Components and Indicatorsof InformationTechnology Competencies of Business Students in the Digital Age

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Abstract: The objective of this research was to studyof components and indicators of informationtechnology competencies of business students in the digital age.The specialist consisted of seven experts, selected by purposive random sampling who had more than ten years of teaching experience in information technology and business administration from government and private agencies. The research instruments ware questionnaire. The statics for analyzing data ware descriptive statistics consisting of mean and standard invitation.The research findings were components and indicators of informationtechnology competencies of business students in the digital agecomprises 6 components and 33 indicatorsas follows: [IT1] The use of basic information technology necessary for everyday life (6 indicators), [IT2] Access and evaluation of information technology (5 indicators), [IT3] Information technology management (5 indicators), [IT4] Use of information technology in communications (5 indicators), [IT5] Use of creative media in the digital era (6 indicators) and [IT6] Information technology ethical responsibilities (6 indicators).From the findings that can be used to improve the conformity order of models and instruction to enhance the information technology competenciesfor business students in the digital age.

*Keywords:*Components, Indicators, InformationTechnology competencies, Business Students

1. Introduction

Information Technology is very important for everyone as a basis for being able to compete in the world of work. In the midst of the digital transformation, Everything is discontinued and transformed in all dimensions in society. During the past decade, competency management has come to the foreground driven by an increasing scientific interest in the topic (Wickramasinghe & De Zoyza, 2011; Kansal & Singhal, 2018). Competency is extensively defined as a performance aspect representing a combination of skills, knowledge, expertise, values, social and methodical abilities, ambitions and attitudes that are used by individuals for personal growth to perform specific tasks in an

effective manner and in line with values and goals of the organization. More graduates are unemployed, especially those who lack the skills or performance they need in the digital age. Information technology plays an important role in the development of national capacity and in the global society. It is now an important mechanism for changing the way people live. It affects development in all areas such as economy, society, environment and education. Schools cannot avoid the adoption of technology in teaching and learning, and the opposite must also be aware of how to use it to promote learners' learning as well as push them towards society. Information and a lifelong learning society This leads to the development of human resources to meet the needs of the country. Thailand's National Information Policy (2019) focuses on developing Thailand into a digital society, which is important in developing human resources to learn information technology in a normal education system and non-school education to build knowledge, basic understanding, as well as access, evaluate and apply effectively. And then Information and Communication Technology Department (2019) to planthe development goals are aimed at enhancing the country's economy using information and communication technology.

This is reinforced by research byMcClelland (1973), a professor of psychology at Harvard University, said performance is a personality hidden within an individual, which can drive individuals to produce results. Organizations, including academics, have focused on information and communication technology performance by defining mr. Lakasana or interesting elements such as Thailand Professional Qualification Institute (2017), setting standards of core performance of practitioners at the initial and applied skill level, including computer usage, internet usage, use for security,using word processing programs,using table programs, using presentation programs, collaborating,using digital media creation programs, and using digital devices for security. The concept of Information Technology competencies were first put forward byConnor (2011) to discussinformation technology concept: 1) data access, 2) data management, 3) interpretation and display, 4) data evaluation, and 5) data creation.In conclusion, information technology performance is a behavioral attribute that results from knowledge, skills, abilities and other attributes that enable individuals to effectively implement information and communication technology to create their works.Human resource development by increasing the application of information and communication technology In education and training, as well as strengthening rural communities for sustainable national development. In contrast, the Iceberg Model of Competencies is not oriented towards management level jobs. Boyatzis'(1998) set of characteristics to derive five types of competency characteristics: motives, traits, self-concept, knowledge and skills. Motives are psychological features that arouse a person to action toward a desired goal. These internal drives lead to the need to seek achievement, power and affiliation. Traits are an individual's dispositional characteristics, which lead

to consistent responses to situations or information. Selfconcept is how an individual positions him/herself. It is related to his/her values and self-concept. Knowledge is the body of facts, principles, practices and theories that form the basis for a given discipline. It is the acquired information in specific work domains. Lastly, skills are the application of knowledge and know-how to perform a certain physical or mental task. Knowledge and skills are fundamentally different. For instance, IS graduates from an enterprise architecture course would demonstrate that they possessed analysis skills by conceptualizing a system infrastructure. This requires an underlying knowledge of computer networks and an ability to apply system design principles.

The Thai National Education Plan of the 20-year National Strategy (2017-2026) specifies a vision that "Every Thai people must have adequate education and lifelong learning, a happy life in accordance with the philosophy of sufficiency economy and rapid changes in the 21st century". The plan has 4 main objectives: 1) Develop an efficient and high-quality education management system. 2) Develop the Thai people to be good citizens with skills and abilities needed. 3) Develop the Thai society to be one of learning with ethics, moral, and unity for homogeneous, sustainable development per the philosophy of sufficiency economy. 4) Solve problems of middle-income trap and domestic income disparity. Improving the quality of higher education students, focusing on developing knowledge and creating graduates to think critically, think critically. They have the knowledge and expertise in their field, along with providing hands-on instruction to enable students to develop the skills and abilities they need and adapt to society and coexist with others. It must be aimed at developing knowledge, thinking, etc. The abilitycommunication and social responsibility to effectively provide higher education instruction. Teachers need to have a basic understanding of the nature of educational management because higher education is unique and different from other levels of teaching. The main point that teachers need to understand is the aim of higher education. The nature of higher education students and higher education courses to be able to be effectively linked to the management of teaching classes at this level. Due to the social transformation that occurred in the 21 century, it has affected the way of living that has faced wide and rapid changes from the advancement of information and communication technology. Techniques, teaching methods, learners, learning resources Learning behavior and knowledge pursuit The digital world values lifelong learning. Learning without borders, without limits, in terms of environment. anytime learning reform,we have to move on with the changes in time. Especially those who are in business administration. A business administration student who became a graduate in driving the country in business. It is necessary to create a dominant identity in information technology, as learners who must constantly learn and increase their knowledge of new technologies, to develop their potential by practicing their skills to become masterful competencies, to cope with an ever-changing economy. Moreover, In the 21st

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Century skills(Panich, 2013) is suitable learning style to solve one of the problems in teaching in higher education, it also responds to the provisions of the which aims to increase opportunities for information technology competency by using smart course.

Thus,business student who became a graduate in driving the country in business. It is necessary to create a dominant identity in information technology, as learners who must constantly learn and increase their knowledge of new technologies, to develop their potential by practicing their skills to become masterful competencies, to cope with an ever-changing economy. This study of information technology composition and performance indicators The results of the research will be useful in planning the development of empirical models and teaching models to enhancethe information technology competencies that will directly affect business administration students as graduates with expertise to meet the needs of the career path in the digital age.

2. Objectives

To study of components and indicators of Information technology competencies of business students in the digital age

3. Literature Review

Employment and Training Administration United States Department of Labour (2012) defined competencies asthe Information Technology (IT) Competency Model identifies the knowledge, skills, and abilities needed for workers to perform successfully in the field of information technology. The model is depicted as a pyramid consisting of several tiers. The arrangement of the tiers in this shape is not meant to be hierarchical, or to imply that competencies at the top are at a higher level of skill. Instead, the model's tapered shape represents the increasing specialization and specificity of proficiencies covered. Its tiers are further divided into blocks that represent competency areas (i.e., groups of knowledge, skills, and abilities), which are defined using critical work functions and technical content areas. Foundational CompetenciesTiers 1 through 3 represent the "Softskills" and work readiness skills that most employers demand. Each tier covers a different group of competencies:

- Tier 1 Personal Effectiveness Competencies are personal attributes essential for all life roles. Often referred to as "soft skills," personal effectiveness competencies are generally learned in the home or community and honed at school and in the workplace.

- Tier 2 Academic Competencies are primarily learned in a school setting. They include cognitive functions and thinking styles. Academic competencies are likely to apply to all industries and occupations.
- Tier 3 Workplace Competencies represent motives and traits, as well as interpersonal and self-management styles. They are generally applicable to a large number of occupations and industries.
- Tier 4 Industry-Wide Technical Competencies cover the knowledge and skills and abilities from which workers across the industry can benefit, regardless of the sector in which they operate. Because of this, many of the critical work functions on this tier deal with awareness or understanding.
- Tier 5 Industry-Sector Technical Competencies represent a sub-set of industry technical competencies that are specific to an industry sector.

The global information technology report 2015. In Thailand, a system of academic degrees has been used for evaluating an individual's competencies for employment in both public and private sectors. Companies have found, however, that fresh graduates with academic knowledge still require additional training on some professional competencies, which costs money and time. As market competition has intensified, employers aim to reduce cost and increase work efficiency by improving the capability of existing staff and at the same time recruiting competent new staff. Therefore, a system of professional qualification standards is required in various professions to ensure better standardization of employment and strengthen Thailand's competitiveness in national and international markets.ICT competency standards in Thailand were set by the Thailand Professional Qualification Institute (TPQI), a public organization that established a system of competency standards for various professions and approves organization as certified bodies. The MICT and TPQI signed a memorandum of understanding in 2012, which assigned TPQI to formulate ICT and digital content professional standards. The standards cover six ICT professional sectors: 1) hardware, 2) network and security, 3) software and applications, 4) animation, 5) telecommunication, and 6) project management, total 64 ICT professions.

The current ICT2020 frameworkwas developed and enacted during 2011-2020. Under this latest policy framework, Thailand envisions a "Smart Thailand 2020" strategy, with ICT as a key factor to improve the economy and quality of life. It should lead the country towards greater social equality, a stronger economy, and more environment sustainability, as shown in Figure 1. The main objectives of the ICT2020 framework are to broaden ICT accessibility through ongoing improvement of infrastructures and rising penetration of 1. Background Thailand Chanansara Oranop Faculty of Communication Arts, Dhurakij Pundit University Country Case Study ICT Competency Standards

ICTD Case Study4 mobile broadband and through developing information literacy among Thais. In addition, the framework aims for Thailand to rank in a top quartile of the Networked Readiness Index (NRI) and to increase the proportion of ICT-based industries to not less than 15% of the GDP. One of the framework strategies focuses on ICT human resources and competent ICT workforce, aiming to establish a framework for developing ICT personnel and personnel in general fields with knowledge and skills that are in tune with the changing economy, society and technology in the 21st century.
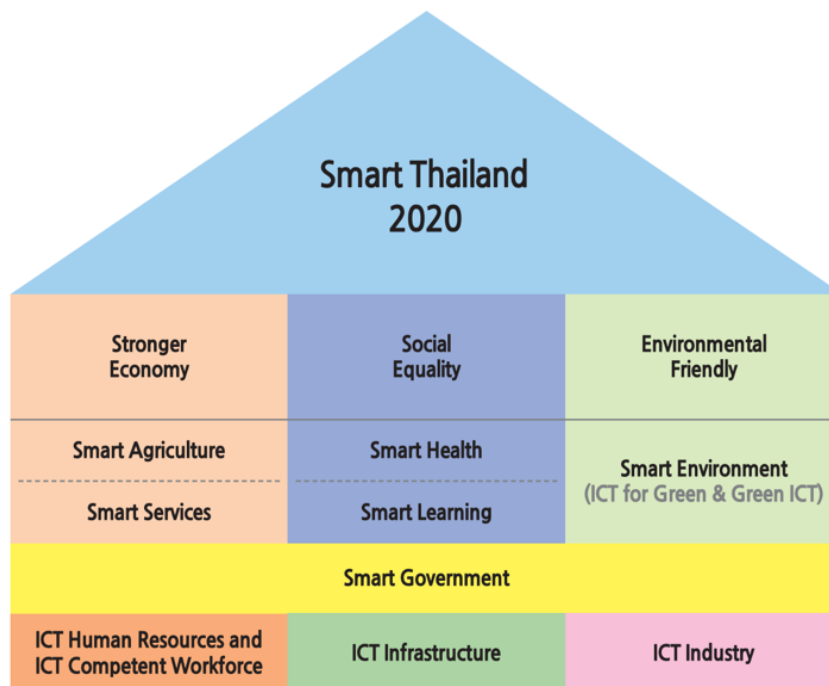

Figure 1: ICT 2020 Thailandframework

(Source: http://www.mict.go.th/view/10/All%20News/e-Publication/25)

The ACM Committee for Computing Education in Community Colleges (2014),"Throughout the evolution of computing education, no organization supported a report with recommendations specifically addressing courses for other disciplines. The present report is the first to make such recommendations" (Klee, Austing, Impagliazzo, Currie Little, & Chlopan, 1993). The ACM used a customized version of Bloom's Revised Taxonomyin formulating student learning outcomes. For each level, a well-defined collection of measurable action verbs is specified. The active learning verbs chosen for the core IT competencies were selected from the first three levels of Bloom's Taxonomy: "remembering", "understanding", and "applying." These are frequently augmented by higher Bloom's levels in the "highly developed" column of the associated assessment rubric. The distribution of core IT competencies by Bloom's level appears depending upon the way one organizes the learning

outcomes into an associate-degree or certificate program, higher Bloom's levels can be included to meet local needs as appropriate to the specific IT program.

Business Context, strongly influenced and championed by several IT industry task force members and fashioned with direct input from business leaders, the core IT competencies are reflective of the foundational knowledge and technical skills desired by employers. In addition to ensuring IT competencies are associated with enterprise scenarios reflective of business mission and goals, learning outcomes also include workplace and personal effectiveness competencies, such as business awareness, communication skills, collaboration and teamwork, and ethics and professional behaviors. With the persistent global demand for computing professionals and the realized benefits of a diverse workforce, the core IT learning outcomes include an awareness of future workforce and technology trends, such as broadening participation in computing and reviewing emerging technologies, and their related impact on the future of computing.

4. Methods

The research used a group of seven expertswhich are obtained by the purposive selection, with qualifications are as follows: 1) who has experiences in information technology for at least 10 years 2) who has an academic position as a lecturer in related field 3) who has who has a company position as a manager or entrepreneur or related field, use a Likert Scale query with a range of five tiers: maximum, highest, medium, low, and minimal, respectively. The research is conducted through the following steps:

1. Literaturereview by research concerned with the information technology competency and other relevant careers of the information technology in various local and overseas organizations

2. The researcher synthesized the information technologist's competency by separating the issues of competency from literature and research projects and then analyze the content which the researcher set as criteria by selecting the academic literature and research of the academic's references of competency or relevant careers such as Employment and Training Administration United States Department of Labour, The ACM Committee for Computing Education in Community Colleges.Also, the competency of information technologists' expertise such as computerteacherIT worker and ITentrepreneur. The researcher sets the data outline of analysis and categorization of words or text relevant to the competency of information technology to set their components and indicators.

3. Afterword, take it to the quality of the questionnaire by experts to find the conformity index value, the IOC determined the confidence of the questionnaire using Cronbach's Alpha coefficient method. Gains questionnaire confidence It is equal to 0.84, the data obtained from the interviews were collected and further obtained a mean of the suitability score of the competency.

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4. The researchers collected by data online, respondents insisted on the system, representing 100 percent after the initial inspection was completed. Analyze data using average, standard deviations.

5. Results

The components and indicators information technologycompetenciesfor business students in the digital agethe research concluded the analysis following table 1

Table1Assessmentofthesuitabilityofinformationtechnologycompetenciesbyexperts

Competencies	Mean	Standard deviations
IT1: The use of basic information technology necessary for everyday life (6 indicators)	4.51	0.49
IT2: Access and evaluation of information technology (5 indicators)	4.19	0.58
IT3: Information technology management (5 indicators)	4.05	0.59
IT4: Use of information technology in communications (5 indicators)	4.28	0.64
IT5: Use of creative media in the digital era (6 indicators)	4.42	0.53
IT6: Information technologyethical responsibilities (6 indicators)	4.11	0.47

The above table 1 shown that the assessmentofthesuitabilityofinformationtechnologycompetenciesbyexperts, mean and standard deviation of all constructs under all dimensions. With respect ability to use of basic information technology necessary for everyday life(Mean = 4.51, S.D. = 0.49), an ability to demonstrate creative mediain the digital era (Mean = 4.42, S.D. = 0.53) anduse of information technology in communications (Mean = 4.28, S.D. = 0.64)

Afterword, the experts to assessmentofthesuitabilityofinformationtechnologycompetenciesas table 1 the concerned research of 6 competencies of the information technologists, the researcher represented the competency for business students in the digit age model as shown in figure 2.

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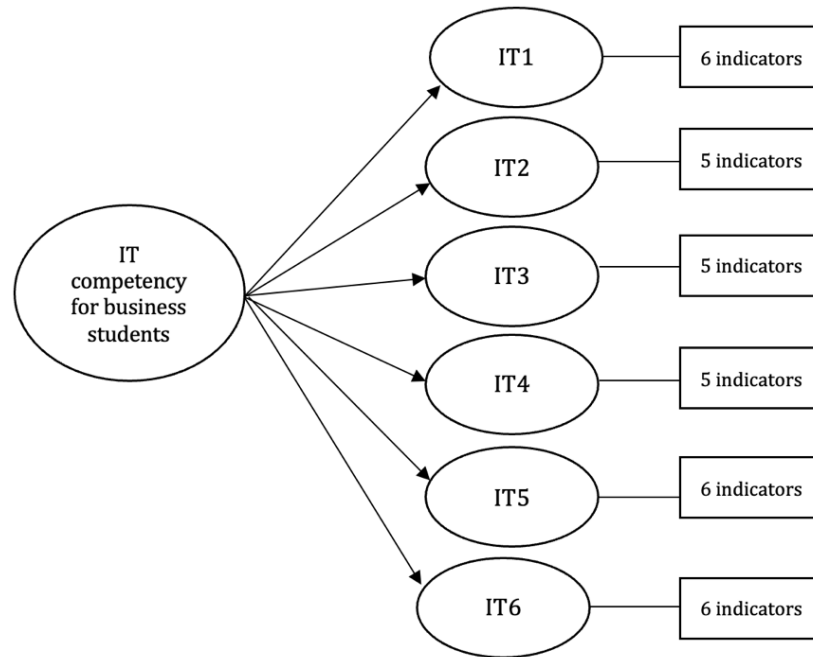
[IT1] The use of basic information technology necessary for everyday life, [IT2] Access and evaluation of information technology, [IT3] Information technology management, [IT4] Use of information technology in communications, [IT5] Use of creative media in the digital era and [IT6] Information technology ethical responsibilities

Figure 2: Model of components and indicators of Information technology competencies

From the competency model of information technologist which is comprised of 6 competencies of which 33 indicators were as follows: [IT1] The use of basic information technology necessary for everyday life (6 indicators),[IT2] Access and evaluation of information technology (5 indicators),[IT3] Information technology management (5 indicators),[IT4] Use of information technology in communications (5 indicators),[IT5] Use of creative media in the digital era (6 indicators) and [IT6] Information technology ethical responsibilities (6 indicators).

6. Discussions

This research a study components and indicators of Information technology competencies of business students in the digital age, as follows:

The discussion was the overall assessment result of competency of the information technology by experts. From the literature review and concerned research of information technology of local and overseas It was found that there were 6 components and 33 indicators the researcher presented the discussion following details:The use of basic information technology necessary for everyday life (6

indicators) Access and evaluation of information technology (5 indicators) Information technology management (5 indicators) Use of information technology in communications (5 indicators) Use of creative media in the digital era (6 indicators) Information technology ethical responsibilities (6 indicators) Information technology involves a combination of hardware and software that is used to perform the essential tasks that people need and use on the everyday basis. The purpose behind business information technology is to fulfill the everyday growing needs of industries and to fulfill the growing expectations of customers of every field andWanida Boonum, et al. (2019) to study the development of performance indicator on information and communication technology of computer teachers and findings are as follows the performance indicators on information and communication technology of computer teachers comprises 5 main components, 16 sub-components and 68 indicators, which can be classified into 22 indicators on the possession of basic knowledge on using information and communication technology; 13 indicators on the use of information and communication technology for communication; 11 indicators on the legal, virtuous, ethical and safe use of information and communication technology; 12 indicators on the use of information and communication technology in the instruction and 10 indicators on the use of information and communication technology in self-development and profession development. Also, Han Lai et al. (2021) this study investigated how employees' information technology (IT) competency is associated with employee agility via perceived task structure. Most scholar's emphasis is on the impact of IT competency on individual work performance; however, it seems as if no attention has been given to explore the relationship between IT competency on employee's agility through perceived task structure. This research offers and tests a new comprehensive model that links the individual's IT competency with perceived task structure and employee agility. Data were gathered from 167 representatives who used various IT applications for daily work routines in the organization. Findings showed that IT competency is positively related to task interdependence and autonomy. Task autonomy also has significant effect on employee agility; however, task interdependence has shown insignificant effect on employee agility. Furthermore, work expertise positively moderates the relationship between IT competency and perceived task structure. Theoretical and managerial implications of study are also discussed in the last section. Syed Zain ulAbdinet al. (2021) studied information technology competencies: A performance booster for organizations. The direct findings reveal that all three components of IT competencies are statistically significant in organizational performance. Among the three components, information technology infrastructure is the strongest predictor of organizational performance. Further, organizational performance is statistically significant in determining financial performance. There are no direct significant influences of IT competencies toward financial performance. Indirect results show that all three components of IT competencies are statistically significant. IT infrastructure is the strongest

predictor of financial performance through organizational performance. Moreover, this study reveals that IT competencies are not merely sufficient to maintain financial performance. Additionally, the firm is also required to focus on complementary indicators such as innovation, quality, customer satisfaction, customer retention, and reduction of operating cost—which are generated by proper utilization of IT competencies.Similar to Shin (2006)this study also identifies the positive relation between IT competency and organizational performance. This result implies that top management supports the new technologies to create new product launching, innovation, customer relations to maintain their market value to earn higher financial benefit.

7. Conclusions

The research for information technology competency to an important question: What competencies are important to transform the new curriculum business course?Our findings provide company/industry and academic with valuable knowledge. For company/industry, we clearly describe the characteristics and distinguishing capabilities of highly skilled IT performance so that organizations can more effectively select and develop information technology competency. The research givesdepartment an improved understanding of the characteristics of business student and a set of visible and easy-to-develop competencies that can be used to structure information technology competency. Itwas the most dynamic talent and skills management issues of any organization and functional group. These issues may appear tactical but can also have wide ranging impact on the successful and continuing operations of the overall business.

In conclusion, the researcher studies about the competency guidelines and competency indicators of information technology. In the next phase, the researcher to collect data for the confirmatory factor analysis (CFA) secondary order.Finally, finding to enhance the information technology competencies for business students in the digital age.

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