

A Framework for Knowledge Acquisition System based on Phases of Information Systems Strategic Planning: Case Study PT. Sumber Turindo

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ABSTRACT

The absence of knowledge management in business plans created by travel agents which are useful for business product planning and its implementation creates problems. Support in technology and qualified human resources are significant to solve this issue in order to help decision makers in the companies determining the model or framework for the knowledge management to create significant benefits for the companies.

This study discusses the form of a framework for the incorporation of explicit knowledge from a variety of sources of knowledge to the strategic planning of the travel agent where strategic planning phase approach used towards the acquisition of knowledge from different knowledge sources. These results provide a clear description of how knowledge from different sources can support the strategic planning of a travel agent.

Keywords:

Knowledge Acquisition, Framework, Information Systems, Strategic Planning, Travel Agent.

1. INTRODUCTION

A business that relies on service products and provides a significant economic contribution in the world is the business of tour travel [1][2]. Travel business improves the productivity of global enterprises; generate a return on investment of 10:1. In other words, one unit of a new business travel spending produces additional industry sales of ten units [3].

PT. Sumber Turindo is one of the travel services provider company participating to develop productivity of the company in the field of tourism. The company that was established since 1992 has committed on ticketing services, hotel reservations, tour packages, and travel documents. The company began as active member of IATA (International Air Transportation Association) in 2006. Every year, the company always builds innovations such as flexible payments, reservations and ticketing, domestic and overseas travel products, and so on. This is to provide customer satisfaction and in facing of business competitors.

Problems that are often encountered are the effectiveness of time in planning, monitoring and evaluation, problems on the work efficiency, travelling packages and expenses. The implementation of the information system for this company is intended to solve these problems. But the reality on the field, the obstacles faced due to lack of knowledge management as a form of information that supports the entire business process of the company.

The knowledge of the travel business requires a part called as suggestion and recommendation path [4] in which both require a clear description of the product, what is needed in the product, and the relationships that connect the product of travel trip. These things form the mechanism set out in the business process of e - tourism.

The mechanism in building business processes that is based on information system requires a business strategy with knowledge management system that is able to compete with other leading competitors. Strategic planning is the basis of the formation of business strategy through forecasting, review of the influencing factors, the market environment and competitors [5]. All of them require the basic knowledge of all information required for the travel agent in the building business products for sale.

Travel agents cannot accumulate knowledge through team or the employee alone. In a business trip many parties are involved as providers of transportation services, accommodation providers, tourist attractions organizers, consumption and so on. If they only rely on surveys or employee teams then it will take time and cost overruns while customers would want and travel costs that cheap, safe and enjoyable. It needs a system that support strategic planning in which this system provides clear information about travel and tourism that will generate business products.

One type of recommender systems are knowledge-based system [6]. This system collects between user and product knowledge to provide an overview of the recommendations on business and systems improvements. Knowledge-based system from different sources can be acquired through the concept of knowledge acquisition. Knowledge acquisition is a blend of different sources of knowledge into new information

that helps the implementation of business strategies in gaining profitability [7].

This study raises the issue of knowledge gathering of tour trip for travel agents in Indonesia to support travel agents in building a knowledge-based strategic planning. In it, there is a structure of framework the knowledge acquisition for linking the knowledge of travel agents, transport providers, accommodation providers and security conditions in the tourism places.

2. RELATED WORKS, RESEARCH PURPOSE AND CONTRIBUTION

Research on knowledge management models represent the two fundamental types of project knowledge in the form of micro-knowledge required of each process and micro-knowledge that run by everyone in every level of the organization [8]. This model describes each micro-knowledge life cycle of any structural organization. Description of this model shown in Figure 1.

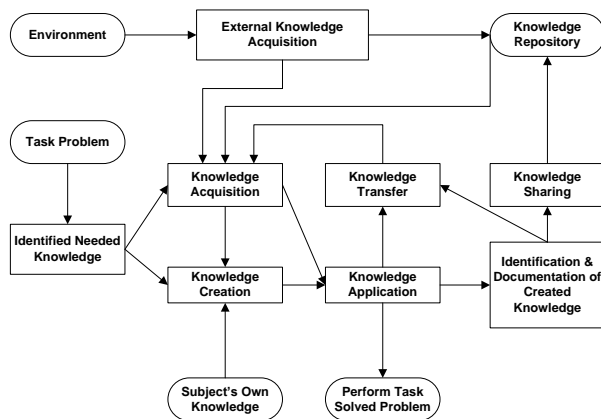


Figure 1. Procces of Knowledge Elements Management [8]

Another related research is the study of a framework to synchronize the knowledge transfer in web-based intelligent tutoring system [9]. The study produced a framework that synchronize the learners view directing web content for the effectiveness of knowledge transfer in an intelligent tutoring system and every process in every part of the system.

Consideration on these two studies towards the current study is about the extent and the amount of components that must be implemented in every business process within organizations that seems effortless. If the previous literature were implemented to optimize the products of this travel agency, some difficulties would be found in each process.

The purposes of the present research are:

- To clearly identify about the basis and resources knowledge that required as well as a number of knowledge that must be captured at each source.
- To combine the capturing of the knowledge into a system that is described through the framework acquisition.

The contribution is in the form of a framework for knowledge acquisition that appropriate for small-medium business travel services, that optimizing the business strategy as execution of merging knowledge. Future of these results can be built into a web-based system that processes any knowledge collection,

knowledge merging, reuse and process to make new knowledge for the benefit of the organization.

3. LITERATURE REVIEW

3.1 Knowledge Acquisition

A prerequisite for the implementation of knowledge management is to understand and develop the necessary infrastructure elements to support the acquisition, management, and transfer of tacit and explicit organizational knowledge. It is more focused on the people in the organization, processes and technology [10][11]. To make knowledge acquisition as explicit, knowledge management has a strategy of intensive knowledge promotion shared by connecting and making information easily accessible so that they can learn from the documented experience [12].

Knowledge acquisition gives a different definition of the acquisition based on conditions or cases that follow. Knowledge is basically learning to something that still unknown [13]. Learning enhances the ability and thinking skills of individuals or groups to develop creative ideas that generate new knowledge in solving problems. The role of knowledge acquisition connecting different knowledge from individuals or groups can build positive synergies to increase mutual knowledge, the ability to build new knowledge, solve problems based learning and the ability to create new innovations either in person, organization, or business.

Within the organization environment, knowledge acquisition is in the form of consolidation of knowledge different organization and plays an active role in meeting the needs of short-term and long-term organizational goals to achieve each organizational purpose [14]. Usually organizations that use knowledge acquisition are organizations engaged in the same field. Knowledge is not only placed for the purpose of completing a number of organizational problems but also the acquisition of knowledge from outside the organization [8]. This is done for the needs of a specific project or for organizational strategic planning needs.

In the business environment, knowledge acquisition helps the process of providing new products and services for the latest sales and special combination of existing knowledge and the newly acquired knowledge [15]. In its application, a company needs to support its employees when building their knowledge to develop competence and performance.

Some things to consider in building of a framework knowledge acquisition are [16]:

- Find an area that focuses on existing knowledge sources.
- Build a job / task knowledge acquisition based on any source of knowledge.
- Find things that related interdependently or related from different knowledge sources.
- Make an approach on the knowledge pattern formed based on the field/expertise.
- Make a qualitative reasoning on knowledge gained. (For example, if a source of knowledge A is not the same with the provisions of the A tour then the product cannot be executed).
- Document a solution that obtained from the acquisition of knowledge.

This study focuses on the acquisition process based on different organization used by of travel agent to boost the company's business strategy in creating innovative tour travel products.

3.2 Phases of Tourism Product Planning

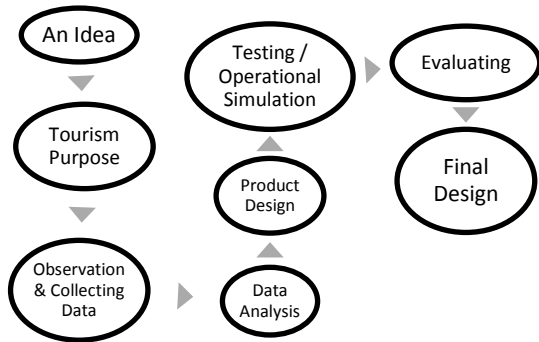


Figure 2. Phases Of Tourism Product Planning -Modified- [17]

Planning phases of the tourism product consists of searching of ideas, formulating tourist destination, observation and data collection, data analysis, design of product introduction, operational and simulation testing, evaluation, final design [17]. Overall of this phase depicted in Figure 2.

Phase of an idea where the main source of tour package product ideas is the market. The idea of market is about the needs and desires of the tourists who have not been met. By identifying the needs of tourists, the product can be directed to fulfill their wish.

Phase of tourism purpose uses the obtained knowledge from the identification of customer needs used as the basis for formulating a tourist destination. The formulation of this goal is basically a hypothesis about the goal that will be achieved, while the goal not other than the formulation of the tour that will be held. Formulated objectives should be able to answer the questions that are commonly known as 5W2H formula, namely: (What), what tour that will be arranged; (Why), why the tour was arranged; (Who), who will be involved in the tour; (Where), where tour will be organized; (When), when tourism is organized, (How), how tour is organized, and (How Much), how much of the costs incurred by travelers.

Observation and the data collecting phase are basically the knowledge of objectives that have been formulated and the link between hypothesis and reality. The things that are observed are all questionable issues in the formulation of a tour destination. Key components of tour packages that must receive attention at the time of observation and the data are tour leaders, transportations, accommodations, restaurants, tour objects and attractions and souvenir shops.

Phase of data analysis obtained in the observation activity that are processed and analyzed. Data analysis is intended to determine strategies to achieve goals; identify obstacles that may arise in the process of goal achievement, and look for alternatives that might be taken.

Product design phase devoted to develop several alternative conceptual designs to meet the characteristics of the selected products, such as models or types of tour packages, basic elements and supporting travel packages, safety factor and so on. This result is expected to be a product that can compete and can be realized into a superior product.

Operational simulation and testing phase aimed at testing the marketing and capabilities in the field, through a market test by given to a group of tourists to try, to get their views. Purpose of this test is to obtain data about the travelers' opinion of the product.

Phase of the evaluation carried out after testing of the package that tested on tourists, then it would be obtained data on the responses concerning the tried tour package. The incoming responses then reanalyzed and reevaluated in order to determine the lacks or excesses of the tested tour product packages.

In the final design phase, the results of the tour packages evaluation that has been tested, will be used as a reference to correct deficiencies or weaknesses in tour packages by doing some modifications. The next step, results of the modifications which serve as the final design, it should be marketed in accordance with the intended markets. In this stage also, the setting of standards and procedures specified.

3.3 Phases of Information Systems Strategic Planning

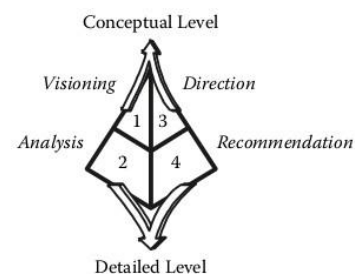


Figure 3. Phases of the Planning Process [19]

Business planning is the main thing in business organization. Moreover, when gain supporting system that built to contribute objectively in each stage of a business trip. In the field of information systems known as information systems strategic planning (ISSP). ISSP is a process of information identification documented from computer application that supports the organization in the implementation of the business plan and in achieving business goals [18].

Strategic planning process is the business demands and business requirements leading to IS and its architecture [19]. Figure 3 illustrates the strategic business planning which is divided into four phases, namely visioning, analysis, direction, recommendation.

Visioning phase shows how to initiate and manage projects that recognize business situations by analyzing the existing documents in accordance with the organization's business vision. Such as job descriptions outlining the work to begin, this phase outlines what is involved in the business planning refers to the vision.

Analysis phase is the phase in which the business strategy makers need to understand the current IS situation and then analyze it. Results of the analysis are in the form of alternative solutions and recommendations for further development.

Direction phase is the phase that requires the development of the IS vision and the steps of development. Then building concrete plans on IS and outlining projects to be executed.

Phase recommendation develops a business roadmap that leads to earlier phases then builds a business framework that subsequently communicated as IS development plans in the business process that will be executed.

4. FRAMEWORK OF KNOWLEDGE ACQUISITION BASED ON INFORMATION SYSTEM STRATEGIC PLANNING

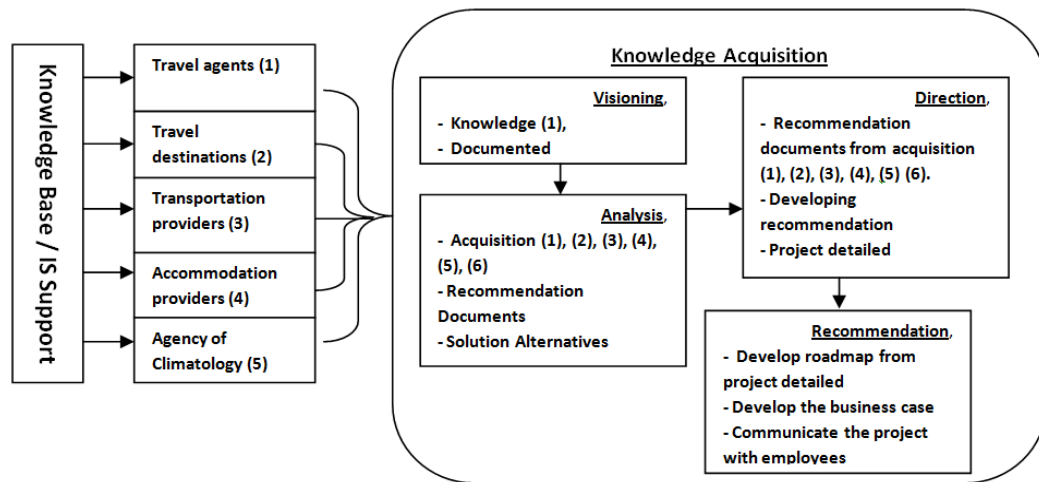


Figure 4. Knowledge Acquisition Framework Based on Information Systems Strategic Planning

In Figure 4, there are three main components that is knowledge base / IS support, the five objects of different sources of knowledge and knowledge acquisition. Knowledge base / IS support is intended as a system that stores all the existing knowledge on the second component.

The second component consists of a travel agent (1), the owner / organizer of tour objects (2), provider of transportation services (3), provider of accommodation services (4), agency / organization as an expert in providing knowledge of travel conditions (weather, climate, geographical condition) (5). The use of numbers here is for the ease of writing and tracking of knowledge within this framework.

The third component is an integrated of knowledge acquisition with four phases of strategic information systems planning. All knowledge acquired from both components. But not all sources of knowledge used in each sub-component of this knowledge acquisition.

Four sub-components are generally divided into two parts, namely the conceptual level consisting of visioning and direction, and detailed levels that includes the analysis and recommendation. Conceptual level focuses on concepts, documents, and detail projects. Detailed level talks about the action taken by businessmen to analyze, make recommendations, provide solutions, and communicate with related people and others.

In the sub-component of visioning, the knowledge that used is only knowledge of travel agents as the main actor in this framework. Travel agents run the business and gather all the knowledge that supports the work plan and run business processes. The whole vision, targets, work program and measures of problem solving should be defined and documented at this stage. Through sub-component of analysis, knowledge from the components of different sources of knowledge is merged. Acquisition of this knowledge results recommendations that are clearly documented in the system. Furthermore, businessmen should choose alternative solutions from the given recommendations. Sub-component of redirection documents again towards the results of recommendations in the form of alternative solution from the analysis phase. This is done to develop of the recommendations and clarify the documents, and projects and stages that will be run in a business process.

Sub-component of the recommendation develops roadmap of detailed projects, develops the business processes and communicates with relevant personnel in each field in the project. All of this is done so that the process of collecting and acquisition of knowledge does not stop only on the documentation, but also leads to knowledge sharing and knowledge implementation.

5. STUDY AND ANALYSIS

The studies of this research covered several methods that were based on the implementation procedures. The research procedure were problem identification, literature study, data collection, data process, analysis and summary.

The problem identification procedure was done by identifying problems in PT Sumber Turindo, collecting causes of the problems and formulating them in objectives.

The literature study procedure was done by studying the method in the objectives. Framework of knowledge acquisition, then, were made based on the literature study and the objectives.

The data collection procedure was done by observation and interviews in PT. Sumber Turindo. Some questions in relation to problems and the solutions done by PT. Sumber Turindo were asked during the interview. The

data collected from this interviews were the tourist destination packages that had been offered to customers and the packages to be offered in the future.

The data process was done by identifying data that are based on *framework knowledge acquisition* and IS strategic. This data, then, are analyzed based on its framework structure and its comparison with the current IS strategic. If the result did not correspond to the framework, it would review the procedure from the beginning. The summary can be retrieved when the analysis are in line with the framework structure.

Results of framework acquisition approach from data of PT. Sumber Turindo shows a number of captured knowledge based on different knowledge sources. The retrieved data is the data tour trip on 26-30 July 2012; departing from Jogjakarta with Denpasar Bali as destination place, with number of tour participants are 20 people. The results are divided into three parts, namely capturing knowledge, identified keywords and analysis.

Capturing knowledge done by taking the knowledge from each different source and saving them in the knowledge space. Structurally, knowledge sorted based on sub-component parts of the knowledge base.

After all of the knowledge captured in the knowledge space, keywords are defined that will be used to connect all existing knowledge in the knowledge space. This is done like semantic technique that takes each sentence, phrase, or word that structurally based on keyword, condition and criteria.

Finally, the analyses of keyword suitability, product acquisitions and plan travel services that will be run are performed. Such products can be in an alternative decision as a form of management of strategic planning knowledge information that presented in the form of information system of knowledge management.

5.1 Capturing Knowledge

Table 1 presents the results of knowledge capture collected from sources of travel agents, travel destination, transportation providers, accommodation providers and agency of climatology.

Table 1. Capturing Knowledge

Knowledge Based	Captured Knowledge	Knowledge Example
Travel Agent	Customer characteristics (the preferred destination, the cost of which is owned, loyalty, satisfaction level)	Hobby (diving, snorkeling, shopping, party, hiking), purpose of trip (work, visiting, surveys, meetings, holiday)
	Costs (expenditures for each post of expenditure, the available budget, the amount of planned profit, the results of previous cost/ income services products)	The average cost of flying Yogyakarta-Denpasar (JOG-DPS) IDR.525.000 PP, - (For High Season); Average cost flights of Yogyakarta-Denpasar (JOG-DPS) IDR.390.000 PP, - (For Low Season)
	Labor (the ability and readiness of field labor, promotion, outsourcing, the number of available workers)	Outsourcing employees are paid an average IDR.750.000, -/program (accounting for 3 days 2 nights trip). Outsourcing employees in this case as a driver and tour guide.
Travel Destination	Natural tour attractions (beach, sea, marine parks, natural heritage, protected forests, and mountains)	There are tour beaches of Kuta, Sanur, Nusa Dua, Tanah Lot are all presented with beautiful coastline, white sand, service, sunset and sunrise; Tanjung Benoa Beach and Dream Land available for water sports such as diving, snorkeling, parasailing, banana boat, and others.
	Cultural tour attractions (historic places such as temples, puras, monuments, museums)	Bali bombing monument, temple, Garuda Wisnu Kencana Uluwatu temple on the cliff area, sanggar and cultural center of Bali in Denpasar and Sanur)
	Shopping attractions (souvenirs center, wholesale, handicraft centers, traditional markets, shops)	Located along Kuta beach, souvenir center of Tanah Lot on the market, shopping for souvenirs in some places there are in almost every area.
	Nightlife venues (clubs, café)	Nightlife scene centered in Legian and Kuta
	Others (ballroom, resort, conference hall)	Resort, luxury hotel, ballroom, hall, in Tanjung Benoa
Transportation Providers	Ground transportation	Ground transportation can be reached by bus for 8-10 hours from Yogyakarta to Denpasar Bali.
	Marine transportation	Marine transportation in the form ferry boat located in the border Surabaya and Bali and is used when using bus transportation. Transported using bus and crossing takes 2-3 hours.
	Air transportation	Air transport using aircraft with a travel time of 1 hour from the international airport Adi Sucipto towards Bali's Ngurah Rai airport.
Accommodation Providers	Hotels (based on Star)	IDR.150.000 hotel price range, - until IDR.5.000.000 per night, service is friendly, safe, close to places of tourist visits. For hotels in the regions somewhat far from the crowds not known about level of security because it is usually travelers more preferable in the area near the center of the crowd or the tourist attractions.
	Resort	Usually used by the family included with the price of tour packages ranging IDR.10.000.000-30.000.000, -
	Home stay	Typically used by foreign tourists, backpackers, to stay longer at a lower cost and safer. IDR.50.000/day price ranges or IDR.500.000, - until IDR.1.500.000, -/month
Agency of Climatology	Circumstances of Weather and Climate	At certain months as the period from February to May, snorkeling tour is not held because of the choppy sea conditions. Usually get a warning from the body of meteorology, climatology and geophysics of Indonesia. For the rainy season is also not recommended for diving or climbing in the area of Tanjung Benoa and Uluwatu.
	Disaster and security conditions	In certain situations of natural disasters and security conditions affecting tourist attractions. Such as landslides, floods, tsunamis, or security disturbances as occurs in the Bali bombing.

5.2 Identified Keywords

Identification of keywords is performed based on customers' demand include customer-owned funds, time and place customers want to visit. The subsequent identification is performed based on the availability of facilities and services by travel agents, some knowledge about tourist attractions, transportation, accommodation, manpower and available budget.

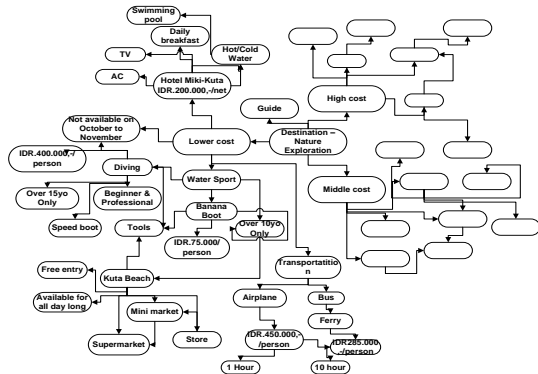


Figure 5. General Identified Keyword for Lower Cost Requirement

Figure 5 describes a tourist destination for nature tourism and shopping tourism. This is the most favored by tourists visiting Bali. In this figure there are three main clusters namely lower cost, middle cost and higher cost. Causal relationship indicated by arrows.

In this study only addressed the keywords used in a cluster of lower cost. It is exemplified in the form of input of lower cost keyword, standard hotel amenities, water sport tourism, and the cheapest transportation within 3 days. It will found number of knowledge which connected with the keyword.

A number of keywords can be presented in Figure 6. Note that there is so much knowledge gathered. This figure is intended only to give a clear description on the identification of keywords for the acquisition of knowledge. It given an example depend on customer knowledges. It known by customer requirements with number of requirements were the lower cost, interesting place, beach, water sport and have two until 3 days trip. So that number of knowledge can be found from knowledge base and IS support as information as Miki Kuta Hotel with lower price (IDR 200.000./net include all facilities), watersport at Tanjung Benoa (IDR 350.000,-/person include snoorkling, guide, banana boat) and the beach on the Kuta area (free entering).

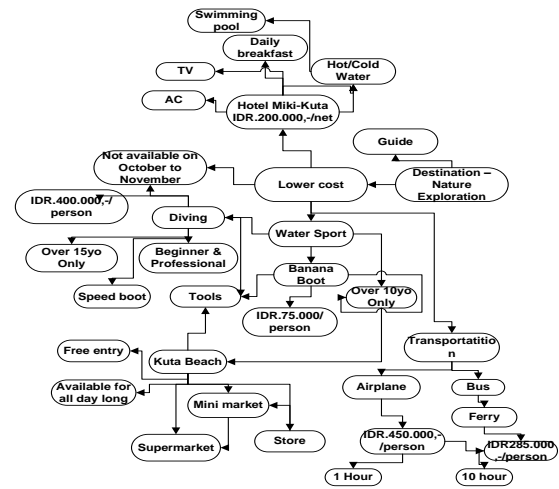


Figure 6. Identified Knowledge Based On Customer Requirement (Lower Cost)

5.3 Analysis

Analysis is performed by comparing the use of IS support that already exists on the PT. Sumber Turindo and the achieved results using of this framework. There are two clusters of data that were used as data analysis. The first cluster was collected from the evaluation of PT. Sumber Turindo's information systems strategic planning. The second cluster, was taken from the result of knowledge acquisition framework using the information system strategic planning phase approach.

The result of this analysis shows the use of knowledge acquisition in strategic planning to improve the performance of employee, the effectiveness of planning, monitoring and evaluation, work efficiency, time and cost as well as the flexibility of the product, as for example transport prices can change at any time, the conditions and situation of the tourist attractions, and forth. The results of this comparative analysis are presented in Table 2.

Table 2. Comparative Analysis Between IS Strategic Planning and ISSP with Knowledge Acquisition

Indicator	IS Strategic Planning	ISSP with Knowledge Acquisition
System	Structural	Flexible
	Requires a manual update from admin	Generalization of knowledge into information
	Limited data	Unlimited data, always updated, generating new knowledge
Visioning	Static documents such as previous product evaluation, compliance with organizational vision, job description	Outlines a number of alternatives and criteria for products based on the source of knowledge in the provided knowledge space.
Analysis	Understanding of the performance of the IS on company is still lacking, and this is because of alternative decision of a product is done manually. The existing IS is used for data recording and process evaluation.	Offers strategic IS performance to help workers determine which alternative decisions products would be launched, clear documentation of knowledge, and processing of knowledge into information as well as into new knowledge for the company that is very helpful.
Direction	Still performed manually by the admin and leader.	It has been in accordance with standards of IS development for using sources of knowledge, the acquisition of knowledge to keep lead on product overview and vision of the company
Recommendation	Still performed manually by the admin and leader.	Business roadmap exposed by input keywords from the keyword identification can then be communicated to the relevant parties such as field personnel, airlines, hotels and so on

6. CONCLUSION

The use of knowledge acquisition is needed to support the strategic IS. The management of IS using of knowledge management enables the processes the business of company in accordance with the company's objectives. In a tourism service company, it requires a lot of different sources of knowledge so that knowledge acquisition framework can be used to deal with knowledge management and help travel agent in the product planning, marketing until evaluation.

Generally, the scope of this framework can be applied to small-middle enterprises by customizing the first and second concept and the components of this framework. The first component is the IS support and knowledge base. The second component is the internal as well as the external that support the business strategy of the company.

Future research can be developed by developing application using the techniques of semantic, merging with SECI models and others.

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