

USE OF POST-DEPLOYMENT INFORMATION TO IMPROVE THE EFFECTIVENESS OF IT SYSTEMS IMPLEMENTATION THE CASE OF POLISH SMEs

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Abstract:

Nowadays, systems information plays an important role in the functioning of almost all business organizations. IT tools improve the performance of internal processes, but also contacts with customers, cooperators and government units. Despite the high rate of computers and the Internet usage in Polish small and medium-sized enterprises (Giannakouris & Smihily, 2013, p. 2), it turns out that the level of effectiveness of the implementation projects and the associated efficiency of the deployed systems is relatively low. The result of implementation process depends on many economical, technical, organizational, or social determinants (McLeod & MacDonell, 2011, p. 24.2). The key success factors should include the knowledge and experience of implementation team members but also communication skills and position of project leader. Becomes important, therefore, to examine how companies collect, store and use information from the previously executed implementations in order to improve future work. This paper presents the results of research conducted among 103 Polish companies on the forms and usage of collected documentation by two parties involved in the implementation process: providers and recipients. Analysis presented in the article is a component of a broader research conducted by the author in the years 2011-2013 on the effectiveness determinants of IT systems implementation in the Polish SME sector. The article includes a characteristics of the forms and the use of implementation documentation, stresses the differences in the area of documentation usage by providers and recipients of IT services.

Keywords: IT deployment documentation, IT implementation effectiveness, SME

1. EFFECTIVENESS OF THE INFORMATION SYSTEMS IMPLEMENTATION

Information systems play an important role in the functioning of almost all businesses (Nowduri & Al-Dossary, 2012, p. 125). The statistics (Kraska, 2010, p. 5) shows that as far back as in 2008, 99.9% of large, 99% medium and 93.8% of small businesses work was carried out with the use of computers. 99% of Polish companies also had access to the Internet (Giannakouris & Smihily, 2013, p. 2).

Information systems are used both, in supply, production and sales areas. Act as a stimulator of economic activity, fast decision-making, rapid development and expansion of businesses. Make management more efficient. IT tools become the link between the company and its cooperators and customers, integrate the business units in one coherent body.

To fulfill the needs and help the company in achieving the objectives the system has to be properly selected (Shaul & Tauber, 2013, p. 55:18) and then implemented. Often, the quality of work related to the system selection, designing procedures to adapt it to the specific requirements of individual companies determines the proper functioning and as a result, smooth functioning of the company.

There can be stated that implementation is a process of starting using something in practice. Deployment can therefore be defined as one of the stages of the system life cycle involving the development and an introduction to the functioning of it in the enterprise (McLeod & MacDonell, 2011, p. 24.35). The implementation process can be divided into the following stages: preparation of documentation, preparation of the environment, adaptation of the system and the organization to the operation stage.

Despite the important role of information systems in the enterprise, many IT projects fail. A lot of the implementation procedures do not allow to achieve objectives, due to system low capabilities, but also improper use. Becomes important, therefore, to answer the question, what aspects determine the effectiveness of the information system implementation, how to increase the effectiveness of IT systems implementation in order to minimize costs or maximize the effects of the planned expenditures.

Effective implementation of the information system requires answers to three linked questions:

- What factors contribute to or hinder the implementation?
- What action should we take in the event of the above factors?
- What determines the effectiveness of such actions?

Thus, the effectiveness of implementation is determined mainly by adequate preparation of the deployment process, including the identification of multidimensional success factors (Shaul & Tauber, 2013, p. 55:3), (Hossain & Jahed, 2010, p. 63) and barriers of implementation, and planning appropriate responses in the event of a situation positively or negatively affecting the level of effectiveness of the implementation. It is also necessary to develop mechanisms to monitor the effectiveness of performed tasks so that it was possible to make a deliberate response to emerging opportunities or threats.

Proper preparation of the implementation process requires extensive knowledge and skills not only in the area of performing the deployment processes, the operation of the enterprise, but also in the field of functional and technical specifications of the implemented software and company's IT infrastructure. This kind of knowledge is possessed by implementation team members (Metrejean & Stocks, 2011, p. 2), who may also be assisted by external experts. The expertise may result from previously implemented projects. However, knowledge alone is not enough; the lower effectiveness of the implementation processes may result from (Celjo et al., 2011, p. 84):

- lack of sufficient funds,
- lack of vision of the final state,
- undefined key success factors,
- lack of process orientation,
- insufficient support of the authorities and employees,
- lack of changes acceptance,
- inadequacy of technology to the needs of the enterprise.

Not only the technical aspects (technical infrastructure, the characteristics of the implemented system, expertise of implementation team members) determine the effectiveness of the IT system implementation. Organizational factors play also important role. Different groups of people involved (McLeod & MacDonell, 2011, p. 24.4), have a divergent knowledge and skills (Metrejean & Stocks, 2011, p. 2), different point of view (McLeod & MacDonell, 2011, p. 24.9), represent different levels of risk aversion. Therefore, it becomes important to motivate employees so that the activities carried out during the implementation were performed without resistance, almost automatically. Communication and information is also the key factor. It enables the unification of aims and better cooperation of entities involved.

An important factor stimulating the effectiveness of IT systems implementation is adequate selection of the implementation team. The roles of individual team members are usually specified in the methodology document, but the challenge is to have the right people in the right roles. Crucial role for the effective IT implementation plays a selection of a suitable leader with both strong technical and interpersonal skills (McLeod & MacDonell, 2011, p. 24.31), endowed trust of the other team members and supported by the enterprise management.

A collection of knowledge in the form of implementation methodology, which is usually a set of good practices arising from the previous implementation processes (McLeod & MacDonell, 2011, p. 24.31-24.32). It characterizes also the way of communication and documentation of the work. Deployment requires the preparation of appropriate documentation: implementation plan, milestones characteristics, closing protocols. Creating documentation is often very labor-intensive activity, often conducted in parallel to the real implementation work. Therefore, it is necessary to prepare such patterns to keep documentation development just in time and with minimum effort. It becomes possible using document templates, electronic knowledge bases or automatically generated repositories such project mailing boxes design.

Detailed documentation of the implementation pays off especially in emergency situations, unexpected change in project management, a sudden change in the situation of the company. Developed documentation enables smooth taking charge by a new person or correcting purposes, and adapt them to the new realities. Bureaucracy of the implementation process makes the deployment effects become visible after some time, however, reduces the risk of failure. Practice shows that the project implementation is carried out generally in the blended form consisting of meticulous planning and documenting whilst allowing freedom, which stimulates manifestation of new initiatives. The practice also indicates that the implementation processes participants do not like and do not create accurate and up to date documentation.

The process of system implementation can be effective when deployed system performs all designed objectives in a cost-effective and reasonable way. The social environment of the organization must also accept implemented system. Determination of the level of aims achievement is possible mainly by comparing the results of performed tasks with the provisions (objectives) described in the implementation documentation.

In view of the many factors influencing the effectiveness of the implementation process in the enterprise it is necessary to develop methods and tools to enable its objective assessment. Evaluation of implementation can be carried out based on the Balanced Scorecard (Kim et al., 2012, pp. 180-181) developed by R. Kaplan and D. Norton (Balanced Scorecard Basics, 2014) (tab. 1).

Table 1: The financial and non-financial indicators used by The Balanced scorecard

<p>Financial perspective:</p> <ul style="list-style-type: none"> - budget control, - payback period calculation, - cost to benefit ratio method, - method of internal rates, - a set of figures, - value in use analysis, - the balance of pros and cons. 	<p>Customer perspective:</p> <ul style="list-style-type: none"> - gathering information (formal documents), - interviews, - surveys, - analysis of quantitative indicators.
<p>Internal business processes perspective:</p> <ul style="list-style-type: none"> - a set of figures, - the balance of pros and cons - process monitoring. 	<p>Learning and growth perspective:</p> <ul style="list-style-type: none"> - observation, - discussions with co-workers, - surveys, - set of quantitative indicators.

Source: Lent, 2005, p. OW-1.

Implementation of the system is therefore a very complex process dependent on many: economical, organizational, social and technical factors. Identifying and controlling the above determinants allows to increase the efficiency of the implementation process but also involves additional costs, extra time and effort required to prepare appropriate implementation documentation.

Information contained in the documentation articulates the needs of the company, fixes goals, but also becomes some kind of deployment work accelerator, allowing for precise determination of the level of work effectiveness.

However, this paper focuses only on a narrow group of factors that influence the effectiveness of the implementation focused on the problem of documenting the historical implementation processes and utilization of collected information in order to improve the performance of future deployments.

2. THE RESEARCH METHOD

2.1. Purpose and course of the research

The main aim of the whole research carried out by the author was to identify and determine the impact and the interrelationships between the effectiveness factors of IT systems implementation in the enterprise.

This paper is a part of data analysis and conclusions coming from the study on documentation forms and the way of using collected implementation processes documentation. The purpose of the part of the research presented in this article was to answer the questions:

- Whether and how IT implementation processes carried out by small and medium-sized enterprises are documented?
- Whether and to what extent the documentation collected during the past implementations is used in future deployments?
- Are there differences in the scope and use of implementation documentation between providers and recipients of IT services,
- What sources of information available in the company allow to improve the implementation process?

Achieving these goals required to construct and verify the research tools in the form of an interview scenario and questionnaire.

In the process of constructing and validating the research tools author used the information found in Polish and English literature and the author's own experiences in the implementation of information IT systems in small and medium-sized enterprises, as well as local government units. Collected knowledge was also supported by the expertise of project managers, implementation consultants, system engineers, and developers who are experienced employees of companies producing and implementing software to support business management.

The studies have been carried out in enterprises providing implementation services, as well as companies of the SME sector, which deployed IT system. The subject of study was only the small and medium-sized clients. Intentionally omitted micro-enterprises, as in the opinion of IT industry analysts, the full IT deployment procedures in this type of companies are rare. The research was carried out in four stages: preparation, qualitative research, quantitative research, analysis of the results.

This article presents part of the results of research concerning the implementation process documentation, which are part of a broader analysis of the effectiveness determinants of information systems implementation in the SME sector. All qualitative and quantitative research was conducted in the period from March 2011 to June 2013. Stage of qualitative research was preceded by cycle of meetings with decision-makers in enterprises to present the topic and select the research participants. The starting point for quantitative research was to develop a questionnaire and its critical analysis by the qualitative research participants.

Detailed planning of the course of (two-stage) research process and cooperation with IT specialists enabled the precise control of the study course, and, as it turned out during the analysis stage, allowed for the preparation (quite broad) research tools enabling to obtain complete and multi-dimensional data, characterizing the process of IT systems implementation in small and medium-sized enterprises.

2.2. Characteristics of research sample

During the step of quantitative research, 126 enterprises were examined. As a result of the data verification, due to incomplete data and failure to meet the research requirements, 23 questionnaires were rejected, mostly information obtained from micro and large enterprises, which implemented the IT system. Discarded data will become a starting point for planned comparative study on perception of the IT systems implementation process by the enterprises of various sizes.

Finally, data analysis based on responses collected from 103 companies - providers and users of implementation services. Characteristics of the surveyed companies were presented in table 2.

Table 2: Characteristics of the surveyed companies (n=103)

	Criterion	Number	(%)
Status	provider	59	57,3
	recipient	44	42,7
The employment	1-9 employees	13	12,6
	10-49 employees	33	32,0
	50-249 employees	49	47,6
	more than 249 employees	8	7,8
Sector (more than one answer)	production	38	36,9
	trade	37	35,9
	services	86	83,5
The main area of activity	manufacturing	5	4,9
	production and supply of energy	2	1,9
	building industry	2	1,9
	wholesale and retail trade	12	11,7
	transportation and storage	1	1
	information and communication	23	22,3
	financial and insurance activities	7	6,8
	other professional, scientific and technical activities	7	6,8
	business administration services	2	1,9
	public administration and defense	6	5,8
	education	2	1,9
	health care and social assistance	10	9,7
	other service activities	24	23,3
The scale of the business	local	9	8,7
	regional	12	11,7
	national	44	42,7
	international	38	36,9
Planned expenditures on IT	at a higher level	33	32
	at the same level	33	32
	on the lower level	12	11,7
	no data	25	24,3
Form of IT system usage	installation on-premise/self-service	68	66,0
	installation on-premise/external service	18	17,5
	outsourcing	17	16,5
The prospect of the enterprise in the next three years	limitation of activity	0	0,0
	maintaining the current position	29	28,2
	development	74	71,8

Source: own work.

The study sample was divided into two sets. The first group consisted of companies that provided implementation services, created demand in the IT market. The second group consisted of enterprises generated demand for implementation services. Among surveyed the 59 companies were providers (57.3%) and 44 recipients (42.7%) of implementation services.

The majority of the sample were medium-sized enterprises (47.6%) and small enterprises (32%). Although the study involved only the implementation of information systems in small and medium-sized enterprises, the analyzed data contained also empirical material derived from micro and large companies (a total of 20.4% of responses). An analysis of the completed questionnaires showed that these data were obtained from the companies (providers) realizing implementation projects in small and medium-sized entities, thus were able to participate in the study.

The vast of respondents (83.5%) were service providers. The main area of their activity were: other services (23.3%), information and communication (22.3%), wholesale and retail trade (11.7%) and health care and social assistance (9.7%).

Most respondents operated on a national and international scale, respectively 42.7% and 36.9%. Companies usually had systems installed on-premise, and supported by internal IT departments (66%).

In the opinion of research participants, in the next three years, the enterprise plan was to develop the business (71.8%), only 28.2% of respondents indicated a desire to maintain the current market position. None of the respondents stated that the company in the near future plans to reduce operations. An indicator of the enterprise development desire may be information that 64% of respondents said that the planned investment in IT will be maintained at least at current levels or will increase.

The Implementation process of IT system can be conducted in different ways, depending on the nature of the entity, in which the system is deployed. Different members of the implementation team can perceive even the same implementation process differently. As part of this study, therefore, gathered detailed information not only about the enterprise, but also about the characteristics of the people involved in the implementation.

Among the respondents male were predominant part (86.4%), which is consistent with the general trend of employment in the Polish IT industry. 88.3% of the respondents had a university degree while the remainder had secondary school education.

Among the respondents, an overwhelming majority of 89.3% worked in the current enterprise no longer than 10 years. The analysis of the number of completed IT implementation projects shows that most of respondents completed from 1 to 3 deployments (43.6%) and from 4 to 10 deployments (29.1%). An important fact that clearly demonstrates the experience and skills of the respondent is the number of managed IT implementation projects. 22.4% of respondents guided up to three deployments, while 13.6% were heads of up to 10 deployments.

The major part of the respondents were: developers, project managers, implementation consultants and support staff respectively 35%, 34%, 34%, 31.1%. Among the recipients, the largest group were system administrators (33%). Slightly smaller percentages were users of the system (26.2%) and key system users who are typically managers or directors of enterprise organizational units (18.4%).

3. THE USE OF IMPLEMENTATION PROCESS DOCUMENTATION – THE RESULTS OF THE RESEARCH

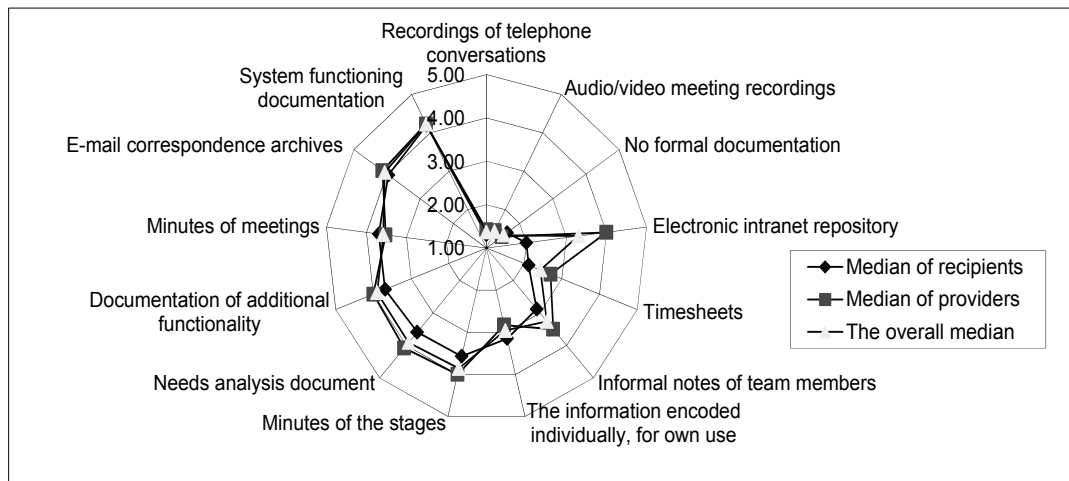
3.1. The main forms of implementation documentation

In order to examine opinion on how implementation processes was documented and how enterprises used the knowledge derived from previously implemented implementations, in the research survey placed a number of questions concerning the impact of the method of implementations documentation on the level of process effectiveness.

By providing different definitions of the effective implementation, respondents, particularly representatives of recipients, expressed a clear opinion that the effective implementation has to include preparing and storing appropriate documentation. On the one hand it allows the full use and administration of the system during the operation phase, on the other hand collected information is necessary to develop standards for work with the system, but also the rules of the businesses operation supported by the newly implemented IT tool.

In the opinion of the respondents, implementation documentation takes the form of the description of system functionality, e-mail correspondence archive, large needs analyzes document and documentation of additional functionality, as well as formal meeting minutes. The average value on a scale of 1 to 5 (with 1 indicating a low value and 5 indicating a high value), for the above forms of documentation was at a level of at least 3.86 (picture 1).

Picture 1: The main forms of implementation documentation



Source: own work.

The least frequently used forms of documentation are audio/video meetings and telephone conversations recordings (Me \leq 1.43).

3.2. Differences in the scope of implementation documentation between providers and users of IT services

The study also made it possible to identify differences in the manner of preparation of implementation documentation by users and providers. Table 3 shows statistics on how the small and medium-sized enterprises document conducted implementation work.

Table 3: Documentation of the IT implementation processes in small and medium-sized enterprises (Mann-Whitney test)

Form of documentation	All respondents (n =103)	Providers (n=59)		Recipients (n=44)		Z	p
	Me	Me	Mean rank	Me	Mean rank		
System functioning documentation	4,22	4,23	52,57	4,20	51,24	-0,237	0,813
E-mail correspondence archives	4,07	4,14	53,99	3,96	49,33	-0,824	0,410
Needs analysis document	3,91	4,08	55,31	3,59	47,57	-1,346	0,178
Documentation of additional functionality	3,90	4,00	54,52	3,69	48,63	-1,027	0,304
Minutes (protocols) of the stages	3,86	4,00	54,88	3,57	48,14	-1,173	0,241
Minutes (protocols) of meetings	3,58	3,52	51,53	3,69	52,63	-0,188	0,851
Electronic intranet repository	3,30	4,00	60,26	2,00	40,92	-3,341	0,001*
Informal notes of team members	3,26	3,50	55,93	2,88	46,73	-1,588	0,112
The information encoded individually, for own use	2,96	2,83	49,25	3,15	55,68	-1,107	0,268
Timesheets	2,43	2,70	54,08	2,12	49,20	-0,843	0,399
No formal documentation	1,52	1,46	50,14	1,62	54,49	-0,841	0,400
Meeting audio/video records	1,43	1,45	52,14	1,42	51,81	-0,067	0,947
Recordings of telephone conversations	1,37	1,42	53,63	1,31	49,82	-0,783	0,434

Symbols: * – occurrence of statistical significance, Me – median, Z – statistics of Mann-Whitney test, p – level of significance.

Source: own work.

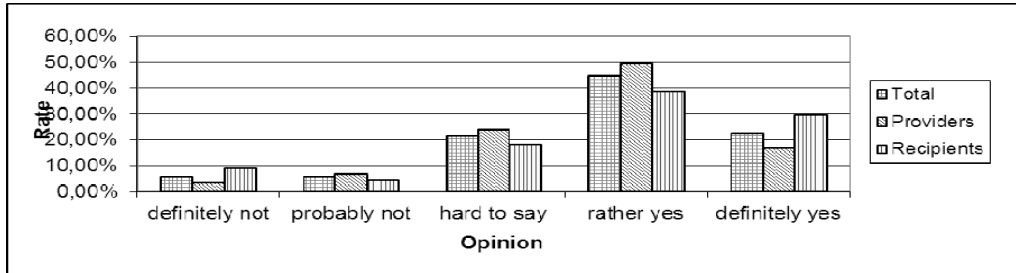
The above data clearly indicate converging opinions of providers (Me_{pro}) and recipients (Me_{rec}) on forms of prepared documentation of IT implementation work. Among the 13 surveyed forms of documentation, the author found only one statistically significant difference. Service providers more often document the progress of implementation work and present it in an intranet repository ($Me_{pro}=4.0$). For recipients median is at a much lower level ($Me_{rec} = 2.0$).

This discrepancy may result from the fact that in particular small businesses do not have an intranet tool, which could store repositories and knowledge base. On the other hand, the service providers operating in the IT industry use many solutions for rapid collection and exchange of information in electronic form, so that the information management is cheaper and more efficient. In the case of recipients who perform usually one implementation at the same time, collecting information about the implementation process can be realized using an e-mail correspondence archive. For companies that provide implementation services, realization of many projects in the short term results in the need to use tools for improving opportunities to collect, store, search and share the data, hence the greater percentage of using an electronic repositories available in the intranet.

3.3. Using post-deployment documentation to improve effects of further implementation processes

Respondents, both service providers and recipients of IT services, stressed the fact that the documentation of the implementation work conducted previously was used for new deployments realized by the enterprise (picture 2).

Picture 2: Usage of documentation from previously conducted implementations for new deployments



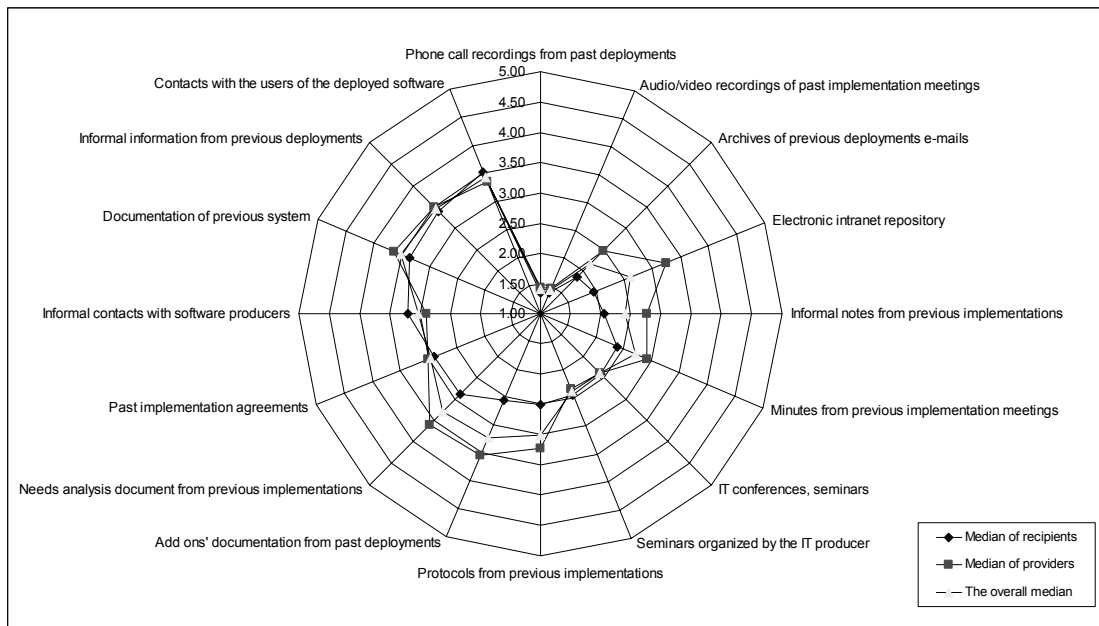
Source: own work.

According to the respondents, the manner and quality of the system documentation (Me = 3.65) and the manner and quality implementation procedure documentation (Me = 3.35) contributes to the effectiveness of performed deployment. Respondents stated that the need for precise documentation, although it was labor-intensive operation, it did not constitute a significant barrier in the course of ongoing implementation work. Development of appropriate implementation documentation was also important from the completion of implementation point of view. In the opinion of the respondents end of the IT system implementation process should take place after the development and verification of deployment documentation (Me = 3.27).

3.4. Available sources of information for the improvement of the implementation process

The respondents were questioned about main sources of information available in the enterprise, which helps to improve the effectiveness of the IT implementation process. Opinions about available sources of information from the providers' and service recipients' points of view were shown on **picture 3**.

Picture 3: Available sources of information for the improvement of the implementation process



Source: own work.

Received information shows that improving the realization of the deployment process was possible thanks to the use of functional documentation of previously implemented system (Me = 3.51), the information provided in an informal way from participants of previous projects (Me = 3.45), as well as through informal contacts with users of currently implemented system (Me = 3.43). The least used sources of information included conferences and industry seminars, archives of an email correspondence, as well as recordings of meetings and telephone conversations. The median for the above sources does not exceed 2.39.

While the little influence of audio and video recordings on the effectiveness of IT implementations is not surprising, merely due to the lack of availability of these materials. The analysis of low use of e-mail correspondence archives requires more discussion. Respondents stated that developing such archives was one of the main ways of collecting the deployment documentation. However, the use of this source of information turned out to be negligible. This may be because the e-mail archive contains a number of unstructured information (on average, from several hundred to several thousand computer letters per one implementation), generated automatically, that can be used in the present implementation process (for solving current problems). As time passes, it becomes more difficult to quickly find specific data, check its accuracy or relevance to the implementation. Consequently, performing e-mail correspondence analysis in order to improve future deployment processes becomes ineffective.

3.5. Differences in the perception of the sources of information that improve the IT implementation process

The research found significant differences between opinion stated by providers and recipients in the perception of the impact of various sources of information on the IT implementation effectiveness. Table 4 presents the sources of information available to the enterprise, allowing for improving the deployment process.

Table 4: Available sources of information for the improvement of the implementation process (Mann-Whitney test)

Source of information	All respondents (n =103)	Providers (n=59)		Recipients (n=44)		Z	p
	Me	Me	Mean rank	Me	Mean rank		
Documentation of previous system	3,51	3,63	54,56	3,36	48,57	-1,053	0,293
Informal information from previous deployments	3,45	3,49	51,93	3,39	52,09	-0,028	0,978
Contacts with the users of the deployed software	3,43	3,35	51,29	3,52	52,95	-0,292	0,770
Needs analysis document from previous implementations	3,29	3,59	57,58	2,88	44,51	-2,257	0,024*
Add-ons documentation from past deployments	3,22	3,54	59,17	2,56	42,39	-2,899	0,004*
Informal contacts with software producers	3,02	2,89	50,33	3,19	54,24	-0,674	0,500
Protocols from previous implementations	3,00	3,23	54,83	2,50	48,20	-1,145	0,252
Past implementation agreements	2,96	3,00	51,83	2,90	52,23	-0,068	0,946
Minutes (protocols) from previous implementation meetings	2,70	2,92	53,48	2,38	50,01	-0,600	0,549
Electronic intranet repository	2,61	3,24	57,77	1,96	44,26	-2,336	0,019*
Informal notes from previous implementations	2,40	2,76	55,56	2,05	47,23	-1,444	0,149
IT conferences, seminars	2,39	2,38	51,02	2,40	53,32	-0,400	0,689
Seminars organized by the IT producer	2,38	2,35	51,47	2,44	52,72	-0,217	0,828
Archives of previous deployments e-mails	2,16	2,47	55,38	1,85	47,47	-1,391	0,164
Audio/video recordings of past implementation meetings	1,42	1,45	52,96	1,38	50,72	-0,448	0,654
Phone call recordings from past deployments	1,40	1,44	53,50	1,34	49,99	-0,703	0,482

*Symbols: * – occurrence of statistical significance, Me – median, Z – statistics of Mann-Whitney test, p – level of significance. Source: own work.*

The main differences were related to the use of previous needs analysis documents ($Me_{pro} = 3.59$, $Me_{rec} = 2.88$), documentation of additional functionality ($Me_{pro} = 3.54$, $Me_{rec} = 2.56$), as well as an electronic repository published in the intranet ($Me_{pro} = 3.24$, $Me_{rec} = 1.96$). Service providers strongly emphasized the use of these sources of information to raise the level of implementation efficiency. While the increased use of electronic repositories by the providers can be explained by its greater prevalence and accessibility among enterprises providing implementation services, the use of needs analysis documentation should rather be explained in terms of the implementations frequency and timeliness of the data contained therein.

Companies providing implementation services perform simultaneously several deployments, conducting the projects of a similar specificity every few months. Enterprises that generate market deployment demand carry out the implementation projects once in several years. Accordingly, the information contained in the documents developed by the service providers are much up-to-date and more congruent to the current needs of the customer. Documents can therefore be easily transferred from one implementation to another. Significant is the fact that the authors of this documentation usually still work in the enterprise, so there is no problem with the interpretation of the data. Recipients' documentation of the previous implementation is much older, and can therefore be unsuitable for the current needs and requirements set by the company and the market. That fact is important especially for rapidly developing small-sized enterprises.

4. SUMMARY

Performed research indicates that the implementation of the information systems is a complicated process, which is influenced by both: economical, technical, organizational and social factors. The expertise of the deployment team members is one of the main factors determining the effectiveness of the implementation procedure ($Me = 4.3$) (see. McLeod & MacDonell, 2011, p. 24.17). Having technical knowledge, however, is not sufficient for a successful implementation. Equally important components are:

- having relevant experience ($Me = 4.34$),
- communication skills of the implementation team members ($Me = 4.26$),
- managerial skills of project leaders ($Me = 3.83$).

Effective realization of the implementation process also requires developing of the relevant documentation. Documenting the course of the work and the characteristics of the system is a labor-intensive operation, mostly disliked by the participants of deployment processes. Keeping adequate documentation enables full utilization and system administration in the operation phase, on the other hand, the collected information is necessary to develop standards of work with the system, but also the rules of the businesses operation supported by the newly deployed IT tool.

The performed study allows for conclusion that the information from the previously realized implementation projects are accumulated by IT providers and service recipients. Respondents highlighted the positive impact of the method and the quality of the documentation on the efficiency of the implementation procedure.

An important role for enhancing the effectiveness of the deployment plays information accumulated and communicated in an informal way by the participants of previous implementations. Crucial is also the knowledge obtained through informal contacts with users of currently implemented system.

Research showed that companies that provide implementation services during the realization of new projects often use the documentation prepared for the previously conducted deployments. Respondents also found that having a substantial knowledge of the functioning of the implemented system is not enough for effective implementation. Equally important is relevant experience, communication skills, as well as appropriate leadership.

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