American International Journal of Business Management (AIJBM)
ISSN- 2379-106X, www.aijbm.com Volume 07, Issue 06 (June-2024), PP 70-72

Advantages of the OLTP System in the Context of Information Security

Malgorzata Kochanowicz[1] ORCID: 0000-0003-3775-8854
Maryna Lassota[2] ORCID: 0000-0003-3713-6000
[1] *(WSB Merito University in Poznan)*
[2] *(WSB Merito University in Poznan, SGH Warsaw School of Economics)*
**Corresponding Author: Malgorzata Kochanowicz[1]*

ABSTRACT: *The paper analyzes the advantages of the Online Transaction Processing system, which is used in business. The publication was created using empirical research in the form of interviews with experts dealing with OLTP systems. In addition to indicating the advantages of the OLTP system, the paper presents an explanation of the system's features. The article refers to personal data, which is also processed in OLTP systems. Therefore, the work has a practical aspect.*

KEYWORDS: *information security, trade secrets, personal data*

I. INTRODUCTION

The first half of the XXI century is the era of new technologies. The world is developing at a fast pace, solutions are being created that are designed to make life easier, including business. The above results in the need for the development of such branches of law as: trade secrets, patents, copyrights, licenses, utility models. They help to preserve the value of the company in which they were created, contributing to the acquisition of more and more customers.

Business is based on new technologies in the form of systems used to process databases. Systems must be properly designed to process data correctly. Companies can't afford to slow down their systems or lose their data, as it can affect their reputation, the number of orders, the number of customers, their profits. Therefore, it is important to give the right features to the OLTP system, which has been analyzed in this article.

II. PRACTICAL USE OF THE SYSTEM OLTP

„OLTP" is an abbreviation for Online Transaction Processing and it means a system for processing data in multiple transactions taking place simultaneously. Currently, OLTP systems facilitate the work of many sectors that use them to serve customers, such as online banking, as well as are used within organizations, for example, for accounting purposes. These systems process "huge amounts" of data on a "large number" of people.

The emergence of OLTP systems was mainly dictated by business development. Companies began to serve customers and, wanting to do it as quickly as possible and as efficiently as possible, they began to look for solutions based on new technologies. On the other hand, more efficient and faster customer service made it possible to accept even more orders for services or products. OLTP systems have replaced the "work of hands" and the human mind. They have given business the opportunity to quickly serve a customer or its own organization, which a human would never be able to do at such a fast pace.

Undoubtedly, OLTP systems have served as a tool for business to optimize the costs of running a business. With a properly configured OLTP system in relation to the needs of the organization, the organization runs its business without the need to employ a large number of employees who performed the work entrusted to these systems.

III. RESEARCH

OLTP systems have many advantages and are an advantage over existing systems. We asked experts what they think about these systems. Expert number 1 pointed out that OLTP systems provide the ability to support many users at the same time. In addition, they are characterized by the atomicity of transactions, i.e. they ensure that all elements of the transaction performed with the use of this system will be correct and guarantee the execution of the process. Expert number 2 indicated the automation of this system, i.e. the reduction of the need for human intervention, as an advantage over the existing systems in the first place. As he pointed out, the above minimizes the risk of human errors. The system can be fully automated. As the second feature that determines the advantage of this system over the previous ones, expert number 2 mentioned the reduction of operating costs. The introduction of this system, according to the expert, will eliminate the need to hire additional employees or eliminate the need to invest in expensive software.

Expert number 3 emphasized that the advantage and advantage of the OLTP system over the previously existing systems is the speed of data processing in this system. According to this expert, the OLTP system is optimized to process, at a fast pace, a large number of transactions that are short-lived. Such action gives you the opportunity to effectively handle business operations performed in real time. As the second advantage and advantage of the OLTP system, the expert pointed to the up-to-date data. Systems are tasked with maintaining the actual, up-to-date state of data. This advantage is extremely important for applications that require immediate updating of information. This is what we see in banking systems or warehouse management systems, for example. As the third advantage and advantage of the OLTP system, expert number 3 pointed to high availability. These systems are designed in such a way as to minimize the risk of data loss, as well as to prevent interruptions in transaction processing. This is achieved through the use of virtualization, redundancy, and clustering. As the fourth feature and advantage, multi-availability was indicated, i.e. the ability to support many users at the same time. Attention was also paid to the optimization of transactions in terms of efficient transaction processing, which, for example, distinguishes an OLTP system from an OLAP (On-Line Analytical Processing) system. The latter are more focused on data analysis. Expert No. 3 pointed to vertical scalability understood as increasing the computing power of one server and horizontal scalability understood as adding more servers as a feature and advantage of the OLTP system. This makes it possible to adapt the system to the increasing load. As another advantage and advantage of the OLTP system, the expert pointed to the security of transactions. It is noted here that these systems are designed to maintain data integrity, transactions to be secure, and the system itself to be resilient to failures. At this point, it is worth noting the need to ensure data security in the OLTP system.

The results of the study can be presented in the table below:
Table – advantages of an OLTP system with an explanation

	Advantages of an OLTP system	**Explanation**
1.	Ability to support multiple users at the same time.	The systems process huge amounts of data, handle a huge number of transactions at the same time.
2.	The atomicity of transactions.	A guarantee that all elements of the transaction will be correct and that the process will be executed.
3.	Automation.	A system that is largely independent of humans.
4.	Reduction of operating costs.	Eliminating the need to hire additional employees. Eliminate the need to buy expensive software.
5.	The speed of data processing.	Fast processing rate of a large number of transactions.
6.	Up-to-date data.	Maintain the actual state of the data. Instant data up-to-date.
7.	High availability.	Minimized risk of data loss.
8.	Multi-availability.	Ability to support multiple users at the same time.
9.	Vertical scalability.	Increasing the computing power of a single server.
10.	Horizontal scalability.	Adding more servers.
11.	Transaction security.	A system that is resilient to threats, including failures.

Source: Author's own elaboration

IV. DATA SECURITY INCLUDING PERSONAL DATA IN THE OLTP SYSTEM

Organizations are forced to fend for themselves in ensuring data security. In order to achieve the highest possible level of security, companies employ experts in the field of IT, marketing, market knowledge, automation, and data security. It should be remembered that OLTP systems process a large amount of data, including personal data. Any data breach in an OLTP system may result in a personal data breach. In some cases, it will be possible to equate the breach of database security with the security of personal data processed in the OLTP system. A breach of personal data processed in an OLTP system may adversely affect the rights and freedoms of individuals whose data is processed. As a result of a breach of the security of the described system, identity theft, theft of funds, public disclosure of personal data may occur. Personal data must be adequately secured and transferred in accordance with the law. Authorities (...) should have technical and organizational measures in place to ensure data security" [1]. In the European Union, the issue of personal data security is regulated by Regulation (EU) 2016/679 of the European Parliament and of the Council [2]. Bearing in mind the above, it can be pointed out that OLTP systems are gaining importance in the social dimension. Today, they are a permanent and inseparable tool facilitating the functioning of many industries such as: banking, finance, healthcare, telecommunications and, of course, trade. The above industries are public, widely available and apply to everyone. If the humanity is deprived of the opportunity to benefit from the above systems, then it

would need to take several steps back. It is difficult to imagine the functioning of society without these systems. Nowadays, they are, after all, a tool for performing and facilitating everyday activities. Therefore, it can be pointed out that the proper functioning of the OLTP system contributes to ensuring social security, which is defined as "intentional striving for people's living conditions, which ensures at least the existing level of the existential situation of citizens, an appropriate standard of living, and at the same time creates an opportunity to raise and improve it" [3].

V. CONCLUSION

OLTP systems are used by a huge number of users. These systems are eagerly used by business, because without these systems it would not be possible to run a business. Humans would not replace OLTP systems. OLTP systems are also becoming popular among newly-established, modern companies that want to keep up with new technologies and take up the challenge of meeting customer demands. This makes transactions taking place in OLTP systems critical. The OLTP system has many advantages, which makes them very popular among businesses.

REFERENCES

[1]. Kochanowicz M., *Dane osobowe w sferze bezpieczeństwa narodowego - w kontekście RODO, ustawy o obronie ojczyzny oraz ustawy o ochronie danych osobowych*, [in:] J. Stelmach (ed.), *Bezpieczeństwo obiektów użyteczności publicznej i infrastruktury krytycznej. Prognozowanie-projektowanie-edukacja,* Poznań 2023, Grupa Wydawnicza FNCE, p. 202.

[2]. Rozporządzenie Parlamentu Europejskiego i Rady (UE) 2016/679 z dnia 27 kwietnia 2016 r. *w sprawie ochrony osób fizycznych w związku z przetwarzaniem danych osobowych i w sprawie swobodnego przepływu takich danych oraz uchylenia dyrektywy 95/46/WE* (ogólne rozporządzenie o ochronie danych (Dz.U.UE.L.2016.119.1)

[3]. Lisiecki, M., (2008). *Diagnoza i prognoza rozwiązań systemowych w zakresie organizacji i zarządzania bezpieczeństwem obywateli*. In: Lisiecki M. (eds.) *Zarządzanie bezpieczeństwem -wyzwania XXI XX wieku*, Warszawa, p. 276.

Corresponding Author: Malgorzata Kochanowicz
(WSB Merito University in Poznan)