouping Articles

Grouping articles that will be used as writing articles for introduction, previous research, literature review and discussion. This grouping aims to facilitate writing, entering citations, and references.

4. RESULTS AND DISCUSSION

MSME Sector

In MSMEs, the Ward and Papperd method can carry out strategic planning of information systems in MSMEs. The goal is to formulate a strategy in describing the objectives of the system and technology architecture that will be implemented in MSMEs. The results of this IT system planning can be useful for MSME actors so that they can utilize information well for their organizations. Based on these results, MSMEs must be able to have the ability to apply information technology that can be an innovation to develop their business (Hamdani & Fatah, 2018) .

Furthermore, the Ward and Papperd method can carry out strategic planning of information systems in UMKM Herbal Products. The aim is to plan IS/IT strategies in UMKM herbal product entrepreneurship at one of the universities in Semarang. The result is that this strategic framework and IS and IT implementation plan can run according to the business strategy plan in the organization. (Alfat et al., 2022)

Course Place Sector

In the course place, the Ward and Peppard method plays a role in strategic planning of information systems in increasing the competitive advantage of the Pare English language course institution. The aim is to discuss the steps in strategic planning of IS/IT at the Pare English language course institution. The results can help in achieving goals and strategic plans by adjusting the needs of the organization in increasing competitive advantage (Laple et al., 2018) .

Then strategic planning of business information systems at the Rantau Rasau Link course and training institution can be done with Ward and Peppard. The aim is to analyze the strategic business environment and information system strategy. The results can be used to identify important factors needed in the development and implementation of information systems, as well as the applications needed to manage data and support the main business

functions of the Rantau Rasau Link course and training institution (Suryadi & Roestam, 2021) .

Court Place Sector

At the Court Office, the Ward and Peppard method can carry out strategic planning of information systems at the Salatiga District Court Class 1B. The aim is to conduct an analysis related to the internal and external environmental conditions of the agency. The results produce recommendations for information system applications that are useful in improving performance and minimizing errors in IS/IT at the Salatiga District Court Class 1B (Wijaya et al., 2021) .

Furthermore, strategic planning of information systems in Balikpapan Religious Court can use Ward and Peppard Method. This objective analyzes business both inside and outside the business. The result has been compiled strategic planning of information systems in Balikpapan Religious Court which consists of IS business strategy, IS/IT management strategy & IT strategy, and produces Application Portfolio. (Auliya et al., 2003) .

Hospitality Sector

The Ward and Peppard method can carry out strategic planning of the XYZ Balikpapan Hotel information system. The goal is to be able to align the needs of business strategy and IS/IT strategy in order to increase the excellence of the XYZ Hotel by analyzing the situation that occurs and determining strategic planning to support the XYZ Hotel business. The result is that with the design of a business information system strategy at the XYZ Hotel, it is necessary to develop a website & mobile application, an information technology strategy that the XYZ Hotel needs to update IT devices, and also an IS/IT management strategy that can play a role in increasing the excellence and value of the XYZ Hotel (Prima et al., 2022) .

Next, the strategic planning of IS/IT at Inna Grand Bali Beach uses the Ward and Peppard method. It aims to provide strategic planning solutions for information systems at the INNA Grand Bali Beach hotel, so that in the future it can compete in the hospitality business. The results are in the form of a strategic planning portfolio for future information systems with the addition of several information systems such as, *Knowledge Management System* , *Customer Relationship Management* , Customer Complaints IS, Security IS, Attendance IS, and also Mobile Applications (Paramartha et al., 2018)

Library Sector

Strategic planning of IS/IT in the library at SMA Negeri Satu Baleendah can use the Ward and Peppard method. The aim is to conduct analysis based on existing data. The result

is a strategic planning blueprint based on the organization's business plan based on data obtained through the analysis method used and also involving all components of the organization. (Hanafiah & Junaedi, 2020) .

Furthermore, the Ward and Peppard method can carry out strategic planning of information systems and information technology at the Mastrip Jombang Library. This goal is to produce proposals for improvements in the form of IS/IT management, information system business strategies, and IT strategies for the Mastrip Jombang Library. Produce recommendations in the form of improvements to IS/IT management that are in line with business strategies in order to help achieve the goals of the vision & mission and also improve performance at the Mastrip Jombang Library (Muttaqin et al., 2020) .

Hospital Sector

In the Ward and Peppard method, strategic planning of IS/IT of public services can be carried out at the Special Eye Hospital of South Sumatra Province. The aim is to prepare strategic planning of the system and information technology. The results can be known the conditions and existing information technology, the methodology used, a description of the internal & external environmental conditions and what strategic steps must be taken so that the application of information technology can be carried out effectively and efficiently (Naraloka, 2019) .

Next, the strategic planning of the information system at Petala Bumi Pekanbaru Hospital uses the Ward and Peppard method. The aim is to compile a strategic planning of the information system. The results are a portfolio of strategic planning applications for the system and future information technology for future planning at Petala Bumi Pekanbaru Hospital (Yunitami & Saputra, 2019) .

Local Government Sector

Strategic Planning of IS & IT at the Department of Industry and Manpower of Salatiga City can be done using the Ward and Peppard method. The aim is to analyze the business environment and IS/IT environment both internally and externally. The results provide recommendations related to the vision and mission, with the results of these recommendations being used as a way to improve the quality of public services (Yunitami & Saputra, 2019) .

The strategic planning model of information systems in the Anambas Islands regional government uses the Ward and Peppard method. The aim is to carry out strategic planning analysis steps for information systems in the Anambas Islands Regency for the Women's

Empowerment and Family Planning Office. The results can help the Office better regarding strategic information system planning in the future (Bachtiar et al., 2020) .

Furthermore, strategic planning of IS/IT at the Rote Ndao Regency Tourism Office can use the Ward and Peppard method. The aim is to map business processes through survey results and strategic plans. The results found that there were quite significant challenges to be worked on by the Rote Ndao Regency Tourism Office in providing services to the community in order to attract every tourist who visits Rote Ndao Regency (Nona, 2021) .

And the IS/IT Strategic Planning of the Bengkayang Regency Education and Culture Office can use the Ward and Peppard method. The aim is to analyze the internal and external business environment of the organization. Resulting in the conclusion that the Bengkayang Regency Education and Culture Office is currently not implementing IS/IT optimally, there are still several shortcomings in the use of IS/IT that need to be developed, and the need to be implemented to help progress (Ayu & Wijaya, 2020) .

Education Sector

At the school level, strategic planning of information systems uses the Ward and Peppard method at SMK Syubbanul Wathon. The aim is to analyze data for strategic planning. The results produced a portfolio of 18 information system recommendations that have been mapped for priority. Furthermore, strategic planning of information systems at SMPN 4 SALATIGA can be done using the Ward and Peppard method. Aims to be able to analyze the internal and external business environment. The results are that SMP Negeri 4 Salatiga has implemented an information system, but it has not been integrated and has not been utilized optimally so that the business process is inefficient & hampered (Triyuni & Wijaya, 2021) .

At the university level, strategic planning of UPN Veteran East Java information systems can be done using the Ward and Peppard method. This goal is to be able to create strategic planning of information systems that are in accordance with the vision, mission, goals/objectives and also business processes that exist at UPNVJT. Producing internal & external analysis at UPN Veteran East Java and also strategic IS/IT planning which is used as a basis for planning the development of 7 new information system projects at UPN "Veteran" East Java (Bachtiar et al., 2020)

Next, the analysis of information system planning at the Indonesian Christian University of Maluku uses the Ward and Peppard method. This objective is to formulate a strategic plan for information systems in the Indonesian Christian University of Maluku environment in the form of a portfolio of applications / information systems for the future.

The conclusion is that the Indonesian Christian University of Maluku needs 10 types of new information system applications that are planned to be created, 16 applications that are considered for renewal, and a proposal for a Cloud-based enterprise network architecture model that can be used as an initial step in order to achieve the strategic goals of the Indonesian Christian University of Maluku, besides that it can be used as a guideline so that the direction of information system development policies becomes measurable and clear (Janeman Sumah & Kurniawan, 2021) .

Corporate Sector

Strategic planning of IS/IT at PT. Gahamedia Informasi uses the Ward and Peppard method. The aim is to analyze the internal and external environment. The results are in the form of recommendations for information systems that can be used by companies to develop their companies based on the analysis of the internal and external environments that have been analyzed previously (Riswara et al., 2021) Using the Ward and Peppard method, strategic planning of information systems at PT Telekomunikasi Indonesia, Tbk WITEL Semarang. . Aims to analyze the internal and external environment of the business. Produces the conclusion that IS/IT at PT. Telekomunikasi Indonesia, Tbk is already good, only what needs to be improved is in the employee performance and HR improvement. This improvement is intended so that the implementation of IS/IT at PT. Telekomunikasi Indonesia, Tbk can be used effectively and efficiently (Wijaya et al., 2021)

Next, we can conduct a strategic planning study of information systems in the retail business case study of PT. Gramedia Asri Media which uses the Ward and Peppard methodology. The aim is to conduct internal and external business analysis. The results produce an application portfolio for the future and also recommendations for an IS/IT implementation roadmap based on the company's business strategy. This strategic planning of information systems requires commitment from stakeholders to remain consistent in order to achieve the company's vision and mission (Rumiarti et al., 2019)

5. CONCLUSION AND SUGGESTIONS

In the use of the Ward and Peppard method in strategic planning of information systems, it can be used in planning information systems in various sectors of life. Such as in the education sector, it produces a portfolio of 18 recommendations for information systems that have been mapped for priority at SMK Syubbanul Wathon, in the UMKM sector, it produces a strategic framework & IS/IT implementation plan that is in line with the business strategy plan of the Herbal Product UMKM organization, and in other sectors.

The conclusion of this study is that the Ward and Peppard method in strategic planning of information systems can be used as one of the preferred methods that can be used in carrying out strategic planning of information systems in various sectors of life.

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