EXPLORATION OF THE CRITICAL SUCCESS FACTORS IN ONLINE EVIDENCE-BASED PUBLIC POLICY LEARNING BEHAVIORS

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Exploration of the Critical Success Factors in Online Evidence-Based Public Policy Learning Behaviors

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Abstract

Nowadays, learners of public policy could rapidly search for the desired data and information anytime and readily obtain the needed knowledge via internet or web-based learning. Yet the emergent trend of learning public policy online collides with the evidenced-based approach to policy making embraced by policy-makers seeking the most effective ways to tackle policy problems. Namely, whether or not online policy learning meets the requirements of evidenced-based plaque many researchers of policy learning and policy transfer. The main themes of this study are to tap into the critical factors affecting web-based policy learning and examine whether or not such learning behavior meet the tenet of evidenced-based. Drawn from college students in the department of public policy, public administration, and public management, both the under and graduate students with experiences in online search for learning public policy are selected for the research. In this study, total 600 copies of questionnaires are distributed, and 423 effective copies are retrieved, with the effective rate 71– ate et-. The research findings show that Web Searching Behaviors, weighted 0.438 about 43.8% of global weight, is mostly emphasized in Hierarchy 2, followed by Information Commitment (weighted 0.327) and Internet Self-efficacy (weighted 0.235). From the global weight of the Critical Success Factors in online evidence-based public policy learning behaviors, the top five indicators, among 12 evaluation indicators, are Information Resources, Communicative Efficacy, Search Task, User Characteristics, and Standards for Accuracy.

Keywords: online evidence-based public policy learning, information commitment, internet self-efficacy,

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Research background and motivation

The true test of public policy hinges largely on whether or not policy making could be informed by a new kind of interaction between knowledge producers and users (Torgerson, 1985), and in turn conducive to solve the socially concerned issues, i.e. the policy being effective. With the impact of rapid development of network communications and the diversity of information and knowledge contents, the interaction between knowledge producers and users becomes intensive and spontaneously, therefore learners of public policy could rapidly search for the desired data and information anytime and obtain the needed knowledge with their mobile device. Yet the emergent trend of learning public policy online collides with the evidenced-based approach to policy making embraced by policymakers seeking the most effective ways to tackle policy problems. Namely, whether or not online policy learning meets the requirements of evidenced-based plaque many researchers of policy learning and policy transfer. This study maintains that policy information or knowledge acquired through online learning being evidence-based is closely related to the learners' web searching behaviors, information commitment, and internet self-efficacy. As such, the major theme of this study is to tap into the critical factors affecting web-based policy learning and examine whether or not such learning behavior meet the tenet of evidenced-based.

Researches on web-based learning have been, until lately, mainly focus on education, particularly the online learning of teachers or students. For instance, Wang (2010) indicated that the judgment of a teacher on online information could affect the frequency of using web-based integrated instruction. A teacher applying web searching to acquiring instructional data and the use of information technology are associated with the designed instructional activities or assignments for the students. A teacher with higher frequency of using information technology, multimedia, or network for the designed instructional activities or assignments presents the higher probability to facilitate the students learning with network resources (Hsu, 2011). Lately, as the utilization of online financial information and learning finance online are gradually becoming the daily life of most investors and students, Chow, Chien, and Yeh (2015) examine the critical factors affecting the financial information seeking behavior of students, and suggest that finance students applied an assortment of standards to seek information via the Internet, among them are learning motivation, financial information commitments, and internet self-efficacy. Yet, there is no research exploring what are the critical factors affecting learning public policy online, and under what circumstance can such learning be called evidence-based.

New knowledge is constantly developing in the changing era with advancing technologies so that learning new knowledge and technologies become the essential lessons for every employee. Even the civil servants in governmental sectors can inevitably face such a trend. According to Taiwan e-Learning and Digital

Program in e-Taiwan Construction Plan of Executive Yuan, Lee *et al.* (2013) pointed out the ubiquitous learning environments in digital learning and emphasized that learner motivation, acceptance, and learning efficacy should be taken into account when constructing digital learning environments. E-learning for Civil Servants has also proceeded in Directorate-General of Personnel Administration since 2008. According to Executive Yuan and the national programs, the government expected to improve the shortcomings of time and space in traditional learning through the Internet and to create an online learning environment which was not restricted to time and space and presented instantaneity, interaction, and personalization so that the civil servants could acquire personal desired knowledge through online learning to enhance the competitiveness.

In comparison with the development of domestic information and communication technologies and the achievement of e-government, Chang (2012) mentioned that the digital learning market was not as the anticipation because of insufficient teaching contents and short of interaction making the learners not perceive the learning presence, and possibly because the learners, based on the online course regulations, generating passive learning by interacting for the interaction. Furthermore, the past research on digital learning was discussed with the evolution of science and technology. From the aspects of innovation and application of technologies, the learning advantages and drawbacks resulted from digital technologies were likely to be focused on. A lot of research therefore discussed how public sectors introduced and applied digital technologies to the learning and how the government introduce and promote online learning schemes in public sectors (You, 2002; Wang, 2007; Shang, Liu & Lin, 2008), but little applied experiments from the aspect of public managers to clarify the correlations between the dimensions and key factors in the web searching learning of civil servants. For this reason, the online evidence-based public policy learning is constructed in this study in order to assess the accuracy and usefulness of Web-based policy materials and assist learners in acquiring high-quality policy information.

Literature review

Evidence-based public policy learning

A lot of countries have been enthusiastic about evidence-based path in past years; Adeleh *et al.* (2014) disagreed that it revealed the past policy making not presenting empirical evidence. Baglione (2013) proposed that the policy making process presented the preference of policy makers or the practice of political views of chief executives and academic institutes or professional researchers would be entrusted to proceed systematic research in order to find out the

empirical evidence to support the specific policies. The problem was that such research, with specific purposes, was likely to rationalize the existing policies and reduce the assistance of social science research in the policy making. Blattner & Lomicka (2012) indicated that research responding to the existing policies might conform to the evidence-based requirements for scientific strictness, academic carefulness, and rational appeal, but such evidence was not evidence-based for the supporters of evidence-based path.

According to Danli (2011), evidence-based supporters considered that the limit of contemporary scientific research and the development of web database actually could find out the relationship among policy-related variables and the situational background of policies by exploring, making a painstaking investigation, and meta-analyzing the existing researches to make the policy suggestions for policy makers determining the weight of the evidence-based evidence in the policy-making process. This study follows the perspective of Danli by examining the existing researches aimed at exploring web/internet searching behavior to find out the extent to which the knowledge acquiring behaviors of public policy learners conform to the epistemological tenets developed for web users, and the extent to which learners of public policy are capable of using internet to obtain the expected results.

Ertmer *et al.* (2011) indicated that the supporters of evidence-based path also realized the political consideration in the policy-making process and maintained that the policy rationality should not be overwhelmed by political rationality in the process. Viewing policy rationality and political rationality as the ends of a spectrum, Fahim & Sa'eepour (2011) posited that the evidence-based approach should be utilized both at the policy formulation/planning stage and the policy/project evaluation stage in order to prevent the mess of political consideration from being focal point in the entire policy-making process. In addition, the prerequisite of policy-making process being conformed to evidence-based is whether or not the learning behavior/strategy exhibited by learners of public policy follows the dictate of evidence-based approach. Namely, learners of public policy are required to possess certain level of policy literacy in order for policy to meet the tenet

Internet/Web Searching Behaviors

Assadi *et al.* (2013) pointed out data searching as a complex cognition process that everyone would apply distinct searching methods and sequence, even when the same topic was selected (Rouet, 2003). From the literature, a learner's searching process could contain trial and error, problem solving, purposeful thinking, and selecting main idea (Liu, 2003); besides, a learner, aiming at the availability of evaluation information, the conformity of searching data to the objective, the reliability of data sources, and the accuracy of evaluation data, would evaluate

whether the searched data were necessary and be triggered new concepts from the searching data for new searching strategies (Tsai & Tsai, 2003). Bray & Iswanti (2013) mentioned that a learner was likely to proceed purposive data searching behaviors in web environment and search for usable data through multiple data sources to solve the encountered problems (McKinley, 2013).

When a learner preceded web data searching, the searching behaviors in network situations could be measured from three dimensions (Debowski, 2002): (1) Task-focused effort, including searching time and number of input times; (2) Wasted effort, containing repeated and redundant search and error inputs; (3) Search quality, to compare the searching quality with the searching width, depth, and order.

The past research has discussed learners' learning behaviors in network environments from various dimensions, covering the factors of network information searching strategies, information judgment, concept, and strategies (Ellis, Goodyear, Prosser & O'Hara, 2006; Navarro-Prieto, Scaife & Rogers, 1999; Tsai & Tsai, 2003; Hsieh, 2008). In terms of web searching strategies, the cognition strategy of network users, particularly the information processing skills, was the Critical Success Factor in web searching (Hess, 1999). Sockett & Toffoli (2012) stated that the webpage browsing experiences would affect the user's searching behaviors; Song & Salvendy (2003) stressed on the importance of individual webpage browsing experiences; and, Graff (2005) indicated that the differences in network browsing strategies existing between seniors and juniors as well as between webpage users with linguistic statement and image recognition.

Savolainen (2008) divided the factors in an individual selecting information into (1)Availability and Accessibility of Information, referring to the data being able to easily used and rapidly accessed, (2)Content of Information, referring to the information provided in Information Resources being experience-based information, facts, broad information, specific information, or comments, (3)Usability of Information Resources, referring to the information being easily organized and comprehended, and (4)User Characteristics, such as user habits.

Information Commitments

Bean (2011) explained that network technology provided abundant information resources and a lot of network learning courses could use web searching and network information for enriching the instruction and learning (Tsai, 2004). Network learning facilitated the users becoming active learners in the learning process (Tsai, 2001). Grosseck *et al.* (2011) mentioned in the research that a lot of information was covered in network environments and some of such information was consistent with the user's concept cognition, while the others might conflict with the user's concept cognition; the users would evaluate such network information with a series of judging model (Tsai, 2004), called Information

Commitments. It is therefore worth studying the accuracy and usability of the data searched and evaluated by the users on the Internet.

Chesniak (2013) mentioned epistemological view commitments as individual opinions about effective knowledge and information which would guide to the construction of personal knowledge (Tsai, 2004). Referring to the idea of epistemological view commitments, Tsai (2004) proposed Information Commitments as the criteria to evaluate network users judging the accuracy and usability of network information, where three dimensions were covered.

Standards for Accuracy. Wang (2012) indicated that network users used Standards for Accuracy for evaluating the accuracy of network information, Standards for Accuracy contained two dimensions of Multiple Sources and Authority, and some network users utilized multiple information, such as other web sites or other information resources, for testing the information accuracy; besides, Authority was the standard to test information accuracy, as network users generally considered the information provided by larger scale or more professional web sites being accurate.

Standards for Usefulness. Network users applied Standards for Usefulness to evaluating the practicality of network information. Standards for Usefulness contained two dimensions of Content and Function. The former referred to network users judging the usability of a web site by the provided contents, while the latter indicated that the functions provided by a web site were the major consideration, such as the arrangement of information, presentation of contents, degree of aesthetics, and browsing speed.

Searching Strategy. Searching Strategy was the strategy used by network users for searching information on the Internet. It also contained two dimensions of Elaboration & Explore and Match. The former referred to the purposeful thinking of network users who could organize and integrate the data from various web sites to find out the optimal information conforming to the purpose. The latter, on the other hand, referred to network users merely searching few web sites for the information and intending to find out a web site which could best conform to the searching target (Wu *et al.*, 2013).

Internet Self-efficacy

For individuals, Bicen & Cavus (2011) regarded self-efficacy as a belief of an individual presenting certain capability and understanding how to effectively complete certain affairs. When the space of learning environments transforming to the Internet because of the advance of computer network technology, an individual would appear Internet Self-efficacy (ISE) because of the demands for special learning environments and the external human factors (Tsai & Tsai, 2003). Davidson & Delbridge (2011) defined Internet Self-efficacy as an individual self-

evaluating the confidence in the ability of using network in personal operating and using network environments. Wu and Tsai (2007) also pointed out Internet Self-efficacy as the expected confidence of network users when using the Internet. Summarizing other researchers' definitions of Internet Self-efficacy as Efficacy Expectation and Result Expectation extending from Bandura self-efficacy, Hashemi & Zabihi (2012) regarded Internet Self-efficacy as the expected confidence of achieving the network use tasks when corresponding the subject to personal network use (Commander *et al.*, 2012).

Tsai (2007) considered self-efficacy as the belief and expectation of an individual learner to the work performance that it could affect the action choice of a person, who would expect the period in handling emergent conditions according to the efforts. Hiew (2012) explained Tsai's definition of Internet Self-efficacy as network users being aware of the confidence and expectation of network use. In this case, a learner with higher efficacy expectation would appear larger chance of success on computer or network related work. Based on Tsai's opinions, Deardorff (2011) pointed out the difference between Internet Self-efficacy and Computer Self-efficacy. Tsai considered that Computer Self-efficacy was studied for years, while Internet Self-efficacy was an emerging concept; however, learners with higher Computer Self-efficacy could reveal more positive attitudes towards network and further correlated with Internet Self-efficacy. After understanding the meaning of Internet Self-efficacy, Delden (2012) simply defined Internet Self-efficacy as the self-judgment of a learner using the Internet and the confidence and expectation from the Internet. Krabs (2013) mentioned about the critical role of Internet Self-efficacy in the motivation of network users associating with network technology. Tsai (2004) indicated that network users with higher Internet Self-efficacy would reveal higher motivation on dealing with tasks through network. In the research on Internet Self-efficacy, Tsai and Tsai (2003) discovered that network users with higher Internet Self-efficacy could apply more efficient methods to solve network use problems and present higher use motivation and learning achievement on network learning. Accordingly, a network user's Internet Self-efficacy not only could affect the network use motivation, but was also a critical factor in network learning (Kramsch, 2013). In the research in 2007, Tsai classified Internet Self-efficacy Survey (ISS) into: (1) General Self-efficacy Scale, to measure learner confidence in using network in general situations (e.g. I am good at searching data through the Internet); (2) Communicative Self-efficacy Scale, to measure learner confidence and expectation of the basic communication on the network or the network-based interactive relationship (e.g. I think I could communicate with others in the online classroom).

Research design and method

Delphi Method

Delphi Method, as an emerging research method by combining the advantages of meeting and questionnaire survey, gradually achieves the consensus through anonymous written questionnaires to be the important reference of research results. Delphi Method is utilized in this study for confirming the questionnaire contents of the online public policy learning behavior model. After three runs of questionnaire survey, the consensus and points of view of the experts are cohered to enhance the effectiveness and adaptability of the questionnaire content so that the questionnaire survey becomes more feasible. Based on Delphi Method, the factors in the web searching behavior model for policy learners are constructed, and "questionnaire survey on the factors in online evidence-based public policy learning behaviors" is compiled as the research instrument. Questionnaire survey is applied to discussing the correlations among factors in web searching learning behaviors and further exploring the relations between the factors and the evidence-based performance.

Analytic Hierarchy Process (AHP)

Since the proposal of Saaty, AHP has been developed for more than 3 decades and is broadly applied. The applicability of AHP, the applied fields, and the applied processes for complex problems are discussed in this section. AHP is mainly applied to decision-making problems. Saaty (1980) and Vargas (1991) indicated that it could be applied to the following types of problems when analyzing problems, including (1) Setting Priorities, (2) Generating a Set of Alternatives, (3) Choosing a Best Alternatives, (4) Determining Requirements, (5) Allocating Resources, (6) Predicting Outcomes, (7) Measuring Performance, (8) Designing Systems, (9) Insuring the Stability of a System, (10) Optimization, (11) Planning, (12) Resolving Conflict, and (13) Risk Assessment.

With classification, the Critical Success Factors in online evidence-based public policy learning behaviors are set, and such key factors are regarded as the AHP dimensions. Figure 1 shows the revised research framework for this study.
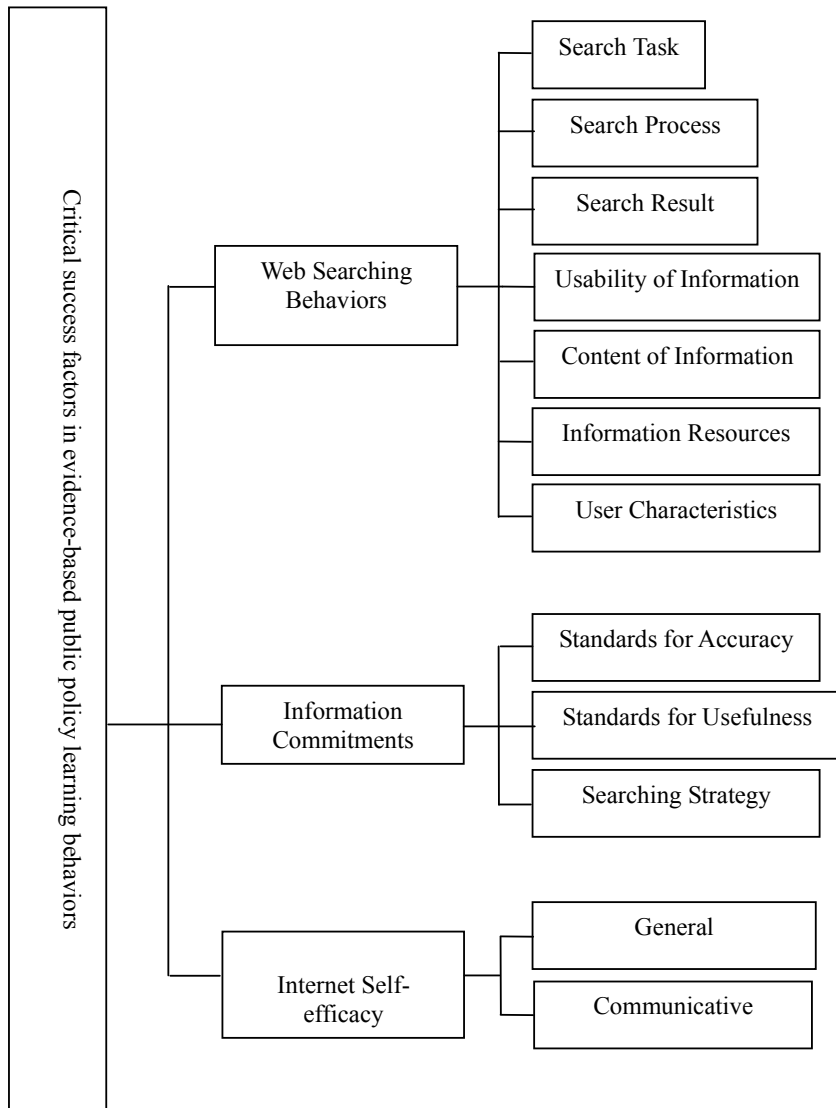
Figure 1. *Research framework*

Research subject

Aiming at colleges with the department of public policy, the junior, senior, and graduate students (including general and on-job students) are selected the ones with experiences in web searching learning public policy for this study. The relevant departments in northern, central, southern, and eastern areas are purposively sampled, and the students are randomly selected according to the scale of the departments. Total 600 copies of questionnaires are distributed, and 423 effective copies are retrieved, with the effective rate 71%.

Data analysis and result

Having completed all hierarchical weights, the relative importance of the evaluation indicators in different hierarchies were allocated to show the importance of the indicators in the entire evaluation system and to generate the global weight of the Critical Success Factors in the online evidence-based public policy learning behaviors, Table 1.

Table 1: *Global weight of online evidence-based public policy learning behaviors*

Dimension	Hierarchy 2 weight	Hierarchy 2 ranking	Indicator	Global weight	Global ranking
Web Searching Behaviors	0.438	1	Search Task	0.118	3
			Search Process	0.032	11
			Search Result	0.030	12
			Information Availability	0.053	8
			Content of Information	0.084	6
			Information Resources	0.131	1
			User Characteristics	0.106	4
Information Commitment	0.327	2	Standards for Accuracy	0.093	5
			Standards for Usefulness	0.072	7
			Searching Strategy	0.047	9
Internet Self-efficacy	0.235	3	General	0.043	10
			Communicative	0.124	2

Conclusion

According to the empirical analyses, the following conclusions are expected to provide definite guidance and directions for online evidence-based public policy learning behaviors. From the questionnaire analyses, the global weight of the evaluated online evidence-based public policy learning behaviors is organized in Table 1, and the conclusions are summarized as follows. In Hierarchy 2, Web Searching Behaviors, weighted 0.438 with 43.8% global weight, is mostly emphasized, followed by Information Commitment (weighted 0.327) and Internet Self-efficacy (weighted 0.235). Accordingly, Web Searching Behaviors is the most emphasis in online evidence-based public policy learning behaviors.

In Hierarchy 3, the hierarchical weights of the evaluation indicators are ranked as below: (1) The evaluation indicators in Web Searching Behaviors are ranked Information Resources, Search Task, User Characteristics, Content of Information, Information Availability, Search Process, and Search Result; (2) The evaluation indicators in Information Commitment are ranked Standards for Accuracy, Standards for Usefulness, and Searching Strategy; (3) The evaluation indicators in Internet Self-efficacy are ranked Communicative Efficacy and General Efficacy.

By organizing the global weight of the Critical Success Factors in online evidence-based public policy learning behaviors, the top five emphasized indicators, among 12 evaluation indicators, are ranked Information Resources, Communicative Efficacy, Search Task, User Characteristics, and Standards for Accuracy.

Suggestion

In light of the above research results, the following suggestions are proposed in this study.

Learning system supporting user characteristics. It is suggested to construct a real learning support system, which thoroughly utilizes the advantages of network for developing effective public policy learning, as it is the research issue to which public sectors should pay attention. Consequently, it is suggested that with the premise of User Characteristics existing in social background, wisdom background, attitude value, emotion, and psychology, civil servants should make efforts to balance the personality characteristics and the learning environments so as to overall enhance the attainments. Learning support systems should be established for evaluating civil servants in the beginning of web searching learning and distinct counseling and training should be practiced, aiming at civil servants with different User Characteristics, in order to ensure the learning information resources for civil servants in the initial learning, remove various obstacles in the network learning, and promote the learner confidence.

Strengthening the Communicative Efficacy among organizational public policy learning teams. To enhance the exchange among civil servants, public sectors need to offer online communication and interaction trainings, e.g. civil servants studying the public policy learning points and difficulties together for the conclusion and testing. Civil servants exchange the learning methods & thoughts and the online learning experiences with self-learning notes and the texts of statement. Moreover, the roles of civil servants could be exchanged at different learning periods that everyone has to actively speak, discuss, communicate, and interact to enhance civil servants grasping the public policy learning knowledge.

Cultivating an individual actively responding to online public policy learning skills and abilities. Civil servants could form active responding strategies in the social cognition process of living, working, and learning and develop extremely active functions in the online public policy learning process. In this case, civil servants would actively make efforts to enhance the self-efficacy, develop the subjective initiative, and be confident with the network learning in the learning process to promote the online public policy learning standard.

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