International Journal of Curriculum and Instructional Studies

13(2), 2023, 404-423

www.ijocis.com

E-Learning Performance Assessment Model Proposal for E-Learning Academies*

Yahya Yılmaz, Gazi University, yahyayilmaz@gmail.com, 0009-0006-5220-4285

Mutlu Tahsin Üstündağ, Gazi University, mutlutahsin@gazi.edu.tr, 0000-0001-6198-2819

Keywords

E-Learning
E-Learning academies
Performance assessment
Data visualization

Article Info:
Received : 22-10-2023
Accepted : 14-12-2023
Published : 30-12-2023

DOI: 10.31704/ijocis.2023.017

Abstract

Corporates provide e-learning systems to their employees to improve their knowledge and competences needed in job descriptions. This study aims to propose a model that measures and analyzes real user data in e-learning system to measure the targeted personal development and learning level of employees of corporates with e-learning academies according to different criteria, compare the success level, and evaluate the effect of training on job performance. Employees' training activities, departments, positions, assessment and survey results, and other related data are recorded in the e-learning system and collected from the e-learning system, LMS (Learning Management System), by data mining method. The document also reviews the System Approach, Kirkpatrick's Four Levels of Training Evaluation Model, Balanced Scorecard, KPI (Key Performance Index), and OKR (Objectives and Key Results). In order to make a performance assessment in the model, data collected from e-learning systems is used, and the academy enters its own target data into the model. The results are associated with the corporate's KPI and OKR targets in the model. Model output is visualized for management review. The results declare that the model helps the academy have a holistic perspective for training activities associated with corporate target, a realistic review of effects of training on job performance, and possible opportunities and plans for future development of the trainings.

To cite this article: Yılmaz, Y., & Üstündağ, M. T. (2023). E-Learning performance assessment model proposal for e-learning academies. *International Journal of Curriculum and Instructional Studies, 13*(2), 404-423. https://doi.org/10.31704/ijocis.2023.017

*This study was produced from the PhD thesis of the first author. The second author is the supervisor of the dissertation. Both authors have contributed to the study equally.

Introduction

E-learning is preferred in training activities in a growing trend as a result of its advantages and the rapid development of internet infrastructure and technologies. This growth is monitored and reported by different organizations in the e-learning sector. According to the report published by Docebo (2020), it is estimated that the e-learning market will reach a total of 286 billion USD in 2023. It is also stated that approximately 100 billion USD of this amount will belong to corporate e-learning. While a growth trend in the future, there are expectations and issues that need to change in parallel with this growth on the side of human resources, training academies, and employees. Most academy professionals state that (Brandon Hall, 2019) it is more important to increase and develop the skills and capacities of existing employees and make them ready for changing needs rather than hiring new employees. In line with this assessment, the relevant departments assess that the priorities in e-learning activities are how personal development training should be offered, identifying the competencies where the existing employee has skills gaps, tracking talent development, and reporting the impact of development on business performance. However, when they evaluate the existing systems and solutions, it is also stated that they have insufficient reporting and analysis features.

Academy professionals reviewed these issues, and it becomes necessary for e-learning academies to develop in two areas: technology and content (Docebo, 2020). In terms of content development, academies explain that they prefer gamification, simulation, and content curation (learning journeys with different content) designs. More changes are expected in technology development (Anton & Shikov, 2018). In this sense, it is evaluated that the learning management systems (LMS) used in e-learning academies will evolve into learning experience systems (LXP-Learning Experience Platform) by focusing on the concept of "experience" rather than management (Fanning, 2019). The development of systems is designed upon the user-centered learning experience, supports talent management, emphasizes learning in the workflow, has an informal learning environment (information sharing with colleagues and managers) where coaching and mentor processes can be used, and can be integrated with all other systems in the organization stands out.

The pandemic period affected the expectations and technological developments described above and seems to accelerate the expected changes (Saverimuttu, 2022). The effects of COVID-19 are also evaluated in the "Future of Jobs Report" published by the World Economic Forum (2020). In the report, technological investments will begin to transform tasks, professions, and skills in organizations trying to overcome the pandemic impact. Nearly half of organizations want to accelerate digitalization for skills development. On the other hand, only very few of them plan to make permanent staff reductions. It can be concluded that organizations aim to retain their existing employees as much as possible to upskill them and increase their productivity.

In corporate e-learning research, the effectiveness of training in e-learning academies has been particularly examined to increase employee productivity and skills (Warner, 2019). However, the measurement of effectiveness for the above-mentioned expectation and need for change issues is not so clear because the business objectives used in the evaluation of the activities in the academies may vary according to each academy and have different priorities. In Brandon Hall Report (2019), employee engagement, personal performance, and supervisor

evaluations are mostly used to measure the effectiveness of e-learning academies. Financial results like revenue growth, annual sales, and effects on the market share are rarely used. However, most of the organizations explained that they still have problems in measuring learning impact and effectiveness (Drozdova & Guseva, 2017). In order to solve measurement problems, different theoretical approaches, models, and methods are proposed in the literature.

Theory and Research

Different methods, approaches, and models are examined in the literature review. Some of these are currently used in e-learning academies. The Kirkpatrick Model, Balanced Scorecard, Key Performance Index, Objectives and Key Results, and System Approach are selected, and it is aimed to use all of them in the model appropriately.

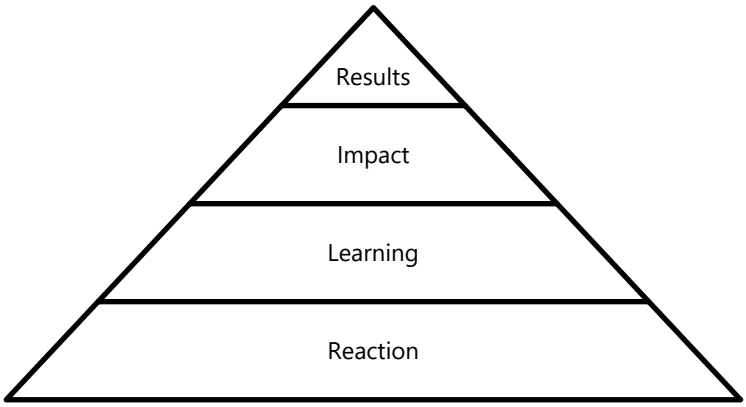
The reasons of choosing the theoretical approaches and model can be explained respectively as follows. The System Approach enables the model to have a holistic framework and use necessary structural parts of corporations that need to have relations with each other for organizational results. By using the Balanced Scorecard, the model gets strategic learning and development targets of e-learning academies. Key Performance Index and Objectives and Key Results provide measurable targets for assessment of the effectiveness of training to Academy professionals in the model. Lastly, the Kirkpatrick Model is chosen in the model since it evaluates specifically the effectiveness of training in every stage of training.

The Kirkpatrick Model

The model is established by Donald Kirkpatrick in 1959, and Kirkpatrick updated the model in 1975 and 1993. The model focuses on the measurement of the effectiveness of training. Four steps in the training processes in the model have features that can facilitate corporates to make measurements according to their business goals in e-learning academies (Chen, 2010). It is expected that the employee with a specific skill will have learning outcomes in knowledge, behavior, and upskills after the training they receive. Following the learning outcomes, it is aimed at increasing competence and, accordingly, a positive improvement in work performance (Cahapay, 2021). In this process, the first 2 levels of the model, named as respectively reaction and learning, can be tracked and reported through existing e-learning academy systems. However, the 3rd and 4th levels, named as respectively impact and results, have important roles, especially in evaluation; therefore, they should be measured, monitored, reported and modeled so that new decisions and plans can be done for the future in the academies.

Figure 1

The Kirkpatrick Model



The Balanced Scorecard

The last stage of the Kirkpatrick Model, the measurement of the contribution of training to the organization at the results level, is an important issue for academies. One of the biggest reasons for this is that human resource capital and training investments are intangible assets. In departments such as finance, sales, marketing, purchasing, and production, targets and results are quantitative and measurable. On the other hand, the human resources capital, strength, and competence of corporates are more qualitative and, therefore ,not easy to measure. When training activities are managed and evaluated within human resources and academies, Balanced Scorecard is one of the methods that is used in this field (Sevinç & Yıldırım, 2001).

The Balanced Scorecard is an approach developed by Robert Kaplan and David Norton in 1992 and defined as "a method for turning a corporate's strategies into actions". The main purpose of the approach is to evaluate the performance of the corporate by considering customers, internal processes, and learning and development, called as non-financial dimensions with financial results of the corporate (Kaplan, 2009). The Balanced Scorecard approach has 4 dimensions. These are (1) Financial, (2) Customer, (3) Internal Processes, and (4) Learning and Development. In the fourth dimension of learning and development, related to the study, the corporate is expected to fulfill the requirements to achieve its long-term goals by keeping continuous development and learning. In this dimension of the Balanced Scorecard, human resources management aims to determine the impact of employees on the goals of the corporate and the impact of human resources activities on all other dimensions. The fourth dimension includes 3 different types of resources: human resources, information resources, and organizational resources. Kaplan (2009) explains that these resources are intangible assets;, therefore, some steps need to be completed in order to incorporate them into the strategy and align them with it.

As human resources and academies, corporates have skills, competencies, and intellectual know-how. Four stages are proposed in human resource readiness. In the first stage, strategic job positions should be identified. All positions can be considered strategically important, or only some positions can be decided to be more strategic. In the second stage, qualification profiles for these positions and the skills and competencies needed for these profiles should be determined. In the next stage, the current level of the employees working or likely to work

in the relevant positions should be evaluated according to the determined competency profiles. In the final stage, a development program should be planned in order to acquire the skills and competencies that employees need to develop in terms of competence after the evaluation (Kaplan, 2009).

In the Balanced Scorecard, scorecards are created for units, managers, and employees in order to ensure that the company strategy can be maintained at the same level from the top to the bottom. Employee cards include not only financial targets but also targets for learning and development so that employees can participate in training and similar development activities within the scope of the development programs mentioned above. The Balanced Scorecard suggests that when planning a development program, the Objectives, Measures, Targets, and Initiatives mentioned in the approach should be prepared according to the company's strategic goals (Petersen, 2008). According to Kaplan (2009), "Objective" refers to the issue to be measured; "Measures" refers to how the issue will be measured and the unit of measurement; "Targets" refers to the point to be reached through the decided unit of measurement; and "Initiatives" refers to the activities needed to achieve the goals. In the measurement and targets headlines, academies need some methods to measure performance and progress quantitatively. In this study, KPI (Key Performance Index) is used as a method for the Learning and Development dimension.

Key Performance Index (KPI)

KPI is a method used in performance measurement and is usually graded on a scale of 0-100. The biggest benefit of the KPI method for academies is to enable the assessment of progress under measurable targets. The common opinion in the KPI method is that the measurement criteria and studies in accordance with the objectives should be correctly selected to achieve a successful result. Minhong et al. (2010) state that KPI can be used to support 3 issues: First, KPI may be used to align the personal training needs of the employee with the competency priorities of the organization. Secondly, it can help to establish the relationship between learning and job performance. Third, it can contribute to social learning and communication between employees. After all evaluations, it is possible to measure the performance outputs of the targets in a more fair and flexible way (Marr, 2012).

Objectives and Key Results (OKR)

Objectives and Key Result (OKR) is one of the current performance systems and aims to ensure engagement and alignment for measurable goals. It helps academies to focus all their resources on identified key issues and provides a framework for managers to demonstrate how the efforts of their direct reports can be linked to company goals (Hatipoğlu, 2020). OKR has two main components: Objectives and Key Results. Objectives are measurable and quantitative definitions of the results the corporates and employees want to achieve. In OKR, it is important that objectives should be meaningful, motivating, attainable, and purposeful for both the corporate and the employee (Milenko, 2017). Critical results can be defined as quantitative, specific, and sub-targets to measure progress towards the goals. It is recommended to set between 2 and 5 to be achievable and trackable (Charoenlarpkul & Tantasanee, 2019).

OKR supports corporates in terms of the organizational focus of all teams, agility, the collaboration between teams, open communication within the company, participation and efficiency, tracking progress, and transparency (Palo, 2020). For the OKR to receive the

necessary support, all units should be included in the goal-setting process; the number of goals should be between 3 and 5; the goals should be determined numerically and have a timeline, and the desired result should be clear instead of general goals being challenging.

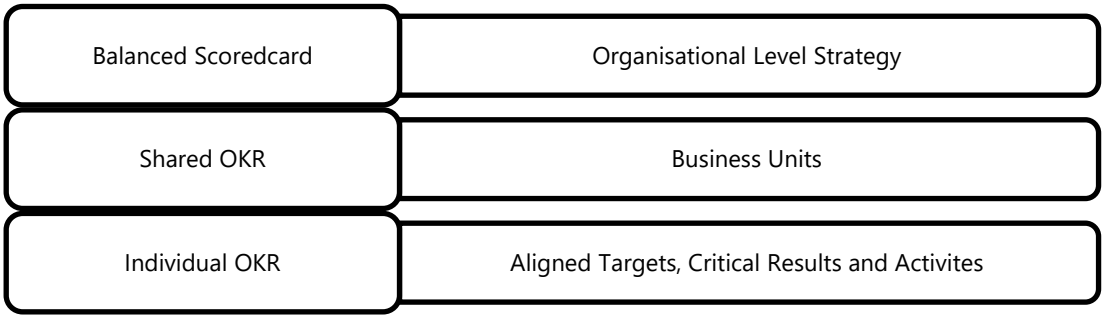
The Relationship between Balanced Scorecard, KPI, and OKR

Corporates use Balanced Scorecard, KPI, and OKR when they want to set goals and measure performance accordingly. Due to the similarities and differences among themselves in these models, corporates make evaluations to choose the appropriate model(s). Balanced Scorecard helps corporates set annual strategic goals. However, the goals are determined hierarchically by management, so they are inflexible, and are expected to be fully achieved. The inflexibility and hierarchical setting of vertical goals reduces employee contribution and has been criticized in this respect. OKR, on the other hand, enables the determination of monthly or quarterly targets. Shorter-term targets help to respond more quickly to rapidly changing conditions. In OKR, targets are not set vertically but are instead set by business units, including the employee. It offers a structure where both vertical and horizontal teams are involved in the process.

These two models can be used together to benefit from their advantages and avoid their disadvantages (Rojas-Chipana et al., 2021). Setting short-term targets in OKR offers the corporate an advantage in adapting to changing conditions. However, there may be a risk of moving away from the main objectives of the corporates in setting short-term targets. This may be especially the case in corporate with multiple business units and a large number of employees (Stray et al., 2023). Rojas-Chipana et al. (2021) suggest that to reduce this risk, alignment with and progress towards the strategic business objective set in the Balanced Scorecard can minimise the risk. On the other hand, hierarchical targets in the Balanced Scorecard may be difficult for employees to comply with and employees may show resistance. In OKR, the flexibility of business units and employees to set their own targets can be used to overcome these problems. This relationship between BS and OKR can be seen in Figure 2:

Figure 2

Balanced Scorecard-OKR Relation



The relationship between OKR and KPIs can be reviewed as complementary parts. OKR provides a strategic framework for objectives. KPIs are the measurements used within this framework. In other words, while the objectives to be achieved are determined with the OKR, KPIs ensure the correct implementation and the achievement of this OKR (Zhou & He, 2018). In achieving the targets, the use of these models together may be beneficial in ensuring efficiency and sustainability in the corporates. In this study, it is aimed to use OKR and KPI together in the model.

System Approach

When Saba (2013) explained the systems approach in his work "Building Future: A Theoretical Perspective", the method of solving problems by dividing them into smaller simple parts is insufficient to understand human behavior, including education, and cannot provide a solution at the organizational level. Saba (2012) declared that organizations have a more complex structure beyond the personal interactions of individuals with them; therefore, it is more important to understand the relationships between components rather than dividing them into parts. Saba (2014) presented a model of a dynamic system approach in his systems approach assessment. In a dynamic system, the targeted structure can be customized for the needs of the employees that can follow them and offer suggestions for their preferences and activities.

In this study, the model aims to integrate the e-learning academies with the learning and development goals set by academies and the performance measurements related to these goals within a system approach, then to achieve holistic results and make evaluations. The model helps the corporates use Balanced Scorecard, KPI, and OKR inputs and assess the measurement of impact and result levels of The Kirkpatrick Model. Therefore, answer to the following question will be sought:

1. Within the framework of the systems approach, can KPIs and OKRs, which are determined for employee development in line with the strategies in the Balanced Scorecard and user data from e-learning academies, be used in a model to evaluate 3rd and 4th levels (Impact & Results) of Kirkpatrick Model?

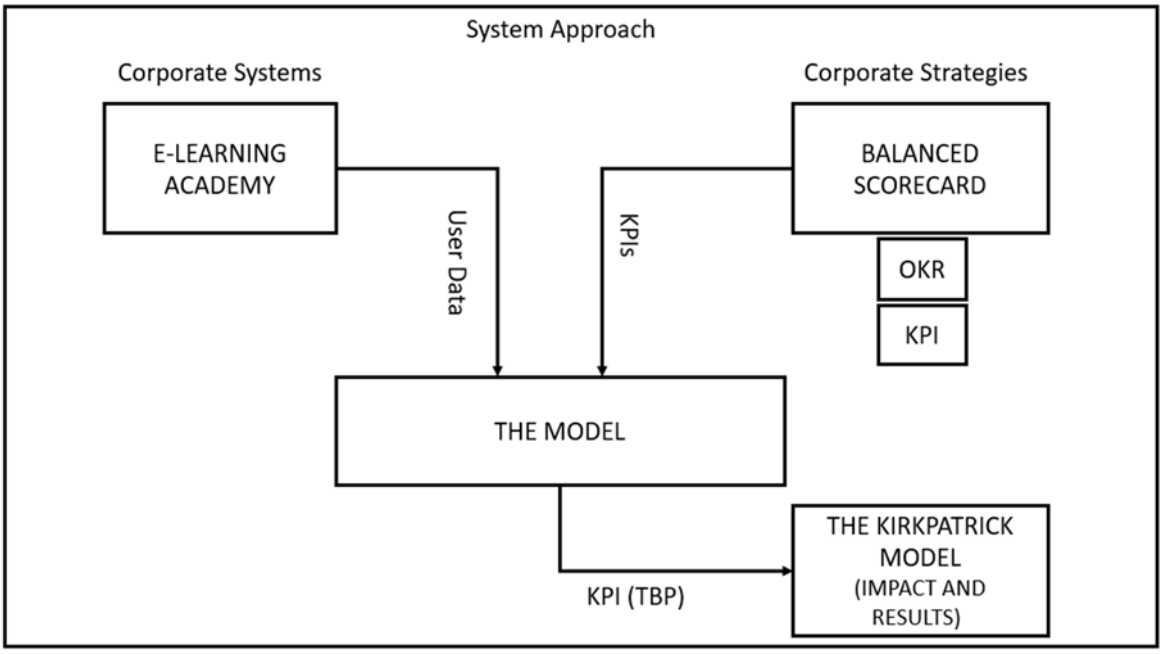
Method

To answer the study's question, a systematic review of the literature and model building are used. The literature review can be described as "a systematic, explicit, and reproducible method for identifying, evaluating, and interpreting the existing body of recorded work" (Fink, 1998). By model building, it is decided which results of the literature review and available data can be included in the model.

As a result of a systematic review of the literature and evaluation of available data, the model can be designed, as seen in Figure 3.

Figure 3

Schema of The Model



As the schema of the model, e-learning academy, Balanced Scorecard targets determined for learning and development, specified KPI and OKRs in line with Balanced Scorecard are used in the model to assess the impact and results levels of The Kirkpatrick Model within the framework of System Approach. The System Approach is not directly used by academy professionals in the model. It provides a holistic view to use corporate's assets via other models and methods. Academy professionals have strategic targets in the Balanced Scorecard and determine KPI and OKRs appropriated with the Balanced Scorecard at different levels (like department and position). They use all of them flexibly in the model. At this stage, training activities in e-learning academies are reported, and associated activity data is added to the model. The outputs are reviewed to assess impact and results levels of The Kirkpatrick Model.

Study Group and Data Collection Process

If the model is planned to be applied in a corporate academy operating in any industry, the following steps can be applied:

1. Academy professionals determine strategic goals for the learning and development dimension of the Balanced Scorecard.
2. They set targets and measurements with KPI and OKRs related to strategical goals at Balanced Scorecard. They also specify the parameters and weights of KPI and OKRs in the model.
3. In order to have training activities data used in the model, the corporate academy needs to be used actively. The academy has employee users, and the employees are expected to participate in training activities through the e-learning system. Training activities, logging in to the system, receiving training, completing training, training evaluation after training, training behavior survey, and exam procedures are carried out via web and mobile interfaces.

4. One-year training data obtained from the e-learning academy used by the research group may be used. This data can be reported from the system and is downloaded in Excel format. The data may be used in the calculations specified in the model. In order to review the model visually, the dashboard interface can be developed (Dewan et al., 2021). In the dashboard interface, there may be sections where the academy can find and select the user data parameters related to the KPIs that the academy wants to measure and determine the percentage weights to assign the importance of the relevant parameters according to itself. In addition, other relevant parameters and data in the academy can be entered manually by the academy professional. In this way, both other relevant data from the academy and reported data from the e-learning academy can be used.
5. In the dashboard interface, the results of the model, clustering analysis and analysis about similarities may be shown to the academy (Sariman, 2014). Position, unit, and employee-based evaluations can be presented in the analysis if needed. There can also be graphics using data visualization.
6. The outputs based on position, unit andemployee, or other aimed criteria are reviewed for impact on behavior and results in business performance.

Performance Assessment Model Parameter and Calculation Structure

Calculation Structure

Table 1

Performance Assessment Model Parameters

Position	*Department*	*OKR*	*Expected Competency*	*KPI Levels*	*KPI Results*	*KPI Performance Results*
P1	B1	O1	Y1	Level 1: [0-20)	KPI (Y1)	KPI (TBP)
P2	B2	• K1	Y2	Level 2: [20-40)	KPI (Y2)	
P3		• K2	Y3	Level 3: [40-60)	KPI (P)	
P4		• K3		Level 4: [60-80)		
				Level 5: [80-100)		

Parameters reported from the e-leaning academy system:

E(T): Training Completion Status (Completed :100; Uncompleted: 0)

E(B): Training Success Status (Success:100 ; Unsuccess: 0)

E(P): Training Score (0-100)

E(D): Training Experience Duration (Hour)

S(B): Exam Success Status (Success: 100; Unsucess:0)

E(De): Training Assessment Survey Result (0-100)

E(Da): Training Behavior Survey Result (0-100)

SÖ: Social Learning Transaction Number

TPSÖ: Platform Total Social Learning Transaction Number

M: User Mobil Experience Duration (Hour)

TD: User Total Experience Duration (Hour)

TDP: Platform Total Experience Duration (Hour)

TE: User Completed Training Number

TEP: Platform Total Completed Training Number

PG: User Platform Login Number

TPG: Platform Total Login Number

EÖ: User Training Recommendation Number

TPEÖ: Platform Total Training Recommendation Number

Parameters entered by the academy's professional:

S(n): A parameter that the academy can define itself. It will be able to define as many parameters as possible to see the effect.

s1: % weight of the identified parameter

Model Calculation

KPI (Yn): KPI value calculated from the model created with user data from the e-learning academy for the relevant competency.

b_1, b_2,... b_n values will be determined as percentages of academy professionals. Their sum is 100%.

Recommended calculation in the model:

KPI (Yn)= b_1 x ((E_1(T)+E_1(B)+E_1(P))/3+ b_2 x (E(D)/TD*100) +b_3 x S(B)+ b_4 x E (De) + b_5 x E(Da) + (s_n x S(n)) (parameter field to add if preferred by academy professional)

KPI (P): KPI value of all other interactions made on the e-learning academy, except for transactions related to training for the relevant competency.

c_1,c_2,...c_n values will be determined as percentages by their units. Their sum is 100%.

Recommended calculation in the model:

KPI (P)= c_1 x (M/TD) *100 +c_2 x (TD/TDP) *100 + c_3 x (TE/TEP) *100+ c_4 x (PG/TPG) *100+ c_5 x (EÖ/TEÖP) *100+ c_6 x (SÖ/TPSÖ) *100

KPI Performance Result: It is the personal success score calculated with the KPI values and coefficients defined by the relevant unit.

a_1, a_2,... a_n values will be determined as percentages by academy unit. Their sum is 100%.

Recommended calculation in the model:

KPI (TBP)= a_1 x KPI (Y1) + a_2 x KPI (Y2) +....a_n x KPI (P)

If the academy prefers, it can make calculations in its own way instead of this model.

After the KPI (TBP) is calculated on an employee basis, the average of the KPI (TBP) scores of employees in the same department and the same position is also calculated. It is possible to evaluate users who are above or below the average. In addition, cluster analysis will be performed on these scores, and employees with similarities will be analyzed. The status of employees in similar positions in different departments can also be observed. If the academy accesses other relevant performance parameters, the effect of scores on performance can also be checked. The model study also aimed at academy professionals to make an assessment about the work to be done in the future.

Results

Regarding the model and calculation structure, an example calculation table is established for academy professionals. The example calculation table is shown below.

Table 2

Example Calculation Table

Employee	Employee 1		
Department	Sales		
Position	Sales Specialist		
OKR O1	Renewal for All Customers		
K1	%50 Increase in Customer Satisfaction		
Competency	Customer Satisfaction		
Min. Level KPI for Competency	Level 4 (60-80 Score)		
KPIs be Calculated		*KPI Weight*	*KPI Value*
KPI (MM)	Customer Success Training KPI	60%	80
KPI (Eİ)	Effective Communication KPI	30%	77
KPI (P)	E-Learning Academy Usage KPI	10%	11
KPI (TBP)			72
Customer Success Training Data	*Status*	*Score*	*Weight (%)*
E(T): (Completed:100; Uncompleted: 0)	Completed	100	30%
E(B): (Success: 100; Unsuccess: 0)	Success	100	
E(P): (0-100)	-	100	
E(D): Training Experience Duration (hour)	1,5	-	20%
S(B): (Success: 100; Unsuccess: 0)	-	100	25%
E(De): (0-100)	-	100	10%
E(Da): (0-100)	-	80	15%

Table 2 (*Cont.*)

Effective Communication Training Data	*Status*	*Score*	*Weight (%)*
E(T): (Completed:100; Uncompleted: 0)	Completed	100	30%
E(B): (Success: 100; Unsuccess: 0)	Success	100	
E(P): (0-100)	-	100	
E(D): Training Experience Duration (hour)	0,5		10%
S(B): (Success: 100; Unsuccess: 0)	-	100	10%
E(De): (0-100)	-	80	10%
E(Da): (0-100)	-	70	40%
E-Learning Academy Usage Data	Status	Score	Weight (%)
M: (hour)	3	-	25%
TD: (hour)	10	-	
TDP: (hour)	250	-	15%
TE:	2	-	
TEP:	25	-	25%
PG:	50	-	
TPG:	5.000	-	15%

This calculation table shall be applied to all employees at corporate. Total results can be found and combined in a dashboard within MS Excel. The aim of using Excel is to enable academy professionals use easy and applicable application. Possible integrated applications and solutions to corporate-related systems need to require detailed planning, additional workforce, and personal information security measures. Moreover, there will be changes in applications in the future, and these changes will need rework in systems.

The dashboard may be used for overall assessment and making comparisons (Vozniuk et al., 2013). By using Excel pivot and graphical features, the model suggests dashboard example to academy professionals. The main advantage of the dashboard in Excel is to allow academy professionals to create different dashboard presentations whatever they want and focus on. If they plan to improve dashboards, they can also use more specific applications, like Tableau, that work with Excel reports (Slater et al., 2017).

Assessment and comparison can be done not only overall but also based on department, position, and sub-company, if any. Such work helps the academy find competency and talent gaps and learning and development needs related to department and position levels. In future perspective, the academy can review and update human resources and learning and development strategies at Balanced Scorecard, KPI, and OKR.

Figure 4

Example Dashboard in Excel

Discussion, Conclusion, and Implications

As mentioned in the introduction, corporates want to invest in staff learning and development. One of these investments is e-learning academy systems for digital learning experience. When using these systems, corporates not only manage their training activities but also aim to fulfill their learning and development needs (Martins et al., 2019). Naturally, it is stated in the relevant parts of the study that they want to measure and evaluate the impact of this system investment on business performance (Kurt, 2016). In doing so, they use different methods and approaches to monitor alignment with company strategies. However, to use and evaluate these methods and approaches together with the data from the e-learning academy system, a model proposal described in this study is needed.

In the model, academies are expected to enter data according to their own targets and measurements, whose KPI criteria, parameters, and weights for the competencies to be measured are determined in the Balanced Scorecard. The parameters and weights for each KPI calculation will be determined by the academy professionals. OKR target information will need to be used to compare the results on the OKR side. In this way, each academy will be able to make its own measurement and evaluation accordingly.

Employee information and training data can be retrieved from the e-learning academy through the report method. The report can be received monthly, quarterly, semi-annually, or annually, depending on the needed period. The reports contain real user data and can be simplified to be used in the model. The required comparison analysis can be made on the employee information (position, department, experience, and manager informationin the reports. Educational data mining techniques can also be used here for more detailed analysis needs (Khare et al., 2018). In this case, academy professionals may need support in data mining. Instead, it is recommended to proceed with Excel dashboard design as stated in the model as an easier way.

As limitations of the model, the model can be used only in corporates with e-learning academies. Moreover, training activities data need to be reported from the e-learning academy. The e-learning academy should be active for at least 1 year, and it has a minimum 250 employee users. Academy professionals are expected to have KPI and OKR methods and to use them for performance assessments.

By model, academy professionals can make assessments based on situations not only limited to the listed below:

1. Do the duration of experience, completion, and success status vary according to the units of the organization?
2. Do the duration of experience, completion, and success status vary according to the title positions in the organization?
3. In the same training, do the duration of experience, completion, and success status vary according to the units and positions in the organization?
4. Are there similarities or differences in the results according to the units and positions in the same exam?
5. What is the number of employees who did not reach the targets in KPI and OKR results despite receiving the relevant trainings?
6. Do the duration of experience, completion, success and exam results vary according to the duration of professional experience of the employee?
7. Is there a positive relationship between the total experience time spent at the E-Learning Academy and achievement of KPI and OKR targets?
8. Do employees who achieve KPI and OKR targets have training experiences different from the planned training?

In addition to these situations, if the academy prefers, it can make the evaluation more alternative and detailed by adding the parameters it chooses to analyze to the model according to the data received and its own KPI and OKR targets. The reason for providing this flexibility to the model is to ensure that the model is open to updating according to changing targets and evaluation needs in the future.

In the next study, the model will be applied in the corporate academy; then the results will be tested and reviewed. In the test and review process, comments and assessments of academy professionals about the model will be collected. All outputs of the model application will be used to improve the model and to eliminate deficiencies of the model, if any.

In another study, the model will be applied in the corporate academies from different sectors. All processes will be conducted the same as previous study. Additionally, the model

will be tested by each sector's own conditions and expectations, and results will be analyzed for the model's flexibility. Necessary improvement topics can be determined if needed.

In the near future, with the transformation of the systems used in e-learning academies into LXP (Learning Experiment Platform), artificial intelligence algorithms that can track employees and the parameters of these algorithms can be expected to be added to the analysis and evaluations in the model. Artificial intelligence algorithms can also suggest to academy professionals which parameters can be added to the model by analyzing personnel data which user data can be related to which KPI and OKR. In addition to this development, artificial intelligence may provide alternative dashboard presentations for the model to the academy.

Author Contributions

This study is established based on the PhD thesis of the first author. The second author is the supervisor of the dissertation. Both authors have contributed to the study equally.

References

Anton, C., & Shikov, A. (2018). The method of personalized corporate e-learning based on personal traits of employees. *Procedia Computer Science*, *136*, 511-521. https://doi.org/https://doi.org/10.1016/j.procs.2018.08.253

Brandon Hall. (2019). *HCM Outlook 2019*. https://go.brandonhall.com/hcm-outlook-2019

Cahapay, M. B. (2021). Kirkpatrick model: Its limitations as used in higher education evaluation. *International Journal of Assessment Tools in Education*, *8*(1), 135-144. https://doi.org/10.21449/ijate.856143

Charoenlarpkul, C., & Tantasanee, S. (2019). A proposed employee development program from objectives and key results: a case study of SG Group of Companies. *ABAC ODI Journal Vision. Action. Outcome*, *6*(2), 133.

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. https://doi.org/https://doi.org/10.1016/j.compedu.2010.07.005

Demirören, S. (2014). Başarım ölçütlü uyarlanabilir öğrenmenin etkililiğinin ve verimliliğinin değerlendirilmesi. *Eğitim Bilimleri ve Uygulama*, *13*, 47-64.

Dewan, M. a. A., Pachon, W. M., & Lin, F. (2021). A review on visualization of educational data in online learning. *Lecture Notes in Computer Science* (15–24). https://doi.org/10.1007/978-3-030-66906-5_2.

Docebo. (2020). *E-Learning trends 2020 – A new era of learning*. https://www.docebo.com/resource/elearning-trends-2020-docebo-report/

Docebo. (2020). *The Future is now: Learning strategy 2020*. https://www.docebo.com/resource/future-of-work-enterprise-learning-strategy-2020-report/

Drozdova, A. A., & Guseva, A. I. (2017). Modern technologies of e-learning and its evaluation of efficiency. *Procedia - Social and Behavioral Sciences*, *237*, 1032-1038. https://doi.org/https://doi.org/10.1016/j.sbspro.2017.02.147

Fanning, B. A. (2019). *How a professional services firm has adapted learning for the new digital age* (Thesis No: 13904053) [Ed.D., University of Pennsylvania]. ProQuest Dissertations and Theses Global. Pennsylvania, United States. https://www.proquest.com/dissertations-theses/how-professional-services-firm-has-adapted/docview/2285296097/se-2?accountid=11054

Fink, A. (1998). *Conducting research literature reviews: From paper to the internet*. Sage.

Hatipoğlu, Z. (2020). Performans yönetimi, amaçlara göre yönetim yaklaşımı ve OKR sistemi. *International Journal of Arts and Social Studies*, *3*(4), 1-16.

Kaplan, R. S. (2009). Conceptual foundations of the balanced scorecard. *Handbook of Management Accounting Research,* 1253-1269. https://doi.org/10.1016/s1751-3243(07)03003-9

Khare, K., Lam, H., & Khare, A. (2018). Educational data mining (EDM): Researching impact on online business education. In A. Khare & D. Hurst (Eds.), *On the Line,* 37-53. https://doi.org/10.1007/978-3-319-62776-2_3

Kurt, Ö. E. (2016). Bilgi sistemleri başarı modeli ile bir e-öğrenme sistemi değerlendirmesi. *Yönetim Bilişim Sistemleri Dergisi*, *2*(2), 140-149.

Marr, B. (2012). *Key performance indicators: The 75 measures every manager needs to know*. Financial Times/Prentice Hall.

Martins, L.B., Zerbini, T., & Medina, F.J. (2019). Impact of online training on behavioral transfer and job performance in a large organization. *Revista de Psicología del Trabajo y de las Organizaciones*, *35*(1), 27-37. https://doi.org/10.5093/jwop2019a4

Milenko, R. (2017). OKR system as the reference for personal and organizational objectives. *Econophysics, Sociophysics & Other Multidisciplinary Sciences Journal, 17*(2), 28-37

Minhong, W., Weijia, R., Jian, L., & Stephen, J. H. Y. (2010). A performance-oriented approach to e-learning in the workplace. *Journal of Educational Technology & Society*, *13*(4), 167-179.

Palo, J. (2020). *Setting goals for autonomous motivation using objectives and key results*. [Thesis Dissertation, Aalto University]. Aalto University School of Science Master's Programme in Information Networks.

Petersen, B. A. (2008). *Measuring e-learning program effectiveness: A stakeholder approach to scorecarding performance* (Publication No: 304478979) [Doctoral Dissertation, Concordia University]. ProQuest Dissertations and Theses Global.

Rojas-Chipana, I., Aguilar-Pelizzoli, N., Quiroz-Flores, J. C., Collao-Diaz, M., & Flores-Perez, A. (2021, November 3-5). *Increasing profitability through the implementation of an integrated balance score card & objectives key results model in a digital agency: A research in Perú*. International Conference on Industrial Engineering and Operations Management Monterrey, Mexico.

Saba, F. (2012). A Systems Approach to the Future of Distance Education in Colleges and Universities: Research, Development, and Implementation. *Continuing Higher Education Review*, *76*, 30-37.

Saba, F. (2013). Building the future: A theoretical perspective. *Handbook of Distance Education*, Routledge.

Saba, F. (2014). Methods of study in distance education: A critical review of selected recent literature. *Online Distance Education: Towards A Research Agenda*, 151-171.

Sariman, G. (2014). Veri madenciliğinde kümeleme teknikleri üzerine bir çalışma: K-means ve K-Medoids kümeleme algoritmalarının karşılaştırılması. *Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Dergisi*, *15*(3), 192-202. https://doi.org/10.19113/sdufbed.41288

Saverimuttu, J. J. (2022). *An exploratory study on effectively upskilling employees during COVID-19*. Robert Morris University.

Sevinç, L., & Yıldırım, O. (2001). Stratejik insan kaynakları yönetiminde HR scorecard uygulaması. *Dokuz Eylül Üniversitesi İşletme Fakültesi Dergisi*, *5*(2-1), 149-164.

Slater, S., Joksimović, S., Kovanovic, V., Baker, R. S., & Gasevic, D. (2017). Tools for educational data mining: A review. *Journal of Educational and Behavioral Statistics*, *42*(1), 85-106. https://doi.org/10.3102/1076998616666808

Stray, V., Moe, N. B., Vedal, H., & Berntzen, M. (2023, January 3-6). *Using objectives and key results (OKRs) and slack: A case study of coordination in large-scale distributed agile*. The proceedings of the 55th Hawaii International Conference on System Sciences, University of Hawai'i, Manoa, USA.

Vozniuk, A., Govaerts, S., & Gillet, D. (2013, 15-18 July). *Towards portable learning analytics dashboards*. IEEE 13th International Conference on Advanced Learning Technologies, Beijing, China.

Warner, M. C. (2019). *The corporate adult learner: A study of the effectiveness of asynchronous learning in a corporate workspace* (Publication No: 13810103) [Doctoral Dissertation, Northeastern University]. ProQuest Dissertations and Theses Global.

World Economic Forum. (2020). *The Future of Jobs Report 2020*. https://www.weforum.org/reports/the-future-of-jobs-report-2020/

Zhou, H., & He, Y. (2018). Comparative study of OKR and KPI, *DEStech Transactions on Economics Business and Management*. https://doi.org/10.12783/dtem/eced2018/23986

Uluslararası Eğitim Programları ve Öğretim Çalışmaları Dergisi
***13*(2), 2023, 404-423**
www.ijocis.com

TÜRKÇE GENİŞ ÖZET

E-Öğrenme Akademilerine Yönelik E-Öğrenme Başarı Değerlendirme Model Önerisi

Giriş

Docebo'nun (2020) raporuna göre e-öğrenme pazarı, 2023 yılına kadar 286 milyar ABD dolarına ve özellikle kurumsal e-öğrenmede 100 milyar ABD dolara ulaşması beklenmektedir. E-öğrenmedeki büyümeyle birlikte insan kaynakları ve eğitim akademi birimlerinde değişmesi gereken beklentiler ve konular bulunmaktadır. Çoğu İK profesyoneli, yeni çalışanları işe almak yerine mevcut çalışanların beceri ve kapasitelerini geliştirmenin çok önemli olduğuna inanmaktadır (Brandon Hall, 2019). Bu değerlendirmeye göre akademi birimleri çalışanlara kişisel gelişim eğitimleri sunmaya, mevcut çalışanların beceri eksikliklerini belirlemeye, yetenek geliştirmeye ve gelişimin iş performansı üzerindeki etkisini raporlamaya öncelik vermektedir. Ancak akademiler mevcut sistem ve çözümleri değerlendirdiklerinde raporlama ve analiz özelliklerinin yetersiz olduğunu da belirtmektedir. Akademi profesyonelleri, e-öğrenme akademilerinin teknoloji ve içerik geliştirmeye odaklanmasını gerekli bulmaktadır. E-öğrenme akademilerindeki öğrenme yönetim sistemleri (LMS), yönetim yerine "deneyime" öncelik vererek öğrenme deneyimi sistemlerine (LXP) dönüşmeye başlamıştır. Bu sistemlerin geliştirilmesindeki öncelikler; kullanıcı merkezli öğrenme, yetenek yönetimi, iş akışında öğrenme, informal öğrenme, koçluk ve mentorluk süreçleri ve diğer sistemlerle entegrasyon olarak sıralanmaktadır.

Pandemi dönemi ve sonrası beklenen bu değişiklikleri hızlandırmaktadır. COVID-19 etkileri, Dünya Ekonomik Forumu (2020) tarafından yayınlanan Future of Jobs raporunda da değerlendirilmektedir. Raporda, kurumsal şirketlerin yarısı yetenek gelişimi için dijitalleşmeyi hızlandırmayı hedeflerken yalnızca küçük bir kısmı kalıcı personel azaltımı planlamaktadır. Şirketler, üretkenliği artırmak için çalışanlarını elde tutmaya ve becerilerini geliştirmeye çalışmaktadır. E-öğrenme akademilerinin etkililiği, çalışanların üretkenliğini ve becerilerini geliştirmek hedefinde incelenmektedir (Warner, 2019). E-öğrenme akademilerindeki etkinliğin değerlendirilmesinde zorluklar vardır. Çünkü farklı şirketlerin farklı hedefleri ve öncelikleri bulunmaktadır. Etkililiği ölçmek için genellikle çalışan bağlılığı, kişisel performans ve yönetici değerlendirmeleri kullanılmaktadır (Brandon Hall, 2019). Çoğu şirketin aksine gelir artışı ve pazar etkileri nadiren kullanılır. Bununla birlikte öğrenme etkisini ve etkililiğini ölçmek çoğunluk için sorun teşkil etmektedir (Drozdova & Guseva, 2017). Sorunu çözmek için çeşitli yaklaşımlar, modeller ve yöntemler önerilmektedir.

Alanyazın taraması yapıldığında farklı yöntem, yaklaşım ve modellerin incelendiği görülmektedir. Bunlardan bir kısmı mevcut kurumsal e-öğrenme akademilerinde kullanılmaktadır. Kullanılan yaklaşım, yöntem ve modeller içerisinde en çok kullanılan ve incelenenler arasında bir seçim yapılmış ve bu çalışmada önerilen model içerisinde kullanılması değerlendirilmiştir. Kirkpatrick modelinde kurumsal bir akademide verilen eğitimlerin davranış olarak etkili olup olmadığını incelemektedir. Bunun için dört aşamalı bir uygulama süreci vardır. Sürecin sonunda etkililiğini görme ve geliştirme için çıktılar alınabilmektedir. Kurumsal karne metodu akademilerin şirketlerin kurumsal stratejilerinde yer alan öğrenme ve gelişim boyutunda belirlenen hedeflere göre faaliyetler yürütmesini ve bu hedeflerin şirketin tüm birimlerince takip edilmesine yardımcı olmaktadır. Bu hedeflerin iş birimleri seviyesinde ve bireysel seviyede ölçülebilir ve raporlanabilir şekilde yönetilmesi için KPI ve OKR performans ölçümleri kullanılmaktadır. Tüm bu metot ve yöntemleri bir arada kullanmak için sistem yaklaşımından faydalanılmaktadır. Sistem yaklaşımı, dinamik bir şekilde hazırlanan ve tüm bileşenler arasındaki ilişkinin belirlendiği bir yapının daha etkili olacağını önermektedir. Bu çalışmada önerilen model, farklı yöntem ve metotların bir araya getirilmesi ve değişen ihtiyaçlara göre güncellenebilen bir dinamik yapıda bir çözüm önermeyi amaçlamaktadır.

Yöntem

Çalışmada belirtilen soruyu cevaplandırmak için sistematik bir literatür taraması ve model oluşturma yöntemi kullanılmıştır. Literatür taraması, "mevcut kayıtlı çalışmaların tanımlanması, değerlendirilmesi ve yorumlanması için sistematik, açık ve tekrarlanabilir bir yöntem" olarak tanımlanmaktadır (Fink, 1998). Model oluşturma ile literatür taramasının hangi sonuçlarının ve mevcut verilerin modele dahil edilebileceğine karar verilmektedir.

Bulgular

Örnek hesaplama tablosu şirketlerde uygulanabilir bir çalışmadır ve kolay uygulanabilir olması için MS Excel formatında hazırlanması tercih edilmiştir. Farklı uygulamalar kullanılabilir olsa da ek çalışmalara ihtiyaç olacaktır. Tablo her çalışan için ayrı ayrı uygulanabilir ve dashboard arayüz tasarımında birleştirilebilir. Dashboard arayüzü genel değerlendirme ve karşılaştırma yapmak için kullanılabilmektedir (Vozniuk et. al., 2013).

Modelde Excel'deki dashboard tablosunun kullanılması akademi profesyonellerinin tercihlerine ve önceliklerine göre farklı arayüzler hazırlamalarına imkan oluşturmaktadır. Tüm pozisyon, unvan, bölüm ve varsa alt şirket bazında değerlendirme ve karşılaştırma yapma imkanıyla akademi profesyonelleri yetenek gelişim seviyelerini, bu seviyelere göre öğrenme ve gelişim ihtiyaçlarını değerlendirebilecektir. Değerlendirme sürecinde şirket tanımlı Balanced Scorecard, KPI ve OKR'de gözden geçirebilecektir.

Tartışma, Sonuç ve Öneriler

Şirketler çalışanların öğrenme ve gelişimlerini takip etmek, yönetmek ve daha ileri seviyeye taşımak istemektedir ve bunun için e-öğrenme akademisi yatırımları yapmaktadır. Bu yatırımın sonucunda eğitimlerin işe katkısını ve etkisini ölçmek ve değerlendirme amacını da taşımaktadır. Şirketler, e-öğrenme akademisindeki verileri kullanarak kendi strateji ve hedefleriyle beraber bu ölçme ve değerlendirmeyi yapabilmeleri için bir model önerisine

ihtiyaçları vardır. Bu çalışmada önerilen model, bu ihtiyacı karşılamak için eldeki veriler ve şirketin kullanmakta olduğu yöntem ve uygulamaları esnek bir şekilde kullanabilmesi, ölçebilmesi ve değerlendirme yapabilmesini amaçlamaktadır.

Modelde önerilen yöntem ve hesaplamalara ek olarak şirketteki akademi profesyonelleri analiz etmek istedikleri hedef ve strateji parametrelerini modele ekleyebilmekte ve ek değerlendirmeler de yapabilmektedir. Bu esneklik sayesinde sektör, strateji, yöntem ve şirket yapısından bağımsız analizler yapılabilmesi sağlanmaktadır.

Bir sonraki çalışmada model kurumsal akademide uygulanacak, ardından sonuçlar test edilecek ve gözden geçirilecektir. Test ve gözden geçirme sürecinde akademi profesyonellerinin modele ilişkin yorum ve değerlendirmeleri toplanacaktır. Model uygulamasının tüm çıktıları modelin geliştirilmesi ve varsa eksikliklerinin giderilmesi için kullanılacaktır.

Başka bir çalışmada model farklı sektörlerden kurumsal akademilerde uygulanacaktır. Tüm süreçler bir önceki çalışma ile aynı şekilde yürütülecektir. Ayrıca model her sektörün kendi koşulları ve beklentileri ile test edilecek ve sonuçlar modelin esnekliği açısından analiz edilecektir. İhtiyaç duyulması halinde gerekli iyileştirme konuları belirlenebilecektir.

İlerleyen dönemde şirketlerin kullandığı sistemlerin LXP (Learning Experiment Platform) yapısına dönüşmesiyle beraber bu analiz ve değerlendirmelerde yapay zeka ve benzeri algoritmaların da kullanılması beklenebilir. Bu sayede sistemden alınan veriler daha verimli daha farklı alternatiflerde ve ilişkilerde kullanılması ayrıca analiz edilmesi de mümkün olacaktır.