Reasons for the insufficient use of e-learning in the employee training process in the sector of small and medium enterprises

Michał Kozioł[1], Anna Mikos[2], Krzysztof Leśniak

Małopolska School of Economics in Tarnów
Faculty of Management and Tourism

ORCID:
[1] 0000-0001-9694-3983
[2] 0000-0003-2780-1759

Abstract: The aim of the article is to identify the reasons for the insufficient use of e-learning training in the SME sector and to indicate ways to reduce it, as well as to present the results of empirical research. The implementation of the foreseen objective was based on: analysis of the results of the predecessors' researches and the questionnaire. Research, in its scope, included internal reasons for the low use of e-learning training, and so it related to the decision-making sphere of the company. Numerous financial, personnel and information barriers have been identified, as well as lack of a coherent training and knowledge management and poor cooperation with other entities in the sector. External causes derive, among others, from poor knowledge of the principles and methods of conducting cybernetic learning and communication, lack of interest and use of IT tools referred to as the 'Internet of Things', and finally low, unsatisfying work-life balance.

Key words: e-learning trainings, barriers to the use of e-learning, SME sector

1. Introduction

The discovery of the Internet, the invention of the epoch, and its application in the enterprises practical activity as well as in the area of social life, caused significant changes to the existing order. It is under its influence that social relations, economic conditions and processes change. In the social perspective, the Internet becomes one of the few important areas of free speech, the transfer of thoughts and new ideas. The Internet accelerates the development of capitalism, transforms and transfers it from the industrial phase to the cognitive one. Under the influence of the Internet and other IT instruments, changes in the industry are progressing from electronic information industrialization to new generation (NGMS) systems, also called intelligent (Drath and Horch, 2014, pp. 56–58).

In the sphere of production, this generation is referred to as Industry 4.0. The direction can be described as 'digitization

Correspondence to:
Michał Kozioł
Małopolska Wyższa Szkoła Ekonomiczna
Wydział Zarządzania i Turystyki
Samodzielny Zakład Informatyki i Metod Ilościowych
ul. Waryńskiego 14
33-100 Tarnów, Poland
Tel.: +48 14 65 65 535
E-mail: michal.koziol@mwse.edu.pl

DOI: 10.25944/znmwse.2018.04.1323

of matter', and its assumptions are implemented by intelligent factories controlled by Cyber--Physical System CPS in the Internet of Things environment.

Among other, equally numerous applications of the Internet, e-learning deserves a special attention. E-learning is meant to be a form of education in which interactive computer techniques are used by the learner in a convenient place and time. They can complement traditional forms of training or education, as well as can be a basic form of training. In short, e-learning is a method of acquiring knowledge (teaching technique and a way of learning), using electronic media. Briefly, it can be described as learning via the Internet. In the aspect of the broad definition provided, e-learning includes various forms of e-education, such as: academic e-learning, school e-learning, corporate e-learning, which is the subject of research described in the article.

According to data from the Sloan Consortium—an international organization monitoring the development of Internet education—the rate of growth of this phenomenon in the 1990s and at the beginning of the twenty-first century was around 20% per annum, but later, at the end of the decade, it began to weaken. Currently, considerable fluctuations in this phenomenon can be observed throughout individual years.

Still, e-learning is not a commonly used method of employee training in many countries. This observation particularly applies to small and medium-sized enterprises. A manifestation of such situation is often the lack of interest in e-learning training by both employees and the company's management. There is a lack of knowledge of the rules and culture of education and learning in this mode. However, recently, after a period of stagnation, there is a growing interest in this form of education. Compulsory trainings are of the biggest interest and so are the types of trainings the most often carried out in companies. They mainly cover the topics of health and safety and fire protection, as well as changes in legal regulations, financial and accounting rules, or information on the control of the course of the plan.

The results of previous research have shown that e-learning is a useful and effective tool for employee training, especially in the sector of small and medium-sized enterprises. Therefore, one should not give up this form of employee training and, what is more important, having improved the organization by its means. Searching for ways and methods to broaden the use of this instrument in practice is an important problem for the development of the company.

The aim of the article is to identify the reasons for the poor use of e-learning training in the SME sector and to indicate ways to reduce it, as well as to present the results of empirical research. The implementation of the foreseen objective was based on: analysis of the results of the predecessors' researches and the questionnaire. Research, in its scope, included internal reasons for the poor use of e-learning training, and so they related to the decision-making sphere of the company. Selected, more important external determinants of the poor use of e-learning were characterized basing on the results of predecessors' research and, to a lesser extent, on opinions of managers and employees of the analyzed companies.

2. Communication and social barriers to e-learning training in the sector of small and medium-sized enterprises

The use of 'single loop' and 'double loop' in the remote learning process

The basic barrier to the development of corporate e-learning is the knowledge of how to learn and the ability to learn on the principle of a 'double loop'. Referring to cyberne-

tics[1], especially to the theory of communication and learning, four fundamental principles must be met to make the process run smoothly. First, an individual must have the ability and skills to study different aspects of his environment. Secondly, it must also have the ability to link this information to the operational standards of the organization that govern the behaviour of the individual. Thirdly, it must have the ability to identify deviations from these standards, as well as be able to initiate corrective actions. If these conditions are met, a continuous information exchange process is created between the unit and its surroundings, which allows the unit to act intelligently using various techniques of self-organization and self-regulation.

However, if the individual's intelligence fails, then the feedback process leads to compliance and maintenance of the wrong behaviour pattern (norm). In this situation, according to cybernetics, it is necessary to distinguish the mentioned learning process on the basis of 'single loop' from the learning process indicating how to learn on the principle of 'double loop' (see Morgan, 1983, pp. 96–98). Complex cybernetic systems, such as the human brain, have the ability to identify the wrong pattern. It can detect and correct errors in operational standards and then influence the procedures that direct their actions. This kind of ability to question their own actions is the basis for the actions of individuals (systems), capable of learning how to learn and of self-organizing.

Most organizations and their employees have acquired proficiency in learning based on the 'single loop' rule. This skill, often institutionalized, frequently takes the form of information systems, budgets, a set of financial regulations, health and safety, and quality standards.

Achieving proficiency in learning according to the 'double loop' model, often turns out to be tedious and unreliable. It is difficult to identify and define systems for viewing and questioning accepted norms, procedures, policy, in relation to changes in the environment and continuous process of introducing innovations. Failures in this area often affect bureaucratic organizations, mainly due to petrified structures, sharply outlined hierarchical divisions, established behavioural patterns, areas of necessary knowledge. In bureaucratic organizations, the free flow of knowledge rarely takes place, and the binding principle of bureaucratic responsibility effectively blocks the operation based on the principle of 'double loop'.

There is one more issue that significantly impedes e-learning training and employee learning, resulting from the fact that there is often a discrepancy between what people say and what they do (Morgan, 1983, p. 101). Chris Argygis and Donald Schön use the distinction between 'propounded theory' and 'application theory' to denote this phenomenon. 'Prejudiced theories' effectively prevent people who preach these theories as well as those to whom they are addressed from understanding the problems and dealing with them.

There are many ways to deal with the learning barriers of organization members. Selected, more important are: stimulating reflexivity, openness, appropriate style of management, team work, networking that allows seeking help in solving problems and the learning, taking into account the principle of the 'double loop', mentioned above.

[1] Cybernetics is a science about the processes of control and communication between man and machine (Kienzler, 2003, p. 60). The American mathematician Norbert Wiener is considered to be the founder of cybernetics.

'Internet of Things' and e-learning in the context of information technology acceptance

The concept of 'Internet of Things' (IoT)[2] formulated by Kevin Ashton in 1999, which also includes e-learning in its structure, is still developing in both qualitative and quantitative terms.

The number of devices connected to the Internet significantly exceeds the number of inhabitants of the world and is still growing, in particular it concerns mobile devices such as smartphones, tablets, cameras, etc.

In model 'Internet of Things' networks, any object or device (called 'thing' or 'smart object') can automatically connect to the Internet, making a full network node, and communicate with any other object (device) connected to it (Mącik, 2016, p. 13).

The next part of the article presents selected results of empirical research on attitudes of young consumers towards technologies and devices classified as 'Internet of Things' (see more on this topic: Mącik, 2016. pp. 11–27).

Young consumers seem skeptical about the actual usefulness of the 'Internet of Things' in their lives. The respondents can see more clearly the disadvantages rather than the advantages associated with the use of IoT devices, most fearing of losing privacy. At the same time, they notice the convenience of using such solutions and their potential ability to generate savings in expenses. Respondents' fears related to the use of 'Internet of Things' devices:

- exposes me to overly intrusive and frequent advertizing,
- exposes me to leakage of sensitive data about me,
- exposes me to uncontrolled loss of privacy,
- provides data about my behaviour to others,
- provides data about my purchases,
- may cause loss of control over the device,
- creates a sense of danger,
- raises concerns about privacy,
- raises concerns about health, costs and others.

In their statements, the consumers emphasized that most often they use simple configurations of wireless devices such as printers or speakers in home and personal networks. The majority expressed the opinion that they do not intend to make additional purchases of IoT devices, they do not have such a need.

E-learning versus the Work-Life Balance (WLB) concept

The concept of balancing professional life and personal life was a reaction to prolonged working hours as well as socio-cultural changes, such as the large and still increasing share of women in the labour market and the associated new, different from traditional, distribution of roles in the family (Kot-Radojewska, 2014), as well as a change in the nature and content

[2] The idea of the 'Internet of Things', in which objects (material world) equipped with sensors that collect information from the environment communicate (exchange data) with computers via ICT networks, mainly the Internet (see Brill, 2014, p. 97). The 'Internet of Things' also includes research areas related to the development of the systems discussed (López et al., 2012, p. 291), which aim to use and extend the functionality of existing Internet networks as a communication platform for various types of facilities and equipment and modules occurring in the human environment (Ożadowicz, 2014, p. 88).

of the work. The phenomena mentioned above have caused employees' disabilities, illnesses, a sense of burnout, deterioration of family relationships (Samojlik, 2015), and in the sphere of manufacturing, a significant decline in creativity, productivity and organizational involvement of employees (Monster Polska, 2016).

There are many definitions of this phenomenon in the literature. According to David Clutterbuck, the balance between work and personal life occurs when an individual copes with a potential conflict between the various requirements, regarding his time and energy in such a way that his desire for well-being and fulfillment is satisfied (Clutterbuck, 2005, p. 26). In essence, it is about the skill appropriate to the needs, not necessarily equal, distribution of available time between the areas of private and professional life (Dąbrowska, 2014) and treating these two areas complementarily (Bargij, 2014), so that they form the whole and bring general satisfaction.[3] The division of time can be made according to many criteria. The simplest is probably breaking it down into basic life activities, such as: working time, time for commuting and work, time of obligatory classes, time of satisfying physiological needs, free time connected with personal development.

It can be concluded from the quoted remarks that the employee is an architect of the time budget structure and it is him who is responsible for the balance between work and home. However, there are more and more opinions from researchers who, to a large extent, bear responsibility for the imbalance on the employer. They emphasize that the balance may arise through the introduction of organizational changes, special intervention programmes and benefits, and so the harmony between the two areas depends to a large extent on the company's organizational culture (Dąbrowska, 2014).

Work-life balance of employees in Polish enterprises is low. According to the work-life balance index calculated by OECD, Poland was ranked 25th among 36 countries surveyed. It obtains 6.5 points on a 10-point scale, which places it close to countries that do not help employees to maintain balance (see Figure 1). This situation is largely influenced by the work environment that requires performing duties during illness, holidays and overtime.

Work overload and lack of time have a negative impact on relationships with others and on employees' learning and development in e-learning mode. Our own research on these topics showed that business owners and managers used e-learning for the purposes of self-organized learning and organizational improvement, allocating 4–6 hours a week for this activity while specialists used it for about 3–4 hours, and employees in non-managerial positions did not take such actions at all.

Selected, more important work-life balance activities are: reconstruction and improvement of flexibility of working time, wider use of e-learning and remote work, redundancy of working time for learning in e-learning mode, development of social programmes, with particular attention paid to facilities for parents, as well as knowledge of the rules and their skillful use in managing their time and others.

[3] Such balance occurs when work does not encroach on private life and vice versa, when extramural life does not occur at its expense (Borkowska, 2004, p. 54). In addition, the enterprises implementing the programmes of the discussed idea create definitions for their own needs, e.g. WLB are the examples of system solutions that help employees to maintain a balance between work and private life and to help incorporate different social roles to reach satisfaction in both spheres of life (Tchibo, 2015).

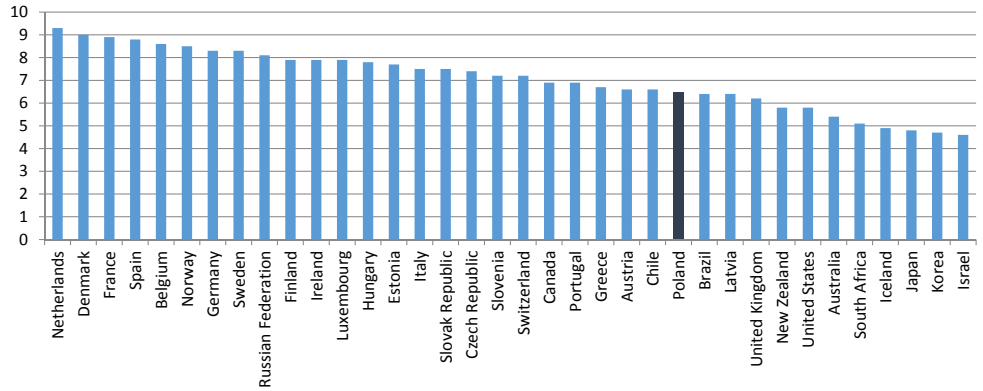

Figure 1. Work-life balance indicator in selected OECD countries

S o u r c e: OECD, 2018.

3. The use of e-learning in the process of training employees of SME sector enterprises

In empirical research, the organizing method, which is the questionnaire, was used, together with statistical methods. The research was made to obtain information about business entities from people managing them, first and foremost from their owners, board members, directors, and managers of appropriately high level of management.

The research covered 166 enterprises of the SME sector, dealing mainly with the provision of services (47%), production (21%) and trade (13%). The largest number of companies covered the region (37%), few companies indicated national (34%) and international (25%) coverage. Most of them assessed their financial condition positively (almost 50%), much less—29%—assessed the financial condition as average, another 10% of companies described it as good. Only 8% considered their financial situation as poor.

To sum up the general characteristics of the companies, it should be stated that the enterprises participating in the study reflected the structure of the sector, especially the SME sector in Southern Poland (see more Kozioł, 2018, p. 109), in both economic and organizational structure, as well as technical and technological one.

The information obtained allowed to present the following conclusions important from the point of view of the objectives of the article. 20% of all surveyed companies use e-learning in the process of employee training. In most of them, this process is organized in an occasional, share-based manner—depending on the needs (58%). In others, the training process using the e-learning method occurs as unorganized and accidental activities (30%). By contrast, 6%, i.e. only 10 companies, are constantly using this employee training tool. The relevant data are shown in Tables 1 and 2.

Table 1. Application of the training process using the e-learning method

Indication	Enterprises (%)
The company uses e-learning in the process of employee training	20
The company does not use e-learning in the process of employee training	74
No answer	6

S o u r c e: Kozioł, 2018, p. 128.

Table 2. Forms of the training process using the e-learning method

Training process	Enterprises (%)
Continuous management process	6
Occasional management process	58
Unorganized, accidental activities	30
No answer	6

S o u r c e: Kozioł, 2018, p. 129.

The results of the research indicated that enterprises evince high activity in training and improving employees. Almost all of them were conducting training in the traditional form, a quarter also uses other forms of investing in human capital, i.e. seminars and studies. E-learning trainings are dedicated in the initial phase and will probably develop. As it can be assumed from the frequency of using IT tools supporting training, over half of employees use them in the process of informal learning from others.

Among the important reasons for the low use of e-learning training, rooted in the internal conditions of the company, the most frequently mentioned are: lack of knowledge gathering and dissemination, scarcity of funds allocated for this activity (20%–30% of the surveyed companies mentioned it); poor IT infrastructure, poor internal communication, fluctuation of specialists or inappropriate management style—indicated by about 15% of the surveyed organizations. However, the resistance of employees against sharing knowledge with others was noticed in 20% of companies. Summarizing the presented results of the analysis, it should be emphasized that numerous, significant barriers to the development of e-learning appear in every fifth company under study. This phenomenon is not as widespread as it was assumed. The data fully confirm the collected statements (see Table 3), which show that over 70% of companies do not notice barriers in sharing knowledge, moreover, over 50% of them state there is no rivalry between employees caused by unhealthy competition.

Table 3. Significant barriers to the development of e-learning in the company

Barrier type	Enterprises (%)
Lack of any systems, knowledge gathering procedures	30
Knowledge is collected, but not disseminated	20
Resistance to sharing knowledge	20
Poor communication	14
Inadequate management style	15

Barrier type	Enterprises (%)
Lack of financial resources	22
Poor IT infrastructure	16
Fluctuation of specialists	16
Others	12

S o u r c e: Kozioł, 2018, p. 112.

The advancement of information systems in the surveyed enterprises of the SME sector and their cooperation with other entities operating on the market are worth mentioning here.

The most commonly used IT systems were systems with a database of approximately 81%, and transaction systems that were used in 64% of surveyed enterprises. To a much lesser extent, e-learning systems were used—9%, and management information systems as well as decision support systems—6% and 5%, respectively. These systems can be used to rationalize decisions at both operational and strategic level, and therefore it can be assumed, that their significance and practical application will increase. Other IT solutions were clearly less popular; expert systems, early warning systems, or simulation systems were used in 1% to 4% of the surveyed enterprises (see Table 4).

Table 4. Types of information systems used in SMEs

Type of system	Enterprises (%)
Transaction systems (ST)—informational domain systems	64
Systems with a database	81
Decision support systems (SWD)	5
Management information systems (SIK)	6
Expert systems (SE)	4
Early warning systems (EWS)	2
Simulation systems (decision making)	1
E-learning systems	9
Others	4

S o u r c e: Kozioł, 2018, p. 122.

An important determinant of the development of e-learning is its use in the search for necessary information and knowledge. The most frequently mentioned directions of obtaining and exchanging information were customers and recipients—54% of the surveyed companies, competitors and companies of the same industry—48%, suppliers and cooperators—45%. As sources of information, seminars and conferences—40%, as well as fairs and exhibitions (slightly less frequently mentioned)—38%. University colleges were much weaker in this respect—16%. Other directions of obtaining information serving the introduction of new solutions or making the innovative activity more dynamic were used only by 4–7% of the surveyed companies. For example, it can be stated that 7% of enterprises cooperated with scientific institutions, 5% with research and development units, and 4% with the technology transfer centre (see Table 5).

Table 5. The way of obtaining information by the company to introduce a new solution or to expand the scope of innovative activity

Source of information	Enterprises (%)
Universities	16
Scientific institutions	7
Technology transfer centres	4
Research & Development units	5
Suppliers of equipment, materials, components and software	45
Customers	54
Competitors and other companies in the same field of activity	48
Trade shows/ exhibitions	38
Seminars, scientific conferences	40

S o u r c e: Kozioł, 2018, p. 122.

4. Summary and conclusions

As a result of the conducted questionnaire studies and the analysis of the collected data, it was stated that:

1. Over 20% of all surveyed enterprises use e-learning in the process of employee training. In the majority of them, this process is organized in a periodic and share manner, and is less often performed as a permanent activity.
2. Most employees support their training with the use of IT tools, such as the Internet, websites, e-mail, databases, and so it can be assumed that they use them in the process of self-education, i.e. in the process of informal learning from others.
3. E-learning trainings are currently in the SME sector in the initial phase, at the creation stage, their dissemination on a scale of 1–5 can be determined at the level of 2–3.

It turned out that the essential reasons for the insufficient use of e-learning in the training process are:

1. Lack of a coherent training and knowledge management system. Activities in this area are based mainly on internal, available operational possibilities.
2. Insufficient cooperation of the surveyed enterprises with scientific and research institutions and other entities of the SME sector, rare cases of establishing cooperation and taking alliances.
3. Low level of sophistication and use of IT systems.
4. The existence of numerous barriers of a financial, personnel and information nature. The costs of IT modernization and structural changes are an essential limiting factor.

As it can be seen in the enterprises of the SME sector, there are still a lot of barriers of the insufficient use of e-learning for the purposes of e-learning training in particular. The internal reasons given are limited or even eliminated. On the other hand, external ones do not change enough, they result, among others, from poor knowledge of rules and ways of cybernetic learning and communication, lack of interest and use of IT tools referred to as the 'Internet

of Things', and finally, low, unsatisfying work-life balance of Polish company employees, resulting to a large extent from existing relations and working conditions.

References

Bargij, J. (2014). *Work-life balance, czyli balansowanie między pracą a życiem osobistym* [online, accessed: 2016-02-15]. Ready for Future. Wrocław: Fundacja Educover. Retrieved from: http://educover.pl/czaspismo/work-life-balance-czyli-balansowanie-miedzy-praca-a-zyciem-osobistym/.

Borkowska, S. (2004). Praca a życie pozazawodowe. In: S. Borkowska (ed.). *Przyszłość pracy w XXI wieku*. Warszawa: Instytut Pracy i Spraw Socjalnych. ISBN 838789057X.

Brill, J. (2014). The Internet of things: Building trust and maximizing benefits through consumer control. *Fordham Law Review*, *83* (1), 205–217.

Clutterbuck, D. (2005). *Równowaga między życiem zawodowym a osobistym. Przewodnik dla specjalistów od spraw personalnych*. Transl. by G. Łuczkiewicz. Kraków: Oficyna Ekonomiczna. ISBN 8389355515.

Dąbrowska, A. (2014). *Oddziaływania resocjalizacyjne. Autorski model pracy edukacyjno-wychowawczej z nieletnimi*. Warszawa: Wydawnictwo Naukowe PWN. ISBN 9788301180003.

Drath R., Horch A. (2014). Industrie 4.0: Hit or hype? *IEEE Industrial Electronic Magazine*, *8* (2), 56–58.

Kienzler, I. (2003). *Słownik terminologii komputerowej angielsko-polski i polsko-angielski*. Gdynia: IVAX. ISBN 8388134116.

Kot-Radojewska, M. (2014). *Jak zachować równowagę? O work-life balance słów kilka* [online, accessed: 2016-02-15]. In: Jobs.pl. Katowice: Jobs.pl SA. Retrieved from: www.jobs.pl/poradniki/jak-zachowac-rownowage-o-work-life-balance-slow-kilka.

Kozioł, M. (2018). *Wykorzystanie e-learningu w procesie szkolenia pracowników małych i średnich przedsiębiorstw*. Pelplin: Bernardinum.

López, T. S., Ranasinghe, D. C., Harrison M., McFarlane, D. (2012). Adding sense to the Internet of Things. *Personal and Ubiquitous Computing*, *16* (3), 291–308.

Mącik, R. (2016). „Internet rzeczy" – postrzegane przez młodych konsumentów korzyści i zagrożenia – wyniki badań wstępnych. In: J. Moczydłowska, Z. Patora-Wysocka (eds.). *Nowe trendy w zarządzaniu – perspektywa marketingowa i personalna* (pp. 11–27). Przedsiębiorczość i Zarządzanie, 17 (4), part 3. Łódź–Warszawa: Wydawnictwo Społecznej Akademii Nauk.

Monster Polska. (2016). *Sukces to równowaga = balans między życiem zawodowym a osobistym* [online, accessed: 2016-02-15]. Monster Polska. Retrieved from: http://informacje.monsterpolska.pl/sukces-to-rownowaga-balans-miedzy-zyciem-zawodowym-a-osobistym/article.aspx.

Morgan, G. (ed.). (1983). *Beyond method: Strategies for social research*. Newbury Park: Sage Publications. ISBN 0803919735.

OECD. (2018). Work-Life Balance [online, accessed: 2018-11-20]. In: *OECD Better Life Index*. Retrieved from: http://www.oecdbetterlifeindex.org/topics/work-life-balance/.

Ożadowicz, A. (2014). Internet rzeczy w systemach automatyki budynkowej. *Napędy i Sterowanie*, *12*, 88–93.

Samojlik, M. (2015). *Work-life balance* [online, accessed: 2016-02-15]. Elektroniczne Centrum Aktywizacji Młodzieży. Retrieved form: www.ecam.ohp.pl/-/work-life-balance-71323.

Tchibo. (2015). *Work-life balance: równowaga praca – rodzina* [online, accessed: 2015-01-04]. Warszawa: Tchibo. Retrieved from: http://www.tchibo.com/content/1000076/-/pl/kariera/work-life-balance.html;jsessionid=36DFFC364F41CDD1C050705D6C6BB5C.

Przyczyny niskiego wykorzystania e-learningu w procesie szkolenia pracowników w sektorze małych i średnich przedsiębiorstw

Abstrakt: Celem artykułu jest identyfikacja przyczyn niskiego wykorzystania szkoleń e-learningowych w sektorze MSP i wskazanie sposobów ich ograniczenia, jak również prezentacja wyników badań empirycznych. Do realizacji tak nakreślonego celu wykorzystano: analizę wyników badań poprzedników oraz kwestionariusz ankiety. Badania w swym zakresie obejmowały wewnętrzne przyczyny niskiego wykorzystania szkoleń e-learningowych, a więc odnosiły się do sfery decyzyjnej przedsiębiorstwa. Zidentyfikowano istnienie licznych barier o charakterze finansowym, personalnym i informacyjnym, nadto wskazano na brak spójnego systemu zarządzania szkoleniami i wiedzą oraz na słabą współpracę z innymi podmiotami sektora. Zewnętrzne przyczyny są następstwem między innymi słabej znajomości zasad i sposobów cybernetycznego uczenia się i komunikacji, braku zainteresowania i wykorzystania narzędzi IT określonych mianem „internetu rzeczy", czy wreszcie niskiego, mało satysfakcjonującego work-life balance.

Słowa kluczowe: szkolenia e-learningowe, bariery wykorzystania e-learningu, sektor MSP