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The Descriptive Data Analysis for e-Learning Cloud-Based Factor Adoption

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Abstract *- Cloud-based eLearning network environment for Institution of higher learning (HLI) gives a higher impact and come most important used today. There are many advantages for IHL in using the e-Learning cloud-based. In adoption to cloud-based, a few factor adoption need to be considered by the IHL for successful adoption of eLearning cloud-based. Thus to identify the factor adoption the opinion from the employee that have experiences in using cloud-based is needed. The data gathering among the experiences employee in using cloud-based is conducted to get the important success factor adoption needed. Thus the data analysis was conducted to measure the factor adoption identify systematically. The analysis was identifying the interaction of the factor adoption that will be present by the experiences employee. The analysis of the employee context was driven with shown the awareness, benefit and motivation as a success factor adoption. Therefore, the descriptive analysis was conducted to prove either the factor is an important factor as a success factor adoption needed in adoption an e-Learning Cloud-based. Thus the outcome of the study was shown the result of descriptive data analysis in identifying the important factor that contributed for the successful adoption of e-learning cloud-based and can be a benchmark for other IHL in adoption e-Learning network environment.*

Keywords: Cloud-based, adoption, data analysis, e-Learning, descriptive

I. INTRODUCTION

These studies focus on finding the important factor adoption in adoption e-Learning to cloud-based by the Higher Learning Institution (IHL). To shift from the existing network environment to a cloud-based, the IHL still fear and worry about the services provided and benefit given by the clouds [1].

There are many advertisements and news to giving the awareness about the cloud but the IHL still keeps thinking to decide to move to the cloud-based[2]. The IHL still using the ownership and server farm in handling and managing the e-Learning server. Today, there are a few IHL that takes the initiative to move to a cloud-based but there not have proper guide followed in selected the factor adoption. It is important to IHL to know the factor adoption before migrating the e-Learning cloud-based for ensuring the implementation is successful for IHL[3].

To help with this aspect, the distribution of the survey for the study is needed to get an accurate factor, where it needs to be distributed to the experts for an IHL that have experiences in using cloud-based. The survey is used to identify the opinion about the success factor adoption of a cloud-based. The analysis of data is needed to identify suitable factors adoption. The statistical data analysis is used to analyses significant data for the adoption of a cloud-based[4].

A few steps are conducted during the data analysis. The purpose is to ensure the data is clear and accurate identification. Thus, data collection is the first step conducted followed by the data analysis. The data analysis is using the quantitative method in gathering and analyzing the data [5]. Lack of attention about the factor adoption may cause the IHL

to use the traditional way for their network environment and this may cause countless problems.

II. DATA COLLECTION

The data collection was started by designing the questionnaire and identify the population and sampling. Thus the distribution of the questionnaires to the respondent was conducted for those who have knowledge and experience in a cloud-based at IHL. The questionnaire was distributed to the target population and a group of sampling[6]. The IT officer as an experienced employee from a few of IHL was chosen as expertise to get the opinion in using e-Learning in the cloud-based. The person selected that is reachable, available at the given time and willing to participate to answer the questions [7]. Figure 1 shows the data collection process in this study.

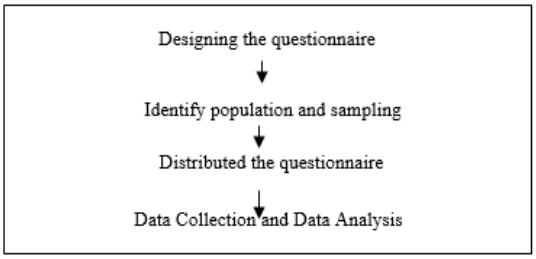

Figure 1: The data collection process

The percentage taken from the population is required to get a representative of the sampling[8]. Figure 2 shown the sample size from a given population in which N is the population size and S is the sample size.

Figure 2: Krejcie & Morgan, 1970

N	S
10	10
15	14
20	19
25	24
30	28
35	32
40	36
45	40
50	44
55	48
60	52

Thus, after distributing the questionnaire survey for a few weeks, 50 respondents answered the questionnaire survey out of 60 respondent inside the population. The data analysis was conducted after the data collection was done.

III. DATA ANALYSIS RESULT

The data analysis is used to analyze all the data and interpret using the description analysis. The purpose is to identify the interacting factor adoption that will influence the individual data expert experience with data, information and knowledge of the expertise. The descriptive analysis is to find the mean average and standard division of the data. Through the mean average, the factors that have a higher score are shown as an important factor adoption.

In using the descriptive analysis, the success factor needed in adoption Cloud-based was defined in using the measurement of the sampling average classification[9]. The analysis means score and standard division score shows the result of the employee context that consists of the awareness, benefit and motivation factor for the factor adoption. Table 1 shows the mean and standard division score analysis for awareness factor adoption. The result showed the higher value of the mean score of the instrument for the awareness factor adoption.

Table 1: Awareness Mean Score

B1-Awareness	Mean Score	Standard Deviation
1.Privacy	4.36	0.921
2.Availability of data services	4.14	0.670
3.Integrity of services	1.16	0.817
4.Confidentiality of data	4.34	0.772
5.Loss of service control	4.20	0.728
6.Lack of liability of providers in case of security incidents	2.16	1.017
7.The unclear cost in the pay per use approach	2.38	1.176
8.The difficulty of migration to the cloud	2.76	1.135
9.Protection of data	4.32	0.819

From the analysis shown the higher value of means scores for the instrument that consists under the awareness factor where the instrument is the privacy (4.36), availability of data service (4.14), the confidentiality of data (4.34), loss of service control (4.20) and protection of data (4.32). In using the cloud, the security factor is a big concern for the expert. Thus employees need to have an understanding of cloud security as well as know-how to create confidentiality and data protection before moving to the cloud [3]. The awareness among the employees needs to give for more understanding about the advantages provided by the cloud and how to prevent the security problems in using the cloud. The awareness in using the cloud can be given by using proper training to the employee[10]. Thus the knowledge and skill of employee in managing the cloud-based can be further improved making IHL ready in using cloud-based[11].

Table 2 shows the mean and standard division for benefit factor adoption as an important factor in moving to a cloud-based.

Table 2: Benefit Mean Score

Benefit	Mean Score	Standard Deviation
1.Increase storage capacity	4.04	0.755
2.Online back-up integrity	4.16	0.792
4. Software as a Service (SaaS-Individual software) as hosting for IHL	4.20	0.782
5. Platform as a Service (PaaS-Individual software) as hosting for IHL	4.20	0.728
6. Infrastructure as a Service (IaaS-Individual software) as hosting for IHL	4.18	0.774

The instrument for the benefits factors adoption s shows the higher mean score greater than 4.00 consist of increase storage capacity (4.04), online back-up integrity (4.16), software as a service (SaaS-Individual software) as hosting for IHL (4.20), platform as a service (PaaS-Individual software) as hosting for IHL (4.20) and infrastructure as a service (IaaS-Individual software) as hosting for IHL (4.18). The result shows experts believe the benefits of the cloud is needed to be understood and defined clearly before moving to the Cloud[12]. Thus from the result, among the benefits given, the IHL can select the suitable hosting between SaaS, PaaS and IaaS which gives more benefits to the IHL in using Cloud-based[13]. Besides that, the IHL can manage internally in a selected private cloud. Thus, in using the cloud-based, the increasing storage capacity can improve the learning activity[14].

Table 3 shows the mean and standard division score for an instrument of the motivation factor adoption. From the analysis, the mean score shows the success factor adoption value analysis for motivation factor adoption.

Table 3: Motivation Mean Score

Motivation	Mean Score	Standard Deviation
1. Cloud computing is well organized	4.10	0.814
2. Sufficient motivation for using the cloud	4.30	0.863
3. General conflict can be solved by using cloud	4.14	0.729
4. Integrating cloud with the existing IT application is moderate	3.24	1.001
5. Data is well secured	4.08	0.853
6. Sufficient support and saving received compare to investing in their network infrastructure	4.26	0.723

The analysis in Table 3 shows most of the instrument tested giving the mean scores greater than 4.0 except integrating cloud with the existing IT application is moderate to show the mean score is equal to (3.24). From the result, the adequacy of training in the technology provided by the cloud is needed. In using the cloud-based the IHL need to understand the ability of cloud technology can help the IHL. The knowledge of the employee in using cloud and the technology provided by the cloud, it would enable users to complete the task easier and more efficiently compared to the traditional way.

IV. CONCLUSION

As a conclusion, the data analysis presents the analysis of the data collection stage and the expected result given. Therefore, from the analysis show the opinion from the expertise was proven the employee context is important in helping the IHL in the adoption of a Cloud-based. The employee needs to give the awareness, motivation as well as giving knowledge about the cloud benefit is an important factor in adoption a cloud-based. Thus the result has approved the awareness, motivation and benefit is the important factor need under the employee context in successful adoption a cloud-based. Onward these studies give a broad explanation in selected the suitable factor adoption in migrating to the cloud-based.

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