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Development of IT Managers' Competencies in Preventing Occupational Burnout: Evaluation of an E-learning Programme Developed within the International Erasmus+ PositiveWorkplace Project

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Keywords: occupational burnout, e-learning, IT managers, lifelong learning, Erasmus+, PositiveWorkplace, employee well-being, managerial competencies.

Abstract: Occupational burnout has become one of the major challenges faced by contemporary organisations, particularly in the information technology sector, where managers play a crucial role in creating work environments that promote employee well-being. The development of managerial competencies in this area can be effectively supported through modern e-learning programmes. The aim of this study was to evaluate the effectiveness of the e-learning programme developed within the international Erasmus+ PositiveWorkplace project in enhancing IT managers' competencies related to the prevention of occupational burnout. The study was based on project documentation analysis, knowledge tests, satisfaction questionnaires, participant observation, and interviews. A two-stage evaluation process was conducted, including usability testing of the programme prototype and the assessment of its final version involving 44 IT managers from Poland, Spain, Lithuania, and Luxembourg. The findings demonstrated a high level of programme effectiveness, reflected in excellent knowledge test results and a very high participant satisfaction. The iterative programme design process enabled a continuous improvement based on users' feedback. The results confirmed that e-learning can serve as an effective lifelong learning tool supporting the development of managerial competencies in the prevention of occupational burnout.

Introduction

Contemporary organisations operate in an environment characterised by rapid technological change, increasing competition, and growing expectations towards both employees and managerial staff. One of the most significant challenges faced by organisations across all sectors is occupational burnout. This phenomenon affects not only employees' psychological well-being but also organisational performance, employee engagement, absenteeism, staff turnover, and the quality of work outcomes (Maslach & Leiter, 2016). It is increasingly recognised that effective burnout prevention requires systemic organisational interventions, including the development of managers' competencies in organising work and creating a work environment that promotes employee well-being.

The importance of mental health in the workplace has been strongly emphasised by the World Health Organisation (WHO), which indicates that creating safe, healthy, and supportive working environments contributes to the protection of employees' mental health, improves organisational performance, and supports sustainable organisational development (World Health Organisation [WHO], 2022) In 2019, the World Health Organisation introduced the 11th Revision of the International Classification of Diseases (ICD-11), in which occupational burnout (QD85) was defined as a syndrome resulting from chronic workplace stress that has not been successfully managed. According to the WHO, burnout is characterised by three interrelated dimensions: feelings of energy depletion or exhaustion, increased mental distance from one's job or feelings of negativism or cynicism related to one's work, and a reduced professional efficacy (World Health Organisation, 2019).

This issue is particularly relevant in the information technology (IT) sector. Work in the IT industry is frequently performed under considerable time pressure and associated with project-based activities requiring strict adherence to deadlines. Previous studies indicate that prolonged time pressure represents one of the major occupational demands in software engineering and may contribute to reduced employee well-being, emotional exhaustion, and occupational burnout (Kuutila et al., 2020). Consequently, IT managers are expected not only to possess advanced technical and organisational competencies but also to recognise the symptoms of burnout, support employees' well-being, and foster an organisational culture based on psychological safety and effective communication.

The development of managers' competencies in this area is closely aligned with the concept of lifelong learning, according to which the acquisition and continuous updating of knowledge should accompany individuals throughout their professional careers. In recent years, digital forms of education, particularly e-learning programmes, have increased in importance by enabling flexible learning regardless of time and place while allowing educational processes to be adapted to learners' individual needs. Such solutions are especially valuable for managers, whose professional responsibilities often limit their opportunities to participate in traditional face-to-face training. The research to date has demonstrated that well-designed online learning programmes can be as effective as conventional educational approaches in developing professional competencies (Topping et al., 2021).

Despite the growing body of research into occupational burnout and online education, relatively few studies have focused on evaluating e-learning programmes designed to develop IT managers' competencies in preventing employee burnout. The existing

literature is dominated by studies examining the causes and consequences of burnout or evaluating individual preventive interventions, whereas considerably less attention has been devoted to comprehensive training programmes implemented within an international context.

This research gap is partially addressed by the Erasmus+ PositiveWorkplace project, whose objective was to design, implement, and evaluate an e-learning educational intervention aimed at developing IT managers' competencies in preventing occupational burnout among employees. The evaluation process consisted of two stages. The first stage involved usability testing of the course prototype with IT managers, whereas the second stage focused on evaluating the final version of the programme with 44 participants from Poland, Spain, Lithuania, and Luxembourg. The evaluation included an assessment of participants' satisfaction as well as the analysis of knowledge test results obtained after the completion of individual training modules. The data analysed in this study were derived from evaluation reports prepared within the PositiveWorkplace project.

The aim of this article was to evaluate the effectiveness of the e-learning programme developed within the international Erasmus+ PositiveWorkplace project in enhancing IT managers' competencies related to the prevention of occupational burnout among employees. This objective was achieved through an analysis of the findings obtained during the evaluation of the two successive versions of the training programme, together with an assessment of participants' satisfaction and learning outcomes following the course completion.

Research methodology

Characteristics of the Erasmus+ PositiveWorkplace Project

The Erasmus+ PositiveWorkplace project was implemented under the Erasmus+ Programme as an international initiative aimed at developing innovative tools to support the development of competencies among managers in the information technology (IT) sector in the scope of preventing employee occupational burnout. The primary objective of the project was to develop an e-learning programme enabling participants to acquire knowledge and develop practical skills related to recognising burnout risk factors, promoting employee well-being, and creating a work environment that supports mental health.

The project was carried out by an international consortium of partner organisations from several European countries. Through this collaboration, a comprehensive training

programme for IT managers was developed, with its content based on current knowledge in the fields of management, occupational psychology, and digital education. A particular emphasis was placed on the practical nature of the learning materials and their applicability to everyday managerial practice.

The main outcome of the project was the development of an online training programme delivered through a learning management system (LMS). The course consisted of a series of thematic modules addressing occupational burnout, the identification of burnout risk factors, methods for promoting employee well-being, team communication, psychological safety, and the role of managers in creating a healthy work environment. Each module included educational materials together with a knowledge test designed to assess participants' understanding of the presented content.

The programme underwent a multi-stage evaluation process. During the first stage, usability testing of the course prototype was conducted with IT managers. The second stage involved the evaluation of the final version of the programme with participants from Poland, Spain, Lithuania, and Luxembourg. This iterative evaluation process enabled the introduction of improvements based on users' experiences and feedback, allowing the e-learning solution to be refined and better adapted to the needs of its target audience.

Research Design

The study was designed as a two-stage evaluation process of the PositiveWorkplace e-learning educational programme. Its objectives were both to improve the quality of the course under development and to evaluate its effectiveness in enhancing IT managers' competencies related to the prevention of occupational burnout. An iterative design approach was adopted, involving the systematic testing of successive versions of the programme and the implementation of improvements based on users' feedback and the findings obtained during the evaluation process.

The first stage of the study constituted a formative evaluation and focused on assessing the course prototype (Prototype 1). Its primary objective was to identify usability issues, evaluate the functionality of the e-learning environment, and collect information that could be used to improve the programme before testing it with a larger group of participants. The findings obtained during this phase formed the basis for modifications to both the educational content and the way it was presented, as well as to the overall organisation of the learning process.

The pilot study involved five IT managers representing the project's target group. Participants came from four partner countries—Poland, Lithuania, Spain, and Luxembourg—and held various managerial positions within IT organisations, including team leaders, middle

managers, and department managers. All participants had previous experience with e-learning courses, which made it possible to focus the evaluation on the quality of the developed programme rather than on users' ability to use digital learning technologies. The diversity of the participants in terms of professional experience, age, and country of origin provided a broad perspective on the course's functionality and usability.

During the first stage of the evaluation, **usability testing** was conducted and supplemented with participant observation and individual interviews. Participants completed predefined task scenarios using the first module of the e-learning course. Researchers observed participants' navigation through the platform, task completion processes, difficulties encountered, and their responses to different elements of the learning environment. Immediately after completing the usability tests, individual interviews were conducted to explore issues identified during the observations and to gather the participants' opinions regarding the course functionality, clarity of the educational content, intuitiveness of the user interface, and the overall learning experience. In addition, all participants completed a satisfaction questionnaire designed to evaluate their overall perception of the course and to collect basic demographic information.

The application of these complementary research methods enabled the identification of usability issues of varying severity, ranging from critical and major problems to minor imperfections affecting users' learning experience. At the same time, positively evaluated features were identified and retained in subsequent versions of the programme. The findings of the first evaluation stage formed the basis for revising the educational content, improving navigation, refining graphical elements, and enhancing the overall usability of the e-learning environment before the second stage of the study.

The second stage of the research consisted of the summative evaluation of the final version of the PositiveWorkplace e-learning programme (Prototype 2). The objective of this stage was to evaluate the effectiveness of the developed training programme in enhancing IT managers' competencies related to the prevention of occupational burnout and to collect participants' opinions regarding the quality and usefulness of the course. This evaluation was conducted after all improvements resulting from the usability testing of the first prototype had been implemented.

The second-stage evaluation involved 44 IT managers representing the four partner countries participating in the project: Poland, Spain, Lithuania, and Luxembourg. Of all participants, 42 completed the satisfaction questionnaire, which served as the basis for analysing participants' perceptions of the course quality and their overall learning experience.

The research procedure consisted of three complementary components. The first involved participation in the complete e-learning programme delivered through the Learning

Management System (LMS) platform. The second component comprised knowledge tests administered after the completion of each training module. Interactive multiple-choice tests were automatically assessed by the LMS. Each test consisted of a maximum of ten questions, and participants were required to obtain at least 60% correct answers to successfully complete a module. This procedure made it possible to assess participants' knowledge acquisition and verify the intended learning outcomes.

The third component of the study was a post-course satisfaction questionnaire. The questionnaire included items concerning the overall evaluation of the programme, participants' satisfaction with the training, their confidence in the knowledge acquired, their willingness to recommend the course to other managers, and open-ended questions allowing respondents to identify the programme's strengths, aspects requiring improvement, and suggestions for further development. By combining knowledge tests with a satisfaction survey, it was possible to conduct a comprehensive evaluation of the programme that considered both objective learning outcomes and participants' subjective experiences of using the developed e-learning solution.

Research Methods and Instruments

A mixed-methods approach, combining qualitative and quantitative research methods, was adopted to evaluate both the development process and the effectiveness of the PositiveWorkplace e-learning programme. The selection of research methods depended on the stage of the project and was consistent with the assumptions underlying the programme's multi-stage evaluation process.

The primary research method was the analysis of project documentation, including materials developed during the implementation of the Erasmus+ PositiveWorkplace project. The analysed documents comprised the report on the evaluation of the first version of the programme (Prototype 1), the report on the evaluation of the final version (Prototype 2), documentation describing the evaluation process, and the research instruments used throughout the study. This analysis made it possible to reconstruct the process of designing, implementing, and improving the e-learning programme, as well as to identify the evaluation procedures applied during the project.

Learning outcomes were assessed using knowledge tests administered after the completion of each training module. Interactive multiple-choice tests were automatically assessed through the Learning Management System (LMS). Each test consisted of a maximum of ten questions, and participants were required to achieve at least 60% correct answers to successfully complete a module. The test results enabled the assessment of

participants' acquisition of the educational content and the verification of the intended learning outcomes.

The second quantitative research instrument was a post-course satisfaction questionnaire completed by participants after finishing the training course. The questionnaire included items concerning the overall evaluation of the course, participants' satisfaction with the training, their confidence in the knowledge acquired, and their willingness to recommend the programme to other managers. In addition, open-ended questions enabled participants to identify the programme's strengths, aspects requiring improvement, and suggestions for further development. Consequently, both quantitative and qualitative data concerning the participants' perceptions of the training programme were collected.

During the first stage of the evaluation, participant observation was also employed while users interacted with the course prototype. This method enabled the identification of issues related to platform usability, navigation, and users' interaction with the educational materials. Researchers recorded the participants' task completion processes as well as any difficulties encountered while completing individual course activities.

The observations were complemented by individual interviews conducted with the participants involved in the usability testing of the first version of the programme. The interviews were designed to explore the issues identified during the observations in greater depth and to collect participants' opinions regarding the functionality, clarity, and usefulness of the developed e-learning solution. The interview findings provided the basis for formulating recommendations and introducing improvements into the final version of the training programme.

The combination of these complementary research methods enabled a comprehensive evaluation of the PositiveWorkplace programme. Integrating project documentation analysis, knowledge tests, the satisfaction questionnaire, and qualitative methods such as observation and interviews made it possible to assess not only participants' learning outcomes but also the quality of the developed e-learning programme and the effectiveness of its continuous improvement process.

Results

Usability Evaluation of the First Programme Prototype

The first stage of the PositiveWorkplace evaluation consisted of a usability study conducted using the first prototype of the e-learning course (Prototype 1). The objective of this stage was to identify issues related to the programme's functionality and to collect feedback

from representatives of the target group regarding its clarity, usability, functionality, and the presentation of the educational content. The findings obtained during this stage provided the basis for developing the final version of the training programme.

Key Issues Identified

The analysis of the usability testing results showed that most of the identified issues were related to the functionality of the e-learning platform and the navigation between individual course components. The participants reported problems including malfunctioning navigation buttons, the opening of new browser tabs while navigating through the course, automatic user logouts, and inconsistencies in the user interface that made it difficult to navigate the course structure. The evaluation report also identified untranslated interface elements that remained in Polish, as well as problems associated with the login procedure and subsequent access to the platform.

In addition to the technical issues, the participants identified several aspects requiring improvement from both content-related and organisational perspectives. These included insufficient information about the project and its partner organisations, a lack of explanation regarding the use of a Polish e-learning platform within an international project, and the need to clarify selected elements of the course content. Participants also suggested improvements concerning the organisation of the learning materials, the availability of the course syllabus, and the inclusion of additional multimedia resources to enhance the learning experience.

Participants' Recommendations

Based on the usability testing results, a number of recommendations were formulated to improve the quality of the programme. Regarding technical issues, the participants recommended correcting navigation errors, improving the login procedure, and ensuring greater consistency of the user interface. They also suggested preparing a brief user guide explaining how to navigate the platform and interact with its individual components.

With regard to the educational content, the participants recommended expanding the information about the PositiveWorkplace project, its partner organisations, and the objectives of the course. They also highlighted the need to eliminate inconsistencies within the learning materials, supplement missing information, and further develop learning support resources, such as additional educational materials and other features aimed at improving the overall user experience.

Modifications Introduced Following the Usability Testing

The report from the first stage of the evaluation clearly indicates that the findings were directly used to improve the programme before testing its final version. The identified issues and the participants' recommendations served as the basis for introducing technical and organisational modifications during the subsequent stages of course development. According to the project documentation, the conclusions drawn from the usability testing were incorporated into the development of the second version of the programme (Prototype 2), subsequently subjected to a summative evaluation involving a larger group of participants.

Effectiveness of the E-learning Programme

The effectiveness of the PositiveWorkplace e-learning programme was evaluated on the basis of the results of the knowledge tests administered after the completion of each of the ten training modules. The purpose of the tests was to assess the participants' acquisition of knowledge related to the prevention of occupational burnout and to verify the achievement of the intended learning outcomes. Interactive multiple-choice tests delivered through the Learning Management System (LMS) were used. Each test consisted of a maximum of 10 questions, and participants were required to obtain at least 60% correct answers to successfully complete a module.

A total of 44 participants took part in the study. The result analysis demonstrated that all participants who completed the knowledge tests successfully passed the assessment for each module. The mean scores achieved by the participants were consistently high, ranging from 9.44 to 9.86 points out of a maximum of 10 points. The highest mean score was recorded for Module 10 (9.86 points), whereas the lowest was observed for Module 8 (9.44 points) (Table 1). The differences between the individual modules were minimal, indicating a consistently high level of knowledge acquisition throughout the training programme.

According to the final evaluation report, the programme enabled the participants to successfully acquire the intended learning content. The findings are consistent with previous research demonstrating that well-designed e-learning programmes can effectively support the achievement of learning outcomes among adult learners (Martin et al., 2020). The report concludes that the high knowledge test scores reflected both the clarity of the educational materials and the appropriate pace of knowledge delivery, which allowed participants to achieve the intended learning outcomes in each module.

Table 1. Knowledge test results following the completion of the PositiveWorkplace training modules.

Module	Participants who passed the test (n)	Mean score (0–10)
1	44	9.84
2	44	9.50
3	44	9.82
4	44	9.59
5	42	9.69
6	44	9.61
7	44	9.57
8	43	9.44
9	43	9.67
10	43	9.86

Source: The authors' own elaboration based on the PositiveWorkplace project documentation.

The consistently high scores achieved across all modules and the limited variation between the mean results indicate that the participants successfully acquired the knowledge delivered during the training programme. However, it should be noted that the evaluation procedure included only post-module knowledge tests administered after the completion of each training module. As reported in the project documentation, no pre-test was conducted due to the specific characteristics of the target group. Consequently, the results provide evidence of the participants' level of knowledge following course completion but do not allow for a quantitative comparison of knowledge levels before and after the training programme.

Participants' Satisfaction

The participants' satisfaction was evaluated using a post-course satisfaction questionnaire administered upon completion of the PositiveWorkplace e-learning programme. Of the 44 participants enrolled in the training programme, 42 completed the questionnaire. The survey included questions concerning the overall evaluation of the course, the participants' confidence in the knowledge acquired, their willingness to recommend the programme to other managers, and open-ended questions enabling the respondents to identify the programme's strengths and areas requiring further improvement.

The results indicate a high level of participant satisfaction with the programme. The high level of participant satisfaction is consistent with research findings indicating that well-designed e-learning environments foster positive learning experiences and enhance participant engagement (Kuo et al., 2014). The largest group of respondents (68.29%)

reported being very satisfied with the course, while 29.27% described their level of satisfaction as satisfied. Only one participant (2.44%) selected a neutral response. None of the respondents expressed dissatisfaction with the programme.

The learning outcomes were also evaluated positively. More than half of the respondents (56.10%) reported feeling very confident in the knowledge acquired during the course, whereas 39.02% declared a high level of confidence. Neutral responses and rather confident responses each accounted for 2.44% of the sample, while none of the participants reported a lack of confidence in the competencies they had developed through the training.

The participants also expressed a very high willingness to recommend the programme. As many as 97.56% of the respondents stated that they would recommend the PositiveWorkplace course to other managers, whereas only one participant (2.44%) expressed no clear opinion on this issue. None of the respondents indicated that they would not recommend the programme. These findings demonstrate an overall positive perception of the training programme among its participants (Table 2).

Table 2. Participants' satisfaction with the PositiveWorkplace programme.

Evaluation area	Result
Study participants	**44**
Completed questionnaires	**42**
Overall course evaluation	
Very satisfied	68.29%
Satisfied	29.27%
Neutral	2.44%
Dissatisfied / Very dissatisfied	0.00%
Confidence in acquired knowledge	
Very confident	56.10%
Confident	39.02%
Neutral	2.44%
Rather confident	2.44%
Not confident	0.00%
Willingness to recommend the course	
Yes	97.56%
No	0.00%
No opinion	2.44%

Source: The authors' own elaboration based on the PositiveWorkplace project documentation.

Improvement of the Training Programme

The development of the PositiveWorkplace e-learning programme followed an iterative design approach, based on the systematic improvement of successive versions of the course through continuous evaluation. This approach made it possible not only to assess the quality of the programme but, more importantly, to identify elements requiring modification before the implementation of the final version. Consequently, the evaluation served as a tool supporting programme development rather than merely providing a final assessment of programme effectiveness. This approach is consistent with the principles of contemporary learning environment design, in which the improvement process is iterative and based on successive cycles of design, implementation, and evaluation (McKenney & Reeves, 2019).

The first stage of the study involved usability testing of the course prototype with representatives of the target group. The combination of participant observation, individual interviews, and a satisfaction questionnaire enabled the identification of issues primarily related to platform functionality, navigation, content organisation, and the clarity of the user interface. The evaluation report also included recommendations for addressing the identified shortcomings, such as improving navigation mechanisms, providing additional information about the project, eliminating language inconsistencies, and refining selected elements of the course.

The findings obtained during the first stage were incorporated into the development of the final version of the programme (Prototype 2). As indicated in the project documentation, the results of the usability testing formed the basis for introducing technical and organisational improvements before the second stage of the evaluation, which focused on assessing the programme's effectiveness and participants' satisfaction.

The final evaluation involved 44 IT managers and included both knowledge tests and a satisfaction questionnaire. The results demonstrated consistently high mean scores in the knowledge assessments completed after each training module, together with a very positive overall evaluation of the programme by its participants. These findings confirmed that the multi-stage process of programme design and continuous improvement resulted in an e-learning solution that effectively addressed the needs of the target group.

The evaluation also demonstrated that involving end users in the programme development process facilitates not only the identification of technical and organisational issues but also their resolution before the final implementation of the course. In the case of the PositiveWorkplace programme, the application of a two-stage evaluation procedure enabled the transition from a prototype requiring further refinement to a final programme

that received highly positive evaluations from participants. These findings highlight the importance of formative evaluation as an essential component in the design and development of effective e-learning programmes.

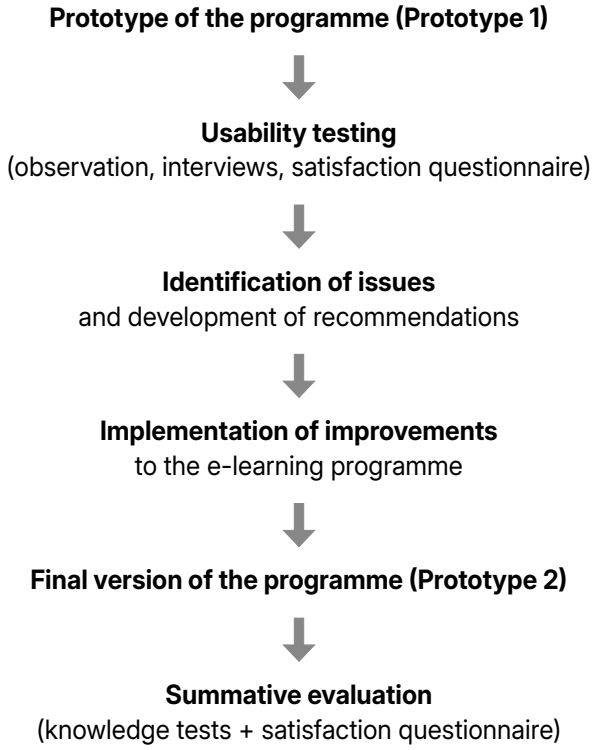

Fig. 1. The process of improving the PositiveWorkplace e-learning programme.

Source: The authors' own elaboration based on the PositiveWorkplace project documentation.

Discussion

The findings indicate that the e-learning course developed within the Erasmus+ PositiveWorkplace project constitutes an effective tool for enhancing IT managers' competencies in the prevention of occupational burnout. The high scores achieved in the knowledge tests and the positive evaluations provided by participants confirm that well-designed online training programmes can effectively support the development of professional competencies among individuals holding managerial positions. These findings are consistent with previous research on the effectiveness of online learning, demonstrating that well-designed e-learning courses can achieve outcomes comparable to, and in some cases even superior to, those of traditional forms of education, particularly for adult learners engaged in lifelong learning. (Means et al., 2010). Similar conclusions

were reached by Salas et al. (2012), who indicated that the effectiveness of training programs depends not only on the content delivered but also on the quality of instructional design, active participant engagement, and a well-planned evaluation process.

The significance of the results should also be considered in the context of the contemporary challenges faced by organisations operating in the information technology sector. Rapid technological development, project-based work, and the pressure associated with meeting strict deadlines increase employees' psychological workload. As reported by Kuutila and colleagues (2020), prolonged time pressure is one of the major risk factors contributing to occupational exhaustion and reduced well-being among IT professionals. Under such circumstances, preparing managers to recognise the symptoms of occupational burnout and to undertake preventive actions becomes particularly important.

The findings are also consistent with the recommendations of the World Health Organisation (2022), according to which workplace mental health initiatives should include not only interventions targeted at employees but also the development of managers' competencies responsible for work organisation, communication, and the creation of supportive working environments. Managers play a key role in shaping an organisational culture that promotes employee well-being; therefore, developing their competencies constitutes one of the fundamental elements of effective occupational burnout prevention. The importance of developing managers' competencies is also emphasised by Noe et al. (2014), who argue that workplace learning is one of the key drivers of the development of an organisation and competencies necessary to function effectively in a dynamic work environment.

It may also be observed that the findings are consistent with the concept of occupational burnout proposed by Maslach and Leiter, who argue that burnout is not merely an individual problem but rather the result of a prolonged mismatch between employees and their work environment. The authors identify six key domains contributing to the development of occupational burnout: excessive workload, limited control over work tasks, insufficient recognition, impaired social relationships, lack of organisational fairness, and conflicts of values (Maslach & Leiter, 2022). Within this framework, managers play a significant role in creating working conditions that reduce the risk of burnout through effective work organisation, fostering a culture of collaboration, and supporting employee well-being.

The findings also confirm the importance of lifelong learning in the development of managerial competencies. Contemporary organisations operate in an environment characterised by rapid technological and organisational change, making the continuous updating of knowledge and the acquisition of new skills essential. E-learning programmes provide flexible learning opportunities for working professionals by eliminating barriers

related to time and place. Contemporary research on digital education also emphasises that the effectiveness of e-learning depends on the appropriate design of interactions among learners, instructors, and learning materials, which contributes to improved learning outcomes (Garrison et al., 2000). Consequently, e-learning programmes are increasingly recognised as an effective means of supporting managers' professional development and promoting the principles of lifelong learning (Merriam & Bierema, 2014). These findings are also consistent with the research of Hrastinski (2008), who argued that well-designed e-learning environments promote active participation and a greater learner engagement.

Particular attention should also be paid to the iterative approach adopted in the development of the training programme. Unlike many studies focusing exclusively on the final evaluation of course effectiveness, the PositiveWorkplace project incorporated two stages of evaluation. The first stage enabled the identification of usability issues associated with the course prototype and the formulation of recommendations for its further improvement. Only after these modifications had been implemented was the final version of the programme evaluated with a larger group of participants. This approach is consistent with contemporary principles of learning environment design, according to which the systematic use of user feedback contributes to improving the quality of educational solutions. The instructional design literature emphasises that the systematic evaluation of successive versions of a program and the incorporation of user feedback are among the fundamental prerequisites for developing effective learning environments (Kirkpatrick & Kirkpatrick, 2016).

The practical implications of the findings extend beyond the academic environment. The programme may serve as a ready-to-use tool supporting the development of competencies among managers responsible for leading IT teams in both commercial enterprises and public organisations. The findings indicate that e-learning enables the effective delivery of knowledge related to the prevention of occupational burnout while maintaining a high level of participant satisfaction. In practice, this may facilitate the implementation of preventive initiatives aimed at improving employee well-being, reducing the adverse effects of chronic occupational stress, and fostering more resilient organisations.

The findings also suggest that developing managers' competencies in recognising and preventing occupational burnout may constitute an important component of a systemic approach to workplace mental health management. As emphasised by Maslach and Leiter (2016), effective burnout prevention requires organisational interventions focused primarily on improving the quality of the work environment rather than solely strengthening employees' individual resilience. (Maslach & Leiter, 2016). In this context,

the PositiveWorkplace programme may be regarded as a practical tool supporting organisations in implementing preventive strategies through the development of managerial competencies.

Nevertheless, several limitations of the present study should be acknowledged. The programme evaluation was conducted with a relatively small sample of participants and based primarily on post-course knowledge tests and participants' self-reported satisfaction with the training. The project did not include a pre-training assessment of participants' knowledge or a long-term evaluation of learning outcomes. Therefore, the findings allow for the assessment of participants' competencies following course completion but do not permit a quantitative comparison of knowledge before and after the training. Future research should extend the evaluation process by incorporating pre- and post-training assessments of managerial competencies, together with longitudinal analyses examining the impact of the acquired knowledge on managerial practice and its contribution to reducing the risk of occupational burnout among employees.

Conclusion

The findings of the present study confirmed that the PositiveWorkplace e-learning programme, developed within the Erasmus+ project, constitutes an effective tool for enhancing IT managers' competencies in recognising and preventing occupational burnout. The knowledge test results, together with the high level of participant satisfaction, indicate that well-designed online training programmes can effectively support the development of managerial competencies related to creating work environments that promote mental health.

The study also demonstrated that the application of a multi-stage programme design and evaluation process enables the systematic improvement of educational materials and their better adaptation to the needs of the target audience. Incorporating the participants' feedback during the prototype testing stage made it possible to identify and eliminate barriers affecting the functionality and usability of the course, which contributed to the high evaluation of its final version. These findings confirm the importance of formative evaluation as an integral component of the design and development of contemporary e-learning programmes.

Furthermore, the results are consistent with current evidence emphasising that effective occupational burnout prevention should be based on organisational interventions and the development of managerial competencies supporting employee well-being rather than

focusing exclusively on individual coping strategies. In this context, the PositiveWorkplace programme may provide a valuable educational solution for organisations seeking to strengthen managers' competencies in promoting mentally healthy workplaces and preventing occupational burnout.

Finally, although the study confirmed the effectiveness of the developed programme, future research should include larger and more diverse groups of participants, incorporate pre- and post-training assessments, and examine the long-term impact of the acquired competencies on managerial practice and employees' well-being. Such research would provide more comprehensive evidence regarding the effectiveness of e-learning programmes designed to support occupational burnout prevention in different organisational contexts.

The findings are consistent with current research indicating that effective strategies for preventing occupational burnout should primarily focus on creating healthy work environments and developing the competencies of managers responsible for work organisation and employee well-being (WHO, 2022). At the same time, the findings confirm that e-learning can serve as an effective instrument for implementing the principles of lifelong learning by enabling flexible professional development tailored to the needs of working adults.

The practical implications of the findings extend beyond the information technology sector. The developed training model may also be adapted for use in other sectors of the economy in which managers are responsible for organising the work of teams operating under conditions of high psychological demands, intensive organisational change, and increasing expectations regarding human capital management.

The present study is subject to several limitations. The relatively small sample size and the assessment of programme outcomes immediately after course completion limit the generalisability of the findings. Future research should therefore extend the evaluation process by examining the long-term sustainability of the achieved outcomes, assessing changes in managers' workplace behaviours, and analysing the impact of the developed competencies on employee well-being and team performance.

The findings suggest that integrating modern educational technologies with an approach based on systematic evaluation and international collaboration may represent an effective direction for the development of lifelong learning programmes aimed at preparing managers to promote employee well-being and manage healthy workplaces in an increasingly dynamic work environment.

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