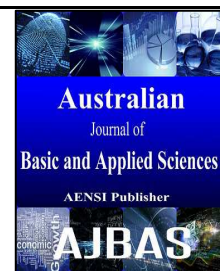




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Development of Knowledge Asset Valuation Model

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ABSTRACT

Knowledge assets which are related to an organization business core can ensure its competitive edge in business competition by transforming knowledge into goods and services. However unlike physical asset, Knowledge Asset is intangible and there are inadequacy techniques to measure the Knowledge Asset. The value of the Knowledge Assets varies, depending on human cognition and awareness which includes context sensing, personal memory and cognitive processes. The aim of this research is to interpret the value of the Knowledge Asset into a meaningful and tangible way. The objective is to develop a model that defines the value of Knowledge Assets. The research approach used is a qualitative single case research. The research has begun with a literature review, document study and interview for information gathering. The findings from the literature review reveals existing framework or model which applied to measure intangible asset. Whereas the document study reveals the factors that triggered event to create, review, update and dispose the Knowledge Asset. This information is used as a foundation to develop the conceptual model. Interviews have conducted and presented the model to the Knowledge Management manager and Knowledge Engineers to collect feedbacks about the conceptual model. As the result, the proposed model enables the Manager and Knowledge Engineers to use the identified factors to value the Knowledge Assets easily and interpret its value into more meaningful and tangible way.

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INTRODUCTION

Many organizations are transforming business model into knowledge based core competence because they are aware that knowledge asset is essential to design and perform business process efficiently and effectively. It is important to have knowledge asset to sustain a competitive advantage in the market place. But due to the nature of many knowledge assets which are intangible and provide wrong impression that they are less important causing organizations to lose their valuable knowledge assets unintentionally. In some scenarios of losing knowledge assets may cause the organization to lose its productivity and creativity in business process, ultimately it may cause the organization to lose its competitive advantage in the market place. It could be time consuming and costly in order to regain the loss of knowledge assets. Some experts believe that to regain the lost knowledge could cost 2 years of salaries of an employee.

Knowledge assets are important as physical and financial assets. It allows organization to design and

perform business processes efficiently and effectively. Also increases the possibility to create new products and services to enable a business to create its value.

Many organizations enjoy contributions by the knowledge assets, but it is difficult to determine actual value of the knowledge assets in a tangible way. Below are some examples on how to determine the loss of the organization if they experience knowledgeable workers leaving the company? What is the cost to discover, capture new knowledge and transfer to the employees? A framework that is able to interpret the values of knowledge assets into money term which helps the organization to understand the importance of their knowledge assets in a tangible way, to allow them to determine the essential knowledge which requires to support organization business process from time to time and to manage knowledge assets more effectively.

The paper is organised as follows. The Literature review section defines Knowledge Assets in detail and several methods of measuring intangible assets are discussed. The Measuring Intangible Assets

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discusses the four (4) methods of measuring intangible assets and comparisons between the 4 methods. Methodology section describes data collection instruments and procedures. Case Study Section describes the result of analysis and interpretation of the collected information. Model Development Section proposed the model of this research based on result generated from Case Study Section. This section will describe the concepts and components of the framework. The final section of the paper, "Conclusion" contains concluding remarks.

1. Literature Review:

According to InvestorWords.com, "Asset" is defined as "Any item of economic value owned by an individual or corporation, especially which could be converted into cash." This is including current assets (liquid cash), long-term assets (real estate, equipment), prepaid and deferred assets (insurance, interest), and intangible assets (trademarks, patents, copyrights, good will).

In the book of "Knowledge Asset: Securing Competitive Advantage in the Information Economy" by Max H. Boisot has defined Knowledge Assets as "stocks of knowledge from which services are expected to flow for a period of time that may be difficult to specify in advance."

Knowledge is intangible and varies towards human cognition and awareness. It is a combination of context sensing, personal memory and cognitive processes. To measure the Knowledge Asset also means to put value on people, both as entities and their collective capability (Skyrme, 1999). Unlike physical asset which have limited life time due to wear and tear, Knowledge Assets can extend its existence and may last forever. It depends on the duration of the updated knowledge base to adapt the change of the world. One good example is the knowledge of aerodynamics, Sir George Cayley discovered and identified four aerodynamic forces of flight –weight, lift, drag and thrust in 18 century and the knowledge has been utilized for three centuries. Another good example is the law of motion which is discovered by Newton that standardize of measuring in terms of mass length, and time which has been used for more than three hundred years (Boisot,1998). From the examples above, we can say that knowledge itself is not perfect (and it will never be) but it will continue to evolve and grow by going through series of experiments, trial and errors bringing best solution at that moment of time.

Snowden has further elaborate 5 types of Knowledge as below (Snowden, 2000):

1. Artefacts:

It is a result of knowledge that has been captured and codified. Examples of artefacts include documents, database and processes.

2. Skills:

It is combination of set of movements which follow in sequence to make a smooth, efficient feat in order to complete a task. Skills are acquired by going through set of training to improve competency.

3. Heuristic:

Technique that has mastered for problem solving, learning, and discovery which enable a person speed up a process. Most of people refer heuristic as "rule of thumb";

4. Experience:

Knowledge which is job dependence and exercised to perform a task, which many refer it as "hands on experience"

5. Natural Talent:

Some people are born with natural talent. This type of knowledge is practically unmanageable. The best method is to discover the talent and develop it whenever possible by providing chances to individuals to put their talents to best use.

Measuring the value of intangible asset such as Knowledge Asset is never been an easy task due for few reasons (Kaplan, 2004). First of all, the value of the intangible assets are subjective, the worth of intangible assets varies in difference of people. In an oil company for an example, it is very important for a retail firm to get hold of retailers as it can ensure the oil company could sell out smoothly; but to the Customer Service Department in the same company, they give more value to the customer service quality and satisfaction more than retailer. Second, the intangible assets are almost never creating value by themselves; they need to be combined with other assets in order to realize their full potential. A good example like investment in IT has little value unless it has complemented with HR training, the IT investment and HR training must be incorporated and associated towards corporate strategy in order to realize their full potential. Third, the impact of the intangible assets to financial performance is not immediate. For an instance, providing training Total Quality Management and Six Sigma could improve the process quality and to improve customer satisfaction and loyalty. However the investment of the training will be paid off if only the company is able to transform customer satisfaction and loyalty into financial benefits from the sales.

Despite the challenges mentioned above, it is still very crucial to recognize intangible assets as the tangible assets. Compared to the tangible assets, the intangible assets are more difficult to replicate by competitors, which makes the organization sustain their competitive advantage due to the distinct uniqueness. If the company manages to find a way to identify the value of their intangible assets, they could measure and estimate the company's competitive position and its strength easily and

accurately. Thus different frameworks have been developed to attempt measuring intangible assets which is discussed in the subtopics below.

A. Intangible Asset Monitors:

The intangible Assets Monitor is the framework introduced by Karl-Erik Sveiby. This framework measures the intangible asset by using table that classified employee into three categories: Competence, Internal Structure and External Structure. Each category is measured with four

perspectives: Growth (e.g. number of years in the profession.), Innovation (E.g. new concept or ideas development), Efficiency (E.g. value added per professional) and Stability (E.g. average of employees) of intangible assets. The format mentioned is for companies with large intangible assets. The Intangible Assets monitor can be implemented into management information system or to make an audit (Sveivy, 2001). Below is the diagram of Intangible Assets Monitor.

Market Value				
	Tangible Asset	Intangible Assets		
		External Structure	Internal Structure	Competence
Growth				
Innovation				
Efficiency				
Stability				

Fig. 1: Snapshot of Intangible Assets Monitor.

The choice of the indicators vary to the company strategy and require adjust to the reality of the company. Each of the perspective which corresponds to three categories should be measured by one or two indicators. The monitor should not exceed more than

a page and should be accompanied with some comments. The diagram below illustrates how to utilize Intangible Assets Monitor by filling in indicators accordingly:

Management Consulting Firm Monitor				
Indicators for	Financial Value	Intangible Assets		
		External Structure	Internal Structure	Individual Competence
Growth	Partner Equity Growth	Fee Growth	Big job ratio %	Averag. Grade
		Fee share from Image enhancing clients % time on maintaining existing clients.	Fee share from Organization enhancing clients	Competence enhancing clients. PAS Rating average. Share postgraduates of employees
Renewal	Share of fees from high Margin clients Investment / depreciation Net	Fees from new clients as % of fees. % time on developing new clients.	Share of fees from new concepts / lines % time on R&D	% time on training courses. Training time /total fees
		Win/Loss Tender Index. Satisfaction Index Old clients	Fees per Support Staff. Support staff utilisation %.	Capacity Utilization Deficiency rate
Efficiency	ROE Gross Margin	% time on proposals. Averag. Size of jobs	Satisfaction Index Support Staff.	Satisfaction Index consultants Value added per consultant.
		Share fees from 25% most satisfied clients. Share fees from 25% least satisfied clients.	Support Staff turnover. Median age support staff Rookie Ratio	Seniority consultants Consultants' turnover Median age consultants

Fig. 2: Snapshot of Intangible Assets Monitor.

B. Skandia Navigator:

The Skandia Navigator was developed by Edvinsson (Edvinsson,2007). The framework is a collection of intangible measurement methods which provides a holistic view based on performance and goal achievement. The Skandia Navigator is used to measure the Intellectual Capital and Knowledge Assets of the company. The framework consists of 5 perspectives which are listed below:

- **Financial Focus** – captures financial outcome of activities. It establishes long term goal and overall condition to the rest of perspective
- **Customer Focus** – indicates how well a company serve customers via products and services.

- **Process Focus** – captures processes which create products and services to meet the need of a customer which by providing an efficient customer support services.
- **Renewal & Development Focus** – focus to reassure a long term development and sustainability of an organization including areas of focus in attaining and developing knowledge which are needed to distinguish and satisfy customer needs.
- **Human Focus** – the core of the navigator where the knowledge creation is visualized in this area to satisfy the employees' work situation in order to satisfy customer needs and to improve the company's performance and sales.

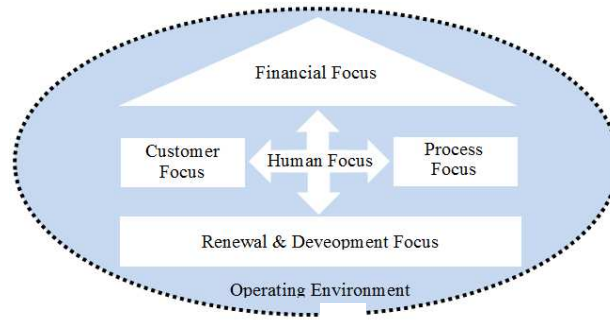


Fig. 3: Skandia Navigator.

C. Meritum Guidelines:

Meritum Guidelines is a framework which provides specific definitions of the terminology and

present comprehensive model for the management of intangible assets (Meritum, 2001). (Refer to Figure 4).

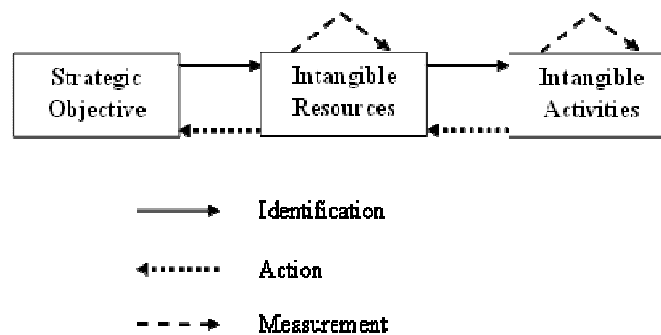


Fig. 4: Meritum Model for Intangible.

The concept behind this model is to guide the company to identify and measure its intangible resources. Then it executes the activities to develop intangible resources and re-measures its intangible resources again. Meritum Guidelines consists of three phases (Refer Figure 5). The first phase is to guide company to identify the vision of the company; the vision should come with a statement which is described in a depiction form of how stakeholders could benefit from the company's intangible assets for an example of the value creation and its key factors. The vision should be directly related to company's core competence and to illustrate methods of intangible help to achieve its Strategic Objective. In the second phase, the company needs to identify the intangible resource which is aligned to their strategic objectives and the activities that could affect the intangible resources. The intangible resources and activities are to be categorized as Human Capital, Structure Capital and Relational Capital; these capitals are the elements used to create value for the company. Next, the company will need to design support activities to be used to examine and improve intangible activities which is possible to impact on the intangible resources. The relationship between activities, resources and the vision should be transparent. Finally, a system of indicators will be used to assess how well the company is fulfilling its

objectives. The system is considered as indicator of how the company manages their intangible resources. Although there are no fixed indicators required for the system indicator but the indicators must be verifiable for auditing purpose and should reflect the Human Capital, Structural Capital and Relational Capital which are important to be managed and monitored.

D. Danish Guidelines:

The Danish Guideline is another framework which is designed to measure the intangible assets (Danish, 2000). What makes Danish Guidelines different compared to other frameworks is the guideline of constructing an Intellectual Capital (IC) statement. Similar to the financial statement, an IC statement is a report which focuses on the KM strategy of an organization. It is designed based on four elements: Knowledge Narrative, Management Challenges, Initiatives and Indicators. These four elements represent the analysis of the company's KM in the IC statement (Refer to Figure 6).

The first element is Knowledge Narrative; it is a written description which describes the value of the company's goods and services to their customers. The Knowledge Narrative describes types of the knowledge resources that create the value of the company which needs supply. The second element is

Management Challenge which is derived from Knowledge Narrative; this element emphasizes on reinforcing knowledge resources through in-house development or outsourcing. This could be done by cooperate with innovative customer, developing greater expertise in specific field or to improve the company processes. The third element is Initiatives which is used to tackle the Management Challenges. In this element, the focus is on resolving challenges of a management in practical ways by composing

developed and procured knowledge resources. The last element is the Indicator which is used to examine whether Initiatives is being used or Management Challenges being met.

To measure performance of the IC statement, an Analysis Model has been developed. (Refer to Figure 7).

A comparison was made among four of the models and are summarised as Table 1:

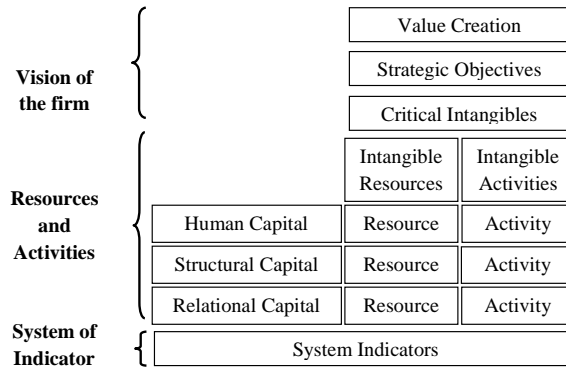


Fig. 5: Three Phases of the Meritum.

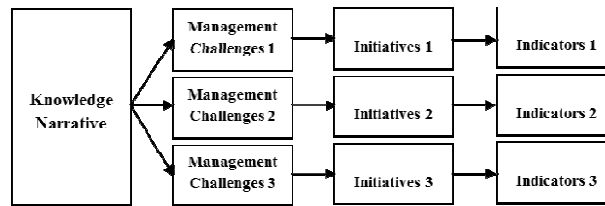


Fig. 6: The Intellectual Capital Statement Model.

Evaluation criteria	Effects	Activities	Resources
	What happens	What is done	What is created
Knowledge Resources			
Employee			
Customer			
Processes			
Technologies			

Fig. 7: Analysis Model for IC Statements.

These models have different approaches to measure the intangible assets. But they share two common actions while defining the measurements:

1. Discover factors to be measured.
2. Define performance measures for the identified factors.

Such actions are taken place as the foundation in measuring performance of the intangible assets. In

general point of views, factors are related to objectives of the company where quality performance must be performed. Meanwhile to define performance measures to identify factors is to serve as benchmarking of the performance. Based on the purpose of the measurement; the result of the benchmarking could be used to control, motivate and guide the company. Figure 8 below is illustrated is a

common state of four models in managing factors into measurement.

Table 1: Comparisons of the models.

Intangible Assets Monitor.	Skandia Navigator	Meritum Guidelines	Danish Guidelines
<ul style="list-style-type: none"> Pioneer in the area of measurements of intangible assets for management and external reporting. Basis model of many current measurement solutions. 	<ul style="list-style-type: none"> Design to measure intangible assets for management and external report. First model that attempt measure intangible assets in general ways. 	<ul style="list-style-type: none"> Design to guide the company identifies and measures its intangible resources. Framework that providing specific definitions of the terminology and present comprehensive model for the management of intangible assets. 	<ul style="list-style-type: none"> Framework provides guideline that constructing an IC statement similar like financial statement. The measurement basis is specific on company management challenges

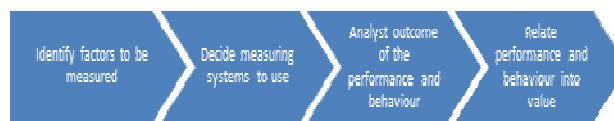


Fig. 8: Flow of Managing Factors into Performance Measurement.

Methodology:

This research focused on studying the current practices to valuation of Knowledge Assets at Company A. It investigated the possibility of implementing new method to measure value of Knowledge Asset and developed a model that defines and reflects the value of the Knowledge Assets.

In this research, the exploratory approach was applied to investigate the way to value the Knowledge Asset which is possessed by Company A and to identify the factors which affects the value of the Knowledge Asset. The qualitative method used to deal with cases which cannot be measured but can be investigated in depths via the observation, interviews and documents review. It helped the researcher to gain deep understanding of the subject and to identify how it could be related to a new concept. The data collected via qualitative method is used as recommendation and foundation to implement concept model to value the Knowledge Asset. The best approach to study the subject is to be led by the purpose of the study and with the research questions as guidelines (Yin, 2009). With that justification, below are the approaches which were conducted for this research:

A. Perform literature review to understand the nature, characteristic and relationship between the value, knowledge and intangible assets. Through the literature review, the operational key words has be defined and described. A brief discussion about the challenges which measures value of the intangible assets will provide a better and comprehensive understanding for the research.

B. Study and explore process of Knowledge Script creation and maintenance which being implemented at Company A. To understand their process flow, the

components procedures and the regulation that has been involved.

C. In this research, a single case study method is applied to provide a better understanding of the under study event being supported with the relevant document. An investigation is conducted to understand process that manages Knowledge Script at Company A. The case study will be used to describe the situation and the requirement which is needed to value Knowledge Asset in this company. After documents from Company A are reviewed and analyzed, an initial concept model will be developed. The model will be reviewed by Knowledge Engineer (KE) and Subject Matter Expert (SME) via survey to provide the inputs to improve the model and to validate proposed model. KE is responsible for periodically reviewing the knowledge documentation being stored, being cognizant of expiration dates of knowledge assets, ratings, and confidence levels to perform the review.

The study started off with existing process that measures the Knowledge Asset at Company A and identified the factors which were initiated to create, maintain and dispose Knowledge Script. To accomplish these, an interview was conducted with Operation Support Office's (OSO) personnel and reviewed documents which are related for analysis. Also, identified the events which triggered to create, maintain and dispose the Knowledge Scripts which assisted in developing model to value the Knowledge Asset. The model practiced by Company A was compared to other models to identify the gap and opportunities which was used to implement new model.

For data gathering, an interview method was used through the development of a series of semi-

structured interview questions related to the units-of-analysis. This method was chosen in order to have a better guide and produce a more informative interview session. This involved the use of multiple data collection methods such as data, methodological and interdisciplinary triangulation (Yin , 2009 ; Denzin , 2000).

In addition to the interviews, data was collected through several other sources such as archival documents, minutes for meetings and consultancy reports. Eisenhardt suggests that the usage of multiple data collection methods supports triangulation and provides a concrete and solid foundation of theory. Interviews shall be recorded and transcribed. A copy of the transcription shall be provided as soon as possible after each interview for further verification (Eisenhardt, 1989).

Concept model was developed based on understanding of the process and procedures which were undertaken in the managing knowledge scripts at the company A. Development of the model was required to support evaluation of knowledge assets of the organization. A model was used to interpret the value of the knowledge assets in currency to provide significant ways to view the knowledge assets similar to the physical asset in an organization. The model should be able to generalize the cost of the knowledge including i) identified knowledge; ii) preserved knowledge; iii) foster the growth of knowledge and updated frequently iv) knowledge sharing. Later, the concept model will be reviewed

by Knowledge Engineers (KE) and Subject Matter Experts (SME), their feedbacks and opinions of the concept model became the references on improving the model before it was proposed.

Case Study Analysis:

The single case study analysis technique is used to present and to analyze the information which is collected from Company A. This research has selected Company A's Operation Support Office (OSO) as a case study for the process of managing Knowledge Scripts in order to develop a model that values the knowledge scripts. The sources of the information are mainly from the personals from OSO such as Knowledge Management Manager, KE, SME and the documents of case study.

Company A is a multinational Corporation which provides IT and business process outsourcing, professional services such as management and technology consulting. OSO is actively involved in activities within KM such as to create, update, review and retire knowledge scripts. Their role is to ensure a completed, timely and accurate knowledge script which stored in the Knowledge Repository and to ensure the availability to those who requires knowledge to solve the IT related issue.

In Company A's perspective, KM is a process that underpins nearly all aspects of its Service Model and all of its components. Figure 9 below is a process flow diagram which provides a general view to Knowledge Management process.

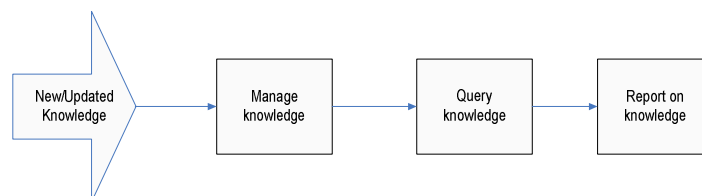


Fig. 9: Process Flow of Knowledge Management Process.

The current process has involved 7 participants. They are Knowledge User(KU), Knowledge Submitter(KS), Knowledge Owner(KO), Knowledge Administrator(KA), Knowledge Engineer(KE), Subject Matter Expert(SME), and Knowledge Publisher(KP). Figure 10 has illustrated the current knowledge script management process in Company A and Table 2 provides the summary of roles and responsibilities for each participants.

Knowledge Script is one of Company A's Knowledge Assets. It used to provide solutions for various problems which the employee may encounter in the working environment. The content of the Knowledge Scripts including IT related issues, business process how-to, template or format of the document for the documentation purposes and many more. Each Knowledge Script is to display information such as: document ID, problem type,

problem description/scenario/questions, solutions, and attachment. At the end of the script, users are able to rate the knowledge script, leave comments and mark as request to update the knowledge script.

Based on result of the interviews and documents study, it shows that:

1. The company does not value the Knowledge Script.
2. The staffs hardly view the Knowledge Script as Knowledge Asset.
3. The value of the knowledge scripts is not tangible to the staffs.
4. The task to maintaining the Knowledge Repository has become a hassle.
5. There is no plan in near future to adopt framework or model to evaluate knowledge script

The following practices and issues were identified after interviewed with OSO's personnel:

1. The current practice of managing knowledge scripts
2. The workflow of the current practice
3. Opinion of valuing knowledge assets
4. The problems and challenges of maintaining knowledge scripts

The following practices and issues were identified after an interview with KM manager:

1. How OSO conducts knowledge management process.
2. Personnel who plays the major role in the knowledge scripts management.
3. How OSO evaluates the knowledge scripts which are stored in Knowledge Repository.

The tables below are the summary of findings through the interviews and document studies.

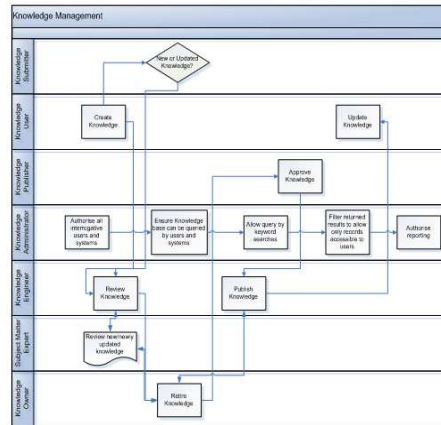


Fig. 10: Overview of Knowledge Script.

Table 2: roles and responsibilities for each participants.

Reviews - Approves	Legends						
Contributes - Performs	Knowledge User	Knowledge Submitter	Knowledge Publisher	Knowledge Administrator	Knowledge Engineer	Knowledge Matter Expert (SME)	Knowledge Owner
Responsibilities							
Manage Knowledge							
Create knowledge	P	C					
Review Knowledge					P	C	
Retire knowledge		C	P				P
Approve knowledge		C	P		C		
Publish knowledge			C		P		
Update knowledge	P						
Query knowledge							
Authorise all interrogative users and systems				P			
Ensure knowledge base can be queried by systems				P			
Allow query by keyword searches				P			
Filter returned results to allow only records accessible to users				P			
Authorise reporting access				P			

*Note: C = Consultant, P = Participant

Table 3: Summary of findings through the interviews.

Interviews Findings
<ul style="list-style-type: none"> OSO personals are unable to recognise the value of the Knowledge Assets. There is no framework or model to evaluate value of the Knowledge Scripts.
<ul style="list-style-type: none"> Knowledge Scripts are rated by Knowledge Users according to their rating system, usage rate and comment which could be misleading.
<ul style="list-style-type: none"> Challenges in maintaining knowledge scripts. Expected challenges in implementing new model.

Table 4: Summary of findings through the document study.

Documents Findings
<ul style="list-style-type: none"> The whole process of knowledge scripts management.
<ul style="list-style-type: none"> Events that trigger knowledge creation, review, update and retire process. This will be a reference to identify factors to value the knowledge Scripts.
<ul style="list-style-type: none"> Roles and responsibilities of each participant in Knowledge script management which are the recommended references to select participant to value the knowledge based on factors.

After comparing to Company A's current practice with the models reviewed in Literature Review Section, few gaps have been identified.

1. Factors are not identified to evaluate the Knowledge Script.
2. The value of Knowledge Script is not tangible and less visible.
3. Company A does not own a measurement system to measure performance of the Knowledge Script.
4. Knowledge Users play a major role to evaluate the performance of the Knowledge Script. The result is subjective and does not reflect the actual value of the Knowledge Script.

The findings from the above served as one of the underlying foundation to formulate the proposed model.

5. Model Development:

The foundation of the conceptual model is derived from the literature review, document study and interview. The purpose of developing the model is to enable the OSO personal to use identified factors to value the Knowledge Assets with an easier way and to interpret its value into more meaningful and tangible way. There are three components in this model: Peoples, the Measurement System, and Process, as shown in Figure 11.

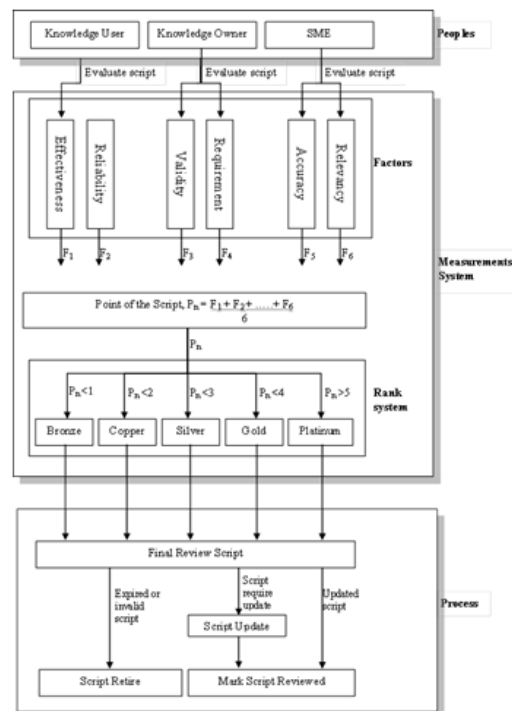


Fig. 11: Components of the Knowledge Asset Valuation Model.

The following subsections will have further describes the component of the model.

People:

Previously, Knowledge Users are the only major role which rates the Knowledge Script. In the new model, there are three participants who play the role to evaluate value of the Knowledge Script:

- Knowledge User
Any person who uses the knowledge as part of their daily task.
- Knowledge Owner
The person who contributes and owns the knowledge script.
- Subject Matter Expert(SME)

The person who is an expert of a given Knowledge Script.

The Knowledge User, Knowledge Owner, and SME will evaluate the Knowledge Script according to specific indexes which are used in the value system.

Value System:

The measurements of the value system are derived from the document study where it describes the event of trigger the Process of Knowledge Script Management. Each participant listed at previous subsection People has a different event which triggers the process. The new model is to take the advantage of the event which can be used as the factors which affect the Knowledge Script Value. The Table 5 has listed events triggered by each participant:

Table 5: Events that trigger by each participants.

Participants	Events
Knowledge User	<ul style="list-style-type: none"> User cannot find any knowledge script in the given area. Problems are not resolved by solutions given in the Knowledge Script.
Knowledge Owner	<ul style="list-style-type: none"> Identifies that Knowledge Script has expired. New knowledge or business process has been introduced.
Subject Matter Expert	<ul style="list-style-type: none"> Aware and able to identify the changes of new technology or knowledge. To identify knowledge script is outdated, inaccurate and irrelevant.

Each event listed above is interpreted into factors. These factors are used by participants as the

indicator or performance measurement to value the Knowledge Script.

Table 6: Factors that value by the participants.

Participants	Factors
Knowledge User	<ul style="list-style-type: none"> Script Effectiveness. Script Reliability.
Knowledge Owner	<ul style="list-style-type: none"> Script Validity. Script Requirement.
Subject Matter Expert	<ul style="list-style-type: none"> Script Accuracy. Script Relevancy.

Each factor given has its definitions as listed below;

the script exists to support the business process is concerned.

• **Script Effectiveness:**

To measure the quality of the knowledge script; the solutions returned in the script guides the user on doing the right things to the achieve objectives and to solve problems.

• **Script Accuracy:**

To measure the precision of the knowledge script; where the details of the script enables user to perform the task or to resolve issue with precision is concerned.

• **Script Reliability:**

To measure the consistency of the knowledge script; the ability of the knowledge script to perform its function or mission to the solutions which are delivered to users consistently without degradation or failure is concern.

• **Script Relevancy:**

To measure the degree of pertinent between the knowledge script and the problem; where the details of knowledge or solutions of the knowledge script is closely tied with current business process or known issues is concerned.

• **Script Validity:**

To measure the validity of the knowledge script in certain period of time; where the solutions of the script are effective and remained in force in the specific timeframe concerned.

Each participant can rate the particular factors from scale 1 to 5, the higher value for the better performance. After the knowledge script is evaluated, the performance of the Knowledge Script will be tabulated into a chart shown as figure 12

• **Script Requirement:**

To measure the necessities of the knowledge script; where the degree of the needs and demands of

Next, the total points accumulated from the factors will be averaged. The average points will fit in to the rank listed at Table 7 below.

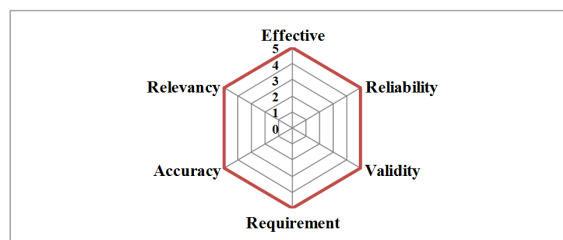


Fig. 12: Example of the chart.

Process:

This subsection will illustrate the process of the model. The idea behind of this process was suggested by Knowledge Management Manager and

Knowledge Administrator. It is suggested to implement the model in the process where the knowledge script is documented, stored at Knowledge Repository and published to the

Knowledge Users. The process is adjusted to fit in the “Evergreen Process”. The process of the model show as figure 13:

Table 7: Table of Ranking.

Average Points	Rank
$0 \leq X < 1$	Bronze
$1 \leq X < 2$	Copper
$2 \leq X < 3$	Silver
$3 \leq X < 4$	Gold
$4 \leq X \leq 5$	Platinum

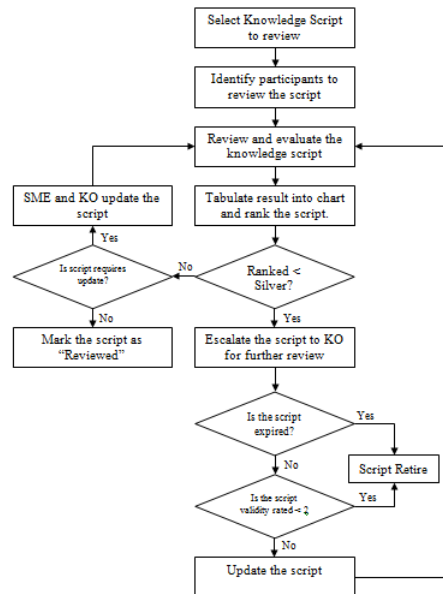


Fig. 13: Flow of the process.

Conclusion:

Knowledge Assets is one of the valuable assets and crucial for the growth of the companies and enable them to sustain their competitive edge. By understanding the value of their knowledge assets will help the companies to manage and retain their precious knowledge. This research is attempted to provide solution where the knowledge assets can be tagged with value and be recognized by the people. Specifically, the proposed model has given an idea on how to identify the value according to the specific factors, and then magnify the value into charts and its rank. Allow users to view the value of the scripts in more tangible and meaningful way.

The studies have revealed the events which trigger the process to create, review, update, and retire the knowledge script and the roles and responsibilities of participants in each event and the methods used to rate the scripts. This information is analyzed and utilized to develop the model. The second contribution was the development of the model to value the knowledge scripts. The aim of the developed model is to utilize identified factors to evaluate the value of the knowledge script.

Finally this research recommends continuing a further study on this model to expose it to other possible improvement and potential of the model. In this research, it is only to focus on valuing the

knowledge scripts. It would be good opportunity to have further research to value other knowledge assets such as skills, heuristic, experience and etc. Also, to conduct further case study with simulation to illustrate how to use the developed model in the working environment and with quantitative elements to increase validity of this research.

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