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Measure the quality policy in web services

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Abstract

The purpose of this research was to measure the ability of exchange information and to measure the maturity of the web service quality policy. Due to the risk arising from various databases in the information and communication system that may cause damage. However, data may be destroyed. The risks are from data intruders Identity theft, such as customer information, supplier information entering to edit information, etc. In addition, this research has studied the quality policy characteristics of quantitative research methods of selection of samples group sampling method of the sample in the data set. The tools used to gather information and data analysis after that, the quality policy from the web service was analyzed. It was found that the executives of the software project had knowledge about quality policies with an average of 71%. However, the application of the second data set and the third data set showed that the administrators of the software project had a moderate level of knowledge about the quality policies with an average of 72%. Therefore, the comparison figure at 4.4 - 4.5 found that both of the above examples there are significant differences with an average of 60 - 67%.

Keywords: information system risk; quality policy; web services

บทคัดย่อ

การวิจัยมีวัตถุประสงค์เพื่อวัดความสามารถในการแลกเปลี่ยนสารสนเทศและวัดวุฒิภาวะของนโยบายคุณภาพของการบริการเว็บ เนื่องจากความเสี่ยงที่เกิดจากฐานข้อมูลต่าง ๆ ในระบบสารสนเทศและการสื่อสารอันอาจจะก่อให้เกิดความเสียหาย อย่างไรก็ตามข้อมูลอาจจะถูกทำลาย ความเสี่ยงจากผู้บุกรุกข้อมูล การโจรกรรมข้อมูลที่มีความสำคัญ เช่น ข้อมูลลูกค้า ข้อมูลผู้จัดจำหน่าย การเข้ามาแก้ไขเปลี่ยนแปลงข้อมูลเป็นต้น นอกจากนี้การวิจัยครั้งนี้ได้ศึกษานโยบายคุณภาพ ลักษณะของการวิจัยเชิงปริมาณ วิธีการเลือกของกลุ่มตัวอย่าง วิธีการสุ่มตัวอย่างแบบกลุ่ม วิธีการสุ่มของกลุ่มตัวอย่างในชุดข้อมูล เครื่องมือที่ใช้ในการรวบรวมข้อมูล และการวิเคราะห์

ข้อมูล จากนั้นจึงนำนโยบายคุณภาพจากบริการเว็บมาทำการวิเคราะห์ พบว่า ผู้บริหารของโครงการซอฟต์แวร์มีความรู้เกี่ยวกับนโยบายคุณภาพอยู่ในระดับปานกลาง มีค่าเฉลี่ย ร้อยละ 71% อย่างไรก็ตาม การประยุกต์ใช้ชุดข้อมูลที่สองและชุดข้อมูลที่สาม พบว่า ผู้บริหารของโครงการซอฟต์แวร์มีความรู้เกี่ยวกับนโยบายคุณภาพในระดับปานกลาง มีค่าเฉลี่ย 72% ดังนั้น ผลการเปรียบเทียบรูปที่ 4.4 - 4.5 พบว่า ทั้งสองตัวอย่างข้างต้น มีความแตกต่างกันอย่างมีนัยสำคัญมีค่าเฉลี่ย 60-67%

คำสำคัญ: ความเสี่ยงของระบบสารสนเทศ นโยบายคุณภาพ บริการเว็บ

Introduction

The quality policy is like a goal. The quality policy must be equal or equal to other policies of the organization or be part of the long-term plan that the organization needs. However, the quality policy must be reviewed in accordance with other ISO9001: 2008 requirements, such as management reviews and must be used for establishing quality objectives for management Therefore, the quality policy is a short-term plan that needs to be achieved.

Data mining is a process that involves a large amount of data to search for hidden patterns and relationships in that data set. Currently, data mining has been applied to many types of work both in the business that helps in the decision of the executive in science and medicine as well as in economy and society.

Web media services for presenting information on a computer or is a collection multiple webpage which are connected via hyperlinks which must be opened with a special program called the web browser which is stored on the World Wide Web and that website was created using a computer language called HTML (hyper-text markup language).

Currently, it has brought the internet technology to apply variously, especially to apply as product services and website services. Besides, the working of each website can increase the opportunity to be available to the customer groups including of more comforts in running the businesses throughout the world. However, with the more requirements, so nowadays it doesn't depend on only the comforts, the varieties of products and internet technology services but it also depends on the one stop service on websites. Similarly, this research has the first aim to study the web services which is the one service with capability to exchange information between websites and coordinate with working on systems differently to response for the requirements. In addition, this research has additional aims to measure the maturity of quality

policy of web services as these following details: literature review, relevant researches, research methodology, results and conclusion.

Literature review

The proposing of concept ideas and relevant theories of research has the objective to understand the principles and relevant theories to apply with this research. Besides, the risk of information systems. Information system risk management, strategic risk management, financial risk management, and web services for internal use in the organization. The policy standard of the quality policy with details as follows:

Information system risk

Information technology risk refers to the risk that occurs to various databases of information systems within an organization. Which may cause damage data is compromised, the risk from data intruders Identity theft, such as customer information, supplier information hacking and editing of information these risks are all necessary to manage the data. Therefore, data security is important, because the information is an important factor for executives that will be used to help make decisions and use for planning. Therefore, the security of information, information systems from various problems, both from individuals inside and outside natural disasters or any event must be analyzed and protected to ensure the stability of the information system and technology.

Information System Risk Management

1. Computer and network security (information and network security) such as preventing network intrusion specifying an individual password for accessing a computer.

2. Confirmation or proof of identity in information systems for accessing information as appropriate for the function, such as determining the user's password restricting access to information Using finger scan to scan the iris for identification depending on each organization to choose the method that is appropriate for the organization.

3. Supervising and preventing the use of external storage media because it may be difficult to control the leakage of information and risk of viruses that will destroy the information in the information system as well.

4. Backing up data regularly and testing the reuse of backup data to see if it can be used

5. There is a plan for rehearsing the system regularly. Simulate that the server is broken by removing it from the network. The system using the system, how long the data can be used or not and analyze out how much the organization will lose.

6. Making a backup and disaster recovery plan in detail so that the system administrators can have the correct methods or methods of operation.

Strategic risk

Strategic risk arising changes in the organization's policies due to changes in policies and the management of various organizations and causing information technology to require changing strategies and strategies.

Strategic risk management

By communicating policies and driving information technology plans in departments at all levels thoroughly and the plan has been transformed into action seriously those involved in the IT planning and planning must communicate. With the management and bring the policy into analysis to adjust the strategy to be in line with the policy of the management.

Financial risk

Means the risk of insufficient budget support and unable to disburse budget on time many organizations tend to encounter these problems. This causes the development or implementation of information technology in organizations in various projects without success. However, there must be a plan to protect the risk carefully, which is quite important. If the introduction of small information technology may not clearly see the picture If it is a large information system such as an ERP system, without a good plan, the budget will escalate due to the fact that the system itself is millions. In addition, the impulse charge is also avoided by millions.

Financial risk management

1. Make a detailed budget management plan and taking into account various factors involved to cover.

2. Prepare a plan for managing changes that may occur, such as variable rates.

The equipment costs have increased and cannot find the required information technology equipment can the new operating system change support the information technology system within the organization and hiring more employees or increasing salary rates etc.

3. There is a follow-up to the expenditure budget continuously. If abnormal, it can correct and prevent various effects in a timely manner.

4. Proposal for causes that budget changes or causes of delay in various projects in the information technology system.

5. Prepare a summary of budget spending reports within various projects or the organization per year or in the development of information systems or maintenance of various aspects of information technology to be used in planning the establishment of budgets for future projects.

Bringing web services to apply inside organizations.

The internet technology to apply variously, especially with product services and website services, it can increase the chance to be available to the targeted group including of more comforts to run the businesses around the world. On the contrary, it mightn't depend on only the comforts and varieties of products and internet technology services, but it also depends on the one-stop service on the websites.

Quality policy

The quality policy is a specification which for the defined in the ISO 9001: 2015 standard,

This is establishing a quality policy and communicating quality policies. The way to achieving ISO 9001:2015 certification saves time and money with quality manuals and procedures. In which this research is an examination divided into 3 parts as follows:

Requirements are defined in the system development process which, before implementing the development, there will be a demand analysis.

Communication is a process that exchanges facts, attitudes, opinions, and experiences from one person to another.

Understand is the knowledge, ability, and skills of people to access information assess the searchable information and use information efficiently in all forms Information literate must have skills in various fields.

Data mining

Data mining, also known as Knowledge Discovery in Databases (KDD) is a technique for automatically finding patterns from large amounts of data by using algorithms from statistics

machine learning and pattern recognition or in another definition data mining is the process of dealing with data (most often in large numbers) to find patterns, approaches, and relationships hidden in that data set. The based on statistical recognition, machine learning and mathematical principles based on the knowledge gained from data mining, there are many forms, including. (Jiawei, Jian & Kamber, 2011, p 125)

Association rule

Show the relationship of an event or object concurrent examples of application of linked rules, such as product sales data analysis by collecting data from point of sale systems (POS) or online stores and then consider the products that buyers tend to buy at the same time, for example, if they find that people who buy videotapes tend to buy adhesive tapes too stores may also store two items near each other to increase sales or may find that after people buy book often buy book as well, this knowledge can be introduced to people who are buying book.

Data classification

The rules to identify the type of object from the properties of the object, such as finding a relationship between the results of various physical examinations and disease by using patient data and doctor diagnoses stored To help diagnose the patient's disease or medical research in business, it is used to look at the qualifications of those who will create good or bad debt to support loan approval.

Data clustering

Dividing similar data into group patients with the same disease according to the symptoms to be used in the analysis of the cause of the disease based on patients with similar symptoms.

Conceptualization (Visualization)

Create computer graphics that can present a whole lot of information instead of text and hidden information when looking at that data set using visualizations.

Capability Maturity Model Integration: CMMI

The standardization process for rubbed work development was created at the Institute of software engineering. Carnegie Mellon University, USA, Software Engineering Institute, Carnegie Mellon University, USA. However, CMMI is a standard for improving software quality to be effective is well-known and accepted internationally if any organization receives CMMI, it is considered that the organization has an effective product (product) and product development process (product). Being trusted by customers and is a guarantee of the work very well. CMMI can be divided into

5 levels, which is used as an indicator of the maturity of the organization's process. (Chrissis, Konrad, & Shrum, 2003)

Level 1 Initial (Initial) is the initial level. There is no process area defined for this level.

Level 2 Managed is a level that defines 7 basic management processes such as requirements management and project planning.

Level 3 Defined (Defined) is a level that defines processes throughout the organization consisting of 11 groups of processes such as requirements development and technical solution.

Level 4 Quantitatively Managed is a level that uses quantitative management principles to help manage the nature of the process and to detect abnormalities caused by natural disorders. Special Cause of the process, therefore resulting in unpredictable results this level consists of 2 groups of processes such as organizational process performance.

Level 5 Optimizing is the level where root cause analysis is done to solve the root cause problem. This will be followed by process improvements or the introduction of innovations to solve the said problem this level consists of 2 groups of processes such as causal analysis and resolution.

Business Process Maturity Model or BPMM

The development is based on the concepts from SW-CMM and CMMI. The process is called Process Area because PA in the model may be transformed into many processes of activities in these processes when combined. The only place where BPMM can be divided into 5 levels as follows: (Jihyun, Danhyung & Sungwon, 2007)

1. Initial - "Fire-fighting management" - There are no specific objectives. Success in these organizations depends on the competence and heroics of the people in the organization and not on the use of proven processes.

2. Managed - "Work unit management" - The objective is to create a management foundation within each work unit or project.

3. Standardized - "Process management" - The objective is to establish and use a common organizational process infrastructure and associated process assets to achieve consistency in how work is performed to provide the organization's products and services.

4. Predictable - "Capability management" - The objective is to manage and exploit the capability of the organizational process infrastructure and associated process assets to achieve predictable results with a controlled variation.

5. Innovating - "Change management" - The objective is to continuously improve the organization's processes and the resulting products and services through the defect and problem prevention, continuous capability, and planned innovative improvements.

Project Management maturity model

Project Management maturity model is developed from PMBOK & PM3, which is the development of project management in the organization, which is the success factor of project management. In addition to the skills of project manager and the team, also includes the readiness of the organization to promote the project management to be effective most organizations are aware of the importance of human resource development to have knowledge and competency in project management (Personal Competency), which can be seen from continuous training for personnel. However, personnel development is just one factor that makes the project successful. The project will be achieved and achieve the objectives. However, another important factor is the process readiness and the standardized tools for managing the organization's project (organizational maturity). PMMM can be divided into 5 levels as follows: (Kerzner, 2005)

1. Awareness Level is the initial level of an organization that has started to change operations in the organization from routine-based to project-based. Employees in the organization know project management and aware of the importance of project management.

2. Repeatable Level is the level that organizations begin to learn to set up processes to be the standard for project management. But still a wide standard and there is no central unit responsible for setting up the standard process and supervising project management to meet the standards (project management governance).

3. Defined Level is the level at which the organization has a central unit to supervise the project or PMO and has a standard process for project management that is the same standard at the methodology, process, procedure, form, and template.

4. Managed Level is when the organization can supervise project management to be the same standard is time to measure the performance of the project.

5. Optimized Level is the level of the organization that is the top of project management, that is, control of project management to have the same standard process.

Relevant researches

In the case of developing the measurement patterns and improving the capacity of the Business Process Maturity Model or BPMM, this model is to measure the ability and improve the business procedure (Jihyun, Danhyung & Sungwon, 2007, pp. 384-395). Besides, this model consists of the following: 1. Input or Service Factors or Manufacturing Management Factor; namely, budgets, foundation, purchasing, materials and the first stage of operation for business manufacturing procedures 2. A mechanism to determine the product methods; namely, tools, users, changed manufacturing factors of products and services 3. Controlling to control and analyze relevant statistics work with factors 4. Output for servicing the users and take caring of products by surveying from questionnaires to determine contents and improve procedures with measurements and capacity of business procedures

In case of developing the management pattern of software project to take assessment in project management inside the organization by using P2CMM principles (Zhang, He & Zhang, 2012, pp. 3691-3697), it can classify into this following: 1) the targets above the operation result in current day without determining in over expectation way to be achieved 2) Procedure to order the continuous actions until finish work 3) Sub-procedures or the works with order the main procedures with content questionnaire creating and surveys through websites for surveys analyzing, index systems and questionnaires result in assessment or to check the questionnaires numbers and correctness by bringing information to make processing into the codes

In the case of developing the models with the concept idea (Ehsan, Malik, Shabbir, Mirza & Bhatti, 2010, pp. 113-116) of PMBOK & CMMI & ITIL & PM3 for developing the services in IT industries, it can divide into this following: 1.making comparison of knowledge levels between PMBOK and CMMI and specify the clearness of works 2.Specifying the work methods of PMBOK CMMI and ITIL 3.Making comparison of knowledge levels between PM3 and CMMI by using the determining pattern methods and improving the procedures conforming with IT industries procedures. It can analyze information by using this model by checking the correctness of the questionnaires and bring it to make process with the regulations. However, it can bring the concept ideas of PMBOK & CMMI to reduce the complexity by determining the solution patterns,

services and improving the basic industrial software procedure structures. On the contrary, it can compare with the development of the combination concept idea for PMBOK & CMMI & ITIL & PM3 by supporting each other including between PMBOK and CMMI and between PM3 and CMMI

Research Methodology

This research is quantitative research. By studying quality policies that are aimed at measuring the ability to exchange information and measuring the maturity of the web service quality policy. The nature of this research is to use the sample group selection of 2 groups and using the sample group number of 150 people. However, the tools for data collection, problems and solutions for data inspection and analysis results, including translation and the results.

Population and group sampling to apply in research

1. Population used in this research or the executive of software project as the member of the software industries associations of Thailand

2. Group Samplings or the executives of software project

3. Methods of group sampling selection by using the specific selection with these standards:

3.1 Selection of the targeted subject field by the group of executives in software project with having knowledge and capacity of Quality Policy or software engineering

3.2 Selection of the group sampling numbers from the field of computer science in branch of software engineering by letting them to fill in the surveys to gather information and take assessment further.

Data collection tools

The tools used to gather information are Survey screening from the CMMI, PMBOK & ITIL & PM3 concept framework. When the data is used in the survey the researcher will have to take the survey to check the IOC from experts. To obtain a survey that is accurate and suitable for measuring the ability to exchange information and the maturity of the policy of the quality of web services the researcher divided the online survey into 3 parts as follows:

Part 1: General information.

Part 2: Quality policy.

Part 3: project management.

Gathering information

The gathering information in quantity research is to bring the results of surveys from the executives of software project to analyze and take assessment of knowledge and capacity for the executives in software project. Thus, it can make comparison with the standard levels of software engineering by using the assessment and analyzing information from using the online surveys of the respondents and, they might apply the most correct online surveys to answer by using the surveys for the servicers in the software project.

Analyzing information

The analyzing information from gathering information must result from the researcher to bring the information to find the statistic values. In addition, it can answer for the research problems to analyze information in the first step. Then, it might bring the information from the group sampling to calculate of the statistics value and then it might apply the reference statistics value to find the answers of the group sampling. As the result, it can conclude or synthesize information to bring the results for making the results.

Result

The result of this research, it can test for the maturity of quality policy of QOS in web Services by classifying into 2 parts as this following:

Part 1 Analyzing dataset of maturity for quality policy.

Part 2 Analyzing to make comparison between the first dataset and second dataset and compare between the second dataset and the third dataset.

Part 1 Analyzing dataset of maturity for quality policy.

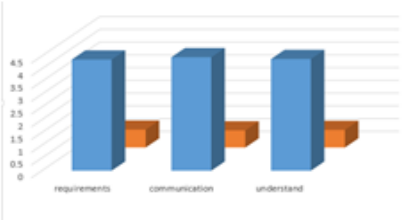

Fig 4.1 Data set 1

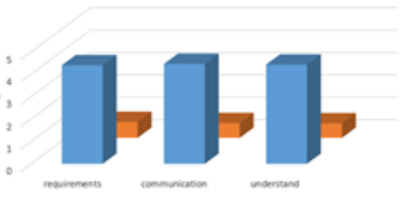

Fig 4.2 Data set 2

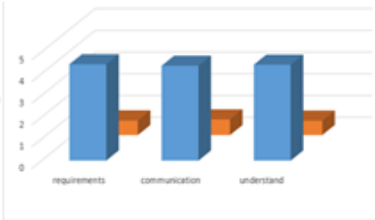

Fig 4.3 Data set 3

From Figure 4.1-4.3, the results of the requirements analysis of the quality policy have an average of 71% from the data set tests in set 2, it has the best accuracy. At the same time, the analysis of the communication quality policy with an average of 72% from the data set tests in set 3, that have the best accuracy at the same time, the understanding of quality policy analysis

in the mean of 69% from the data set tests in Set 1, are the most accurate from the data analysis of all 3 tests.

Part 2 Analyzing to make comparison between the first dataset and second dataset and the third dataset.

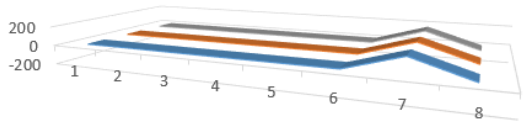

Fig 4.4 Make Comparison of Quality Policy between Data set 1 and Data set 2

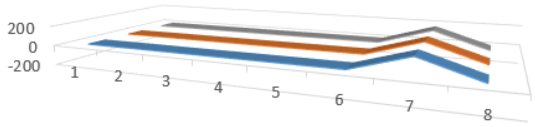

Fig 4.5 Make Comparison of Quality Policy between Data set 2 and Data set 3

From Figure 4.4-4.5, it shows the population that uses various databases in the information and communication system that may cause damage or the data may be destroyed due to the risk of data intruders Identity theft from the analysis; it was found that executives in each organization have different opinions. At a low level the average is 60-67%. That is, the various organizations that use the internet and through the website pay attention to the detection and prevention incorrectly, which may cause damage to the information contained within your organization.

Discussion Research

The analysis of the requirements of the quality policy, 71% received, while the communication quality policy analysis has 72%, while the understanding of the analysis of the quality policy accumulated 69%. However, it has access to various databases in information and communication systems that may cause damage or data may be destroyed, Due to the risk of data intruders, data theft the analysis shows that the executives in each organization have different opinions. The average level is 60-67%, which is the organizations that access the information through the internet, with a moderate level of attention and protection. But may not be the right method, which may cause damage to the information available to your

organization, However, the preliminary analysis can be compared with the research of Jihyun Lee, Danhyung Lee, and Sungwon Kang (2007) on an overview of the Business Process Maturity Model (BPMM). In order to measure the quality of service, we found that the improvement of products and services has improved. Besides, research by Zhang Lianyinga, He Jinga, Zhang Xinxing (2012) on Project Management Maturity Model and Application Based on PRINCE2 is software management for project management in an organization using P2CMM. Service with better code is at 6%, using test values 0 and 1. Finally, Ehsan, N., Malik, OA, Shabbir, F., Mirza, E., & Bhatti, MW (2010). Also the comparative study for PMBOK & CMMI frameworks and identifying possibilities for integrating ITIL for addressing needs of the IT service industry and develop the model using PMBOK & CMMI & ITIL & PM3 as a service usage regulation.

Conclusion

The analysis of the requirements of the quality policy has an average of 71% from the test of the data set in the second set. Meanwhile, the analysis of the quality policy of communication has a mean of 72% from the test of the data set in the 3rd set with the most accuracy at the same time, the average 69% understanding of quality policy analysis from the data set in Set 1 is the most accurate from the data sets collected and analyzed for all 3 tests.

However, the analysis of the service quality policy, the ability to exchange information and measure the maturity of the web service quality policy From the 1st and 3rd comparison, the executives gave different opinions in terms of knowledge about service quality policy, ability to exchange information and measure the maturity of the quality policy of moderate level of web services and showing the organization the use of various databases in the information and communication system that may cause damage or the data may be destroyed due to the risk of data intruders, identity theft from analysis found that the executives in each organization have different opinions at a low level, on average, 60-67%. That is organizations that use the internet and through websites pay attention to incorrect monitoring and protection, which can cause damage to the data in your organization.

Future research the researcher would like to study other information that may be relevant to information exchange and measure the maturity of the policy of the quality of web services by using Decision Tree, Rule-Based, Naïve Bayesian and KNN techniques to predict services in the web service quality policy.

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