

The Impact of e-Learning on Workplace On-the-job Training

Wan-yun Tina Cheng, Cheng Chen

College of Management, National Kaohsiung First University of Science and Technology, Taiwan.

* Corresponding author. Tel: +886 7 6011000; email: u0128902@nkfust.edu.tw

Manuscript submitted 5 September, 2015; accepted 2 November, 2015

doi: 10.17706/ijeeee.2015.54.212-228

Abstract : E-Learning systems are increasingly used by organizations as an approach for enhancing workers' skill and due to cost-down effect in replacing traditional training. However, the satisfaction and impact especially on shift-duty staff have poorly described. From organization management, learning systems provide most beneficial tool. The evaluation of learning system on academic field has been most discussed, but not much on workplace e-learning, retrospect of e-learning knowledge management and comparison of shift-duty staff. How the industry can broaden e-learning and how it can generate a positive attitude are the topics that sparked the researcher's motivation to do the present research. In the study, the modified IS model was adapted to assess shift-duty staff's impact and reflection of effectiveness. The data with 137 subjects were analyzed with PLS-SEM. The results show that e-learning systems are useful, but not satisfactory with e-learning system use.

Key words : e-Learning, on-the-job training (OJT), service quality, user satisfaction, e-learning knowledge management (eLMS)

1. Introduction

In the international industry, personnel's professional proficiency and workplace knowledge knowhow are essential and mandatory. The companies count on their professional trained employees to provide good service quality to win customers. Undoubtedly the need to improve workers' ability is increasing because of the increases of workplace diversity [1]. Not likewise, the professionalism image counts on the employees' performance, especially on the frontline employees. Thus, vocational training is taken into account as one of main training purposes. Hence, on-the-job training (OJT) herein is defined as vocational training for on-the-job employees. The employer definitely would invest the OJT on the employees for their perfect performances.

There are versatile training programs and courses. As viable and vigorous movement of research and curriculum development has been launched, vocational training has gained ascendancy in computer science, technology, and trade [2]. Some companies integrated technological networks with electronic learning (e-learning). Through e-learning, companies can train employees' ability, extend services and propagate the company's policies. Generally speaking, computer skill is required as basic knowledge, working efficiency with computer technology is necessary. In general, the world enterprises invest in e-learning for workplace education and promotion. The organizations turn to e-learning increasingly as they recognize its effectiveness. The industry continues adopting e-learning at a rate of 13% per year, estimated consistent through 2017; the consequence in the global e-learning market is expected to reach \$107 billion by 2015

[3]. Thus, e-learning has been exponentially promoted rather than traditional learning. The new learning strategy has been widely implemented and the efficiency has also been improved.

Coming with the essential computer technology, another key point of e-learning essential factors is that shift-duty staff might depend on e-learning platform of flexible working time. For the shift-duty staff, working schedule is not steady as routine time arranged. Therefore, on-the-job training encounters difficulties in gathering staff together. With the background requirement, e-learning provides a good solution in diversity training method. Clarke[4] stated, "All parts of the education and training system are enthusiastically exploring and implementing e-learning in one form or another". Since computers have been applied to the industry all over the world, e-learning has become important for business communication. They enable the learner to learn at his own pace and they can deliver personalized instruction. Compared with traditional training, electronic training is developing rapidly and turning into an unavoidable trend in the twenty-first century. The benefits of e-learning platform systems are to provide cost and time-effective advantages[5], [6].

Shift-duty staff's on-the-job performance on e-learning platform and effective application of e-learning in workplace become the issue of our research. Nevertheless, different aspects of workplace positions might possess different perspectives. The management level, superiors might concern of manpower cost instead of staff's proficiency of knowledge. To scrutinize the effects of e-learning, another method to substitute of traditional training, will be a worthy study upon shift-duty staff and general concepts of different positions.

2. Background Study

Previous studies of e-learning systems focus most on academic educational training in the classroom or so-called distant e-learning training [5]-[9]. The workplace e-learning training, hereinafter as vocational electronic learning, outstands to be popular movement, especially in the age of information system and electronic technology. The effectiveness of using e-learning system on on-the-job training instead of traditional classroom training is relevant to employer, especially focusing on the shift-duty staff. The following materials provide an overview of related e-learning environment.

2.1. Vocational e-Learning

By sharing information and communication technologies[4], electronic classrooms create an alternative learning setting and atmosphere. After being equipped with facilities for e-learning, almost all businesses can benefit from the latest information and professional skills. Especially international companies have employees overseas. It is almost impossible and will incur high cost to arrange for staffs from different countries to gather together in a traditional classroom for learning purposes. Learners can be equipped with learning materials via media that makes e-learning system a cost and time-effective approach[10]. That means shift-duty staff can make use of self-study on e-learning platform anytime and anywhere. In order to train staffs to perform more efficiently and economically, the industry provides e-learning system with web resources. The staff can facilitate their need in time control and learning speed according to vocational e-learning systems. The e-learning effectiveness for self-study can be retrieved[11]-[13].

Vocational e-learning has been widely promoted because e-learning benefits learners of varying ages through its workplace development and learning in retirement programs[14]. How companies set up e-learning courses for employees and how employees learn and acquire professional knowledge are worth discussing. The e-learning courses can be designed for the employees of different departments in the workplace through programs with specific purposes. If one curriculum which is related to the focus on workplace English ability, therefore most of the courseware is designed in English. To encourage staff to learn vocational e-learning and make good use of the target OJT knowledge without interfering with employees' work has prompted the industry to develop e-learning. Because e-learning can be carried on

anywhere without the limits of space and time; staff can learn and acquire professional knowledge after work in the virtual reality of e-learning. For example, many versatile electronic courses are linked through the company's enterprise information portal (EIP). E-Learning also is an ideal media for the just-in-time delivery of corporate messages. So e-learning is an efficient and useful learning strategy to enhance employees' learning efficiency and reinforce the company's policies.

2.2. On-the-job Training Courses on e-Learning

Websites not only provide users access to authoritative lectures and opportunities to speak and write, but also promote users, collaborative learning [4]. Through vocational e-learning, staff can improve their OJT designed by lecturers. The courses offer the interaction between staffs and teachers, accompanied by feedback discussion. Such e-learning offers learning designed for users to obtain professional knowledge, speaking and correspondence skills for use among users or between users and e-learning lecturers. OJT can be synchronous or asynchronous. Asynchronous approach looks at language at a particular point in time rather than over time. Synchronous learning links different places, but at the same time; while asynchronous learning is in different places and at different times [15]. In asynchronous learning, a teacher can respond to a student's posts or the setting of tasks at a different time to help the learner develop his skills. Generally, vocational e-learning courses are designed in asynchronous structure, but with limited duration time. The importance of OJT and courses designed on vocational e-learning have been described [16]. Generally vocational e-learning courses are designed with specific purpose as single unit (example as Fig. 1); on the contrary, academic e-learning courses are designed with serious continuous units. Therefore, e-learning course management, information management, is essential to achieve success [17]. For e-learning management, Rosenberg [18] explored that knowledge management supports the creation, archiving, and sharing of valued information, expertise, and insight within and across communities of people and organizations with similar interests and needs. Rosenberg also agreed that e-learning is powerful when both training and knowledge management are integrated. Users can be satisfied and motivated only under well-designed e-learning information management.

Fig. 1. Website slide of OJT courseware

2.3. Workplace Ethics

To begin with, the lectures and courses are designed for the vocational e-learning platform, the e-learning

teachers are trained to teach through the Internet, and all learning plans are totally surveyed and improved. During these processes, the strategies are mutually reinforced and modified. That is, the materials applied in e-learning can be adapted from the language arts, like science learning and social study curricula, and workplace. Also the materials designed by implementing these theories can help learning in a different way. In order to see if there is any outstanding effect on employees in a selected service company through e-learning, this research was conducted on the effects of vocational e-learning. Furthermore, the feedback and sense of e-learning effectiveness have been considered if different responding under different titles. The workplace levels focused on managing levels as superiors and frontline employees as staff. How the industry can broaden e-learning and how it can generate a positive attitude are the topics that sparked this researcher's motivation to do the present research. With the selected courses, most successful workplace e-learning offers "short, discrete" classes that focus on a very specific skill. E-Learning should not be exaggerated as computer science and educators should "stop labeling e-learning as the focus or a special term of computer science. Instead, it should highlight the knowledge construction of the learners. From the managing levels, superiors, e-learning should be efficient and cost-saving tool, also enhance company's culture. For organizations that are truly learning organizations, culture building strategies that work includes making managers accountable for the learning of their employees and legitimizing the learning programs so that they become part of the everyday work environment and work day [18]. Widely dispersed employees are requested and demanding access to learning anytime and anywhere and on their terms. Employees are subsequently satisfied with better system use, speed of connectivity and the learning platform to be used [17].

2.4. Evaluating e -Learning Effectiveness by Applying IS Modified Model

By highlighting the e-learning function in vocational training, the method to evaluate the authentic effectiveness is necessary. The IS evaluating model is thoroughly considered. First, the original IS success model was proposed by DeLone and McLean-Parks [19] in Fig. 2.

Fig. 2. The DeLone and McLean's IS success model (1992).

The model received great attention because of its theoretical basis for the link between human system use to the beneficial consequences of their use [16], [19]-[23]. There are six main dimensions: information quality, system quality, system use, user satisfaction, individual impact, and organizational impact. This model indicates that certain characteristics of IS attracted the use of system and satisfaction toward the system. Herein with it influenced both individuals and organizations. However, an updated model of the original IS success model [19] was proposed by DeLone and McLean-Parks [20], making specifications according to the e-commerce environment. The main specifications include the addition of service quality, the addition of intention to use, the adoption of net benefits and the adoption of net benefits. The service quality reflects the importance of service in successful e-commerce systems, an evaluating system [24], [25].

The dimensions are: the intention to use measures user attitude; the adoption of net benefits, replacing individual impact and organizational impact, impacts user satisfaction of e-commerce systems and intention to use [16], [19], [20]. The updated model is as Fig. 3.

Fig. 3. Updated DeLone and McLean's IS success model (2004).

For evaluating feedback of vocational learning system, the intention to use might not be clearly clarified because the mandatory requirement of OJT in company labor contract. However, the user satisfaction might be investigated as their intention opinions for the system use. To know the effectiveness of OJT on e-learning is important for human capital management. Nevertheless, different concepts toward effectiveness of OJT on e-learning might exist between different enterprise titles. That is to say, the superiors might concern the true outcome of effectiveness. This study constructs an explicit modified model to testify the link relationship between indicators and final OJT e-learning effectiveness.

2.5. Research Hypothesis

In order to understand the effectiveness of OJT on e-learning systems, especially on shift duty staff, the study focuses on shift duty users in general to examine the relationship between e-learning system use and OJT effectiveness. Also another extra variable would be discussed based on different titles.

2.5.1. Vocational e-learning system quality, information quality, service quality, system use and user satisfaction

Company's e-learning system, logging in through company's official Website, as EIP (enterprise Internet Portal), provides functions for employee use. There are functions as Login Interface, website slides of OJT courseware, Interface design as sound effect and image effect, and FAQ feedback. The employees must login the e-learning system to finish the assigned OJT courses. The procedure is firstly to login the EIP through company official website. The system quality presented by the e-learning system definitely will influence the employees' use friendly or nervousness. After login, the employees secondly need to choose the OJT courseware. The OJT courseware might present slide by slide (like Fig. 1). The information quality of knowledgeable vocational content carries the results of employees' observation. While using the e-learning, the employees thirdly need to accomplish the online test or might propose FAQ to courseware lecturer for problems enquiry. That is to say, the service quality of e-learning system does link the closed relation e-learning system use and user satisfaction. Based on the related association, the following hypotheses are proposed.

H1: e-learning system quality is positively related with e-learning system use

H2: e-learning system quality is positively related with user satisfaction

H3: information quality is positively related with e-learning system use

H4: information quality is positively related with user satisfaction

H5: Service quality is positively related with e-learning system use

H6: Service quality is positively related with user satisfaction

2.5.2. Vocational e-learning system use, user satisfaction, and OJT effectiveness

Theoretically the employees obtain knowledge, skills and vocational profession through e-learning system. The employees should be able to implement what they learn on the workplace application and respond with good service feedback from the customers. Meanwhile the feedback of accomplished achievement should reflect the employees' accomplishment and professionalism. All these outcomes can be satisfied with OJT effectiveness. Sedera [26] considers user satisfaction is the variable that directly influences the partial behavioral IS use model. According to IS model researches, users obtain beneficial consequences from system use [12], [16], [19]-[21], [23]. In addition, the employee satisfaction reflects the outcome of job effectiveness. Herein with this model constructs the link with OJT effectiveness related with user satisfaction and e-learning system use. The final focus that is adopted in this study as an evaluation indicator [5], [26] is to evaluate the OJT effectiveness, transferring and associating from e-learning system use and user satisfaction. Viewing from the company's perspective, the effectiveness comes into a more concern achievement [19], [20], [23].

H7: e-learning system use and user satisfaction are significantly interrelated

H8: e-learning system use and OJT effectiveness are significantly interrelated

H9: User satisfaction and OJT effectiveness are significantly interrelated

Fig. 4. Research model.

2.5.3. Different titles comparison toward OJT effectiveness

Moreover this study would like to confirm any possible conflicting prospective between managing level superiors and frontline staff; possibly influenced by workplace ethics. Generally the managing level inclines to support time-and-cost saving effectiveness and training not troubling work roster arrangement. Therefore, this study composes an extra analysis in comparing the different levels' prospects about the OJT effectiveness by using t-test. The conceptual research model for this study is shown in Fig. 4.

Superiors and staff both have positive feedback on system use, satisfaction and effectiveness.

3. Research Approach

In order to imperially testify e-learning effectiveness and link association between indicators, this study accommodated questionnaire survey. The empirical subjects are the employees with practical working

experience of duty shift change. The empirical subjects are the employees of service business staff who are front-line serving customers with practical working experience and need to work with shift duty roster.

3.1. Measurement Development

This study develops constructs as measurement indicators. They are system quality, information quality, service quality, system use, user satisfaction and OJT effectiveness. The construct measurements are all referred to historical literature as useful references and authentic definitions. The survey was delivered to the employees for their self-evaluated response on a Likert's five-point scale ranging from (1) strongly disagree to (5) strongly agree. Basically self-appraisal questionnaire by employees is still assumed acceptable and an authentic reference to [27]-[29]. The definitions of each construct are depicted below and the sample questionnaire is attached in Appendix A.

3.1.1. System quality, information quality and service quality

In this study, the measure definition of system quality refers to the employees' perception of system perception of system easiness, responsiveness and stability in use [19], [23], [30]-[34]. The e-learning system can be easily adopted and friendly useable. In addition, information quality relies on the knowledge supportive offered by vocational e-learning lecturers. That is, the employees' perception of the accuracy, reliability and completeness of information output. Service quality is defined as the overall support delivered by the service provider [20]. Service quality is admitted as an importance variable that users might be influenced to wrongly assume as system quality or information quality.

3.1.2. System use, user satisfaction

The definition of system use is the e-learning system use and dependence of users on e-learning system [19], [35]-[38]. Also user satisfaction confirms as the employees' the employees' entire acceptance feeling toward e-learning system [19], [23], [30], [33], [39]. E-Learning offers users a chance to improve their learning experience [36, 37]. Service can also be heightened when better training knowledge are offered. By consensus, most customers expect staff to be knowledgeable and professional. To achieve this purpose, staff can take e-learning courses. For example, e-learning courseware is designed in English on a basic knowledge level. Some courses focus on English terms in ESP at the workplace and some have the personalized reading on the Internet to teach English pronunciation. However, to what extent learners are satisfied with e-learning coursewares worth further study.

Satisfaction is one of the most discussed dimensions. As satisfaction, the complexity construct, many definitions have been discussed. Satisfaction is the outcome of buying a product or service [40], whereby the purchase rewards and costs are compared. Also [41] noted that customer satisfaction is an antecedent of repurchase intention. Many writers claimed that satisfaction may predict future reusing (repurchasing) behaviors and profitability [42]-[44]. Furthermore to say, satisfaction is described the cognitive comparison between the expectations that an user holds prior to the use or service experience and the actual performance of the service. Users expectations can be either positive or negative disconfirmation [40]. Disconfirmation derived from user satisfaction will deliver either positive or negative communication. That is to say, user satisfaction stimulates repeat uses.

3.1.3. OJT effectiveness

OJT effectiveness refers to the result after the employees learn the information of company's training courses and can apply what they learn in the workplace. Herein with it also is defined as the effective efficiency of employee's inspiration [36]-[38]. The effectiveness items can include overall task achievement, job accomplishing satisfaction and job performance. The performance is evaluated from the measurements of four criteria: cost, quality, service and speed [17]. They are the constructs of our modified model. That is

to say, elearning effectiveness can be verified through the learning processes.

4. Data Analysis

In this study, a group of staff members were recruited as the subjects, and all of them are job employees who have been requested to pass an English examination to work and obtained basic computer operation skills. The subjects were asked to login e-learning system through EIP (Enterprise Internet Portal) to participate vocational elearning courses of on-the-job training. After completion of elearning courses, the subjects would fill out the questionnaire of Likert's five-point scale.

The total numbers of the questionnaire were about 180. With returned copies, there were 150 collected. However, only a total of one hundred and thirty-seven were valid respondents with 39 superiors and 98 frontline staff (Table 1 presents the demographic information). Based on the limited subject size, PLS (partial least square) was better aquadete for data analysis [45], [46]. PLS focuses on maximizing the variance of the dependent variables explained by the independent ones instead of reproducing the empirical covariance matrix. PLS now is increasingly common used data analysis method [47]-[49]. To be expected, the hypotheses were verified on the following by PLS-SEM for data analysis.

Table 1. Demographic Analysis of the Total Subjects

	Description	Frequency	percent
Sex	Male	68	49.6%
	female	69	50.4%
Age	20-30	22	16.1%
	31-40	65	47.4%
	41-50	34	24.8%
	51-60	16	11.7%
	Above 25	10	7.3%
Title	Director	39	28.5%
	staff	98	71.5%
Serenity	0-5	25	18.2%
	6-10	38	27.7%
	11-15	33	24.1%
	16-20	17	12.4%
	21-25	14	10.2%
	Above 25	10	7.3%
Education	High school	1	.7%
	College	38	27.7%
	University	91	66.4%
	Graduated school	7	5.1%
Computer skill	Perfect	16	11.7%
	Good	81	59.1%
	Basic	39	28.5%
	Not good	1	.7%

4.1. Measurement Validity

The questionnaire for this study is based on the updated IS Model's construct metric [20] and made the pre-study survey for their response of easily understood constructs. In order to verify the construct model fit and variables prediction, the construct convergent validity, discriminate validity and R2 should be measured accordingly with procedure step [34].

4.1.1. Reliability results

Convergent validity presents the consistency with multiple items exhibiting in measuring the same construct. Composite reliability (CR) and average variance extracted (AVE) are adequate indicators of measurement [50], [51]. To indicate commonly acceptable convergent validity of measurements, the indicators of CR should be > 0.7 and AVE > 0.5 [52, 53]. Also about unidimensionality, factor loadings (> 0.7) and t-value ($t > 1.96$ at $p < 0.05$, $t > 2.58$, at $p < 0.01$, $t > 3.29$ at $p < 0.001$) were both required. The reliability test results are given in Table 2.

Table 2 Model Construct Reliabilities: AVE, CR, FL and t-values

4.1.2. Discriminant validity

The measurement of discriminant validity means that the correlations provide evidence of discriminate items between different constructs. The AVE and cross-loading can be adapted to assess discriminant validity [45]. According to Fornell [54], criteria of adequate discriminant validity, the root square of AVE of a construct should be higher than its correlation coefficients with other constructs. Also the factor loadings should be higher than cross loadings. The test results of discriminant validity are presented in Table 3 while the results of the factor loadings and cross loadings are in Table 4.

Table 3 Square Root of AVE and Correlations of All Constructs

	IQ	OJ	SQ	U	US	VQ
IQ	0.80					
OJ	0.77	0.83				
SQ	0.70	0.70	0.79			
U	0.71	0.72	0.76	0.85		
US	0.59	0.65	0.53	0.59	0.83	
VQ	0.77	0.70	0.72	0.74	0.63	0.80

Table 4 Cross Loadings and Factor Loadings

	IQ	OJ	SQ	U	US	VQ
IQ1	0.73	0.52	0.55	0.52	0.37	0.56
IQ2	0.82	0.65	0.48	0.46	0.38	0.58
IQ3	0.82	0.60	0.51	0.57	0.47	0.62
IQ4	0.85	0.67	0.58	0.65	0.58	0.67
IQ5	0.78	0.58	0.62	0.54	0.47	0.58
OJ1	0.66	0.86	0.58	0.59	0.56	0.60
OJ2	0.72	0.86	0.60	0.60	0.59	0.630
OJ3	0.47	0.76	0.52	0.54	0.42	0.47
SQ1	0.54	0.50	0.78	0.54	0.42	0.608
SQ2	0.42	0.41	0.76	0.51	0.30	0.48
SQ3	0.59	0.57	0.85	0.62	0.40	0.56
SQ4	0.61	0.68	0.82	0.66	0.48	0.61
SQ5	0.53	0.52	0.74	0.59	0.42	0.49
U1	0.70	0.65	0.67	0.90	0.51	0.72
U2	0.61	0.59	0.62	0.85	0.509	0.593
U3	0.43	0.53	0.60	0.79	0.44	0.53
US1	0.53	0.51	0.48	0.52	0.79	0.52
US2	0.46	0.52	0.39	0.45	0.87	0.52
US3	0.43	0.54	0.40	0.44	0.81	0.48
VQ1	0.64	0.56	0.61	0.54	0.50	0.82
VQ2	0.66	0.59	0.51	0.61	0.52	0.77
VQ3	0.62	0.52	0.59	0.55	0.46	0.87
VQ4	0.50	0.51	0.53	0.62	0.490	0.73

4.2. Path Analysis

Fig. 5. The PLS results

A bootstrapping procedure was used to generate statistics and standard errors to show the path coefficient significance and construct explanation. The PLS-SEM analysis results are shown in Fig. 5 and the Table 5. The results indicate that most hypotheses were positively related, except H2, H3, H4 and H7 closed to interrelation. Also interpreted like multiple regression, the R² indicates the figures of variance explained by the model. The R² of learning system use is 0.662, R² of user satisfaction is 0.408 and the OJT effectiveness is 0.587. The above constructs explained good effectiveness, but somehow not all previous variables. The results of the study show that system quality is positively associated to system use, but not on the user satisfaction. Hence Information quality showed both negatively related with system use and user satisfaction. The service quality is significant to system use, but not on user satisfaction. For the system

use to user satisfaction, it's not significant. The final OJT effectiveness is highly influenced by the user satisfaction and system use.

Table 5 Path Coefficients (Mean, STDEV, Values)

Hypothesis(path)	Path coefficient(b)	t-Value	supported
H1 SQ-> U	0.410	3.71***	YES
H2 SQ-> US	0.017	0.20	n.s.
H3 IQ-> U	0.180	1.69	n.s.
H4 IQ-> US	0.180	1.69	n.s.
H5 VQ-> U	0.307	2.48*	YES
H6 VQ-> US	0.329	2.92**	YES
H7 U-> US	0.201	1.82	n.s.
H8 US-> OJ	0.353	4.53***	YES
H9 U-> OJ	0.504	5.60***	YES

* $t > 1.96$ at $p < 0.05$, ** $t > 2.58$, at $p < 0.01$, *** $t > 3.29$ at $p < 0.001$

4.3. T-Test Analysis

Table 6 Different Titles' Perspectives

variables	F	title	numbers	mean	Standard deviation	Mean diff	t
US1	25.95	supervisor	39	4.31	.73	.16	.12
		staff	98	4.15	.36	.15	
US2	17.44	supervisor	39	3.77	.74	-.18	.12*
		staff	98	3.95	.30	-.18	
US3	20.63	supervisor	39	3.82	.68	-.157	.11
		staff	98	3.97	.27	-.15	
U1	13.67	supervisor	39	4.05	.69	.03	.11
		staff	98	4.02	.25	.03	
U2	2.98	supervisor	39	4.03	.67	-.05	.11
		staff	98	4.07	.33	-.05	
U3	25.87	supervisor	39	4.26	.59	.15	.10*
		staff	98	4.10	.30	.15	
OJ1	.98	supervisor	39	3.92	.66	-.04	.11
		staff	98	3.96	.47	-.04	
OJ2	9.30	supervisor	39	3.85	.67	-.11	.11
		staff	98	3.96	.38	-.11	
OJ3	3.26	supervisor	39	3.8974	.64051	-.05	.10
		staff	98	3.9490	.38988	-.05154	

For the system use not clearly explained why not positively related with user satisfaction, this study decided to practice extra statistical analysis to compare if there is any difference attitude toward the feedback variables: system use, user satisfaction and OJT effectiveness between directors and frontline staff. In the study of IS model of Lin [55], t-test is measured before PLS analysis to distinguish no difference between two groups. The result is shown in Table 6. However, this study would like to compare end result of system use, user satisfaction and OJT effectiveness between different workplace titles, superiors and staff, to see if there is any difference with overall correlation. The item of the variable, user satisfaction is "I'm satisfied with efficient e-learning system". The mean value of staff, 3.95 is higher than superiors', 3.77 and it means that staffs reveal higher satisfaction than superiors. Another different value is system use, U3 (I rely on e-learning system to enhance my vocational knowledge). The mean value of superiors, 4.26 is higher

than the staffs', 4.10. It shows that superiors are more positive with e-learning system enhancing vocational knowledge.

5. Discussion and Conclusion

5.1. Discussion

The purpose of e-learning system is to help company enhance employees' training and organizational human resource management. E-Learning system provides portal as a cost-saving tool to assist employees to gain workplace professionalism. System use is temporal behavioral variable, but the desired outcome of employee training comes to more longstanding changes as cognitive changes. How to verify the OJT effectiveness is the empirical and practical finding that this study prefers to find. The following discussion summarizes the findings of this study.

5.1.1. Suggestions

The e-learning system at the beginning was used on academic learning. Later the e-learning system is developed to vocational training and become more and more beneficially adapted due to the high effectiveness and cost of human resource training. All the enterprises know the value of human resource and not to mention the service provided by staff. The shift-duty staffs need to face the customers to offer good service and professional knowledge. Of course the OJT training is essential and important. This study shows the effectiveness of e-learning system training of shift-duty staff to ensure company's concern and help reveal the staff's requirements. The summary discussion is depicted following. In general, it indicates that company's e-learning system portal offers good OJT effectiveness upon employees' perceptions and positive relationships with e-learning system use and user satisfaction.

The e-learning system use and user satisfaction are shown to be positively related with outcome of OJT effectiveness. As user satisfaction is an intrinsic motivator [56], e-learning system use is assumed as behavioral extrinsic motivator. To apply in workplace field's essence, this study designed e-learning system as mustbe OJT training portal. Hence, user satisfaction is hardly related with e-learning system use. The employees generally will not consider user satisfaction to a condition if use or not.

Responding to system quality, information quality and service quality, they responded with different relations. System quality is only related to system use, but not on user satisfaction. Information quality is not related with system use and user satisfaction, while service quality is related with system use and user satisfaction. The result indicates the e-learning design is worthy for further discussion [36]. It reveals messages that knowledge quality, e-learning courseware, might not successfully attract employees' involvement and attention. Hence, system quality might hint the e-learning portal and system network outlook not get employees' satisfaction. Only when it relates with service quality, the service quality really impacts with system use and user satisfaction. It means if the portal provides service courseware or service respond, it really inspires the correspondence of system use and user satisfaction.

5.1.2. Organizational implications

The company sincerely prefers to know if e-learning system design can cope with OJT training use [38]. This study confirms that well-designed e-learning system can facilitate the integration of knowledge required by employees, who can help transfer the training to their workplace [5]. In addition, the e-learning system is well packaged in employees' OJT training. The companies can adapt e-learning system with shift-duty employees with good effectiveness. It also helps the human resource managers how to well-embed e-learning system to good human capital management [17].

5.2. Conclusions

This study is limited to small size sample. Although it's well verified examined, it might have the risk of

presenting general popularity. Furthermore, the modified model is considered from the aspect of enterprise's training. That is to say, the perceived use is not within the consideration of this study. Regarding the workplace field, the demand of OJT training is not negotiable; therefore the perceived use and related satisfaction are far beyond consideration. Finally, considering more environmental variables can be more thoroughly, such as group support, organizational culture and individual learning ability.

5.2.1. Limitations

From the aspect of performance of our e-learning model, though the effectiveness of workplace e-learning is highly significant, the previous result of learning information quality, service quality should not be ignored. It revealed the defect of inconsiderate electronic learning knowledge system (LMS). In the e-learning industry, all industries unavoidably adopt e-learning system, a phenomenal explosion [18], but might not well-designed knowledge management and knowledge sources. Like our research sample company, a branch of international business, even the headquarter urged to apply workplace e-learning system and command the worldwide branches to online learning (for cost saving and manpower management), the e-learning courseware, knowledge management is insufficient and ineffective. Verified by our research result, for the information quality and part of service quality, the subjects show not positive attitude toward e-learning system use and user satisfaction. Of course, all the subjects support the effectiveness (most high percentage of superiors).

5.2.2. Contributions

The company might not be aware of the importance of well-designed knowledge management. Knowledge management and performance support are key components to the learning paradigm and must be considered as part of the learning architecture [18]. Good instructional design and learning knowledge system cannot be underestimated. Ansari, Youshanlouei, & Mo [57] suggested that the identification of knowledge in business sectors as a competitive advantage and strategic resource intensifies the necessity of implementation of knowledge management (KM) in organizations. The importance of knowledge management is the process of identifying, selecting, organizing, and transferring important information and skills. It well advises the essence and importance for the industry to value the workplace e-learning education which is supported by complete knowledge management.

5.3. Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have already been defined in the abstract. Abbreviations such as SI, ac, and dc do not have to be defined. Abbreviations that incorporate periods should not have spaces: write "C.N.R.S.," not "C. N. R. S." Do not use abbreviations in the title unless they are unavoidable (for example, "INTERNATIONAL ACADEMY PUBLISHING" in the title of this article).

Appendix

Construct measures

e-learning system quality

- SQ1. The e-learning system portal provides good interaction mechanisms.
- SQ2. Through the e-learning system portal, the login and operation interface are clear and easy.
- SQ3. The e-learning system feedbacks quickly.
- SQ4. The e-learning system maintains good online test.
- SQ5. The e-learning system functions efficiently in learning time control.

e-learning information quality

- IQ1. The e-learning system provides better information and knowledge than traditional classroom.
 - IQ2. The e-learning system provides complete and sufficient vocational knowledge.
 - IQ3. The e-learning system provides good FAQ (frequently asked questions)
 - IQ4. The e-learning system information perfectly meet my needs.
 - IQ5. The e-learning systems provide knowledge that is helpful to solve the work tasks.
-

Service Quality

- VQ1. The e-learning system provides clear Individual area
 VQ2. The e-learning system provides lecturer's prompt responses
 VQ3. The e-learning system provides flexible Course Area
 VQ4. The e-learning system provides assured time learning

User Satisfaction

- US1. I'm satisfied with sufficient e-learning courses.
 US2. I'm satisfied with efficient e-learning system
 US3. I'm satisfied with effectiveness of e-learning system

Use

- U1. I frequently use e-learning system
 U2. I explore many designed functions of e-learning system
 U3. I rely on e-learning system to enhance my vocational knowledge

OJT effectiveness

- OJ1. The e-learning system helps my job promotion.
 OJ2. I'm confident with my job after learning e-learning system
 OJ3. I can perfectly complete the assigned job tasks after learning e-learning system

References

- [1] Martin, R. J., & Hine, D. W. (2005). Development and validation of the uncivil workplace behavior questionnaire. *J. Occup Health Psychol*, 10(4), 477-490.
- [2] Armstrong, G. B. (1996). Cybersociety: Computer-mediated communication and community. *Journalism & Mass Communication Quarterly*, 73(1), 248-261.
- [3] Global Industry Analysts. (2012). *Global e-Learning Market to Reach US\$107 Billion by 2015* (1st ed.). San Jose, California: Global Industry Analysts, Inc.
- [4] Clarke, A. (2004). *E-learning Skills*. Palgrave Macmillan.
- [5] Chen, H. J. (2010). Linking employees' e-learning system use to their overall job outcomes: An empirical study based on the IS success model. *Computers & Education*, 55(4), 1628-1639.
- [6] Luor, T., Hu, C., and Lu, H. P. (2009). 'Mind the gap': An empirical study of the gap between intention and actual usage of corporate e-learning programmes in the financial industry. *British Journal of Educational Technology*, 40(4), 713-732.
- [7] El-Deghaidy, H., & Nouby, A. (2008). Effectiveness of a blended e-learning cooperative approach in an Egyptian teacher education programme. *Computers & Education*, 51(3), 988-1006.
- [8] Ozkan, S., & Koseler, R. (2009). Multi-dimensional students' evaluation of e-learning systems in the higher education context: An empirical investigation. *Computers & Education*, 53(4), 1285-1296.
- [9] Turvey, K. (2010). Pedagogical-research designs to capture the symbiotic nature of professional knowledge and learning about e-learning in initial teacher education in the UK. *Computers & Education*, 54(3), 783-790.
- [10] Butcher, K., Bamford, R., & Burke, D. (2014). Innovation in e-learning: Learning for all. *Ecancer medical science*, 8, 467-475.
- [11] Blake, M. B., & Butcher-Green, J. D. (2009). Agent-customized training for human learning performance enhancement. *Computers & Education*, 53(3), 966-976.
- [12] Kramarski, B., & Gutman, M. (2006). How can self-regulated learning be supported in mathematical E-learning environm. *Journal of Computer Assisted Learning*, 22, 24-33.
- [13] Narciss, S., Proske, A., & Koerndle, H. (2007). Promoting self-regulated learning in web-based learning environments. *Computers in Human Behavior*, 23(3), 1126-1144.
- [14] Grimes, M. (2010). Strategic sensemaking within funding relationships: The effects of performance measurement on organizational identity in the social sector. *Entrepreneurship: Theory and Practice*, 34(4), 763-784.
- [15] Tranter, E., & Vdez-Reyes, M. (2002). Distance learning programs at the center for power electronics systems. *IEEE*, 122-127.

- [16] Wu, JH., & Wang Y.M. (2006). Measuring KMS success: A respecification of the DeLone and McLean's model. *Information & Management*, 43(6), 728-739.
- [17] Sanderson, PE. (2002). E-Learning: Strategies for delivering knowledge in the digital age *The Internet and Higher Education*, 5(2), 185-188.
- [18] Rosenberg, MJ. (2001). *E-Learning: Strategies for Delivering Knowledge in the Digital Age*. New York McGraw-Hill.
- [19] DeLone, WH., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. *Information Systems Research*, 3(1), 60-67.
- [20] DeLone, WH., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information System*, 19(4), 9-30.
- [21] DeLone, WH., & McLean, E. R. (2004). Measuring e-commerce success: Applying the DeLone & McLean information systems success model. *International Journal of Electronic Commerce*, 9(1), 31-47.
- [22] Wang, YS., Wang H. Y., & Shee D. Y. (2007). Measuring elearning systems success in an organizational context: Scale development and validation *Computers in Human Behavior*, 23(4), 1792-1808.
- [23] Seddon, PB. (1997). A respecification and extension for DeLone and McLean model of IS success. *Information Systems Research*, 8(3), 240-254.
- [24] Madar, A., (2014). Hotel services quality assessment using SERVQUAL method. Case study: Athénée palace hotel *Economic Sciences*, 7(56), 71-78.
- [25] Wu, H.C., & Cheng C.G. (2013). A hierarchical model of service quality in the airline industry *Journal of Hospitality and Tourism Management*, 20, 13-22.
- [26] Kirkpatrick, D. L. (1979). Kirkpatrick technology for training. *Training and Development*, 78-94.
- [27] Dragos, I., Ilie, A & Ispas, D. (1990). Examining the criterion-related validity of the employee screening questionnaire: A three-sample investigation. *Journal of Applied Psychology*, 73(3), 354-357.
- [28] Sulphery, MM. (2014). Construction & validation of employee wellness questionnaire. *Indian Journal of Industrial Relations*, 49(4), 690-701.
- [29] Roberson, M.T. S., & Schmitt, E. (1990). Questionnaire design, return rates, and response favorableness in an employee attitude questionnaire. *Journal of Applied Psychology*, 75(3), 354-357.
- [30] Bailey, J. & Pearson, SW. (1983). Development of a tool for measuring and analyzing computer user satisfaction. *Management Science*, 29(5), 530-545.
- [31] Kahn, B.K., Strong D.M., & Wang R. Y. (2002). Information quality benchmarks. *Communications of the ACM*, 45(4), 184.
- [32] Li, E.Y. (1997). Perceived importance of information system success factors: A meta analysis of group differences. *Information & Management*, 32, 15-28.
- [33] McHaneya, R., Hightower, R. & Pearson, J. (2002). A validation of the enduser computing satisfaction instrument in Taiwan. *Information & Management*, 39, 503-511.
- [34] Igarria, M., & Tan, M. (1997). The consequences of information technology acceptance on subsequent individual performance. *Information & Management*, 32, 113-121.
- [35] Goodhue, DL., & Thompson, R. L. (1995). Task-technology fit and individual performance. *MIS Quarterly*, 213-237.
- [36] Govindasamy, T. (2002). Successful implementation of e-learning pedagogical considerations. *Internet and Higher Education*, 4, 287-299.
- [37] Hamid, A.A. (2002). E-Learning is it the "e" or the learning that matters? *Internet and Higher Education*, 4, 311-316.
- [38] Ismail, J. (2002). The design of an e-learning system beyond the hype. *Internet and Higher Education*, 4, 329-336.

- [39] Doll, W. J., & Torkzadeh, G. (1988). The measurement of end-user computing satisfaction. *MIS Quarterly*, 259-274.
- [40] Oliver, M. (1999). Whence consumer loyalty. *Journal of marketing*, 63, 33-44.
- [41] Gillen, D., & Lall, A. (2004). Competitive advantage of low-cost carriers: some implications for airports. *Journal of Air Transport Management*, 10(1), 41-50.
- [42] Jayawardhena, C., et al. (2007). Outcomes of service encounter quality in a business-to-business context. *Industrial Marketing Management*, 36(5), 575-588.
- [43] Lee, C. K., Yoon, Y. S., & Lee, S. K. (2007). Investigating the relationships among perceived value, satisfaction, and recommendations: The case of the Korean DMZ. *Tourism Management*, 28(1), 204-214.
- [44] Akamavi, R. K., et al. (2015). Key determinants of passenger loyalty in the low-cost airline business. *Tourism Management*, 46, 528-545.
- [45] Vincenzo, E. V., Chin, W. W., Henseler, J., & Wang, H. (2010). *How to Write Up and Report PLS Analyses*, in *Handbook of Partial Least Squares*. Springer Handbooks.
- [46] Sarstedt, M., Ringle, C. M., & Hair, J. F. (2011). PLS-SEM: Indeed a silver bullet. *The Journal of Marketing Theory and Practice*, 19(2), 139-152.
- [47] Beatson, C., & Rudd. (2006). Determining consumer satisfaction and commitment through self-service technology and personal service usage. *Journal of marketing manage*, 22, 853-882.
- [48] Fornell, C. L., & Roos, J. P. (1990). The cooperative venture formation process: A latent variable structural modeling approach. *Management science*, 36, 1246-1256.
- [49] Hsieh, J. J., & Keil, M. (2008). Understanding digital inequality: Comparing continued use behavioral models of the socio-economically advantaged and disadvantaged. *MIS Quarterly*, 32(1), 97-126.
- [50] Bagozzi, R. P., & Yi, Yi. (2011). Specification, evaluation, and interpretation of structural equation models. *Journal of the Academy of Marketing Science*, 40(1), 8-34.
- [51] Steenkamp, J., & Steven, M. (2002). Optimum stimulation level and exploratory consumer behavior in an emerging consumer market. *Intern. J. of Research in Marketing*, 19, 131-150.
- [52] Fornell, L. (1981). Evaluating structural equation model with unobservable variables and measurement error. *Journal of marketing Reserach*, 18, 39-50.
- [53] Hair, J. F., Ringle, C. M., & Sarstedt, M. (2012). Partial least squares: The better approach to structural equation modeling? *Long Range Planning*, 45(5-6), 312-319.
- [54] Fornell, C., & Bookstein, F. L. (1982). Two structural equation models: LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing Research*, 14, 440-452.
- [55] Lin, W. S. (2012). Perceived fit and satisfaction on web learning performance: IS continuance intention and task-technology fit perspectives. *International Journal of Human-Computer Studies*, 70(7), 498-507.
- [56] Lim, J. (2003). A conceptual framework on the adoption of negotiation support systems. *Information and Software Technology*, 45(8), 469-477.
- [57] Ansari, M., Youshanlouei, H. R., & Mood, M. M. (2012). *A conceptual model for success in implementing knowledge management: A case study in Tehran municipality*. *Journal of Service Science and Management*, 5(2), 212-222.

Cheng Tina a doctoral candidate in the College of Management at National Kaohsiung First University of Science and Technology in Taiwan. She is also a lecturer in the International College of National Kaohsiung University of Hospitality and Tourism in Kaohsiung City, Taiwan. Her research interests are service quality, service satisfaction, service recovery, organizational performance and organizational learning education.



Chen Chen -cheng is an assistant professor in the Department of Logistics Management at the National Kaohsiung First University of Science and Technology (NKFUST), Taiwan. She received her PhD degree in economics from Kyoto University in 1999, Japan. Her research interests include business administration, business economics, and human resources management.