INFORMATYKA EKONOMICZNA BUSINESS INFORMATICS 2(24) • 2012
ISSN 1507-3858

Ludosław Drelichowski
University of Technology and Life Sciences in Bydgoszcz
e-mail: lu.drel@utp.edu.pl

EVALUATION OF THE EFFICIENCY OF INTEGRATED ERP SYSTEMS AND BUSINESS INTELLIGENCE TOOLS BASED ON SOME DIAGNOSTIC CASES

Abstract: In the paper an evaluation of efficiency of application of integrated systems of ERP class and BI tools was carried out through analysis of analysis of cases and their usage in surveyed organisations during five last years. However researched objects were differentiated about scale and type of activities but every of those organisations applied advanced and updated information technologies. Analysis of observed successes and not expected failures let precise key factors of successes or failures in the scope of BI tools application efficiency in management. Confirmed rules of guaranteeing of not conditional compatibility of data warehouses contents with the transactional data bases are, in opinion of the author, necessary condition for long term success in BI application in decisions making processes. Such solutions can make sure proposed in the paper the data processing organisation system effectively verified during their several years exploitation in printing enterprise POZKAL in Inowroclaw. Such solution forces compatibility of transactional data bases with data warehouses contents, what is often underestimated by authors of publications from this area.

Keywords: ERP Integrated Systems, Business Intelligence tools (BI), Data Processing Organization System.

1. Introduction

The researches which have been implemented for the last five years concerned the analysis of the determinants of ERP systems implementation and Business Intelligence tools in corporate management and public administration. They justified the attempt to make a synthesis of former publications.

The problems which were considered in the literature [Drelichowski, Parafian 2008; Drelichowski, Parafian 2009ab; Drelichowski 2009a] contain the results evaluation of the empirical studies on the effective implementation of the new standards of integrated systems formation strategy.

In Drelichowski [2009b] article, the applications of PRINCE2 Methodologies has been presented and AIM (Application Implementation Method) for Oracle e-Business Suite integrated system implementation in a chemical industry corporation has been discussed.

The publications which have been mentioned above contain the discussion on the experience in the creation of a model system implementation, the functionality and modules that support the specific information and decision-making processes in enterprises.

The author's experience shared with the consolidated team of consultants focused on the implementation of the rollout methodology in the ERP integrated system implementation in a foreign country.

In the author's opinion, the created strategy of ICT technology implementation in the international corporations has a significant influence on the friendly and efficiently solutions formation.

The attempt of common experiences confrontation together with the results of author's [Kisielnicki 2008; Klimek, Unold 2011; Kobis 2011; Koronacki, Mielniczuk 2006; Lech 2004] results ensured us that the experiences of different research groups suggest numerously similar steps which are required to create convinced strategy for application of ERP system solutions.

The results presented in Drelichowski [2009ab] show several aspects of ICT creation solutions in decision support processes in regional and central bodies of governmental administration. The main problem of the presented system solutions concerns the data warehouse creation which allows the Business Intelligence tools creation.

It was found in the former studies that already developed support standards of the costs settlement in the two separated departments of the central administration were built on the ORACLE data mining platform and provide an accurate information supply for the central and regional bodies of administration.

The BI tools adoption and the application of information flow solution from transactional systems to data warehouse and BI systems which generate reports for all authorized users of central and regional administration units didn't cause any objections.

The third group of the research members was presented in publications [Drelichowski, Stawicka, Cilski 2010; Drelichowski, Żółtowski, Mierzejewski 2011; Drelichowski, Piechowicz 2011], which are related to a single global corporation that operates in the cement production industry. The second corporation conducts production and sales on the international market in railway vehicles industry. Another company represents MSE printing industry sector.

The research results which were analyzed in the subsequent publications allowed to provide the diagnoses of effects of the information technology applications in various research facilities that have been evaluated in several years.

They allowed to define the difficult position based on cause-effect determinants that have been confirmed in Lech [2004]; Lee et al. [2010]; Standish Group [2009]; Shih, Huang [2009]; Umble, Haft, Umble [2002]; Uzoka, Abiola, Nyangeresi [2008].

The research scope and evaluation of the success factors in some of the surveyed business organizations allowed to obtain a synergy that may allow the occurrence of possible failures in the formulation of diagnostic of BI tools applications and in the other facilities.

2. Support methods of development strategy for the IT application in international corporation management

The importance of the implementation organization strategy for the ICT new standards with regards to system life cycle has a significant importance according to the statistic of IT projects implementation (which contain ERP systems) effectiveness and have been quoted in Table 1.

The summary of IT projects implementation in the years 1994–2009 according to the Standish Group analytics was presented in the following table.

Table 1. Summary of IT projects implementation by Standish Group – Chaos Report 1994–2009

Dane za rok	Sukces	Niepowodzenie częściowe	Niepowodzenie całkowite
1994	16%	53%	31%
1996	27%	33%	40%
1998	26%	46%	28%
2000	28%	49%	23%
2002	34%	51%	15%
2004	29%	53%	18%
2006	35%	46%	19%
2009	32%	44%	24%

Source: Based on Czarnacka, Chrobot [2006] supplemented by Lee et al. [2010]; Standish Group [2006].

The data contained in the Table 1 show that the share of successful projects has increased from 16% in 1994 to 31% in 2009 and the interest of failure projects has decreased from 31% in 1994 to 24% in 2009.

The results of systematic studies show that an extremely important task is an effective implementation of project management supporting tools which can reduce the level of treats that can occur during the final parts of system implementation processes.

In the publications [Drelichowski, Parafian 2008; Drelichowski, Parafian 2009ab] the study's results have been presented. They contain the effectiveness verification of the decisions that have been taken by the Corporation Board that have been consisted on parallel implementation of PRINCE2 Methodologies and AIM

(Application Implementation Method) for ORACLE e-Business Suite integrated system implementation in a chemical industry Corporation.

The verification of the assumptions have been performed with the use of the statistical analysis of the compatibility of the planed and real times of tasks implementation within the individual modules of integrated system with the use of t-Student test for the combined observations with compliance in normal distribution.

The verification of normal distribution of duration series of certain tasks required to use the Shapiro-Wilk test [Klimek, Unold 2011]. It was found that the two implementations of the integrated management system which were conducted with parallel application of PRINCE2 Methodologies and ORACLE AIM have been completed within the budget and have provided the essential functional requirements.

In addition, the implementation in the first object has been completed within the planned schedule but it has exceeded the planned duration in the second object.

This analysis allowed to conclude that the implementation in the first object has been successfully completed as discussed in detail in publications [Drelichowski, Parafian 2008; Drelichowski, Parafian 2009ab].

The conducted and published research shows that the achievement of new ERP ORACLE integrated systems standards implementation strategy requires the utilities to support this process by PRINCE2 and AIM ORACLE management support tools application.

The results presented in Table 1 confirm that the application of tools that effectively support the management process has a significant influence on the time and costs of ERP systems implementation process in the production departments of international corporations and the Board realization strategy of this process seems to be completely justified.

3. The analysis of the ERP applications effectiveness in three different organizations

The research objects which have been discussed in the literature [Drelichowski, Stawicka, Cilski 2010; Drelichowski, Żółtowski, Mierzejewski 2011; Drelichowski, Piechowicz 2011] illustrate the basis for the efficient management support appropriate selection and operation of integrated ERP systems in the conditions of significant diversity of changes dynamics that appear in these organizations.

The MOVEX ERP system solutions which have been presented in the paper [Drelichowski, Piechowicz 2011] have been related to the international corporations UNICONFIG Lafarge Cement plc. – Lafarge Cement Plant in Bielawy. The IT application standard which was discussed in the report reflects the corporate standards within the MOVEX ERP system is supplemented by CRM, SCM and MAXIMO machinery exploitation support system.

The efficient exploitation of the mentioned IT systems provides an efficient implementation of the functions of procurement, manufacturing, logistics, sales,

customer service and a high level of machines reliability provided by MAXIMO system.

Efficient operation of these systems provides efficient implementation of the functions of procurement, manufacturing, logistics, sales and customer service and maintaining a high level of fitness machines provided by MAXIMO system.

The consequent strategy of development and implementation of organic production is associated with improvement in productivity parameters of technological processes and product quality support the leading position maintenance of two Polish companies LAFARGE Cement Plant which is located in Poland.

The second company is represented by the manufacturer of railway vehicles PESA Bydgoszcz plc. The company produces trams, multisection railway sets for suburban traffic and for long-distance traffic, as well as the rail buses for local communications.

In the article [Drelichowski, Stawicka, Cilski 2010] the new solution approach has been introduced in the area of knowledge organization and transportation management as a method of compensating the dynamic development results based on PESA Bydgoszcz plc. The dynamic changes which have been permitted to define the stepping out in period of unusual dynamic development of the industry, the thresholds defeating which stood in proper time with the basis of effectiveness rise present enterprises, the administered for help of the newest methods of management among the organizations.

The first threshold of development infrastructure was developed and applied in common management practice of the newly created company PESA plc in the planning and accounting system through the principles of budgets controlling which would have ensured the education of managers and company crew in the area of cost-effective business.

Because of the insignificant development financing sources, it was necessary to acquire the skills of effective project development for gaining the external financial sources as quick as it was possible.

They were essential to enable the opportunity to create new designs and technologies for manufactured products, including the financing of the implementation phase of their prototypes.

The possession of own prototypes allowed to test their utility value with regards to certain users requirements. Some of these users have organized the tenders for short product series offered by PESA Bydgoszcz plc.

Those experiences which were gained in extremely high stress circumstances allowed to take part in several tenders for long series supply for the domestic and international companies (i.e., Ukraine, Italy).

At this stage the new infrastructural challenge have appeared which have conditioned the opportunity to fulfill the requirements of implementation and maintenance of repeatability of highly complex products. It was caused by the low level of IT systems implementation at that time.

In this part of company development process, the decision of the rapid implementation of the tender selected integrated system IFS have been taken.

The pressure of the gap which appeared as the result of integrated system implementation delays, was caused by the lack of funds which were essential for this purpose realization and meant that in the six months the code base and fundamental processes specification have been prepared and developed.

It allowed the creation of customized system implementation for the requirements of PESA plc. Because of the two-generation distance between the IFS system in relation to the approaches which were applied at that time [Kisielnicki 2008], the implementation was established in IFS system on 1 January 2008 without the parallel exploitation period of both systems.

The significant effort of the entire crew was essential to succeed and overcome that infrastructural threshold. It created the conditions for effective management of serial production processes rather than a repair services.

The problems that have been widely discussed in Drelichowski, Żółtowski, Mierzejewski [2011] touch the high efficiency obtainment of the inter-management online supply chain as a method of limiting the increase in stocks of materials have been in Figure 1 as the level of sales growth. The importance of information technology in the supply coordination problem solution at a high rate of production growth have been highlighted in the paper [Choe 2008].

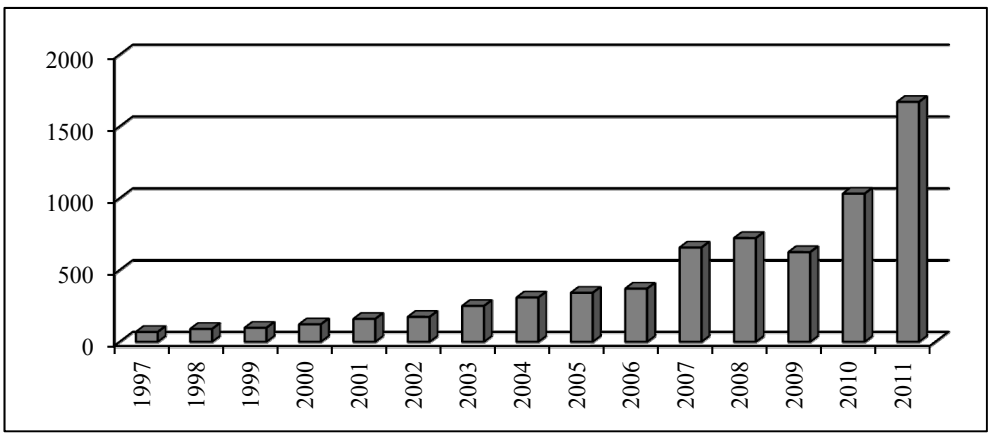

Figure 1. Total income in years 1997–2011 (in million PLN)

The support quality management systems includes primarily ISO 9001/2008 system that contains an internationally applicable principles of quality management, defined procedures for quality management in manufacturing processes and rules of certification and validation of performance audits of quality management systems.

The welded structures manufacturers should also have certified quality systems for welding industry for compliance with ISO 3834-2 and EN 15085.

With regards to quality management systems ISO 9001 or 9004 in rail vehicle manufacturers, it is also necessary to obtain certification of quality management related to the application of the International Quality Standard of Railway Vehicles IRIS.

The IRIS certification will be a necessary condition in all tenders which allow the purchasing of trams, tramway or railway traction units (both international and intercity).

The intensification of the production processed (presented in Figure 1) have forced PESA to implement JiT (Just in Time) as the production control and management standard.

PESA has fulfilled this condition in the full range.

The third research object was represented by the company of the SME sector in the printing industry – POZKAL Inowrocław [Drelichowski, Stawicka, Cilski 2010]. It has provided data which have allowed the effective implementation of the ERP system evaluation which is related with controlling processes and the model implementation of BI solutions.

It was essential to refine the form of cooperation with the founder of the new implementation system to define another, usually not well précised substantive issue.

The identification of the lack of a coherent and unambiguous code database in the range of terminology and quality of construction and technological parameters which have caused the frequent occurrence of multiple names for the same processes for the one technological process.

The technological content collections organization required the 9 months period of technical services and IT planning performance. As a result, the technological dictionary contains 10 terms instead of 116 that have been used before.

The modification of the structure of technological collections and order's planning processes was executed within the ERP CDN XL system provided by COMARCH. It was supplemented by additional modules required by POZKAL, i.e., payroll, warehouse, purchasing and sales supported by CRM system.

The presented solutions have ensured the efficient implementation of contractor support functions and have provided the opportunity of flexible services with regards to the contractor expectations.

The financial and accounting system which include the efficient function of payment and invoices settlement with the modules of fixed assets and controlling in the ABC (Activity Based Cost) version, have provided an efficient processing of data in the area of creation and updating processes of information transaction.

The implementation of modernized version of the ERP system was the basis for the implementation of business intelligence systems. One of the essential objectives of an analytical system formation was the ABC approach implementation. This objective has been achieved.

The reports which have been presented in the following pages contain the information which have required the activity based costing implementation. The most of the presented reports have been based on OLAP cubes – "Model_PozkalABC" which acquires the source data from financial and accounting system, inventory system and production control system.

The allocators algorithms have been defined in the platform structure and in the IBIP platform that uses "Order Analysis" cube which have been rebuilt after 2 year period of exploitation

The first cube was based on studies and assumptions that have been tested with calculational data sheet, financial and accounting system. The second cube was constructed on the basis of the first one and have been expanded with additional dimensions of workflow system, OLAP cubes – payments analysis, sales and RCP. The reports which have been acquired from the system contain the costs that are presented with a negative value, while revenues are presented with a positive value.

The need of information content synthesis of the series of informational statements in strategic decision making process increases the importance of graphical output reports in the synthesis process.

4. The BI systems application stability determination factors in POZKAL company

The ERP system solutions for the company from printing industry which have been discussed, do not constitute the particularly innovative technologies but may provide the unique standard by the application of specific data processing organization. The controlling application based on ABC approach can be an example of more effective fixed assets management approach exploration. The tree year experience which have been gained by effective exploitation of data warehouse and OLAP tools for operational, tactical and strategic decision support can even represent a higher value.

The Figure 2 illustrates the most frequently used solutions of data processing organizations ranging from the formation of source documents by storing them in a transaction database, placing them in the data warehouse and generating reports with OLAP tools , data mining, or graphics output application. Figure 3 presents the solutions which have been implemented in the POZKAL company. There are some significant differences between the processing of the organization which have been presented in Figure 2.

The difference relates to an extremely important process of data warehouse solutions update, which is made at the end of the transaction processing day and provides the feedback and record's verification in the area of operational information. The registration data which is generated at the beginning of the following day can be a basis for the information processing by acquiring the data from data warehouse.

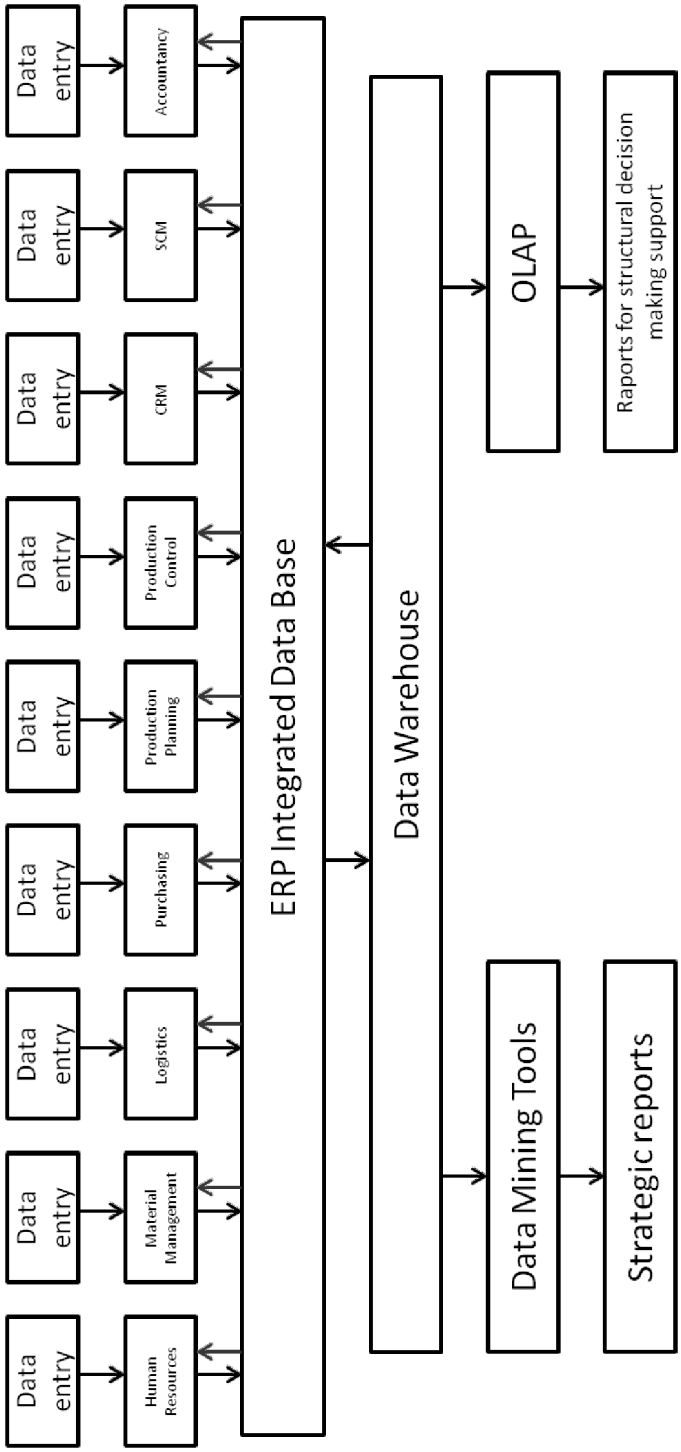

Figure 2. Typical integrated data processing system

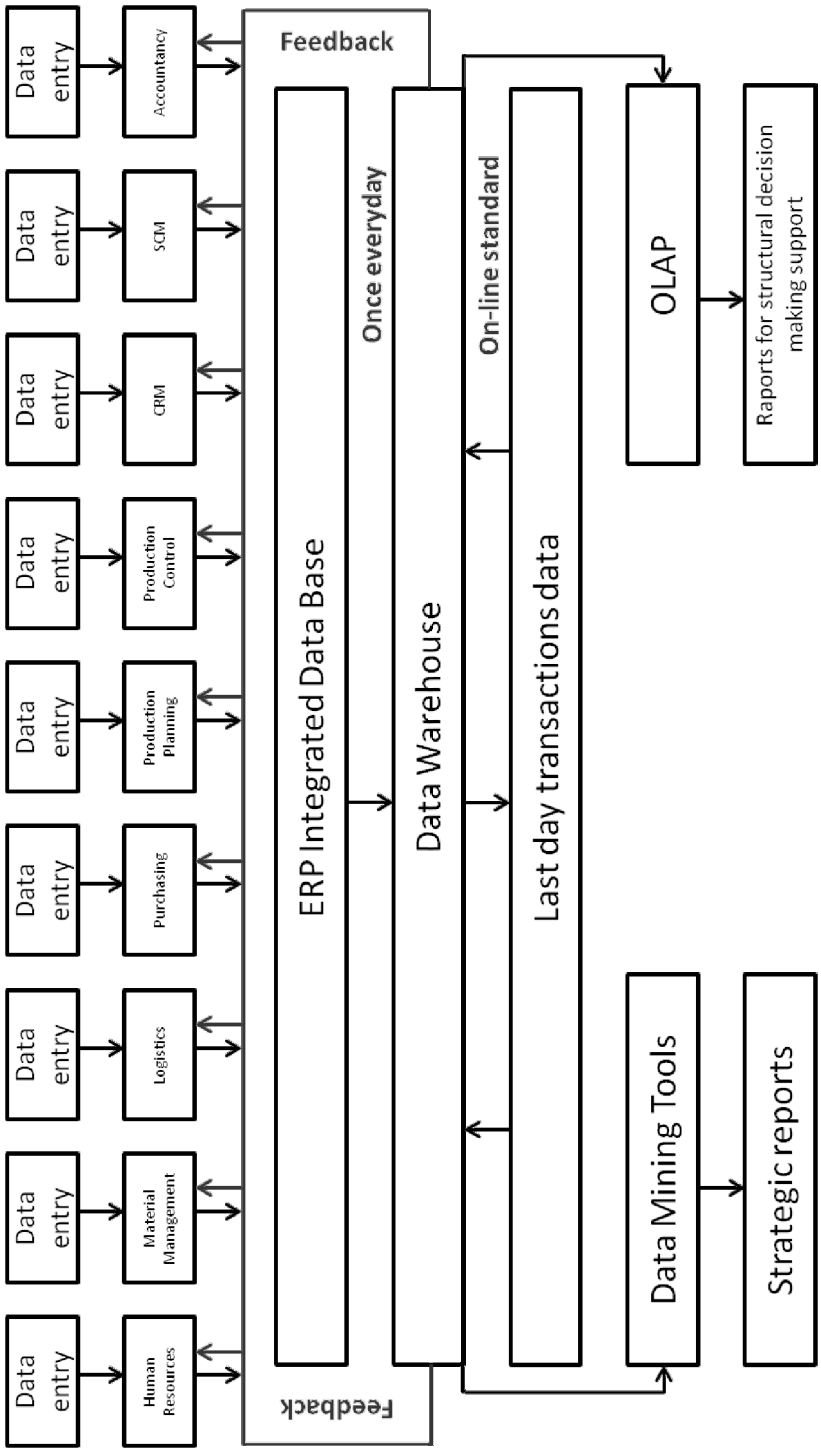

Figure 3. Integrated data processing system with feedback solution

The processed information can be a basis for creating source documents and accounting records state.

The solution that have been implemented in the POZKAL company seems to be fully evident but probably rarely applied in practice. This follows from the fact that the data warehouse application for the operational information formation may raise some doubts both in management crew and in remained staff.

These concerns may be justified because the decision of the complex data warehouse update process implementation as a single operational information supply in the organization (Figure 3) was risky and courageous.

The application of precise data warehouse updating algorithms that have been tested before implementation and its merging with the last day transactional data analysis could raise the doubts about the precision of these operations.

The results of the three-year application of this solution in the POZKAL company proved to be fully effective from the perspective of a long term implementation. The benefits of these solutions are obvious, because the transaction data records are valid only if they are regularly verified in all data processing functions within the organization.

The conclusions which have been formulated in this chapter can provide a basis to find out the explanation of the weakly intensive implementation or resignation from correctly designed and implemented BI systems in the organizations.

5. The Business Inteligence tools implementation in the bodies of public administration

The particularly significant role of the financial and settlement support process of the organizational units budgets in the area of earmarked funds play the BI systems which have been designed for monitoring tasks. They allow to provide the complex report system of the current condition at any subjective or generic cross section.

This type of information systems are usually supplied of data from already used accounting systems that could be modified in recent years.

If we accept the assumption that the creation of this type of system solutions required ORACLE data warehouse technology or ORACLE data mining application with the assistance of a professional implementation company, we can expect that the system implementation effects will be successful.

The author's experience shows that two examples of successfully executed and implemented system solutions have been interrupted after one year of exploitation.

Because the success has many parents – and the defeat is an orphan, it was difficult to find out the reasons of resignations from the correctly implemented and developed system solutions

The explanation of the interruption reasons of BI system exploitation seems to be completely realized by interpretation included in Section 4 of this paper (Figure 2 and Figure 3).

The most of the BI systems have been created by implementataion of information which was stored in transactional systems without direct feedback from the system user

In the stream of hundreds of thousands of the data records transaction per week or month, the code conversion errors of source data or data warehouse information flow are unavoidable.

In this situation the registration information which is stored in data warehouse and used mainly for BI system calculations become incompatible with the actual values. It determines the lack of confidence in the reports received by the system users and leads to the resignation from further BI system exploitation.

The implementation of organization of data processing solutions which have been presented in Figure 3 seems to be apparently simple procedure. It is easier to establish together with the new ERP standard system which is related to data warehouse implementation and its supply from the registration reports storage that is essential for the information services of operational management support.

The implementation of this kind of solutions may cause the concerns of users who are located at the different levels of management hierarchy. To avoid this problem the determination of the representatives of the highest management levels is required (it occurred in the POZKAL company).

The lack of determination causes that more preferred implementations are these which don't provide the feedback from users of the operating management functions.

6. Conclusions

The synthesis of the published research results which have been made in this paper and have been carried out in a number of different corporations, was focused on the implementation of early identification of possible factors that can be critical to efficient implementation of ERP and Business Intelligence tools.

1. The quality and duration of the ERP system implementation process in the organization is ensured by the implementation of certain project management support tools (PRINCE, combined with ORACLE AIM) which has been presented in Drelichowski, Parafian [2008]; Drelichowski, Parafian [2009ab]; Hsieh, Wang [2007]; Kisielnicki [2008].

2. The consistent development of the functionality of the implemented ERP system (IFS Applications) in a highly dynamic development organization, allows the stability of the organization and together with internet applications development, the effective inter-organizational communication solution allow the JiT bulk supplies coordination, which occurred in PESA Bydgoszcz plc [Drelichowski, Żółtowski, Mierzejewski 2011; Uzoka, Abiola, Nyangeresi 2008; Youngberg, Olsen, Hauser 2009].

3. The ERP MOOVEX system implementation in the department of international corporation have been modified to the information requirements with the use of

organization culture which have supported the process [Drelichowski, Piechowicz 2011].

4. The synthetic analysis of operating experience from ERP system, data warehouse and OLAP tools in POZKAL company from Inowrocław have allowed to precise two models of system exploitation (Figure 2) with the feedback introduction that forces the information correctness in data warehouse and the model without feedback (Figure 2). The implementation of solutions which have been presented in Model II (Figure 3) allows to explain the reasons of abandonment of certain interesting systems which have contained BI tools after few months of exploitation, due to the fact that it was not guaranteed that registration records were compatible with data stored in the data warehouse.

References

Choe J., Inter-organizational relationship and the flow of information through value chains, *Information & Management* 2008, vol. 45, pp. 444–450.

Czarnacka-Chrobot B., *Typowe czynniki niepowodzenia w realizacji informatycznych przedsięwzięć projektowych – spojrzenie Standish Group*, [in:] M. Miłosz, J.K. Grabara (Eds.), *Dylematy zarządzania projektem informatycznym*, Polskie Towarzystwo Informatyczne, Katowice 2006.

Drelichowski L., Parafian A., *Uwarunkowania wdrożenia zintegrowanego systemu zarządzania (ERP) na przykładzie wiodącego przedsiębiorstwa branży chemicznej*, Studia i Materiały PSZW nr 17, Bydgoszcz 2008, pp. 47–58.

Drelichowski L., Parafian A., *Using the Rollout Methodology during the ERP Systems Implementations in Foreign Countries*, Studies & Proceedings PSZW nr 20, Bydgoszcz 2009a, pp. 23–31

Drelichowski L., Parafian A., *Application Analysis of Prince 2 and AIM ORACLE as Tools Stabilizing the Process of ERP System Implementation*, Studies & Proceedings PSZW nr 24, Bydgoszcz 2009b, pp. 17–25.

Drelichowski L., Czynniki determinujące zastosowanie narzędzi Business Intelligence w sektorze MSP oraz zarządzaniu regionalnym, *Zeszyty Naukowe US w Szczecinie*, *Studia Informatica* 2009a, nr 24, pp. 111–122.

Drelichowski L., *Narzędzia wspomagania wdrożeń systemów zintegrowanych jako źródło przewagi konkurencyjnej adaptacji do zmian zachodzących w otoczeniu*, Komputerowe Systemy Zarządzania WN WZ UW, Warszawa 2009b, pp. 155–166.

Drelichowski L., Stawicka M.,. Cilski B., *Budowa Międzyregionalnych Hurtowni Danych i rozwiązań automatycznych analiz cenników i kosztów działalności firm usług komunalnych dla potrzeb władz samorządowych*, Studia i Materiały nr 25, Polskie Stowarzyszenie Zarządzania Wiedzą, Bydgoszcz 2010, pp. 42–53.

Drelichowski L., Żółtowski M., Mierzejewski J., Międzyorganizacyjne rozwiązania komunikacji zarządzania wiedzą jako metoda kompensowania skutków dynamicznego rozwoju PESA Bydgoszcz SA, [in:] *Wiedza i komunikacja w innowacyjnych organizacjach*, UE Katowice 2011, pp. 110–121.

Drelichowski L. Piechowicz A., *Rozwiązania logistyki, technologii informacyjnych i ochrony środowiska w Lafarge Cement S.A. – Cementowni Lafarge w Bielawach*, Studia i Materiały nr 40, Polskie Stowarzyszenie Zarządzania Wiedzą, Bydgoszcz 2011, pp. 107–119.

Hsieh J.J.P.A., Wang W., Explaining employees' extended use of complex information systems, *European Journal of Information Systems* 2007, vol. 16, no. 3, pp. 216–227.

Kisielnicki J., *MIS Systemy Informatyczne Zarządzania*, Placet, Warszawa 2008.

Klimek G., Unold J., Wiki jako nowoczesne narzędzie zarządzania wiedzą, [in:] Wiedza i komunikacja w innowacyjnych organizacjach, UE Katowice 2011, pp. 172–181.
Kobis P., Poziom informatyzacji dużych przedsiębiorstw w Polsce w aspekcie wykorzystania grupowych technik wspomagania decyzji oraz technik multimedialnych, [in:] *Wiedza i komunikacja w innowacyjnych organizacjach*, UE Katowice 2011, pp. 208–226.
Koronacki J., Mielniczuk J., *Statystyka dla studentów kierunków technicznych i przyrodniczych*, Wydawnictwo Naukowo-Techniczne, Warszawa 2006.
Kwahk K.Y., Lee J.N., The role of readiness for change in ERP implementation: Theoretical bases and empirical validation, *Information & Management* 2008, vol. 45, no. 7, pp. 474–481.
Lech P., 80/20 role in ERP system implementation – A case study on maximizing ROI, [in:] *Preceedings of the 11th European Conferenceon Information Technology Evaluation*, Genoa 2004, pp. 342–352.
Lee D.H., Lee S.M., Olson D.L., Chung S.H., The effect of organizational support on ERP implementation, *Industrial Management & Data Systems* 2010, vol. 110, no. 1–2, pp. 269–283.
Standish Group International Inc., *CHAOS Report 2006*, March 2006.
Standish Group International Inc., *CHAOS Report 2009*, March 2009.
Shih Y.Y., Huang S.S., The actual usage of ERP systems: An extended technology acceptance perspective, *Journal of Research and Practice in Information Technology* 2009, vol. 41, no. 3, pp. 263–276.
Umble E.J., Haft R.R., Umble M.M., Enterprise resource planning: Implementation procedures and CSF, *European Journal of Operational Research* 2002, vol. 146, no. 2, pp. 241-257
Uzoka F.M.E., Abiola R.O., Nyangeresi R., Influence of product and organizational constructs on ERP acquisition using an Extended Technology Acceptance Model, *International Journal of Enterprise Information Systems* 2008, vol. 4, no. 2, pp. 67–83
Youngberg E., Olsen D., Hauser K., Determinants of professionally autonomous end user acceptance in an Enterprise Resource Planning System Environment, *International Journal of Information Management* 2009, vol. 29, pp. 138–144.

OCENA EFEKTYWNOŚCI SYSTEMÓW ZINTEGROWANYCH I NARZĘDZI *BUSINESS INTELLIGENCE* NA BAZIE PRZYKŁADÓW ICH ZASTOSOWAŃ

Streszczenie: Ocenę efektywności zastosowań zintegrowanych systemów klasy ERP oraz narzędzi *Business Intelligence* przeprowadzono w pracy poprzez analizę przykładów ich wykorzystania w badanych organizacjach w okresie pięciu lat. Wprawdzie badane obiekty różniły się zdecydowanie skalą i rodzajem działalności, jednak każda organizacja stosowała zaawansowane i doskonalone technologie informacyjne. Analiza sukcesów oraz zaskakujących porażek pozwoliła sprecyzować kluczowe czynniki powodzenia lub porażki w zakresie efektywności zastosowań narzędzi BI w zarządzaniu. Stwierdzone zasady zapewnienia bezwarunkowej zgodności zawartości hurtowni danych z bazami danych transakcyjnych stanowią zdaniem autora warunek konieczny długookresowego sukcesu zastosowania BI w procesach podejmowania decyzji. Rozwiązania takie zapewnić może proponowany w pracy system organizacji przetwarzania danych skutecznie zweryfikowany w wieloletniej eksploatacji w przedsiębiorstwie poligraficznym POZKAL w Inowrocławiu. Takie rozwiązanie wymusza zgodność baz danych transakcyjnych z zawartością hurtowni danych często niedoceniany przez autorów publikacji z tej dziedziny.

Słowa kluczowe: systemy zintegrowane klasy ERP, narzędzia *Business Intelligence* (BI), system organizacji przetwarzania danych.