THE PRIORITIES OF SUPPLY REQUIREMENTS FOR E-LEARNING USING THE ANALYTIC HIERARCHY PROCESS

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ABSTRACT

The topic of e-learning is gaining much attention as in this paper. The online delivery of information brings about the transition from traditional education to online learning. Related technological advances have reshaped the e-leaning landscape to cope with the various requirements, on which this paper focuses to identify key factors by prioritizing them. The e-learning requirement structure is composed of three dimensions (digital contents, web site support, software) and hierarchically specified. The analytic hierarchy process (AHP) is utilized to evaluate structured factors more accurately by pairwise comparisons. This study shows that the most impact factor is digital contents followed by software and website support in order. Using compatibility index in the AHP, this paper also shows that the priority of each factor is different by the level of usage.

Keywords: e-learning, requirements, priorities, AHP

1. Introduction

E(electronic)-learning is the online delivery of information for purposes of education, training, or knowledge management (Turban *et. al*, 2011). E-learning can refer to any method of computer/network-enhanced learning (www.wikipedia.org). Technological advances such as simulations, virtual worlds, and open source software, wireless networking have reshaped the e-leaning landscape. E-learning has been dealt with many different approaches such as behavioral, cognitive, social and psychological theories [Gillani 2003].

The purpose of this study is to identify successful key factors of e-learning supply after prioritizing the factors. In order to do so, the intension requires to collect the e-learning factors to satisfy its users and demand, to classify them, and analyze them using Analytic Hierarchy Process (AHP) [Saaty 1980]. This paper also find any difference between two groups according to usage level.

2. Requirements of E-Learning

Concerning benefits of e-learning, it can enable individuals to take charge of their own lifelong learning by eliminating barriers of time, distance, and socioeconomic status. E-learning of new content will help organizations and countries adapt to the demands of the internet economy by training their workers and educating their citizens. E-learning can save money, reduce travel time, increase access to experts, enable large numbers of students to take classes simultaneously, provide on-demand education, and enable self-

paced learning. It also may make learning less frustrating by making it more interactive and engaging.

We classify those benefits into three categories of e-learning requirements: a) digital contents to deliver b) web site support c) software to execute contents, for which 2~5 specific requirements are specified subsequently to 4th level of a hierarchy (ISO/IEC 25000 2005; Selim 2007; Turban et. al 2011;)

3. Research Design and Data Analysis

E-leaning requirements composed to a hierarchy are analyzed by AHP [Saaty 1980]. The AHP has been knows as an appropriate method that translates subjective judgment into objective priorities. We surveyed users who ever experienced e-learning contents on web site about the priorities of requirements. Using the consistency ratio of AHP, only consistent data (40/109 = 36.7%) are analyzed. When we aggregate the multiple users' judgements, we used geometric mean for the pairwise comparisons because it can keep the reciprocal property in the pairwise comparison matrix.

4. Data Analysis Result

As a result, the most impact factor is digital contents itself with 0.407. *That is*, the quality of contents should be basically considered to choose the best alternative. The next one is executed software with 0.305, and the website support with 0.289. The subsequent factors of the major three factors are prioritized, too. Relatively highly evaluated factors are understandability (0.181) for contents and web service (0.171) for web site. Reliability and efficiency are major factor under software factor for the contents execution.

In terms of supply quality, the priority of each factor is impacted by the frequency or level of usage, which can apply to the marketing strategy and product differentiation. It is also necessary to specify user classes and identify how they are different according to the e-learning frequency and time.

5. Conclusions and Limitations

Practically, we found that not only digital contents but also software execution and web site support are required equivalently to raise the quality of e-learning.

Despite the numerous benefits, e-learning does have some drawbacks such as need for retaining, equipment needs and support service, lack of face to face interaction and campus life protection of intellectual property and maintenance and updating of material.

6. Key References

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