

# Formation of Information System for Personnel Training

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## ABSTRACT

Information technologies in personnel management are an important part of today's employment relationship in any enterprise. Indeed, in modern conditions it is impossible to imagine the management of the enterprise or organization without the use of modern information systems. The purpose of this article is to provide an algorithm that allows to organize and carry out training under the project implementation of information systems. The article considers modern tendencies of formation of information systems for training of personnel of the organization, analyzes the advantages and disadvantages of different options using online platforms used in the development of information systems training. The specifics of each of the information learning systems available on the market and features of using information technologies in it are also considered, as well as the factors that modify the effectiveness of different information systems training. The article considers the stages of organization of the learning process using information technologies, which can be divided into two stages: the first is the preparatory, where the work is done by its organization and the second – training of employees.

## Keywords

information technology, learning, online platform, HR management

## 1. THE RELEVANCE OF TRAINING TO ORGANIZATION DEVELOPMENT

One of the major factors of successful activity of the organization is the productivity of its employees. Many factors are composed, but the main ones are the employees' skills, their level of motivation, quality of objectives, that is, the depth of their decomposition, meaningfulness, and finally, compliance with workplace standards, as well as in the stop and the climate in the team. Each of these factors is very important, depending on the scope of activities and their weight then can vary, but in any case it is always necessary to take into account.

The market economy greatly changed the approach to education. Previously, just the presence of higher or secondary education guaranteed to organize efficient and productive activities. This was partly due to the fact that the rate of appearance of new technologies was relatively low, so institutions have time to adapt their educational programs for the real world, but still there was always a delay. In addition, the average work was less skilled, and therefore did not require this amount of knowledge, as in our time. Today, useful knowledge becomes more important and popular because it is aimed at solving specific challenges that employees face in the work. This situation leads to an increasing demand for professionals with such knowledge. A huge advantage and factor in competition for any company are its employees, and its level of development is determined by the competence of the staff. The company is becoming

increasingly important not only by staff development, but teaching him specific knowledge, skills and experience necessary for professional activities in the specific workplace. Training a new type to continuous development of companies demanded new forms of learning, including corporate training [1].

First corporate training used by McDonald's, which was important to prepare its cadres for the ideology of the company, was present everywhere, in all countries, representing the brand. Later this experience was used for Coca-Cola, Motorola, Procter&Gamble, General Electric and many other leading manufacturers from around the world [1].

Staff training is purposeful, organized, planned and systematically carried out process of mastering by knowledge, abilities, skills and ways of communication under the guidance of experienced teachers, mentors, professionals and managers [2].

The main areas of staff training are: vocational training, retraining and advanced training.

The main objectives of the training:

- feature the required level of development of management personnel;
- analysis of trade composition and placement of staff;
- calculation of staff requirements for the future and requirements to them;
- training activities for new activities;
- work with graduates of schools and universities.

Retraining organized to develop new jobs for redundant workers, who cannot be used in existing specialties, as well as individuals expressing a desire to change the profession to meet the needs of production. Retraining is required when changing the activity profile [3].

Refresher training is a learning process of employees of the company, which should soon have new responsibilities, based on the existing knowledge. It can be as higher education and knowledge were was obtained at earlier stages of corporate learning. Its purpose consists in deepening and improving the professional and economic knowledge, the compliance with the requirements of higher positions, the consolidation of new skills, increasing skills in the existing occupations [4].

All the above forms of training is very beneficial, as they raise the skill level of its employees, and in addition its image, attractiveness to potential applicants. But they are no less useful for the employees, because they are professionally developed, thereby enhancing their competitiveness, the demand on the labour market, the level of wages. No less important is the fact that the level of their tasks is also significantly enhanced, which makes their activity much more interesting [6, 7, 13].

Well-designed and implemented a training program for staff development allows to keep valuable people in the company and increase profits. Taking into account the fact that the battle for highly qualified specialists every year becomes more and more competitive, these programs become more vital than ever before. Search and talent takes time and money, and how successful will be used to develop these

talents, greatly affects how long the employee is with the company, and thus the overall success of its activities. In the study of 2014 Great Place to Work [5] it turned out that among the best 100 companies in the world training and personnel development is paid more attention than any other inner sphere development.

It is important to note that training and development of staff, is not a one-time activity, but it is an ongoing process that requires constant attention and adjustments. Below are key steps which allow to build the process of training and development close to the goals of the company, allowing to achieve the best results: [8]

1. The definition of business impact.

It is necessary to design and develop programmes for training and development of staff to meet the overall objectives of the company. Permanent coordination of the program with business goals allows to achieve a tangible impact from their implementation.

2. Analysis of the lack of necessary skills among employees. How does the activity of employees contribute to the achievement of the company's goals? Identifying gaps between actual and required skills of staff, you can better understand what specific areas should be given special attention in the training and development of staff. You need to break the resulting objectives to study into three groups:

a. Motivation

How can trainees help staff to understand why they need to learn something new? Working with the motivation of employees, the company makes a contribution to long-term development

b. Qualification, mastering the necessary skills

What should the employees of the company be able to do in order to do their job? This direction mostly affects the performance of employees.

c. Critical thinking.

What do the employees need to know in order to do their job? You need to separate mission-critical knowledge from just would be nice to know, to understand exactly what should be the content of the curriculum, and what can just provide as additional resources.

3. Phased training.

A layered approach ensures that the training program is focused on the most urgent needs of employees, customers and business, as it allows to carry out training to the right people at the right time in the right direction.

4. The evaluation of effectiveness.

Measurable goals in training are a basic evaluation of the effectiveness of the whole programme.

Summing up the results of the studies mentioned in this section, we can say that every year the importance of training of personnel is increasing rapidly, and this is one area which gives the companies a significant competitive advantage if it is well organized. Training of staff directly affects productivity, company efficiency, and therefore, its financial performance. The more a technological field of activity of the organization, the more responsible its management should approach the processes of training and certification of personnel.

## **2. MODERN TENDENCIES OF FORMATION OF INFORMATION SYSTEM FOR PERSONNEL TRAINING**

The creation and support of a training programme in working condition is a very difficult task. Many companies have come to the conclusion that training and seminar are not the only and most effective methods of staff development. An increasing number of organizations view learning as the "engine of progress", a tool for improving the

value of the company, and, accordingly, managing learning becomes more strategic and important to the organization's ability to thrive in a dynamic business environment. More attention is drawn to new forms, models and methods of teaching. Training and certification of personnel becomes increasingly attached to long-term business objectives, becoming a strategic function of the company, as we discussed in the previous section. [9]

According to the magazine Balance Learning and Training, many organisations are trying to reduce the time spent by employees away from the workplace (e.g. on training), 50%. Last year, for the first time in the last few years, 2% of US companies' budgets for staff training were increased. Last but not least, this contributed to the growth of popularity of programs of e-learning. The final formation of this kind of corporate programs can be called a main process in the market of corporate training in the United States in recent years, say the experts of Bersin & Associates. Today, no one raises the question about its effectiveness. All managed to ensure that the Internet is a great tool for sharing information, and most large companies plan to implement more advanced forms of e-learning. [10].

Initially e-learning was positioned as a cheaper equivalent of regular courses. Winning the market, e-learning forever changed the very structure of corporate training. First of all, it affected the organization of internal trainings: corporate University model, involving full-time attendance, is gradually replaced by a model of training and service, in which service providers train the employees online at any time convenient for them. [11].

Another noticeable trend in the world of corporate training outsourcing training services. However, one can hardly speak about the widespread implementation of this option corporate training: outsourcing in the full sense of the word is popular only in a relatively small number of companies, while the majority prefers to simply seek the assistance of consulting agencies and providers. In this demand system, learning managers (LMS), are developed within the organization of individual orders. [11].

The obvious advantage of finding the whole process of training directly at the enterprise is that the program is very closely integrated with the real working process, of course, with proper organization, to train employees to attract staff for a detailed analysis of practical problems. The weakness of this approach is its high cost and the need for a large administrative resource to ensure the operation of the activities of the company.

The advantages of making training from the company is the high flexibility of this approach in terms of making changes to the program, as its design and drafting professionals. In addition, it also allows you to start the process from scratch fairly quickly, provided a well-established cooperation between the representatives of the enterprise for which tuition is provided, and staff of the company provider of educational services. The downside is the fact that a very likely situation in which between the learning process and the real needs of the production cycle at some point, discrepancies may occur, and over time, they will only expand. In the end, the staff held a learning process to be forced to spend extra time to adapt to real conditions, which is a direct loss for the company due to downtime.

As can be seen, each of these options has significant advantages over the other, so the ideal option would be the possibility of their integration to increase efficiency and reduce cost and costs of training, retraining and advanced training. That is why recently products of rapid growth have appeared which combine these 2 approaches.

With the advent and rapid development of IT technologies in recent years, the option of making the most part of training

online is indeed possible. There were large educational projects, such as Coursera [12], which gave an opportunity without leaving home to learn at different levels in almost any sphere of activity, and even they have not stopped. Typing certification of their students, they have made a huge step in the offline, allowing the students (applicants) on the one hand, and teachers (employers) with another tool to eliminate the need for the physical presence of each other. Moreover, many universities around the world post on these sites their entire courses, giving an opportunity to any person to undergo the same program as icy Stanford, Harvard, etc. This trend is confirmed by analysts. According to research by IBISWorld and MarketResearch.com the money volume of the world market of online education for the year 2015 amounted to \$ 52 billion, a CAGR (cumulative annual growth rate) equal to 20%. [12].

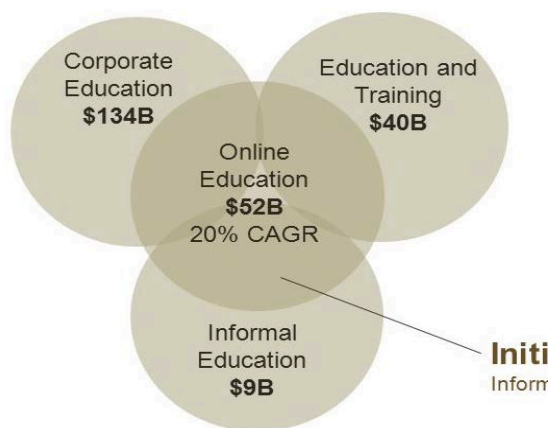


Fig. 1. Results of the research IBISWorld and MarketResearch.com relative global market size of online education

All this allows to speak about the transition learning and assessment in information systems, and further development of technology will only accelerate this process.

### 3. THE RATIONALE FOR THE DEVELOPMENT OF AN INFORMATION SYSTEM FOR PERSONNEL TRAINING

The main advantage of the information of the system is its autonomy. Once is enough to create a method to fill it with necessary courses and tests, and the output is a ready-made solution that can be used with little or no involvement of staff. Courses can be spread between the various regional offices of the company, without the necessity of providing employees for each project.

From this follows another significant advantage: the lack of dependence on specific individuals responsible for the process of training and certification of personnel. It is in the interests of the company to prevent a situation in which a large amount of knowledge at a narrow circle of people (not counting the founders), as the care of any employee of this narrow range creates a lot of problems, which affects the decrease of productivity a large number of people, and care from the entire group can stop the activities of the company. The availability of the information system, which contains all the data solves this problem, since the knowledge focuses not only on the mind of people who develop the courses, but also within the system, and a new employee can always continue development of the course, where the previous one. Moreover, this platform allows to create content due to parallelization of the work that would be very problematic in

the traditional approach to the organization of the learning process.

We cannot talk about the usability of the online platform, and this applies both to those involved in the development of content and to those who are using it. The staff responsible for the development of the courses, get an opportunity to create their user-friendly interface, tailored to their needs. Moreover, due to the imposition of this platform online, you can use it not only in the workplace but also at home or on the go with your smartphone.

Another big advantage of information systems is the possibility of monitoring and analytics of the learning process. Due to the fact that all data is stored in the database at any time the progress status of each employee, division or company as a whole. Aggregation of data is not restricted, so you can build a huge number of reports to track metrics, all in real time.

An online platform can be integrated with another system, making the learning process even closer to the real problems. For example, you can configure the interaction so that task manager will not give the opportunity to begin performing a specific task, if it were not for an employee of unexplored material on the subject.

And finally, the cost of maintaining such solutions is much lower than the content of the staff people responsible for the training and certification of personnel. Of course, in the short term, the cost and time for development of the online platform is high, but a year later, these investments will give a great return.

### 4. ANALYSIS OF THE MARKET FOR EXISTING SOLUTIONS IN THE FIELD OF INFORMATION TECHNOLOGY

So, the benefits of using information systems for training and certification of personnel of the organization are obvious. Before proceeding to develop such a platform, it is necessary to conduct market analysis on the existing solutions. After all, if there is already a product that meets all the requirements of the organization, to develop its own one does not make sense. The results of the analysis are given in Table 1.

Tab. 1 - Analysis of the market of platforms for training and certification of personnel organization

Name	Axis LMS	Digital Chalk Corporate LMS	Doce-bo	Firm-water LMS	Lit-mos LMS
target market	Small and medium business	Big business and training centres	Any size company	Training centers	large business
Integration with CRM-systems	-	+	+	-	+
Support online meeting	-	+	+	-	+
The ability to see real-time intelligence and build custom reports	+-	+	+	-	+-
Open API	+	+	+	+-	+-
Gamification of the learning process	+	-	+	-	+-
A flexible system of access rights	-	+	+	+-	-
No limit on the amount of	+	+	+	-	+

stored files					
No limit on the number of users of the platform	-	-	-	+	-
No limit on the number of courses	+	+	+	-	+
The possibility of using the company's servers	-	-	+-	+	-

According to the results of the analysis can distinguish a clear leader of the market of corporate online education, the company Docebo. Its product has many built-in features, including localization of UI and content, mobile applications, open API for integration with external systems. In enterprise versions of the product, companies are offered the opportunity to store these courses on their servers.

The major drawback is the inability to create custom interfaces, as well as the lack of a platform to conduct A/B tests. Another significant disadvantage is that all the courses you need to create, are not able to use of existing experience or book a course development training center.

For small companies, the latter requirement is critical, as well as the platform to conduct A/B tests, as it allowed to significantly increase the level of the proposed content. It was therefore decided to develop an information system for training and certification of personnel on their own.

## 5. THE PROCESS OF DEVELOPING INFORMATION SYSTEMS (IS) FOR PERSONNEL TRAINING

It the first phase of the development process information systems for training of personnel necessary to develop terms of reference, it is required to determine what will be included in IS. IS allows minimal effort to gather information to refine the product under the demands of the target audience or even to abandon it. The main objective of IS is to accomplish the product of a business task.

In this case, the main business objective is the training of employees. The main modules should be:

- Interface for creating and editing courses.
- Module testing and certification of employees.
- System monitoring and analytics.
- Integration with external solutions.

The next step is the choice of the technology stack of the system.

Technology stack is one of the key factors in the development of such a system. This concept implies the totality of the technology used, the equipment running the system, programming languages that form its foundation. Currently, there is a huge number of available technologies that on the one hand, makes it possible to implement many of the things that recently were technically unrealistic, on the other hand, it makes the process of selecting a technology stack a much more complex and important issue, because the wrong choice could wipe out the rest of the work, even if it is done very well.

The key criteria in selecting the technology stack are scalability, fault tolerance, speed, security, ease of administration, easy integration with external systems, the cost of developing software within the chosen technology stack, the cost of using and maintaining the infrastructure.

For several years in the market development of IT- solutions, the only solution when choosing the method for the use of infrastructure is the cloud-based platform. The most popular and Mature among them are Amazon Web Services, Google

Cloud Platform and Microsoft Azure. Cloud platform meets all criteria from the above list and achieves significant savings in on the creation and use of the product due to the fact that the developer removes a significant portion of work associated with the administration of the infrastructure.

After completing the development of information systems for training of personnel organization begins implementation. The main objective of this stage is the integration of the developed product into the business processes of the company, employees are aware of how the tool works. How well this step depends on the effectiveness of using information systems in organizations.

In conclusion, it should be noted that patterns of use of the program for large and small companies will be slightly different. Companies whose size does not exceed 10 people, you can wait with the introduction of such a system because it will not give a noticeable gain. And besides, in such companies it is very difficult to formalize and standardize most processes, and this is extremely important for the normal functioning of information systems for training and certification of personnel of the organization. If each employee has to fully develop a training course, it means that the platform is used not quite correctly. As soon as a situation arises in which one and the same learning model is relevant to several people — is a signal that it is time to start the automation, and, therefore, implementing such a system.

In large companies, the introduction of such a system is necessary, since the process automation is impossible to achieve high performance. The work of employees is more regulated, and therefore the platform will not have a negative impact on flexibility. It will be much easier for large companies to assess the effectiveness of introducing such a platform, find its weaknesses due to the fact that they have a large amount of data about its use and I can confidently relate them to the working activity. In addition, the availability of such system allows to synchronize the process of learning all branches of the company, even if they are in different countries, and we need to use it, although we should not forget about the difference of approaches related to cultural characteristics.

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