Corporate information systems in construction

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Abstract. Under continuous increasing competition, only companies that use the most optimal methods can survive and succeed. One of the most relevant and successful business models is outsourcing. It was developed by the Electronic Data System (EDS) Company in 1963. In the 1980s, the outsourcing became an effective way to optimize costs and increase profitability. In the 1990s, it was revealed that the outsourcing contributes to the rationalization of company structures and their activities focusing on the main subject and transferring peripheral, official functions to external specialists. The transition to the post-industrial economy contributed to the implementation of this method in data processing and company management systems.

1. Introduction
Among the types of outsourcing, IT outsourcing is especially interesting for an analysis. This type has appeared recently, but it has become one of the most popular outsourcing services. Many companies are implementing IT outsourcing schemes. The IT outsourcing is a relevant and interesting research issue. The research subject is IT outsourcing models implemented in various economic sectors. The aim is to analyze outsourcing models applied in various professional fields. The novelty of the study is due to the attempt to analyze the IT outsourcing market by studying models applied by various economic sectors.

2. Materials and methods
In the late 1990s, there was a sharp increase in the number of companies - providers of outsourcing services. With the growing number of outsourcing companies, outsourcing models (ASP, MSP, SSP, MSSP, WASP and AAA) were being developed.

The ASP model (online applications) [1] provides customers with software products, software packages and IT elements, maintains these programs on the basis of a fixed monthly fee via the Internet [2]. The ASP company provides the following services: management of the hardware and software infrastructure; system integration; customization of applications to the requirements of various industries; web hosting; application hosting; administrative support; industry knowledge and experience; business consulting [3]. The ASP model allows enterprises to reduce the total cost of IT ownership, application implementation risks, speed up the application implementation. The model allows companies to apply the latest enterprise management technologies.

The MSP model is used to provide management services [4], services for remote management of equipment, software and network resources: management of updating and backup procedures; monitoring and performance reporting; stress testing; real-time management of client system information on availability, security and performance of the IT infrastructure; analysis of system
performance and its optimization. When enterprises are abandoning e-commerce projects aimed at developing web sites and online directories and using web technology to implement business processes, the MSP industry is growing rapidly. The infrastructure for supporting these systems is complex and requires the qualified staff.

The SSP model is used to provide remote data storage services: leasing of the storage infrastructure; storage process management: downloading of client data, creation of archival copies; centralized management of distributed data warehouses.

The MSSP model is used to provide Internet security services: vulnerability assessment that identifies potential weaknesses, security policies and procedures; security audit that meets various industry standards to monitor firewalls and other security devices; intrusion detection services that alert customers; investigation of security incidents; security policy preparation; training of the security personnel [5].

The WASP model is used to provide wireless online application management services: modification of applications for using by wireless devices; sale of general-purpose wireless applications to other service providers and portals; development and leasing of specialized applications developed for organizations that want to provide wireless services [6].

The AAA model is used to provide services related to the integration of various applications into a common interface through which customers access these applications: ensuring functions of an integrator of offers of various application providers: concluding contracts with suppliers and negotiating service agreements; development of a single interface; payment for suppliers’ services - customers receive an invoice; application hosting; integration of new applications purchased by the client with existing ones; consulting [7].

3. Results and analysis

The main advantages of IT outsourcing services are as follows:

- saving financial resources. Attracting experts requires large monthly expenses, while IT outsourcing is much less expensive. The company can increase or decrease the volume of outsourcing services, optimizing its own costs;
- tax savings. All costs of outsourcing services can be taken into account as company expenses reducing the tax burden.
- professionalism and competence. The accumulated experience of professionals from outsourcing organizations is more comprehensive and extensive than that of a person who works for one company. A variety of problems and situations contribute to the solution of the most complex and non-standard tasks;
- availability of specialists. Maintenance services are provided on an ongoing basis;
- high quality of services. A detailed description of all types of services, their quality parameters and control methods are fixed in the contract between the customer and the supplier. Outsourcing companies regularly provide detailed reports;
- narrow specialization of specialists. When looking for a full-time employee, it can be difficult to find a professional having comprehensive experience.
- no staff training costs. The constant development of technology requires regular training which increases costs. Using IT outsourcing services, the company saves on training and receives a full range of professional services;
- the ability to concentrate on own business. If the IT sphere is non-core for the company, it takes a lot of time. Outsourcing companies allow employees to focus on urgent problems;
- rapid implementation of new technologies. Outsourcing engineers are aware of new IT trends and can immediately begin to implement IT projects;
- the ability to use services of highly qualified specialists: small companies can afford only one system administrator, but IT outsourcing changes this situation.
- security and privacy. The agreement between the customer and the service provider stipulates conditions for confidentiality of commercial information.
Let us compare quality of service (professionalism) of a full-time IT administrator and an IT outsourcing specialist. The results are presented in Table 1.

**Table 1.** The comparative analysis of quality of services provided by the full-time IT administrator and an IT outsourcing specialist

| Quality of services, professionalism | Staff IT specialist | IT outsourcing specialist |
|--------------------------------------|---------------------|---------------------------|
|                                      | 1 full-time specialist | 2 full-time specialists | 1 specialist | Group of specialists |
| Security                              | +                    | +                         | +            | +                      |
| Valuable                              | +                    | +                         | +            | +                      |
| Information backing-up                |                      |                           |              |                        |
| Documentation                         | -                    | -                         | +            | +                      |
| ATS and other communication systems   | -                    | -                         | +            | +                      |
| Ability to use various OS             | -                    | -                         | +            | +                      |
| Ways to reduce IT costs               | -                    | -                         | +            | +                      |
| Ability to solve any IT problem       | -                    | -                         | +            | +                      |
| Holiday interchangeability            | -                    | +                         | +            | +                      |

We cannot say that IT outsourcing is always more profitable than traditional information services. If the company has a larger share of typical IT processes, it is better to choose IT outsourcing. If there are more unique IT processes, it is better to use insourcing (full-time employment). Both models can be used as well.

**Table 2.** The comparative analysis of financial indicators for services provided by the full-time IT administrator and an IT outsourcing specialist

| Financial indicator, rub. | Staff specialist | IT-outsourcing specialist |
|---------------------------|------------------|---------------------------|
|                           | 1 server         | 1 server                  |
|                           | Full-time IT     | Full-time IT              |
|                           | administrator,   | administrator,            |
|                           | 1 full-time unit | 2 full-time unit2         |
| The average salary in Russia (net of taxes) | 25000 | no |
| Workplace rent (6 sq.m per person) | 4000 | no |
| Depreciation of office equipment (1 person/mo) | 500 | no |
| Administrative | 1500 (5%) | 1500 (5%) | no |
expenses, rub. (%)  
Personal income tax, rub (%)  3250 (13%)  6500 (13%)  no  no  
Social tax deductions, rub (%)  8500 (34%)  17000 (34%)  no  no  
Leave allowance (100%)  yes  yes  no  no  
Sick payment (50-100%)  yes  yes  no  no  
Total, month  42750  84000  3000  15000  
Total, year  513000  1008000  36000  180000

4. Discussion

As a result, full-time specialist costs are about 42,750 rubles per month. This does not include sick payments, bonuses, salary for replacing an employee on vacation, processing fees and other unforeseen expenses [8].

This is a salary for 8 hours a day, 40 hours a week, 160 hours a month. In addition, managers have to monitor the performance of workers. The above example shows that IT outsourcing is more advantageous for the company.

![Figure 1. Savings due to IT outsourcing per year, rub.](image)

The relations of the customer and the IT outsourcer are regulated by contracts and service provision agreements [9]. According to the latter, the contractor gives financial guarantees that a quality service will be provided. Agreements regulate the speed of software functions or the absence of repeated bugs.
when correcting system errors. In addition, the outsourcing company is responsible for competencies and motivation of its employees [10].

5. Conclusion
IT outsourcing is one of the new types of outsourcing. Companies are switching to IT outsourcing earlier than to other types of outsourcing. IT outsourcing involves the maintenance of the information infrastructure of the company by a specialized company [11]. The company does not need to hire IT specialists [12]. There is no unified classification of IT outsourcing. Several types of IT outsourcing can be distinguished: external and internal; resource and functional; outsourcing of IT infrastructure, IT processes or full outsourcing; one-time and long-term; primary and secondary [13]. There are several IT outsourcing models: ASP model (provides online applications); MSP model (provides management services); SSP model (provides remote data storage services); MSSP model (provides managed security services on the Internet); WASP model (provides wireless online application management services); AAA model (provides services related to the integration of various suppliers' applications into a single interface through which customers access these applications); IT outsourcing has a number of advantages: financial savings, the ability to engage in core activities, professional services, and the speed of implementing new technologies [14]. IT outsourcing has the following shortcomings: the problem of data security, trade secrets, low-quality services. Before using IT outsourcing services, the company should analyze business processes and determine the economic efficiency [15].

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