Information technology governance practices based on sufficiency economy philosophy in the Thai university sector

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Abstract

Purpose – The purpose of this paper is to develop a formal set of information technology (IT) governance practices based on sufficiency economy philosophy (SEP) to support the generic context for Thai universities.

Design/methodology/approach – The research methodology in this study is divided into two main phases that are conceptualization and operationalization. In the phase of conceptualization, the authors reviewed literature related to the implementation of IT governance in universities and the principles of SEP in order to conceptualize an initial idea of IT governance on the basis of SEP. In the phase of operationalization, the authors performed in-depth interviews with the CIOs of 20 universities, five IT experts, and five SEP experts in order to verify the proposed concept.

Findings – This study provides two key findings: the IT governance practices based on SEP for Thai universities and the mapping of IT governance practices based on SEP with ISO/IEC 38500.

Practical implications – The total of 65 practices presented in this study can be used as a guideline for handling of IT governance issues in Thai universities.

Originality/value – This study provides university IT governance practices based on the principles of SEP that is widely accepted and highly appreciated in Thailand.

Keywords IT governance, Practice, IT business alignment/value, IT investment

Paper type Research paper

1. Introduction

Nowadays, information technology (IT) has become a vital and integral part of many industries. The pervasive use of IT in many organizations brings IT management and governance to become a more significant issue. After many years of performing insight case studies of various industries on IT governance, Van Grembergen and De Haes (2010) identified that the successful implementation of IT governance is caused by the fine tuning of linkage for structures, processes, and relational mechanisms within the organization itself. This important finding expands our knowledge in order to understand that there is no silver bullet solution for every IT governance scenario.

Different organizations need different solutions for IT governance. The best practice from one place could become a bad one in other places, especially when it is expanded and implemented under different conditions. For example, companies in developing countries that lack of adequate industrial infrastructure are not able to jump into the technological dependence era to stand at the same level as companies in developed countries. Therefore, the best practice contributed from developed countries should be analyzed properly before implementation in developing countries (Ferran, 2006). In the

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same manner, IT governance implementation in developing countries needs a holistic approach to support the complex mix of political, organizational, technical, and cultural concerns in each country (Nfuka and Rusu, 2010). Even if researchers have conducted many frameworks relevant to IT governance, there are a limited number of university-oriented IT governance frameworks. Additionally, we have not found a single solution that can be implemented in every university. The solution can be changed from one campus to another (Council, 2006; Zhen and Xin-yu, 2007; Ribeiro and Gomes, 2009; Sahraoui, 2009). Nevertheless, an implementation of a typical scheme for IT governance which is reasonable and acceptable for each country is still important. It is because the more universal approach is used, the more it will help to accelerate the actionable process of IT governance in that specific country.

In Thailand, the whole university system is governed by the Office of the Higher Education Commission (OHEC) and the Office for National Education Standards and Quality Assessment (ONESQA). The role of the OHEC is to maintain the internal quality assurance in each university, while the control of external quality assurance among Thai universities is responsible for the ONESQA. Both of these two organizations have the same vision that is to create the appropriate quality assurance system for Thai universities. Based on the OHEC and the ONESQA approaches, we have found many indicators for measuring university performance. However, there seems to be a lack of IT governance indicators. Furthermore, IT governance indicators are not mentioned in the educational ICT master plan for higher education. To the best of our knowledge, we have found very little research regarding how to handle IT governance for Thai universities.

Sufficiency economy philosophy (SEP) is considered a very valuable principle that His Majesty the King gave to Thai people for sustainable benefits to all. The principle compiles of three components which are reasonableness, moderation, and self-immunity under the two conditions of knowledge and morality as the basis of this philosophy. At present, this philosophy has been accepted as the most suitable tool for Thailand development. The aim of the principles of SEP is to balance a way of living and prevent an overconsumption in the modern society. The SEP has been applied in various aspects, including business management, education management, and country management (Pathorntuwanon, 2007; Traithip *et al.*, 2008; Hongsranagon, 2009; Khunthongjan and Wiboonpongse, 2010; Supthpun, 2012). We believe that the form of IT governance, which is appropriate for Thailand, should base on the SEP as well. Therefore, the ultimate goal of this study is to develop IT governance practices based on SEP in the Thai university context. Apart from the introduction, this paper covers research question in Section 2, research objectives in Section 3, the literature of IT governance in university and the philosophy that suitable for Thai culture in Section 4, the methodology and results in Section 5 and Section 6, respectively, and lastly, the conclusions in Section 7.

2. Research question

In November 2010, the pilot study of IT governance, which gathered usable responses from 64 IT executives from 64 Thai universities, pointed out that there are some aspects of IT governance that needs to be further explored, especially for the questions regarding IT governance practices and guidelines in the context of Thai universities (Jairak and Praneetpolgrang, 2011). Therefore, this paper aims to answer the question: What are reasonable IT governance practices for Thai universities?

3. Research objectives

In order to address the reasonable IT governance practices in the general context of Thai universities, our research objectives are to:

(1) identify the basic principles that can be applicable for various activities and widely acceptable in Thai society;

(2) attempt to raise the chosen principles to lead IT governance;

(3) initiate the guidelines of IT governance by gathering various viewpoints from academic people who are involved in IT governance, IT experts, and also including experts in the chosen principles; and

(4) develop a formal set of IT governance practices for Thai universities.

4. Literature review

4.1 IT Governance in university

Even though higher education institutions in many countries have increasingly recognized the importance of IT governance, there are still only a limited number of institutions that actually utilize the frameworks and standards for IT governance. However, some institutions also develop their own IT governance framework and indicators because the existing frameworks do not match with their conditions (Fernandez and Llorens, 2009). Research studies involved the development and applications of IT governance in higher education are summarized in Table I.

As can be seen in Table I, the parties involved in IT governance for each academic institution can either select an existing framework or choose to develop a new one. The strategy of IT governance deployment will vary depending on the flexibility of the academic regulation in each country. To apply the existing framework, each institution requires an adjustment period due to the rigidity in each framework. However, we have not found any resistance for the new framework that is initiated from the people who participate in academic community.

4.2 SEP

Sufficiency economy is a philosophy that His Majesty the King has given to the Thai people as a way of living and a guideline for the country's development since 1974. The King had been emphasizing this idea, especially in 1994 when the Thai economy continued to expand at a rapid pace, but the challenge faced in the implementation of this philosophy is an overconsumption in the modern society. Afterwards, the King still stressed the importance of this philosophy every year during the period 1995 to 1999 (Sufficiency Economy Movement Sub-Committee, 2007).

The core essence of sufficiency economy was clearly expressed by Sufficiency Economy Movement Sub-Committee (2007):

> […] The philosophy of sufficiency economy points the way for a recovery that will lead to a more resilient and sustainable economy that is better able to meet emerging challenges such as globalization. Sufficiency Economy stresses the middle path as an overriding principle for appropriate conduct by Thai people at all levels, from family to community to country. It calls for national development and administration to modernize in line with the forces of globalization.

Sufficiency Economy Movement Sub-Committee (2007) described the principles of social development according to the philosophy of sufficiency economy as the development that

Region	Objective	Key findings
UK	To develop the IT governance framework, which namely JISC2007A, and the self-assessment toolkit called JISC2007B for higher education in the UK	The proposed framework is intended to use for IT governance and IT management in the institutions through the self-assessment process involved in five views: 1) governance, 2) management, 3) resources, 4) services, and 5) organization (JISC, 2007)
Spain	To develop IT governance framework for universities in Spain	Based on the JISC model and ISO/IEC 38500:2008 (Standard for Corporate Governance of Information Technology), Fernandez and Llorens (2009), developed the university-oriented IT governance framework called ITG4U for the Spanish Association of University Rectors in Spain. The ITG4U helps CIO enable each university to reach a higher IT governance maturity level
China	To demonstrate how to build the model process of IT governance with ITIL	By using principles and concepts in ITIL, the proper model of IT services for the university was presented. However, the implemented results showed success only in some universities (Zhen and Xin-yu, 2007)
USA	To test COBIT version 3.0 for IT governance	South Louisiana Community College tested COBIT version 3.0 only for the process related to the delivery of IT services and supports to maintain network security. After the implementation of COBIT, the authors found both positive and negative results. On the positive side, the academic administrators could identify the consistency between the IT goals and the objectives of each department that enable the IT function to improve the confident from data owner. On the other side, the strictness of IT policy could lead to resistance from team members (Council, 2006)
Canada	To develop IT governance framework	The framework was developed from management perspective that does not link to other IT service concepts. Nevertheless, the authors have a plan to develop and enhance the framework to use with other aspects (University of Calgary, 2007)
Portugal	To maintain the quality of IT services in public universities by using COBIT	The authors indicated that good governance is required as a part of IT services in educational academies in order to achieve ISO/IEC 9001 standard. Thus, using COBIT can be a possible solution to educational organizations, which aim to get certified to ISO/IEC 9001 (Ribeiro and Gomes, 2009)
Australia	To identify the pattern of implementing IT governance in universities	The authors suggested that there should be the evaluation of strong and weak points before using any form of framework (Bhattacharjya and Chang, 2006, 2007)

Table I.
The studies associated with the development and applications of IT governance in higher education

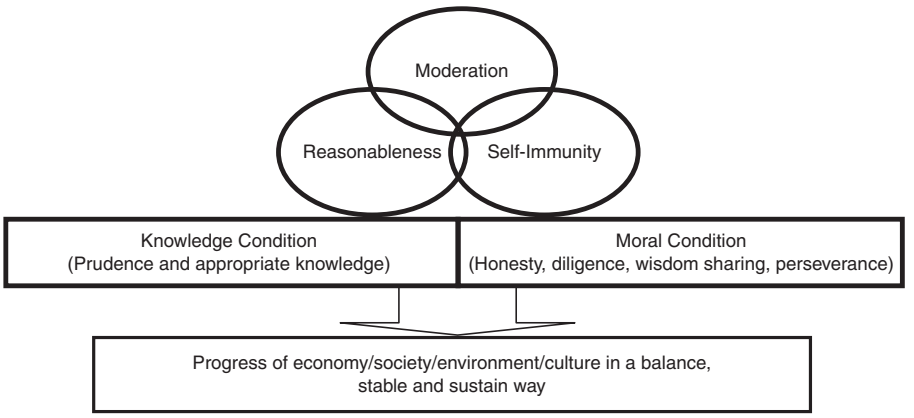
is based on the middle path and carefulness with regard to moderation, reasonableness, construction of self-immunity, utilization of knowledge, prudence, morality in planning schemes, making decisions, and taking actions. Therefore, the ultimate goal of the philosophy is to create the balance and sustainable development with readiness to confront alterations in all aspects, including economic, social, environmental, knowledge, and technological changes. The three essential components of philosophy are moderation, reasonableness, and self-immunity. In order to complete the application of sufficiency,

these three components should be applied under the two vial conditions that are knowledge and morality, as illustrated in Figure 1.

Nowadays, sufficiency economy has been accepted widely as a philosophy, which can be applied for the best interests of an individual (Soyjak and Yuenyong, 2009; Keeratiurai, 2012) or various social groups in Thai society (Pathorntuwanon, 2007; Traithip *et al.*, 2008; Hongsranagon, 2009; Khunthongjan and Wiboonpongse, 2010; Supthpun, 2012; Silanoi, 2012; Somyana, 2012; Ubonsria and Pannun, 2013). In addition, the sufficiency economy has been well regarded not only in Thailand, but now it is gaining wider international acceptance as a new development paradigm (UNESCO, 2013). The United Nations Development Programme (UNDP) is another organization that regards the notion of sufficiency economy as a sustainable development paradigm. The UNDP also published a report regarding the implementation of sufficiency economy guidelines in Thai and English versions and provided copies for all 166 member countries worldwide (UNDP, 2007).

4.3 Mapping the key components of SEP to the key driven components of IT governance

The concept of SEP has the ultimate purpose to create the balance and sustainability in development. It has been driven by moderation, reasonableness, and self-immunity under the conditions of applying knowledge and morality (Sufficiency Economy Movement Sub-Committee, 2007). While, the concept of IT Governance (ITG) has the ultimate aim at the sustainability in managing and supervising the IT activities through five driven components which are strategic IT-business alignment, delivery value, IT resource management, IT risk management, and performance measurement (IT Governance Institute, 2005). As found in the study of Vargas (2011) that compared the relations between the model of IT governance assessment process and the strategic alignment model. As well as the research study of Yodpruettikarn (2011) that analyzed the relations between Buddhist economics principle and the philosophy of sufficiency economy. The results of both studies shown that we could relate the two principles with the similar purposes together. Therefore, we, as the researcher, have an opinion that the two related principles/concepts could possible link up together. As the initial step, we



Source: Sufficiency Economy Movement Sub-Committee (2007)

Figure 1.
The philosophy of sufficiency economy framework

have seen the possibility of relations between the key components in ITG and the main components of SEP, as shown in Figure 2.

Once investigated deeply into the standard of ITG's conceptual framework and the previous researches, we have found the important issues showing the coherent between the operation of ITG and the main elements of the SEP which are moderation, reasonableness, and self-immunity. This supervision is summarized in Figure 3.

5. Research methodology

This research is intended to develop the formal practices for IT governance with initiatives for the higher education sector in Thailand. We have discovered that universities in many countries attempt to clarify the suitable solution for institutional IT governance in their own country (JISC, 2007; Fernandez and Llorens, 2009; Hicks *et al.*, 2010).

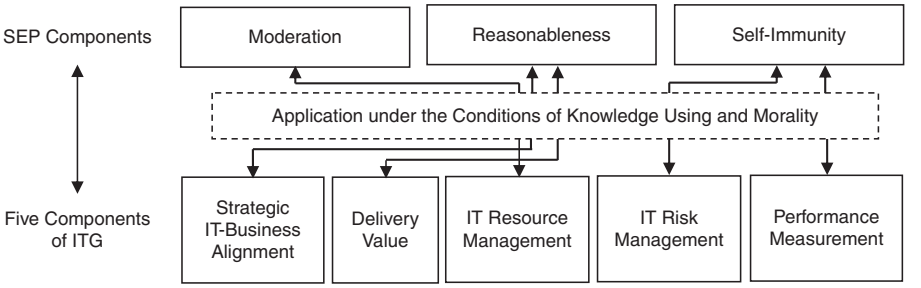


Figure 2.
The relations between the SEP and the ITG principle

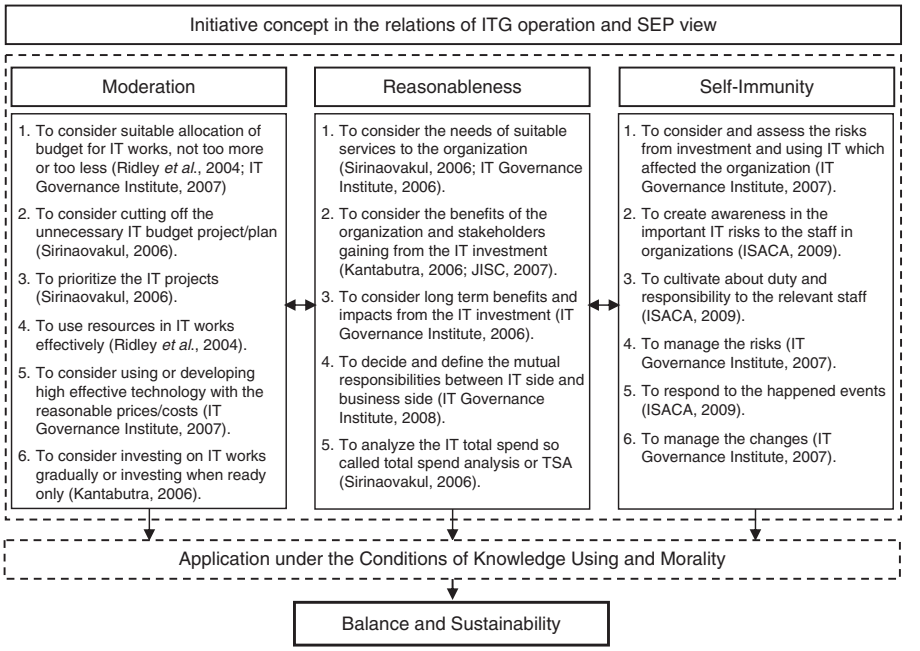


Figure 3.
Supervision of ITG in the view of SEP

For Thailand, it is still an open question for the issues of ITG for university. Moreover, after reviewing the principles of SEP, we have realized that this philosophy has become the important basis that can be used as the universal guidance for many kinds of strategic actions in Thai Society (Calkins, 2008; Israngkul and Pootrakool, 2008; Kantabutra, 2008; Sachayansrisakul, 2009; Mongsawad, 2010). As a result, we believe that the form of ITG, which is appropriate for Thailand, should base on the SEP as well. In order to clarify this concept, the research methodology in this study is divided into two main phases that are conceptualization and operationalization, as shown in Figure 4.

In the phase of conceptualization, we have reviewed literature related to the implementation of ITG in universities and the principles of SEP in order to conceptualize an initial idea of ITG on the basis of SEP, which are provided in the form of documents prepared for indebt-interview with Thai university CIOs. While, the internal operations in the phase of operationalization are divided into two processes: case study and content validity, which we describe in more detail below.

5.1 Case study

5.1.1 Case selection. Recently, there have been many research studies conducted to investigate the relevant issues of ITG in both public and private organizations. Nevertheless, while categorizing by the types of industry, we have found a limited number of ITG studies conducting on educational institutions like universities, especially in developing countries. With emphasis on developing nation like Thailand, we have not found the in-depth study in the subject of ITG for university. According to Weill and Ross (2004), it can be indicated that different contexts of organizations result in different ITG solutions. Regarding to this finding, it means that any kind of organizations in any country should have designed their own ITG approach. Moreover, Thai universities still have not accomplished the clear guideline for operation under the IT supervision when compared to other countries that had already developed ITG framework on their own.

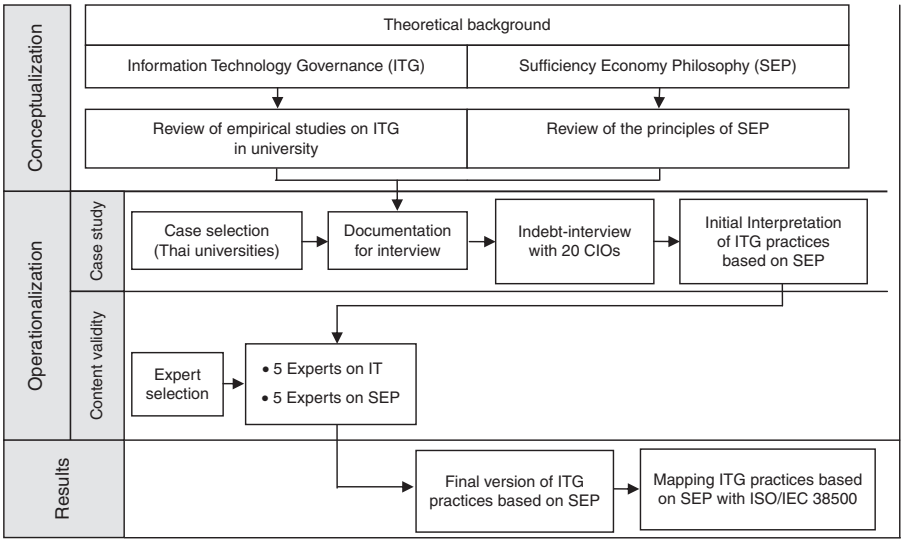


Figure 4.
Methodological framework

In addition, in Thailand the universities are considered as an organization that must be a good model. Then, they should be a role model for other organizations in terms of morality and ethnic in several aspects, including the management and control of IT. Therefore, the initiation of ITG development based on the SEP which is driven by knowledge and morality should be considered as a good starting point and suitable to be a role model of ITG studied cases for other organizations, especially for the government organizations in Thailand which are having the close context to the operation of the university.

For the above mentioned reasons, we chose Thai universities which have main duty to provide education services in the college level or higher educational level as the sample of this study. We carefully selected the representative of universities to ensure that our design framework is applicable to a wide range of Thai universities. In order to achieve this goal, 20 universities in every region of the country were selected by using the following criteria: the types of universities (public or private), the number of students, and the university's obligation. The core obligations of university in Thailand are divided into four categories, which are graduate and research university, graduate and community university, graduate and culture university, and lastly graduate university. Based on the above criteria, six characteristic of the university can be described in Table II.

The term "Thai universities" in this study refers to the universities those producing graduated students from Bachelor degree level up to the higher level. There are 167 universities under the Office of Higher Education Commission (OHEC) and ONESQA which are government and private universities. The universities under supervision of OHEC and ONESQA are divided into four categories, as follows (OHEC, 2010):

(1) Graduate and research university: the group of universities that focusing on producing new graduates and conducting researches are those universities that having mission in producing bachelor degree graduates and conducting researches to create new knowledge to promote the world class academic and propagate this knowledge to national and international level.

(2) Graduate and community university: the group of universities that focussing on producing new graduators and developing the society are those universities that having mission in producing bachelor degree graduates in social development by applying knowledge for academic services and livelihoods knowledge for social.

(3) Graduate and culture university: the group of universities that focussing on producing new graduates and developing cultural arts are those universities that having mission in producing bachelor degree graduates in developing standard for art and culture including propagate the knowledge and Thai local wisdom to the global level.

Table II.
The representative of universities in the interview process

Type	Number of students	Focus	Number of universities
Public university	Around 30,000 students	Graduate and research	4
Public university	Around 12,000 students	Graduate and research	3
Public university	Around 5,000 students	Graduate and culture	6
Public university	Around 5,000 students	Graduate and community	4
Private university	Around 12,000 students	Graduate and community	2
Private university	Around 5,000 students	Graduate	1
Total			20

(4) Graduate university: the group of universities that focusing on producing new graduates are those universities that having mission focusing on teaching the bachelor degree level and applying knowledge for producing the graduates only.

5.1.2 Documentation for interview. The interview document, as mentioned in Figure 1, consists of three main open-ended questions with the following details: In your vision, what are the guidelines for the practice of IT governance based on the SEP? (The SEP comprises rationality, immunity, and moderation, as well as morality and knowledge, which are the major conditions of this philosophy) What are the important knowledge and morality for the university's IT director? What are the guidelines for IT governance to achieve a balanced and sustainable development?

Furthermore, we also collected additional data from the documents that are related to IT management and governance in each university in order to use them as evidences which demonstrated the practice within each university. These additional supporting documents are: overall strategic plan and strategic IS plan, organizational chart and committee structures, security policies and procedures, personnel statistics, and five student satisfaction surveys. This approach is inline with the method presented by Satidularn *et al.* (2011).

5.1.3 In-depth interviews with CIOs. Thailand has defined the policy concerning IT during the year 2011-2020 in order to be as a guideline in development of IT for every executive level. One of the important issues in this policy is identifying that the management of IT in every organization level in this country must be relied on the SEP. The SEP's approach is focusing on modernizing of the organizations but at the same time it must be considering the reasonableness and moderation with the organizations' capacity. It is also necessary to have a good immunity system to be able to cope with the impacts from internal and external changes. The government should propagate this conceptual framework in order to provide background knowledge and create understanding for the IT executive/management in every level (Ministry of Information and Communication Technology, 2011).

Thus, the IT executives/managers in all organizations including the IT managers in the institutions of education should have knowledge and comprehension on the SEP principles in a certain level which is enough for applying such knowledge for managing the IT in their organizations. However, we have not found any concrete implementation under the supervision of IT which based on the SEP so far. Therefore, the results of this study can perform as a guideline for integration of principles SEP and ITG for the IT executives/managers in the universities and other organizations which have similar characters as the universities.

In order to ensure the concept of embedding the SEP with ITG, during the period of June to October 2012, we conducted in-depth interviews with CIOs who play a key role of governing IT in the university. During this process, the interview letters were sent to universities asking them to provide suitable people to participate in the interviews. The summary details of interviewees are shown in Table III. We found that there are two main positions with responsible for ITG in universities, which are the Vice President for IT (VPIT) and the Director of Computer and IT Center (DCITC). It depends on the decision of each university's CEO to select one of the two positions mentioned above as CIO. However, regardless of who holds the CIO position, both VPIT and DCITC must work diligently to strengthen their collaboration in order to drive IT governance into

practice. After the completion of all interviews, we carefully scrutinized the interview data to create an initial interpretation for ITG practices based on the SEP that serves as an essential tool in driving the process of content validity.

5.1.4 Initial interpretation of ITG practices based on SEP. In this phase, we applied domain analysis and taxonomic analysis techniques to perform an initial interpretation of ITG practices based on the SEP. The domain analysis is the classification of a word group under a domain which has coverage meaning of that particular domain set when compared the quantity data analysis. The domain analysis should be similar to the factor analysis which is used for grouping the sub-variable groups under the same factor. Spradley (1979) and LeCompte and Pressle (1993, p. 243) had presented the idea to classify the domain groups through the domain analysis in order to grouping the domains by relying on the relations between the domain and that particular domain by that principle. Considering the conceptual frame and the theory of SEP, we had identified the advanced domain which called this method as deductive coding by using the domain, relations and the identified word groups/domain as the structure in coding schemes for the interview data later. The results of domain analysis according to the sufficiency factors are shown in the Table IV.

Table III.
Details of CIOs interviewed

The position of interviewee	The role of each position	Experience in managing IT (Years)	Number of interviews
VPIT	Establish an organizational IT policy, conduct budget plan, participate in decision making related to IT projects, and follow up overall IT operations	2-30	8
DCITC	Link the IT policy of VPIT into action, participate in decision making related to IT budget plan and IT projects, and control IT operations to meet the plan	4-40	12
Total			20

Table IV.
The domain analysis according to the sufficiency components

Word groups or domain	Relations	Domain
Decision making by considering relevant components Considering carefully on the expected results of the action taking	One type of […]	Reasonable
Sufficiency, not more or less and not exploit oneself or others Producing and consuming in the moderate level	One type of […]	Moderation
Perception and preparation with the components that create impacts and changes Having the strong self-immunity	One type of […]	Self-immunity
Having academic knowledge concerning all aspects Applying all knowledge carefully to relate each other in planning and implementing with caution	One type of […]	Knowledge condition
Believing/holding on the good deed Being honest Being patience, having attempts and using intelligence in planning carefully	One type of […]	Moral condition

Table IV presents the main issues in considering the word groups/domain that are related with several aspects with the SEP in order to provide more information for the readers who unfamiliar with the meanings of sufficiency economy. After the domain analysis was performed, we then identified the domain and the operation meanings to analyze in the taxonomic analysis together with the interview data from CIO in 20 universities. After that the initial interpretation to control and supervise the IT operation and ITG were classified following the components in SEP. There are too many details to present all the statements in the interview, we therefore present only the quotes of actual statements in the answers which are the gist/significant facts in the answers, as results narrated in Table V.

As shown in Table V, we analyzed the data from the interviewing with CIO in 20 universities concerning the implementation guideline for IT governance based on the three components in SEP which are being reasonable, being moderate and having immunity system in both conditions of knowledge and morality. The data were analyzed and grouping according to the domain by considering from the coding schemes, as provided in Table IV. Based on the operation in the mentioned step, we can identify the guideline in IT governance on SEP as an initial interpretation in order to propose to ten experts to evaluate and give suggestions. Five of these experts were IT management specialists and another five were the experts on SEP. If any items were agreed by these experts, they are presented by ✓ and disagreement items are shown by ×, as summary in the Table VI. The complete details of ten experts' evaluation on content validity of the proposed initial IT governance practices are described in the next section.

5.2 Content validity

In content validity process, we consulted experts to inspect the initial interpretation derived from the in-depth interviews with the CIOs from 20 universities. This process aims to analyze the appropriateness of the developed guideline. The two groups of experts were selected. The first group was the IT experts, while the second one was the SEP experts. Five IT experts were selected from those who have experience and have an important role in defining IT policies, including the setting up of the future direction of major national IT initiatives. The additional details concerning the qualifications of IT and SEP experts are following:

(1) The qualifications of all five IT experts must have experience in IT management, especially for IT management in the university, at the CIO level not < 15 years and must have been well-known and accepted in the national level.

(2) The qualifications of all five SEP experts must have experience in conducting researches or academic studies to extend SEP or they should have experience as a committee on the projects that applying the SEP for not less than ten years and they must have been well-known and accepted in the national level.

On the one hand, IT experts helped us to determine the adequacy of the issues assigned in the ITG based on SEP as well as the appropriateness of ITG guideline in each issue. On the other hand, five SEP experts helped us to consider the consistency of the developed guideline with the principles of SEP. The remarks and comments from all experts were carefully summarized to set up as a final version of ITG guideline. The final version of developed guideline is presented in the form of ITG practices based on SEP that are divided into nine dimensions. The more details of these ITG practices are described in the next section.

Interview transcripts and answers	Word groups or domain	Domain analysis
Q: Could you please explain the reasonable operation guideline in IT control and supervise in your opinions?		Reasonable
A1: The administrators should establish an IT strategy plan that is in line with the strategy of the institutions. The CEO/CIO must put the investment on IT that coherent with the institutes' strategy and make the investment for IT more reasonable	Decision making by considering relevant components Considering carefully on the expected results of the action taking	
A2: It should start from the IT investment issue. **It should consider investment as back office or front office** such as the investment in back office that supports only the students in register system, but it can not make the study results getting better, not become true benefits	Considering carefully on the expected results of the action taking	
A3: Normally, we can get the budget in two ways which are from the government and revenue/income from the students' registration fee. Thus, what CIO must reflect to the requesters/students which mean that part of the money belongs to the students, so we have to clarify them that what they can get from the budget you (CIO) spent. Therefore, **the IT investment in universities must consider the benefits for the students as a priority** as they are person we have to take care of them	Decision making by considering relevant components Considering carefully on the expected results of the action taking	
Q: Could you please explain the implementation guideline for controlling or supervising IT in the sufficiency way in your opinion?		Moderation
A1: The university staff often request for various software which they thought it would be benefit for them. Since we have not earned much money. **It should be considered too that which requests are truly necessity and prioritized the requests**, as well as considered the benefits gain towards the overall missions of the university. CIO must be able to clarify that some requested software which are expensive and they **must consider whether there are the alternative software with lower price to replace or not in order to reduce expenditure on unnecessary software.**	Producing and consuming in the moderate level	
A2: We try to spend **the budget on IT as necessary only** as we thought that IT are additional part not the main part. We can not use IT to create the graduated students as that is depending on learning and teaching process. We only use IT to help increasing capacity, so the	Producing and consuming in the moderate level	

Table V.
Taxonomic analysis of the interviewed data concerning the operational interpretation of ITG in classifying groups as the SEP components

(*continued*)

Interview transcripts and answers	Word groups or domain	Domain analysis
budget on IT should not be too high, only 5% of all budget		
A3: The universities have not much budget. We can **use the IT investment in continuous way and extend its capacity little by little by** two forms. The first one is that we have some software that **we developed ourselves to reduce budget.** The second one is the new technology with higher capability but it would be rather expensive. We do not have policy to use new technology all the time, we can consider when it reasonable and necessary to use only	Sufficiency, not more or less and not exploit oneself or others Producing and consuming in the moderate level	
Q: Could you please explain the operation guideline in managing IT with immunity in your opinion?		Self-immunity
A1: At first, we have to build up the staff/manpower **through raising awareness in IT risks which affected the organization.** So the staff would know how to protect their hardware and software as well as data that they take responsible for. The staff should take responsible for any actions that might be risk. When the staff are straightened, they can be a good IT immunity	Having the strong self-immunity	
A2: For our perspective, we focus on the risks management in controlling IT as we want to **reduce dependency** as much as possible. For example, the software we bought we have to rely on the sellers which is the risks. If we want to reduce the risks we should have to bring the open source software as it have the source code that we can modify it. At least, **we can help ourselves.** In Thailand, there is not a mechanism system as Escrow Account as in the other countries. So this is still the risks	Having the strong self-immunity	
A3: We should **rely on the risk management to help CIO keep control of risk from: 1) Human error, 2) Fraud, and 3) Technical failure.**	Perception and preparation with the components that create impacts and changes	
Q: What kinds of knowledge that the IT managers in the universities should have in your opinion?		Knowledge condition
A1: The IT knowledge is needed as this kind of knowledge in linkage with the business process of the organization	Having academic knowledge concerning all aspects Applying all knowledge carefully to relate each other in planning and implementing with caution	

(*continued*)

Table V.

Interview transcripts and answers	Word groups or domain	Domain analysis
A2: The CIO should have IT knowledge as well as management knowledge, especially the human resources management of the IT staff because of the high rate of resignation. One reason is that the salary of IT staff in the universities is considered lower than in other organizations	Having academic knowledge concerning all aspects Applying all knowledge carefully to relate each other in planning and implementing with caution	
Q: In your opinion, what are the necessary morality that IT managers in the university should have?		Moral condition
A1: The transparency, being able to inspect in all work process, especially the procurement process	Believing/holding on the good deed Being honest	
A2: We should have participatory principle by opening up for the staff or the stakeholders to participate in decision making from the planning step and in solving problems	Being patience, having attempts and using intelligence in planning carefully	

Table V.

Note: Underline and bold specifies information from the interviewed person

Based on the inspection of these two expert groups which are presented in Table VI, it is found that the most initial guidelines can be acceptable as a suitable operation. However, the experts had additional suggestions to add more practices for some aspects in the SEP in order to achieve the indicators that can provide the better explanation. After improved as suggested, we can make a conclusion on the guideline operation for ITG based on SEP for all 65 items, as shown in Table VII. In addition, based on the experts viewed, the terms of knowledge and moral conditions should be already inserted/existed in every components of the SEP.

6. Research results

This section provides reports on two key findings: ITG practices based on the SEP for Thai universities and mapping of ITG practices based on the SEP with ISO/IEC 38500 (the international standard for corporate governance of IT).

6.1 IT governance practices based on SEP for Thai universities

Table VII presents the final version of ITG practices based on the SEP. The proposed ITG practices are divided into nine dimensions:

(1) IT/business strategy alignment;

(2) value creation from IT resources;

(3) IT project investments;

(4) IT budget management;

(5) IT human resource management;

(6) IT user management;

(7) IT for university social responsibility;

The initial practices in ITG based on SEP	SEP expert (5) 1	2	3	4	5	IT expert (5) 1	2	3	4	5	Numbers of revised practices from the experts' suggestions
1. Reasonable											
1.1 There is a master plan for IT in the institute which related to the vision, mission and strategy of that institute	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3
1.2 Making decision through considering the benefits in the organization overall and emphasizing the benefits to the students for the first priority, then the staff and community in order to support the learning and teaching process, research conducting, services providing to the society effectively	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4
1.3 Considering the worthiness of the obtained equipment and software as well as considering the life cycle and total cost of ownership (TCO) before approving to prevent the long term consequences	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3
1.4 There is consideration of the guideline to apply and add value from the structure of basic IT equipment which is already existed without investing on the procurement the new one in every fiscal year	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4
1.5 The collected strategic data on behaviors of users have been used to find out the true necessity, such as when considering to extend the bandwidth. It must consider the average usages as it is not necessary to do every as it spend high investment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4
2. Moderation											
2.1 The CIOs should have awareness when they are identifying new technology which it is necessary to have every new technology as others. The necessity of institutes is the most important	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	5
2.2 There should be the investigating method to look for the alternatives to replace the expensive technology	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	4
2.3 There is planning to use and share IT resources together	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	5
2.4 There is a proper bandwidth management suitable with the period of time and usage	✓	✓	✓	✓	✓	✓	×	✓	✓	✓	5

(*continued*)

Table VI.
The inspection of congruence and appropriateness for the initial practices by the SEP and IT experts

Table VI.

The initial practices in ITG based on SEP	SEP expert (5) 1	2	3	4	5	IT expert (5) 1	2	3	4	5	Numbers of revised practices from the experts' suggestions
2.5 There is a management of stakeholders to use IT in the institutes for benefits in learning and teaching and working process rather than for entertainment and personal purposes	✓	✓	✓	✓	✓	✓		✓	✓	✓	6
2.6 There is the maintaining of balance for the stakeholders' needs and the budget available in each fiscal year	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	6
3. Self-immunity											
3.1 Improve the users to aware of the risk impacts and knowledge in preventing risks that might be happened	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	3
3.2 Every project or activity concerning IT should have participatory of stakeholders from the planning step, designing step, to inspecting step before using, especially for the users of the working system or equipment in order to protect the failure in using IT in the future	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	4
3.3 There is the unsuitable investment in IT with the budget, sometimes too spending too much while the other times too few which do not create effective works or became overload for the staff	✓	✓	✓	✓	✓	✓		✓	✓	✓	3
3.4 The investment on new technology should be studying about benefits/impacts as well as assessing the life cycle of technology which the life of technology should be existed long time not just like short-life fashionable technology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1
3.5 There should be regular meetings of working team to discuss the progress, obstacles and finding solutions in work together to prevent the failure. The meeting schedule should be organized clearly	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	2
3.6 There is regular evaluation as well as measurement of the risks in the system with clearly schedule	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	1
3.7 There is the auction in procurement systemically and transparency through the committee forming to supervise, inspect and report to the executives about the case of corruption/unfair process directly	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	2

IT/business strategy alignment (3 Practices)	
SP1.1	There are joint committees comprising board members of both IT department and other parties. These members work together to establish IT vision, mission, and strategies that are synchronized towards the vision, mission, and strategies of the university
SP1.2	Establish IT vision, mission, and strategies that enable practical actions to increase the value of IT assets
SP1.3	Provide extensive communications regarding IT vision, mission, and strategies for the entire university parties and also give them an opportunity to get involved
Value creation from IT resources (6 Practices)	
ITV2.1	In joint committees, members work together to establish and implement the action plans for successfully gaining additional value from existing IT resources (e.g. IT infrastructure or other IT devices that can still operate)
ITV2.2	Provide high availability in network systems and the speed of signal transmission that is suitable for actual use
ITV2.3	Structure work systems or network systems that can share IT resources efficiently and appropriately
ITV2.4	Make paradigm shifts or adjustment in work processes to comply with the existing IT resources
ITV2.5	Develop teaching and learning processes that are consistent with the performance of existing IT resources
ITV2.6	Improve or further develop IT projects that have already invested in the past fiscal year but have not reached the expected targets
IT project investments (12 Practices)	
ITP3.1	In joint committees, members work together to establish short-term, medium-term, and long-term plans. Under the condition that at least two phases of the plans should be established based on the size of the projects
ITP3.2	The committee members work together to consider alternative technologies or the new approaches in order to save the budget, such as the use of open-source software
ITP3.3	The committee members work together to consider the priorities of IT projects with major emphasis on consistency of the university strategies, including the necessity to perform basic tasks
ITP3.4	The committee members work together to consider the effects of risk and uncertainty on IT projects, as well as the specific guidelines for risk mitigation
ITP3.5	There are reports from studies of the technology life cycle from the trusted sources of knowledge to support decision making for investments
ITP3.6	Conduct a study to determine the true total cost of ownership for the technologies that will be invested
ITP3.7	IT project investment decisions should be indicated by the indicators of success from both qualitative and quantitative analyses, including the setting of outcome that is consistent with the university strategies
ITP3.8	Perform user behavior analysis to determine the actual utilization of IT
ITP3.9	Project leaders and team members should be selected from the competent experts who can be responsible for each IT project
ITP3.10	The proposals from suppliers should be considered from more than one supplier
ITP3.11	There are committee members who are competent to inspect IT equipment and the members of this group join together to consider the qualifications of the IT equipment
ITP3.12	There are committee members who work to investigate and follow up the procurement process in order to ensure that the procurement system of the university is transparent and in accordance with the standard rules and regulations.

(*continued*)

Table VII.
ITG practices based on SEP

IT budget management (6 Practices)	
ITB4.1	Perform data analysis regarding the advantages, limitations, improving points, and obstacles from the current year budget as well as the results of implementing the IT projects in the past fiscal year
ITB4.2	Use the results of analysis in practice 4.1 as a basis for consideration in the next year's fiscal budget
ITB4.3	Investigate and follow up the level of IT spending in the fiscal year in order to maintain consistency with the plan
ITB4.4	Present annual IT budget and expense reports to both internal and external stakeholders
ITB4.5	Develop policies or procedures to avoid redundant IT spending
ITB4.6	Keep the approved budget for IT spending under control
IT human resource management (14 Practices)	
ITH5.1	Establish short-term, medium-term and long-term plans for IT human resources in order to maintain and improve the continuity of IT services
ITH5.2	Provide a fair and transparent recruitment process that follows the university rules and regulations for IT staff
ITH5.3	Recruit IT staff based on required competencies that are in accordance with the defined roles of the university
ITH5.4	Encourage IT staff to recognize the importance and impact of their assigned roles
ITH5.5	Develop policy and budget support in IT training to develop the knowledge and capabilities for the IT staff
ITH5.6	Encourage IT staff to express their opinion and suggestions for improving performance in the workplace
ITH5.7	Promote and support research funding that aims to resolve the issues of IT related problems or innovations
ITH5.8	Provide opportunities for IT staff to participate in activities or tasks that involve staff members in other departments
ITH5.9	Encourage IT staff to increase their awareness and understanding on the importance of designing, developing, and using IT resources in the issues of information security in the university
ITH5.10	Encourage IT staff to follow the principles of ethics regarding the use of personal information collected by the university
ITH5.11	Establish knowledge management processes that act in conjunction with IT human resource management
ITH5.12	Provide appropriate and competitive performance-based rewards for IT staff
ITH5.13	Provide channels for input and feedback from IT staff
ITH5.14	Provide a fair and transparent evaluation system for addressing the performance of IT staff
IT user management (7 Practices)	
ITU6.1	Provide training programs to develop a better understanding of how IT resources can be effectively used, as well as raising awareness about the value of IT resources
ITU6.2	Provide training programs to improve knowledge, awareness, and skills for protecting and maintaining data security, and also including the security of IT devices that use in the workplace
ITU6.3	Provide procedures to improve knowledge, awareness, and understanding the practices to reduce energy consumption or resource consumption with IT resources
ITU6.4	Provide procedures that allow teachers and supporting staff who are associated with a particular information system to participate in the development and design of that system with the IT department

Table VII.

(*continued*)

ITU6.5	Give rewards and praise for IT staff who can demonstrate good practices for the use of IT in action, for example, the use of IT to preserve the environment, the protection of security related IT systems, or the use of IT to enhance work efficiency
ITU6.6	Provide procedures that allow teachers and supporting staff who are associated with a particular information system to become the owners of that system
ITU6.7	Provide procedures, methods, or communication channels to exchange IT knowledge such as increasing efficiency and enhancing value in the use of hardware or software.
University social responsibility (6 Practices)	
USR7.1	There are committee members who work to build strategies for offering IT academic services to the communities
USR7.2	Provide constant and continual activities for offering IT academic services to the communities
USR7.3	Provide efficient utilization of university IT resources that offer services to the communities
USR7.4	Determine the proper workload for IT academic services to the communities and that setting workload should be balanced with the normal workload without affecting main duties of the IT staff
USR7.5	There are committee members who work to control, follow up, and evaluate the results of actions in IT academic services for the communities
USR7.6	Follow up the evaluation of actions for IT academic services in order to improve the service activities in the future
Green IT *(6 Practices)*	
GIT8.1	Establish policies regarding the use of IT to reduce resource consumption or using energy efficiently
GIT8.2	Develop an effective plan to manage IT resources that are about to expire in order to reduce electronic wastes
GIT8.3	Provide budget support for activities that are related to the use of IT to reduce energy consumption or energy efficiency for IT utilization
GIT8.4	Develop continual improvement activities to promote the use of IT for energy saving or energy efficiency for IT utilization
GIT8.5	Use equipment that helps to save energy or types of equipment that are under the control of environmental standards (e.g. Energy Star 4.0, TCO'99, RoHS, etc.)
GIT8.6	There are committee members who work to control, follow up, and evaluate the systematic use of IT for environmental conservation in the university and the results of these activities are reported as concretely as possible
Quality assurance in IT department (5 Practices)	
QA9.1	Provide training programs to build knowledge and understanding as well as to raise awareness of the importance of quality assurance for IT staff
QA9.2	Assign roles and responsibilities related to quality assurance in the university for IT staff
QA9.3	The IT sections in the university perform under the regulation for the internal quality guarantee systems prescribed by The Office for National Education Standards and Quality Assessment.
QA9.4	Adopt standards or frameworks (e.g. COBIT, ITIL, ISO/IEC 27001, etc.)
QA9.5	There is an application of the results of the quality guarantee evaluation to improve the work procedure of IT sectors

Table VII.

(8) Green IT; and

(9) quality assurance in IT department.

Table VII shows the list of ITG practices based on the principles of SEP. The concluding remarks from the in-depth interview (with the CIOs of 20 universities,

five IT experts, and five SEP experts) reveal that all practices of ITG for Thai universities can be described in terms of the SEP components, and a brief summary in each component is given below.

Reasonableness. The reasonableness component is related to the rational decision making that reflects the high level of sufficiency. Rational decision making should be accomplished after considering all related factors and expected outcomes. In terms of the IT governance practices based on SEP, reasonableness or rationality is identified in the first dimension (IT/business strategy alignment), the third dimension (IT project investments), and the fourth dimension (IT budget management), as illustrated in Table V. In general, the common goal of all Thai universities is committed to the following objectives: developing teaching and learning systems, improving the capability of students, maintaining the arts and culture, and strengthening the research quality. Therefore, in order to achieve the effective start up of ITG, university administrators need to establish their IT and business strategy functions that are synchronized towards those objectives. The university administrators can carry out eleven practices in the third dimension to ensure that IT investments are reasonable. In the same manner, the university administrators can follow the four practices in the fourth dimension in order to control IT spending effectively and systematically.

Moderation. The moderation is defined as the level of sufficiency that is not too more or less and not exploit oneself or others. Hence, in the perspective of ITG based on the experts in both IT and SEP, we considered that there are seven dimensions of which certain practices are related to the terms of moderation. These dimensions are: the second dimension (value creation from IT resources), the third dimension (IT project investments), the fourth dimension (IT budget management), the fifth dimension (IT human resources management), the sixth dimension (IT user management), the seventh dimension (IT for university social responsibility), and the eighth dimension (Green IT).

Six practices in the second dimension are related to the building of awareness among university administrators so that before investing in new IT projects, such as system development and purchasing of new IT devices. The university administrators must consider whether the existing technology can be applied first in order to reduce the unnecessary spending and to enhance the efficiency of what had been invested in previously. Five practices in the third and fourth dimension are related to the concept of moderation. According to moderation, IT investment decisions are necessary to achieve adequate spending on the setting requirements, but not so tight as to impact on work efficiency of the university staff. On the one hand, IT staff is the key driving force of all successful IT projects. On the other hand, the failure of IT projects can also be caused by IT staff. Therefore, ten practices in the fifth dimension will describe how to encourage IT staff to realize the importance of their jobs in the IT department, as well as the impact of their university from various aspects of IT services. Additionally, IT staff should set themselves up as a good example of efficient users of IT for other departments. Besides, the sixth dimension demonstrates that IT users play a major role in indicating whether university has too high or too low level of IT usage. This is because IT users always have the new requirements; however, the limited budget cannot respond to every single need. Therefore, university administrators should establish an appropriate solution to balance the needs of users and the limited budget. Also, they should create the culture of moderate IT use together with the awareness of using IT efficiently and the suitable needs according to the real usage, not just fashionable only for a short time that can lead to an improper use of IT budget.

Another highlight of the moderation is not to cause detriment to others. Therefore, the dimension of using IT for social responsibility (the seventh dimension) should also be considered as part of the duty in IT department. In order to be able to distribute the benefits derived from IT investments, the IT department should share knowledge and services with other parties outside the university. In this manner, IT investments are valuable in a broader picture, and not limited only to the university. This also includes the eighth dimension (Green IT) that university administrators should give priority, because the environmental protection will minimize negative social impacts as well.

Self-immunity. According to the principles of SEP, self-immunity means getting ready for the upcoming impacts and different changes by considering all possibilities that might happen in the near and far future in various circumstances. In the IT governance perspective, self-immunity is viewed as an issue of IT risk management that is mentioned in many practices in the following dimensions: the third dimension (IT project investments), the fourth dimension (IT budget management), the fifth dimension (IT human resources management), and the ninth dimension (quality assurance in IT department). Six practices in the third dimension and fourth dimension are focused on the building of immunity to prevent failure in the operation of IT projects. The use of a transparent budget management is also regarded as an important issue for immunity as well. As for the fifth dimension, the issue about being immune is mostly connected to the twelve practices in this dimension. Generally, if there is an event that can cause serious problems for IT staff, the IT system of the university will also be at risk. Therefore, university administrators should pay more attention to the process for retaining IT staff in Thai universities, because we have found some serious constraints and challenges in the managerial process of IT staff. For example, the remuneration of IT staff who work for the university is lower than that of the private sector. Additionally, the number of IT staff in each university is often inadequate when compared to the workload. In many universities, the rate of resignation of IT staff is high, causing IT operation to be at risk. Thus, in this dimension, the administrators should provide special care for IT staff by building incentives and methods of motivation to work in order to increase IT staff loyalty. As for the ninth dimension, the experts believe that quality control is important in IT department. The IT staffs need to realize and have fundamental knowledge of quality assurance in order to prevent basic risks.

The basic conditions of SEP that are knowledge and morality should be indicated in all practices. Based on the results in Table VIII, we can confirm that all practices for ITG in Thai universities can be linked to the core principles of the sufficiency economy.

6.2 Mapping ITG practices based on the SEP to the ISO/IEC 38500

The principles of SEP are composed of three components: moderations, reasonableness, and self-immunity, including the two conditions that are knowledge and morality. As for the ISO/IEC 38500 (International Organization for Standardization, 2008), there are six dimensions that are:

(1) responsibility;

(2) strategy;

(3) acquisition;

(4) performance;

Table VIII.
Classification of ITG practices based on the principles of SEP

The dimensions of ITG practices based on SEP	The principles of SEP			
		Components		Conditions
	Reasonableness	Moderation	Self-immunity	Knowledge and morality
1. IT/business strategy alignment (3 Practices)	SP1.1, SP1.2, SP1.3			SP1.1, SP1.2, SP1.3
	3(3)			*3(3)*
2. Value creation from IT resources (6 Practices)		ITV2.1, ITV2.2, ITV2.3, ITV2.4, ITV2.5, ITV2.6		ITV2.1, ITV2.2, ITV2.3, ITV2.4, ITV2.5, ITV2.6
		6(6)		*6(6)*
3. IT project investments (12 Practices)	ITP3.1, ITP3.2, ITP3.3, ITP3.5, ITP3.6, ITP3.7, ITP3.8, ITP3.9, ITP3.10, ITP3.11, ITP3.12	ITP3.2, ITP3.8, ITP3.11	ITP3.4, ITP3.9, ITP3.10, ITP3.11, ITP3.12	ITP3.1, ITP3.2, ITP3.3, ITP3.4, ITP3.5, ITP3.6, ITP3.7, ITP3.8, ITP3.9, ITP3.10, ITP3.11, ITP3.12
	11(12)	*3(12)*	*5(12)*	*12(12)*
4. IT budget management (6 Practices)	ITB4.1, ITB4.2, ITB4.3, ITB4.4	ITB4.5, ITB4.6	ITB4.3	ITB4.1, ITB4.2, ITB4.3, ITB4.4, ITB4.5, ITB4.6
	4(6)	*2(6)*	*1(6)*	*6(6)*
5. IT human resource management (14 Practices)		ITH5.1, ITH5.6, ITH5.7, ITH5.8, ITH5.9, ITH5.10, ITH5.11, ITH5.12, ITH5.13, ITH5.14	ITH5.2, ITH5.3, ITH5.4, ITH5.5, ITH5.7, ITH5.8, ITH5.9, ITH5.10, ITH5.11, ITH5.12, ITH5.13, ITH5.14	ITH5.1, ITH5.2, ITH5.3, ITH5.4, ITH5.5, ITH5.6, ITH5.7, ITH5.8, ITH5.9, ITH5.10, ITH5.11, ITH5.12, ITH5.13, ITH5.14
		10 (14)	*12 (14)*	*14 (14)*
6. IT user management (7 Practices)		ITU6.1, ITU6.2, ITU6.3, ITU6.4, ITU6.5, ITU6.6, ITU6.7		ITU6.1, ITU6.2, ITU6.3, ITU6.4, ITU6.5, ITU6.6, ITU6.7
		7(7)		*7 (7)*

(*continued*)

Table VIII.

The dimensions of ITG practices based on SEP	The principles of SEP: Reasonableness	Components: Moderation	Self-immunity	Conditions: Knowledge and morality
7. University social responsibility (6 Practices)		USR7.1, USR7.2, USR7.3, USR7.4, USR7.5, USR7.6		USR7.1, USR7.2, USR7.3, USR7.4, USR7.5, USR7.6
		6(6)		*6(6)*
8. Green IT (6 Practices)		GIT8.1, GIT8.2, GIT8.3, GIT8.4, GIT8.5, GIT8.6		GIT8.1, GIT8.2, GIT8.3, GIT8.4, GIT8.5, GIT8.6
		6(6)		*6(6)*
9. Quality assurance in IT department (5 Practices)			QA9.1, QA9.2, QA9.3, QA9.4, QA9.5	QA9.1, QA9.2, QA9.3, QA9.4, QA9.5
			5(5)	5(5)
Total	18	40	23	65

(5) conformance; and

(6) human behavior.

We considered the connection between the discovered dimensions and the existing standard carefully by mainly analyzing the definitions of both, and then matching the coherent definitions together. The result of mapping the IT governance practices based on SEP to the ISO/IEC 38500 standard is shown in Figure 5.

7. Conclusions

The aim of the principles of SEP is to balance a way of living and prevent an overconsumption in the modern society. The SEP has been applied in various aspects, including business management, education management and country management (Pathorntuwanon, 2007; Traithip *et al.*, 2008; Hongsranagon, 2009; Khunthongjan and Wiboonpongse, 2010; Supthpun, 2012). Nevertheless, it has not been discovered that the ITG for Thai universities has clearly put the SEP into practice. Moreover, the issue about the reasonable practices of ITG remains an unanswered question for many university administrators in Thailand (Jairak and Praneetpolgrang, 2011).

Therefore, this study aims to initiate the university ITG practices on the basis of SEP that is widely accepted and highly appreciated in Thailand. In order to reach this aim, our approach requires experts who are involved in the academic community to express their opinion on the issues of ITG based on SEP in order to develop ITG practices that lessen the level of resistance when it is implemented in the actual situation. We hope that our contribution will be an alternative solution that can be used as a tool for implementing ITG. Even though the operation which is related to ITG varies depending on the surroundings and the type of organization in each area,

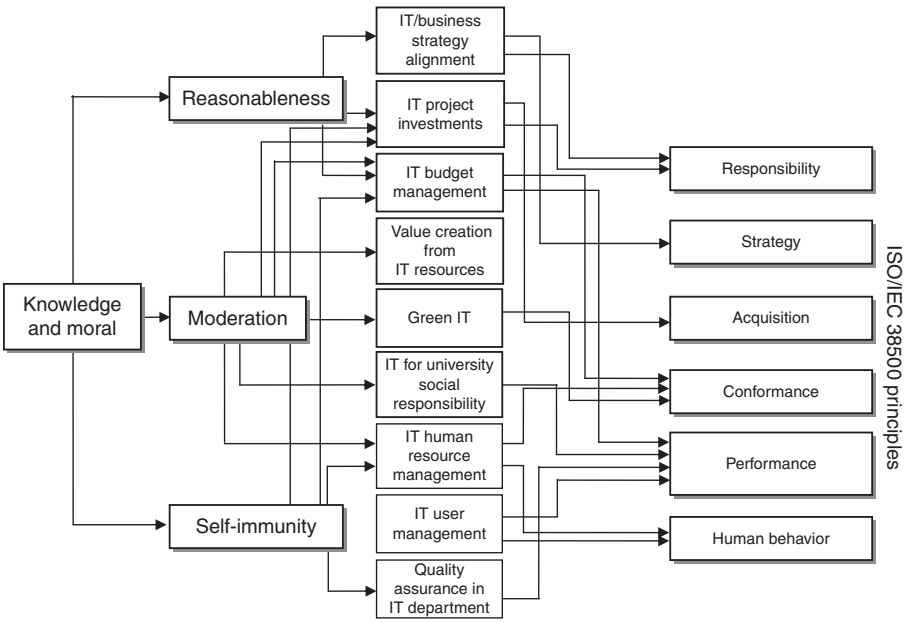


Figure 5.
Mapping the dimensions of ITG practices based on SEP with ISO/IEC 38500

a formal set of practices that is accepted in each country is important to accelerate the procedure of ITG in that country.

In order to achieve our objectives, we performed the procedures planned study provided in Section 3, these procedures for the development of ITG practices starting with the establishment of initial concept from the relevant literature until having the ITG practices for university in 65 items (as shown in Table VII), These practices are extracted from the knowledge gained from the interview of IT executives in 20 universities, including the national IT and SEP experts. Through the carefully working procedures, we are confident that the indicators of ITG in the practicing forms should be presented as the reasonable guideline for ITG in the context of Thai universities. All these are counted as the answer to the research question that what the reasonable ITG practices for Thai universities are.

The results of this study demonstrate that the principle of ITG is concurrent with the principles of SEP. However, from the SEP perspective, the practices which aim towards balancing and following the middle path are more emphasized. According to the final version of ITG practices based on SEP, we can elaborate that universities have to perform the tasks of nine dimensions:

(1) IT/business strategy alignment;

(2) value creation from IT resources;

(3) IT project investments;

(4) IT budget management;

(5) IT human resource management;

(6) IT user management;

(7) IT for university social responsibility;

(8) Green IT; and

(9) quality assurance in IT department.

Each dimension has indicated the practices for ITG clearly and is in accordance with the principles of SEP in order to create the balance in the issues of ITG.

ITG practices based on SEP have been developed in comparison with ITG practices of the universities in other countries which are ITG4U of Spain (Fernandez and Llorens (2009)) and that of the UK under JISC concept (Coen and Kelly, 2007; Joint Information Systems Committee, 2010; University of Strathclyde, 2007). Such practices are considered ITG framework development to fit to the context in that particular country. We have found that ITG practices based on SEP that are developed in this study have dimensional differences from those two frameworks obviously, as follows; first, the dimension of IT for university social responsibility as the universities in Thailand are parts of community development and the SEP teaches people to share, help each other and to create community network. So this has created the second dimension, second, Green IT for environment as ITG practices based on SEP has represented non-violence to others and environment since it aims to reasonable use and consume of resources. Lastly, Quality assurance in IT department since the context and culture of Thai university have emphasized on the quality assurances so this dimension occurred in ITG practices based on SEP on this study paper.

Regarding the implementation, IT executives can apply this approach by prioritizing the importance of practices in each dimension. This is because it is convenient to improve

the chosen practices, one by one, in the manner that matches the context of each organization. Moreover, in the future, other researchers including ourselves can conduct research studies in continuation to the research stream of ITG based on SEP by testing or evaluating this operation guideline with the quantitative research to confirm the grouping of these proposed practices, as well as extend the practices to be implemented in other organizations.

Limitation in this research is the generalization to other situations because the subjects of this study are the universities in Thailand which have particular characters. Therefore, to apply this study into other kinds of organizations, it needs to investigate more on application guidelines that fit to the real situation in other contexts. Also, it is necessary to prove or to test the suggested regulations in this study in terms of the effects to organizations when they apply the proposed practices in all aspects, e.g. the growth of organizations' service quality, the research and development, the organization's expansion, the financial sustainability, and the stability, as well as resources conservation, etc.

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