

Evaluating Learners' Reactions to an Online Training Programme: A Case Study of Maldives National University

I. Balaban*, J. Badari* i I. Ružić**

*University of Zagreb, Faculty of Organization and Informatics, Varaždin, Croatia; **First Primary School Čakovec, Croatia
igor.balaban@foi.unizg.hr, josipa.badjari@foi.unizg.hr, ivana.ruzic@skole.hr

Abstract - In this paper the first level of KirkPatrick's model is used to evaluate the reaction of learners on the online training program conducted at the Maldives National University (MNU). A measurement instrument assessing learners' engagement, satisfaction and relevance of the content was developed and evaluated. A sample of 46 university teachers involved in the training program was used to evaluate the measurement instrument. The results revealed strong positive correlation between all three research constructs. Detailed analysis of participant's responses showed that COVID-19 related lockdown has played a significant role in participants' perception of their engagement and satisfaction with the training program.

Keywords - Kirkpatrick's model; reactions; engagement; satisfaction; relevance; elearning

I. INTRODUCTION

Online training programs have become an unavoidable choice for organizations and individuals looking to enhance their skills and knowledge. The convenience, flexibility, and cost-effectiveness of online training programs have made them an attractive option for learners, and several scientific studies have shown that online training can offer numerous benefits compared to traditional in-person training.

One of the main benefits of online training programs is their accessibility [1]. Online training programs can be accessed from anywhere with an internet connection, making them ideal for learners who are unable to attend in-person training due to geographical, time or other constraints. Additionally, online training programs offer greater flexibility in terms of personal pacing and scheduling [2]. In addition, online training programs can be tailored to the individual needs and preferences of a learner or an institution, providing more personalized and engaging learning experiences.

Finally, online training programs can be more cost-effective than traditional in-person trainings, as they eliminate the need for travel and accommodation and reduce the need for instructor time and resources [3]. This can

result in significant savings for both, individuals and organizations, making online training a more attractive option for budget-conscious organizations and financially-challenged individuals.

Overall, the literature suggests that online training programs can offer other numerous benefits over traditional in-person training, including increased accessibility, flexibility, personalization, and cost-effectiveness [4]. These benefits make online training a highly attractive option for organizations and individuals looking to enhance their skills and knowledge.

This paper explores the efficiency of the online training program created for the Maldives National University (MNU) to prepare their teachers to be able to design and conduct online courses due to the increased requirements from their students. Based on that, Erasmus+ project "AMED - Advancing higher education in Maldives through E-learning Development", implemented from January, 2019 to July, 2022 included the co-creation and piloting of a new online study program for professional development of HE teachers and managers focusing on the use of ICT in education.

The design of the AMED study program started with the identification of the training needs in 2019 that targeted students, teachers and institutional readiness for online learning and provided in-depth information on the perception of each target group. The conducted analysis provided details to design and develop the study program curriculum organised in 4 modules: 1/ Foundations of e-learning, 2/ Leadership and management of e-learning, 3/ Designing digital learning, and 4/ The networked teacher. Lecturers learning path involved modules 1, 3 and 4, while the decision makers learning path involved modules 1 and 2. The study program ended with a Capstone project tailored differently for each learning path (lecturers vs decision makers). The study program was developed in English language, implemented within Moodle LMS and successfully piloted in online mode due to the COVID-19 lock-downs at the MNU during 2021 and 2022 among 51 lecturers and decision-makers.

This paper aims to assess the developed AMED study program for lecturers learning path according to the Kirkpatrick's Model, a globally recognized method of evaluating the results of online learning programs [5]. The Model allows program designers and researchers to assess formal and informal training methods and to rate them against four levels of criteria: reaction, learning, behaviour and results. In this paper we will focus on learners' reaction, which is the first level in the Kirkpatrick's Model.

II. RESEARCH GOALS

Considering the fact that Kirkpatrick's model proposes and describes 4 main levels of assessment without implying any kind of measurement instrument or proposing the possible relationships within the instrument, the research aims of this paper are, therefore, as follows:

- To develop a valid and reliable measurement instrument to assess learners' reaction to the AMED study program
- To explore relationships between the main constructs of the instrument
- To interpret the measured assessment results of the AMED study program.

III. RESEARCH CONSTRUCTS

As mentioned in the Introduction, the Kirkpatrick's model proposes the measurement in three dimensions whether the learners found the training 1/ engaging (engagement), 2/ favourable (satisfaction), and 3/ relevant (relevance). Therefore, in this section the research constructs and their importance for the online training programs will be further elaborated.

In order to create an effective educational environment, it is essential for learners to be involved and engaged in the learning process. Learner engagement can be defined as the passion to participate in and accomplish the assigned learning activities, or as learner willingness, need, desire, and compulsion to successfully participate in the learning process [6]. Learner engagement includes three categories: behavioural, cognitive, and emotional engagement [7]. The positive attitude of the learner to participate in the teaching process is called behavioural engagement. Cognitive engagement implies the disposition to think and comprehend one topic or concept, which involves self-regulation. Learners' reactions and feelings during the learning process is known as emotional engagement. Emotional engagement had the greatest impact on learner satisfaction, followed by cognitive and behavioural engagement [8].

Learner satisfaction is a crucial element that contributes to the quality and acceptance of online program. It shows how learners regard learning experience. Learner satisfaction depends on the learner's digital literacy level,

social and professional engagement, the learner support system including appropriate academic guidance and the course learning design. There are several factors related to learner satisfaction in online courses which include learning value, instructor enthusiasm, rapport, organisation, interaction, coverage, and assessment [6]. Despite technological advances and efforts to design effective ways to connect in online learning environments, learners in online learning have fewer opportunities to benefit from peer collaboration [9].

Relevance can be defined as the degree to which learners will have the opportunity to use or apply what they have learned. Relevance must be determined by using materials, concepts, examples and language familiar with learners [10]. Relevance can be improved by creating familiarity and good habits: using language and concepts related to the experience of the value of learner life, learning related to something that has already been learned; goal-oriented learning so that learners know the purpose and usefulness of learning; and by applying appropriate strategies regarding the characteristics of learners [11]. Researchers developed relevance interventions that seek to promote learners' beliefs that what they learn connects in meaningful ways to their lives. There are five approaches of the existing relevance intervention research: direct communication, personalization, self-generation, critical reflection, and directed reappraisal [12].

IV. METHODS

The methods section covers the participants (sample), data collection procedure and measurement instrument creation and validation.

A. Participants and data collection procedure

In February 2021, AMED project consortium announced AMED pilot study program to all the academic staff of the MNU. Two learning paths were offered: for lecturers and for decision makers. Invitations were sent to all academic staff to register in the study program using a google form with the description of the pilot program. By the given due date (February 21, 2021), 71 participants registered via the Google form and 3 were registered via personal communication. A total of 51 participants have completed either one of the two learning paths of the study program pilot by the end of project (July, 2022). In this paper we will focus only on the lecturer's learning path (Modules 1, 3 and 4 of the AMED study program, see Introduction). The total of 46 lecturers from the MNU (78% of female and 22% of male) with an average age of 39,8 years participated in the cross-sectional survey in February, 2022. They represent the sample of eligible individuals, i.e. participants who were actively using the training program for several months and have obtained the final certificate. Regarding their previous experience the sample included the balanced number within all groups with max. 30% of the lecturers with 6-10 years of

teaching experience. The sample profile is presented in the Table 1.

TABLE 1. SAMPLE PROFILE (N=46)

Gender	Female	36 (78%)
	Male	10 (22%)
Average age	Male	36,7
	Female	40,6
	Both	39,8
Teaching experience	0 to 5 years	12 (26%)
	6-10 years	14 (30%)
	11-15 years	11 (23%)
	> 15 years	9 (20%)
Motivation to take part in the e-learning change (1-5).	Female	3,5/5
	Male	3,1/5

B. Instrument creation and validation

The instrument development phase was conducted by following the recommendations from Straub and Gefen [13]. We started with the operationalization of research constructs based on the existing measures. Since we used an already developed set of measurement items for the specific constructs, the a-priori content validity was achieved.

As already mentioned, this research uses only the 1st level of Kirkpatrick's model that measures learners' reaction to training programs throughout three (3) main (sub)constructs: engagement, satisfaction and relevance.

Engagement refers to the passion to participate in and accomplish the assigned learning activities, or as learner willingness, need, desire, and compulsion to successfully participate in the learning process [6]. Measurement items used to assess the engagement of learners from Handelsman et al. [14] and Dixon [15] were used in this research.

Satisfaction shows how learners regard learning experience [6]. There are numerous examples found in literature which describe satisfaction. However, in this research we focused on a set of measurement items that best suited our research context. Therefore we focused on measures proposed by Ashby [16], Li et al [17], and Davis [18].

Relevance describes the degree to which learners will have the opportunity to use or apply what they learned [10]. Here we used the measurement items proposed by Hamid & Pihie [19].

The measurement instrument assessing the learners' reaction therefore consisted of 3 main (sub)constructs with a total of 22 items: Engagement (8 items), Satisfaction (11

items) and Relevance (3 items). Participants could record their answers on a 4 - point Likert-type scale.

Collected data was used to evaluate the reliability and validity of the instrument. Some items were removed due to their lower loadings on the posited construct or higher cross-loadings, respectively. In total, 18 items were retained within Engagement (5), Satisfaction (10), and Relevance (3). Once again, the proposed measurement model was evaluated with SmartPLS [20] in terms of validity and reliability (See Table 2).

TABLE 2. INSTRUMENT EVALUATION

Item	Median	Loadings	AVE	CR	CA
Engagement					
ENG1	2	0,640	0,541	0,839	0,790
ENG2	3	0,797			
ENG3	3	0,758			
ENG4	3	0,860			
ENG5	3	0,590*			
Relevance					
REL1	3	0,800	0,762	0,862	0,843
REL2	3	0,911			
REL3	3	0,903			
Satisfaction					
SAT1	3	0,838	0,577	0,935	0,917
SAT2	3	0,613			
SAT3	3	0,594*			
SAT4	3	0,867			
SAT5	3	0,827			
SAT6	3	0,850			
SAT7	3	0,771			
SAT8	3	0,769			
SAT9	3	0,711			
SAT10	3	0,701			
Notes. SD = Standard deviation; Loadings > 0,60; AVE > 0,50; CR > 0,70; CA > 0,70. Scale was a 4-point Likert type.					

* item with loading below 0.60 that was retained due to its necessity in the construct

Convergent validity was ensured by examining items' loadings and constructs' Average Variance Extracted (AVE). All items have loaded over 0,60 into their posited construct. The AVE values were all above the threshold of 0,50. Both criteria showed good convergent validity of the model [21]. Values of Cronbach's alpha (CA) and

Composite Reliability (CR) are higher than 0,70 [13] indicating satisfactory internal consistency (reliability).

Final instrument items that were further analysed are presented in Table 3.

TABLE 3. FINAL INSTRUMENT ITEMS IN THREE (SUB)CONSTRUCTS

Engagement
ENG1 I was studying regularly/logging on to the class regularly (Dixon, 2015)
ENG2 I was listening/reading carefully in class/course materials (Dixon, 2015)
ENG3 I applied course materials to my life (Dixon, 2015) (Handelsman, et al., 2005)
ENG4 I really desired to learn the material (Dixon, 2015) (Handelsman, et al., 2005)
ENG5 I participated actively in forums /small group discussions (Dixon, 2015) (Handelsman, et al., 2005)
Relevance
REL1 The content of the courses in this program was current. (Hamid&Pihie, 2004)
REL2 Overall, this study program contributed to the achievement of my wider qualification aim. (Li et al., 2016)
REL3 Overall, I find this study program to be relevant for my work/future tasks.(Li et al., 2016)
Satisfaction
SAT1 Overall, I am satisfied with the quality of the study program. (Ashby, 2011)
SAT2 Overall, I would recommend this study program to other students. (Li et al., 2016)
SAT3 Overall, the study program met my expectations. (Li et al., 2016)
SAT4 Overall, I enjoyed studying this program. (Li et al., 2016)
SAT5 Overall, I was satisfied with the teaching materials provided. (Li et al., 2016)
SAT6 Overall, I was satisfied with the method of delivery of the different teaching materials and learning activities. (Li et al., 2016)
SAT7 Overall, I was satisfied with the assessment during the program. (Li et al., 2016)
SAT8 Overall, I was able to keep up with the workload on this study program. (Li et al., 2016)
SAT9 I was satisfied with the ways to communicate with other peers.
SAT10 I was satisfied with the Learning Management System used in this program.
<i>Note:</i> Answers on 1–4-point Likert-type scale (1 – Strongly disagree; 2 – Disagree; 3 – Agree; 4 – Strongly agree).

V. RESULTS

The Spearman correlation coefficient was calculated for all three constructs in order to explore relationships between

the main constructs of the instrument. The results are interpreted according to Evans [22]: 0,00 – 0,19 (very weak), 0,20 – 0,39 (weak), 0,40 – 0,59 (moderate), 0,60 – 0,79 (strong) or 0,80 – 1,0 (very strong). The significance of correlations among the variables is tested at $p < 0,01$. Table 4 indicates strong correlations between all three constructs.

TABLE 4. CORRELATIONS BETWEEN CONSTRUCTS: ENGAGEMENT, SATISFACTION AND RELEVANCE

	Engagement	Relevance	Satisfaction
Engagement	1,000	0,751	0,680
Relevance	0,751	1,000	0,749
Satisfaction	0,680	0,749	1,000

Such findings are in line with the work of Gray and DiLoreto [6] who found that learner engagement mediates the relationship between learner interaction and instructor presence on both perceived learning and satisfaction and that course structure and instructor presence have a significant impact on learner satisfaction. A strong association between satisfaction and engagement was also determined by Rajabalee and Santally [23]. They found that the association between satisfaction and engagement was significant and positively correlated but they also detected a weak but positive significant correlation between satisfaction and engagement with overall performances. In the end, our findings are also supported by Rahim [24] who concluded that improving learner engagement increases learner satisfaction with online learning.

The final step in this research was to interpret the measured assessment results of the AMED study program. From the results shown in Table 2 under construct Relevance we can note the linear representation of the results (Median=3) without any significant deviations. Therefore, deeper analysis was focused on the most deviant items within constructs Engagement and Satisfaction having also proven strong correlations between items.

Within the construct Engagement, the item measuring the regularity of study among participants showed lowest result (Median=2). Within construct Satisfaction the lower result was noticed with the item which measured to which degree the participants were able to keep up with the workload of the study program (Median=3, Mean = 2,500).

Although the program designers and providers were aware of the fact that the learner engagement can be improved by connecting online courses with practice, helping learners in development of specific skills and make them aware of the value of learning and that improved learner engagement increases learner satisfaction with the online learning [24] and despite the fact that they provided the regular feedback and facilitated individual support, the success was limited by the external factors resulting from the COVID-19 related lock-downs in Maldives which, beyond health and psychological factors, included technical factors of which the most important - the instability of

home-internet connections and the lack of the sufficient IT equipment among participants.

Another negative external factor related to the lack of participants' more frequent regularity of study and involvement in study activities was their obligation as higher education teachers to switch their on-site courses to online teaching which was another unexpected and challenging COVID-19 related circumstance demanding their immediate and additional efforts.

Further, it is important to mention that the study program was enrolled on the voluntary basis according to the public call and it was expected that the program will attract those MNU teachers that have higher prior content knowledge (as proved by the pre-test) being also the teachers who most frequently and actively got involved in similar trainings in the past. Due to the very high scores in pre-test, their gains in knowledge were rather modest, as shown by the post-test. With that said, they have probably expected a more advanced course than the AMED study program, as it was intended to provide a basic level of knowledge that would allow all MNU teachers to start with e-learning at the MNU. However, the participation of advanced learners in the piloting phase was very much appreciated by AMED study program creators since it provided the stronger criticism and quality feedback for future implementation of AMED study program at the MNU.

VI. CONCLUSION

This paper is focused on assessing the efficiency of the online training program designed to prepare MNU teachers to be able to design and conduct online courses. The first level of Kirkpatrick's model was used to assess the effects of the piloted online training program at the MNU. The measuring instrument that assesses learners' reaction to training programs throughout three main (sub)constructs: engagement, satisfaction and relevance, was developed and validated. The Spearman correlation coefficient indicated strong positive correlations between all three constructs: engagement, satisfaction and relevance. The detailed analysis revealed items that showed lower mean values which can be explained with the effect of negative external factors. For future research, it is suggested to analyse the following three levels of Kirkpatrick's model: learning (Level2), to find out whether learners had acquired the intended knowledge, skills, attitude, confidence and commitment to the training; behaviour (Level3) which describes changes in learners behaviour based on the training they received and results (Level4) which assesses the effects the training program had on the organisational purpose and mission.

REFERENCES

- [1] Lucas M, Vicente PN., A double-edged sword: Teachers' perceptions of the benefits and challenges of online teaching

- and learning in higher education. *Educ Inf Technol* (Dordr). 2022 Oct 28;1-21. doi: 10.1007/s10639-022-11363-3.
- [2] James Brunton, Mark Brown, Eamon Costello & Orna Farrell (2018) Head start online: flexibility, transitions and student success, *Educational Media International*, 55:4, 347-360, DOI: 10.1080/09523987.2018.1548783
- [3] Tang, H. Implementing open educational resources in digital education. *Education Tech Research Dev* 69, 389–392 (2021). <https://doi.org/10.1007/s11423-020-09879-x>
- [4] Roni Berger & Marilyn S. Paul (2021) Pedagogy vs. Technology: Challenges in Developing Online Courses in Social Work Education, *Journal of Teaching in Social Work*, 41:3, 275-289, DOI: 10.1080/08841233.2021.1919280
- [5] Kirkpatrick, J., Kayser Kirkpatrick, W., (2021). An Introduction to The New World Kirkpatrick Model, Kirkpatrick Partners, retrieved 14 January 2023, URL: www.kirkpatrickpartners.com
- [6] Gray, J. A., DiLoreto, M. (2016). The effects of student engagement, student satisfaction, and perceived learning in online learning environments. *International Journal of Educational Leadership Preparation*, 11(1), n1.
- [7] Rojas-López, A., Rincón-Flores, E. G., Mena, J., García-Peñalvo, F. J., & Ramírez-Montoya, M. S. (2019). Engagement in the course of programming in higher education through the use of gamification. *Universal Access in the Information Society*, 18(3), 583-597.
- [8] Deng, R. (2021). Emotionally engaged learners are more satisfied with online courses. *Sustainability*, 13(20), 11169.
- [9] Paulsen, J., & McCormick, A. C. (2020). Reassessing disparities in online learner student engagement in higher education. *Educational Researcher*, 49(1), 20-29.
- [10] Afjar, A. M. et al (2020). *J. Phys.: Conf. Ser.* 1460 012119
- [11] Albrecht, J. R. & Karabenick, A. (2018). Relevance for Learning and Motivation in Education, *The Journal of Experimental Education*, 86:1, 1-10
- [12] Wahyudi, S. et al (2017). Learning Model of Attention, Relevance, Confidence, Satisfaction (ARCS) Supported by Video Tutorial to Improve the Students' Learning Motivation in Vocational High School. *Advances in Social Science, Education and Humanities Research (ASSEHR)*, volume 158.
- [13] D. Straub and D. Gefen, "Validation Guidelines for IS Positivist Research," *Commun. Assoc. Inf. Syst.*, vol. 13, no. 24, pp. 380–427, 2004, doi: 10.17705/1CAIS.01324
- [14] Mitchell M. Handelsman , William L. Briggs , Nora Sullivan & Annette Towler (2005) A Measure of College Student Course Engagement, *The Journal of Educational Research*, 98:3, 184-192, DOI: 10.3200/JOER.98.3.184-192
- [15] Dixon, M. (2015). Measuring student engagement in the online course: The online student engagement scale (OSE). *Online Learning*, 19(4). <https://doi.org/10.24059/olj.v19i4.561>.
- [16] Alison Ashby , John T.E. Richardson & Alan Woodley (2011) National student feedback surveys in distance education: an investigation at the UK Open University, *Open Learning: The Journal of Open, Distance and e-Learning*, 26:1, 5-25
- [17] Li, N., Marsh, V., & Rienties, B. (2016). Modelling and managing learner satisfaction: Use of learner feedback to enhance blended and online learning experience. *Decision Sciences Journal of Innovative Education.*, 14(2), 216–242. <https://doi.org/10.1111/dsji.12096>.
- [18] Davis, A. (2017). Measuring student satisfaction in online mathematics courses—RESEARCH. *Kentucky Journal of Excellence in College Teaching and Learning.*, 4(2) Retrieved from: <https://encompass.eku.edu/kjectl/vol14/iss2>.
- [19] Hamid, J. A., Pihie Z. A. L. (2004). Students' Perception of the Quality of Teaching and Learning in Business Studies Programs, *Pertanika J. Soc. Sci. & Hum.* 12(1): 71-86, Universiti Putra Malaysia Press, ISSN: 0128-7702

- [20] C. M. Ringle, S. Wende, and J.-M. Becker, *SmartPLS 3*. Bönningsted: SmartPLS GmbH, 2015.
- [21] J. F. Hair, G. T. M. Hult, C. M. Ringle, and M. Sarstedt, *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 2nd ed. Thousand Oaks: Sage Publications, 2017.
- [22] Evans, J. D. (1996). Straightforward statistics for the behavioral sciences. In *Straightforward statistics for the behavioral sciences*. Thomson Brooks/Cole Publishing Co. module: Implications for institutional e-learning policy. *Education and Information Technologies*, 26(3), 2623-2656.
- [23] Rajabalee, Y. B., & Santally, M. I. (2021). Learner satisfaction, engagement and performances in an online module: Implications for institutional e-learning policy. *Education and Information Technologies*, 26(3), 2623-2656.
- [24] Rahim, N. B. (2020). Improving student engagement and behavioural outcomes via persistence among distance learners. *Akademika*, 90(2), 91-102