

CHANGES IN IT PROJECT MANAGEMENT AWARENESS ACCORDING TO BUSINESS PROCESS MANAGEMENT EXPERTS' OPINION: COMPARATIVE STUDY 2017-2023

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Abstract

Purpose. The main purpose of this article is to compare experts' opinions over two time periods to examine the differences in IT project management awareness and perception. The study was based on opinions expressed in a survey conducted in 2017 and 2023 during symposium meetings related to business process management.

Methodology. The paper's methodology is based on a theoretical and research approach. The survey questionnaire was constructed using a literature analysis and the authors' own experience. The authors formulated a hypothesis addressing the issue of how awareness regarding IT project management has changed over the last five years. The main hypothesis was supplemented by auxiliary hypotheses concerning the variation regarding awareness of: the need to implement information systems into organizations, the need to apply process management within these implementations, and the determinants and effects of IT project management.

Main results. The main results and findings of the research were determined by the validity of the hypotheses using the Fisher-Snedecor test. In addition, differences in city and Euclidean distance indices were calculated, which indicated the directions of changes in experts' views on the place and role of project management. The results pointed to the existence of significant discrepancies between experts' awareness in 2017 and 2023. The conclusions obtained from the survey may have important implications for both business practitioners and educational purposes.

The theoretical contribution. Findings: the findings show the opinions of experts including individuals with a strong research interest and those with an academic background, and also incorporated respondents with substantial practical experience. Part of the respondents' competence was related to years of using traditional project management methods, which in some way also shapes the approach to agile and hybrid methodologies.

Practical implications (if applicable). The conclusion for future project management education at universities, consulting firms, specialized courses, etc. shows profiling in the direction of modern IT development trends correspond to the changes connected with strategies of modern mobile companies with remote access to the data, taking into account changes connected based on representatives from Generation Z, the demographic currently entering the workforce.

Keywords: process management; project management; organization information system; the impact of project management on the organization.

JEL codes: M10.

Introduction

Project management, a field of study and its methods emerged in a strictly practical domain. It encompassed various economic activity sectors, from the military and construction industries to business, culture, etc., ultimately including information technology (Szczepanska-Woszczyna & Gatnar, 2022). As the complexity of internal and external conditions for organizational operations increases, approaches to conducting business are shifting toward process management (Kerzner, 2022).

In addition, project management is developing in parallel with process management in the organization, which further complicates opinions on the joint development of these closely related fields (Donato, 2022; Henshall, 2023; Kochli, 2023; McDaniel, 2019; Team Kissflow, 2024).

Among them, IT projects are the most complex and expensive ventures; they have an interdisciplinary scope and are also "immersed" in the most cutting-edge technologies. At the beginning of this century, the management of these projects gained stability, reinforced by the status of two specific, seemingly universal standards that appeared to meet all possible requirements, rooted in classic project management methods, featuring an organized structure and established procedures, esp. in context of remote work (PM Alliance, 2024).

According to Standish Group (2021) by 2013, only 10-15% of projects implemented using these methods were fully successful. In response to this specific "ossification" of project management methods, twenty-two years ago the Agile Manifesto was created (PMI, 2017; DigitalAI, 2023; Soflab, 2023). Agile methods drew on the experience of the best traditional methods. After initial successes, when the rate of fully successful projects increased to nearly 40% (Guillory, 2022), further analyses have shown that the shift concerns projects in small and medium-sized enterprises. In contrast, relatively "large" projects are still implemented using traditional or hybrid methods (PMI, 2017; Soflab, 2023). This has led to the emergence of several developmental trends in project management in recent years (Cognilytica.com, 2023; Harrin, 2023; Holowka, 2016; Project Group, 2023; Work Automation Index 2022), which included: the application of artificial intelligence, the increased significance of agile and hybrid methods, the wider use of specialized software for process management in projects, and the increasing prominence of professional development and expertise among leaders of project teams (Harrin, 2023; Kuchta et al., 2017). This involves understanding fundamental concepts and evaluating phenomena associated with them. In the literature, this is a topic that is very rarely discussed, as the literature output and research mainly focus on the practical application of project management methods (Kerzner et al., 2022; Trocki & Buklaha, 2016), and, in terms of fundamental concepts, it often does not go beyond the conventional framework originating from the early 2000s (Kerzner, 2022). There are no comparisons that would be carried out over time, and the analyses conducted focus on the relationship between selected traditional and agile methods (Szelagowski, 2019), rather than a comprehensive picture of the attitude of experts to the changes taking place after the COVID-19 pandemic (Dziendziura et al., 2022; Lacova et al., 2022). Therefore, the study into the awareness of experts in this field (Błaszczak, 2022; Eurostat (2023) during dynamically changing development trends is a specific research gap that this article hopes to fill.

The main objective of this article is to examine the differences in experts' awareness (Marciszewski, 2011) concerning project management applied for the implementation of information systems within organizations, comparing two distinct periods in 2017 and 2023. The paper's research purpose is to compare experts' opinions in two periods to examine the differences regarding IT project management awareness and perception in two distinct periods in 2017 and 2023 before and after the COVID-19 pandemic. The main purpose of this article is to compare experts' opinions over two time periods to examine the differences in IT project management awareness and perception. The study was based on experts' opinions expressed in a survey conducted in 2017 and 2023 during symposium meetings related to business process management in Poland.

In this context, the authors define experts broadly as individuals engaged in various roles related to the development and implementation of information systems (business analysts, designers, programmers, implementers, testers, etc.), as well as long-time trainers and educators in this field, managers overseeing IT projects (e.g., project managers) and IT companies' executives (directors, board members, etc.). It is their awareness of both the current state and upcoming changes that will determine the development of project management in the coming years. Given the research gap in this area, the authors formulated questions aimed at discovering whether these trends are recognized by experts and how the situation has changed in terms of awareness of the transformations occurring in recent years. In particular, the survey focused on the possible changes in experts' awareness regarding their attitude towards the importance of implementing IT solutions in organizations and the areas in which, according to them, they yield the best results; the impact of process management in IT projects on project objectives during the digital transformation of the organization; the skills necessary for the proper use of process management in

projects; facilitators and barriers to the development of project management; effects of proper project management; organizational changes necessary for better project management in the organization and the attitude of the organization's management towards them; project management methodologies and elements of organizational culture which are most relevant to project management.

The above considerations have led to the formulation of the main research hypothesis in the article:

H0 – There is a significant discrepancy between experts' awareness of IT project management in two distinct periods in 2017 and 2023, i.e. before and after the COVID-19 pandemic.

The main hypothesis was supported by three auxiliary hypotheses regarding the existence of differences in terms of experts' awareness of:

H1 – There is a difference in terms of experts' awareness of the need to implement information systems in the organization in two distinct periods in 2017 and 2023.

H2 – There is a difference in terms of experts' awareness of the need to apply process management during the implementation of IT projects in two distinct periods in 2017 and 2023.

H3 – There are differences in experts' awareness of concepts, determinants, and effects of IT project management in two distinct periods in 2017 and 2023.

The authors surveyed to address the questions arising from this topic, and the most significant results are presented in this article. The responses allowed for determining whether the research hypotheses were confirmed, i.e., whether there were indeed significant differences in the awareness of experts regarding the issues presented above. The responses obtained in the course of the study will be used to verify the formulated hypotheses, and proving or disproving the hypothesis H0 directly relates to the core objective set forth at the beginning of this section.

The objective indicated in this paper is attained in the following manner. The second section provides a literature review that presents the current achievements in the field and establishes the research background for the presented studies. The third section contains a description of the adopted methodology, research procedures, and a description of the study sample. Next, the analysis of the obtained results, along with the interpretation and discussion of the differences, is presented. The final part of the work summarizes the obtained results, limitations arising from the adopted method, and directions for further research in this area. The conclusion for future project management education at universities, consulting firms, specialized courses, etc. shows profiling in the direction of modern IT development trends corresponds to the changes connected with strategies of modern mobile companies with remote access to the data, taking into account changes connected based on representatives from Generation Z, the demographic currently entering the workforce of Poland and others European Countries (Lacova et al., 2022; Meyer, 2020; Shpak et al., 2023).

Literature review

Awareness of project management depends on historically formed regulations, rules, opinions, and the course of implementation of these projects (Gabryelczyk et al. 2022). In this context, awareness is regarded as the perception of external phenomena related to IT projects and changes in their understanding based on one's knowledge or observations, or the environment, the evaluation and understanding of these phenomena, and predictions based on the identified phenomena (Holowka, 2016).

In the common perception, a project may be described as an effectively and methodically implemented undertaking (Dumas, et al 2018), understood as a sequence of complex but purposeful activities, carried out according to a specific procedure, an undertaking that is innovative, autonomous, deterministic, and carried out within financial, functional, time and quality constraints, and an autonomous venture which is executed with a certain amount of risk (Kerzner, 2022; Kerzner et al., 2022; vom Brocke et al. 2015) to satisfy customer needs (Darie et al., 2019; Kamprath & Roglinger 2011). A process, on the other hand, is most often defined as a set of interrelated repetitive activities that consequently help to achieve a specific goal, generally satisfying customer needs (Juchniewicz, 2019). Thus, by definition, these

concepts are similar, and in the traditional view, the main differences focus on unique endeavours or repeatable operations as well as comprehensive or individual/unit-based sets of tasks. Thus, project management is an integrated and unique set of decision-making activities conducted to achieve objectives, limited by available resources, performed according to specific methodologies (Chmielarz, 2015). Process management represents the entire set of activities concerning the planning and execution of a given sequence of activities within an enterprise to improve its operations - also executed using specific methodologies and tools (Trocki & Buklaha 2016). Contemporary projects shift the focus from dynamism and change management (Barnes, 2023; Morris & DeLapp, 1983) to dynamism (Szelągowski, 2019) guided by economic pragmatism; from pragmatism to knowledge management; from uniqueness to good management practices; from innovation to unconventionality guided by patterns; from risk threat to its minimization; from committed management to improving cooperation between teams and management, and from conflict resolution in the organization to cooperation aiming at minimizing and mitigating conflicts (Chmielarz, 2013). In the realm of process management, there is an evolving trend towards increasing the flexibility and adaptability of processes, moving away from a focus on stability and uniformity (Standish Group, 2015) and implementing automation guided by artificial intelligence mechanisms instead of simple automation to streamline processes across the organization, eliminating routine and traditionalism and encouraging managers' involvement to influence and improve process improvement (Work Automation Index, 2022).

The first issue that emerged in this context concerned the integration of artificial intelligence in project management, including the delegation of certain responsibilities traditionally held by project managers to AI systems (Alok, 2020; Enholm et al., 2022). A sizeable proportion of managers (86%) hold a favourable view of artificial intelligence, with a notable segment including those managers who have already adopted AI and reported tangible benefits. Among these respondents, 20% have observed enhanced efficiency and decision-making support. This includes using AI-powered platforms for forecasting and data visualization, outcome prediction, error reduction through pattern matching with successful models, and boosting project team performance with the aid of chatbots (Cognilytica.com, 2023). According to the report, more than half of the companies intend to implement chatbots (PMI, 2023; Thivemyway.com, 2023) within a year and a half, and 56% believe that their use can increase the effectiveness of projects and the commitment of team members to handling routine tasks.

Another aspect to consider is the increased role of agile practices in hybrid methodologies (PMI, 2017). The common perception is that traditional standards are typically employed for managing large-scale projects with substantial budgets and extensive scopes, and agile methods are applied for smaller-scale endeavours in small and medium-sized companies (DigitalAI, 2023). To enhance the adaptability and application across various project types, practitioners have started to combine these groups of methods. If a sub-project cannot be carried out using traditional or agile methods, hybrid methods are applied. A Project Management Institute (PMI) survey shows that about 57% of respondents use hybrid methods, and they use several methodologies within a single project (Reind, 2019). According to a report presented by VersionOne (DigitalAI, 2023), organizations that have implemented agile methodologies have seen an increase in the quality of their products, better engagement of management and project team members, and an associated increase in work efficiency. Implementing hybrid methodologies during a project is one of the primary trends since best practices from different methods are combined and tailored to the individual needs of projects and the organizations in which these projects are implemented.

The third aspect to explore is the growing popularity and common need to use specialized software for project management. This shift towards specialized software in project management is driven by two key factors (DigitalAI, 2023; ClickUp, 2023): first, the growing complexity of software projects necessitates more sophisticated design tools (Mathiesen et al. 2011). Second, advanced project management software meets customer demands more effectively by providing tighter cost control and enhancing the management experience from the user's perspective (Eicker et al. 2008).

The fourth aspect to analyse is better adaptation to user requirements. The era of one-size-fits-all solutions, particularly in software, appears to be waning. Users, who are critical to a project's success, are increasingly demanding solutions tailored specifically to their unique requirements (Sonteya & Seymour, 2011).

In this framework, process management focuses on modelling as the core for organizational improvements. It involves creating a collection of process models, a common management language, and specific tools for targeted areas to support these changes (Karagiannis et al., 2022).

Additionally, there is a noticeable trend within project management for IT personnel, particularly project managers, to display a high level of professionalism, which includes strong soft skills, essential for leading project teams effectively. According to 92% of managers, human resources are as important as expertise, and 80% of respondents believe that the lack of highly skilled staff may be seen as a major issue in the labour market (Hrabal et al., 2021; Karagiannis et al., 2022). Awareness of these changes and their dynamics is presented in this article.

Research Methodology

The paper's methodology is based on a theoretical and research approach. The survey questionnaire was constructed using a literature analysis and the authors' experience. The authors formulated a hypothesis addressing the issue of how awareness regarding IT project management has changed over the last five years. The main hypothesis was supplemented by auxiliary hypotheses concerning the variation regarding awareness of: the need to implement information systems into organizations, the need to apply process management within these implementations, and the determinants and effects of IT project management. In this research, the following research procedure was used:

1. Literature analysis of key concepts related to process and project management and their determinants during IT implementation as well as identification of the current status and development trends of this field,
2. Testing a pilot version of the survey questionnaire on a randomly selected group of professionals attending an IT project management course, from the point of view of its comprehensibility and relevance of the questions,
3. Conducting the survey and preparing the collected data for analysis,
4. Comparative analysis of the results and the indicators calculated on their basis,
5. Concluding and making recommendations for further evaluation of the place and role of processes in IT projects in the organization.

The questionnaire was correctly completed by eighty-seven experts in 2017 (Chmielarz & Zborowski, 2018) and forty-five experts in 2023 at symposiums related to process and project management.

The survey questionnaire consisted of three sections: the first section: the questions concerned awareness of the need to introduce information systems into the respondent's organization, which translates into increased revenues; the second - the respondents assessed the role of process management for their organization (process modelling, the impact of process management on the organization's operations, the knowledge and skills needed to manage processes, and the extent to which management supports process management in their organization); the third - the respondents identified the conditions and determinants of successes and barriers of an IT project, positive effects of applying project management and preferred groups of project management methods, shortcomings as regards communication between analysts and designers in conducting projects based on process models as well as support of project management by organizational culture.

The data sets from 2017 and 2023 were first brought down to comparability in MS Excel, and achieved, reliability analysis was applied in the form of the α -Cronbach coefficient. For all evaluation criteria, α -Cronbach's coefficient indicates the internal consistency and reliability of the sample – in this case, it was greater than 0.95. Research hypotheses were formulated as detailed in the first section, with assumed probabilities equal to 0.05. To verify the hypotheses, the significance level α for a right-skewed Fisher-Snedecor distribution was counted. The Fisher-Snedecor test was used here to compare the degree of significance of the two data sets from 2017 and 2023 and compare with the p-value determined from the test values (that is, to de facto compare the test results of the $F_{\text{calculated}}$ test value with the tabulated value of F_{cr}). If $p \leq \alpha$ then we reject the hypothesis, if $p \geq \alpha$ then we accept the hypothesis. In addition,

in all sections, the basic indicators of variation: city distance and Euclidean distance were calculated, and for each research criterion, the variance and standard deviation.

The research samples from both selected years were slightly different. While the overall number of women and men was similar in each, there was a significant difference in terms of age. In 2017, there were 36% more respondents under the age of thirty at the symposiums, and there were nearly 26% more respondents aged 36-50 in 2023. There were also 18% more respondents aged 50+. This translated into variations in educational backgrounds. The research sample in 2023 was that over 50% of the survey respondents had a doctoral or higher scientific degree, which decreased the share of individuals with a bachelor's/engineering degree. Generally, it can be concluded that the 2017 symposium succeeded in gathering younger employees engaged in IT projects who were experts in their fields, while in 2023, the participants were older, with more experience and somewhat different skills. Hence, the biggest differences were observed in the group of education-related indicators (city distance -112%, Euclidean distance - 49%). In both years, respondents came from cities with over 500,000 residents (44% each year), but differences exist. Still, differences were noted in the proportion of rural inhabitants (17% in 2023, 5% in 2017) and residents of towns with fewer than 50,000 inhabitants (2% in 2023, 16% in 2017).

Research Results

Selected analyses are shown below. In the first section, survey participants assessed the significance of implementing information systems within their organization (see Fig.1). In this context, the most substantial shift in perspective (a 12% rise) was observed regarding the evaluation of the attribute that defines the application of information systems as an important strategic initiative promoted by the management. As many as 14% of respondents expressed this opinion in 2023. This shift primarily reduced the emphasis on categories such as ongoing monitoring of the situation within the company and its surroundings and the development of new activities in the organization, with both categories receiving 8% fewer responses. As the difference between the highest and lowest values increased to 6%, there was an increase in the values of both the variance (by 0.20% to 0.55%) and standard deviation (by 5.09% to 7.40%). In 2023, respondents highlighted two other critical aspects besides the support of strategic initiatives, namely, the support of information processes at the operational level (12%, a decrease of 6%) and substantial support for all information processes across the entire company (10%). The least important to respondents (6% of responses) in 2023 was ongoing monitoring of the situation in the company and its environment. The sum of absolute differences for all options, i.e., city distance amounted to 45.06%, and Euclidean distance was established at 5.10%.

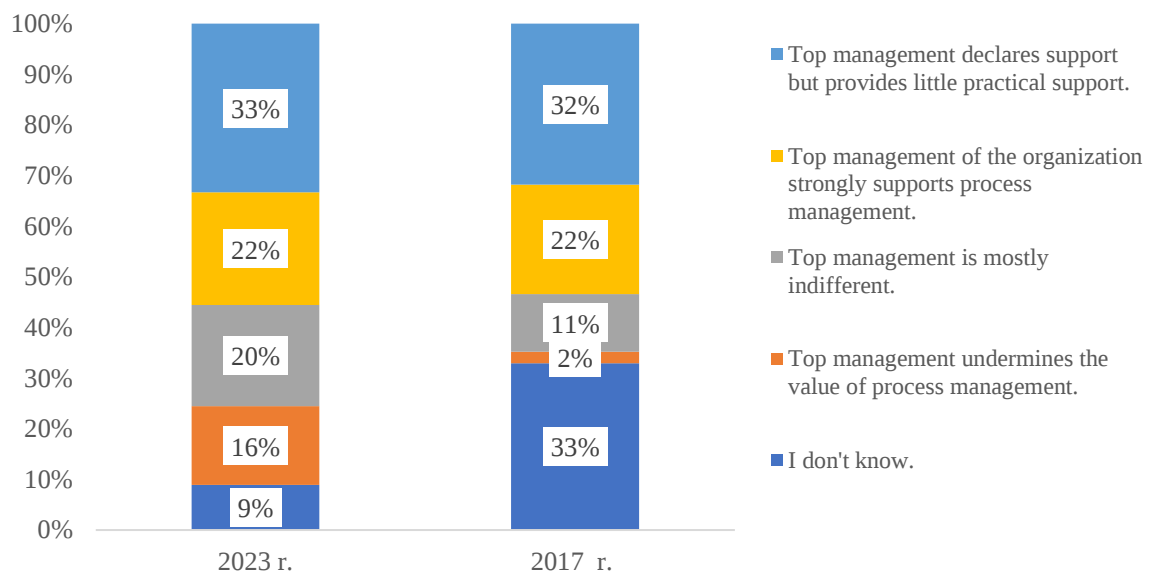


Fig. 1. The importance of process management for the organization's management (Source: Authors)

Regarding the evaluations of areas influenced by the introduction of information technology into organizations, the highest percentage of respondents (9%) emphasized that digital transformation provided a flow of human resources for the organization and their qualitative development, while nearly 9% pointed to introducing new products and services to the market (an increase of 7%). Additionally, 7% of respondents believed that this facilitated efficient funding for the organization's activities (a 6% increase). The city distance was slightly lower at 38.01%, and the Euclidean distance was established at 2.66%.

If we consider the relationship of the responses from 2023 to 2017 and relate them to the previously mentioned trends, they undoubtedly point to the experts' awareness of the importance of introducing IT into the organization, promoted by management, and the understanding of the need to support processes across the organization (an increase of more than twofold), and not just processes at the operational level. In contrast, less importance is given to the ongoing monitoring of the situation in and around the company. In the area of computer-supported activities, the greatest focus is on leveraging information technology to ensure the availability of skilled human resources, as well as the introduction and development of new products and services. This aligns well with the aforementioned trends.

The second section of the survey analysed awareness of the need to apply process management during the implementation of IT projects (see Fig. 2). The focus was on attributes such as the frequency of application of process management in an IT project, its impact on the organization's operations, the competence of staff in this area, and management support for process management, which translates into proper management of IT projects (LinkedIn Report, 2023). In 2023, process modelling supported by specialized software, indicating a modern approach to design, is used during selected analyses of complex project issues according to 9% of experts. This is almost eight times more than in 2017. Indeed, there has been an almost twofold increase in the attribute "always," but it does not exceed 1% of responses. The assessment that it is used during every pre-design analysis appears 7 times less frequently than in 2017.

There was also a decrease of 5% in responses that it is not used at all. The data reveals a substantial growth in recognition of the importance of process management within organizational structures. This indicates an increase in the awareness of the need for process management, especially considering that in 2023, 16% of respondents believe that it is very important for the success of a project and the coordination of activities during its implementation (an increase of 13%), along with a 9% decrease in declarations about the moderate impact of process management on the project. Central to the activities in 2023 is the proficiency in mapping out project processes, as indicated by 4% of participants, and initiating organizational changes, for example, the creation of a BPM competence centre. For the respondents, the awareness of the need to have knowledge of change management in an organization (13%) and strategic process management (9%) has decreased. There is also a diminishing gap between the option stating that the organization's leadership declares support for process management but practically does not support it (9%), and the one indicating strong leadership support for these actions (6%).

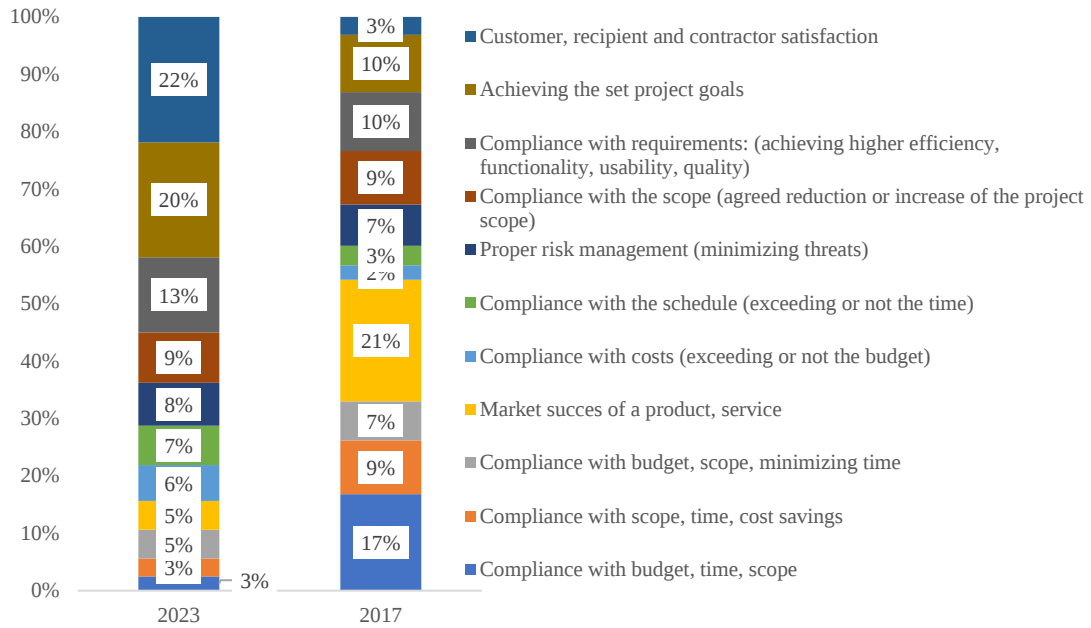


Fig. 2. The list of determinants of IT project success (Source: Authors)

The third section of the survey addressed the determinants and effects of IT project management (see Fig. 3). Over 40% of the questions concerned the knowledge and understanding of the concept of information technology projects. In this regard, statements, and assessments of the characteristics of projects (expediency, determinism, uniqueness) were similar in 2017 and 2023 (city distance at the level of 17.06%, Euclidean distance established at 0.56%). The same was true for determining the characteristics of their implementation - in both years, the most important were: keeping up with changes, economic pragmatism and dynamic (Szelagowski, 2019) project control (city distance was low in this case - 8.53%, Euclidean distance 0.14%). In other cases, the results regarding differences in responses were very similar (Szelagowski, 2019).

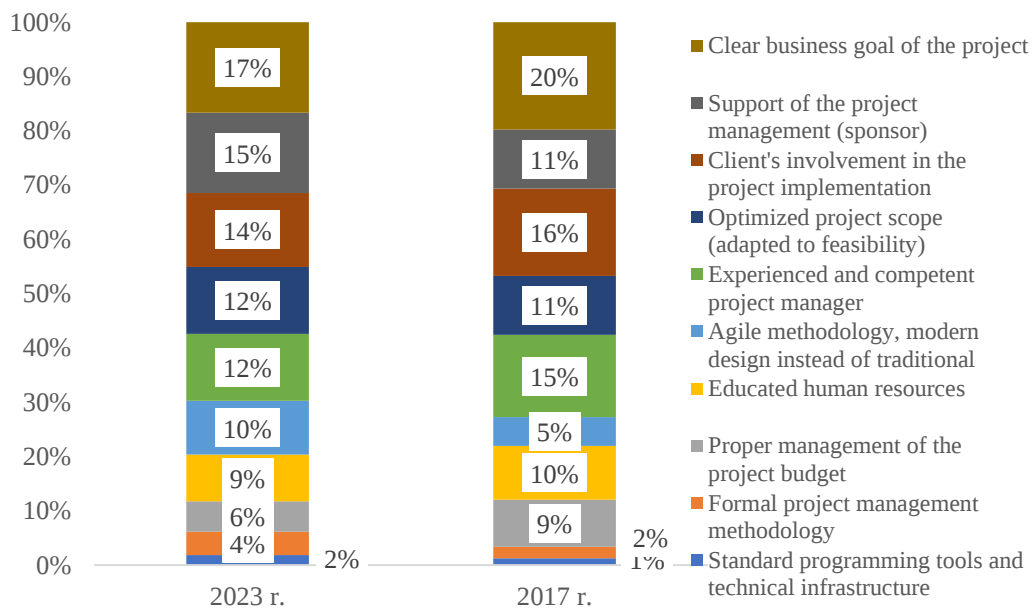


Fig. 3. Determinants of the success of an IT project supported by process management (Source: Authors)

The other options concerned situational awareness derived from the practical experience of experts. At present, project management methods are divided into three groups: traditional, agile, and hybrid, the

latter combining features of the other two. Respondents were asked which of these dominated the market in 2017. Based on their own experience, survey participants attributed 44% of projects to the agile methods category, 35% to traditional, and 21% to the hybrid category. Five years later, these proportions have already changed: hybrid methods dominate with the level of indications established at 37%; followed by agile methods amounting to 34%, and finally, traditional projects constituting 29% (see Fig. 4).

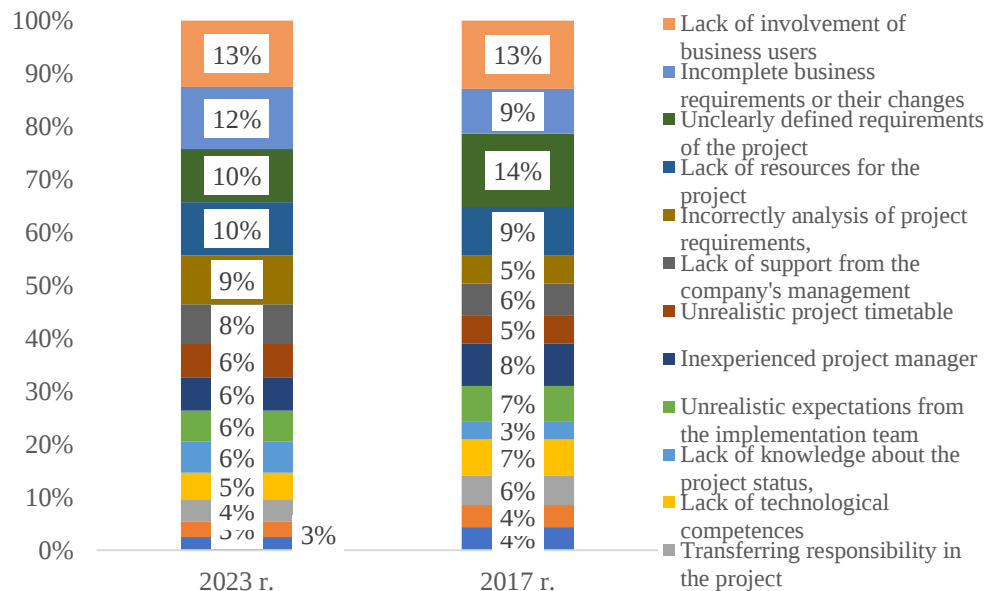


Fig. 4. Constraints to the success of an IT project supported by process management (Source: Authors)

Discussion

The most important determinants of IT project success in both years were identified as the clear business objective of the project (requirements specified with the consideration of existing constraints, in 2023 at the level of 17%, and in 2017 at the level of 20%), customer commitment to the project (14-16%) and an experienced and competent project manager (12-15%). In 2023, there were, admittedly, slight decreases in the shares of responses in these categories, at the level of 16-19%, but this did not change the order of their ranking. The greatest increase (by 5% to 10%) was related to the respondents' perception of the importance of agile, modern design methodologies based on business intelligence replacing existing methods. Similar ratings in both years also occurred in assessments of views on the main barriers to implementing IT projects. The ranking has essentially remained unchanged, with the top three positions being: lack of engagement from business users and information from them (13% each), incomplete business and functional requirements or their frequent changes (9-12%), and vaguely defined project requirements (10-14%). Differences in the dynamics of these categories ranged from 3 to 38%. City distance was also small in this case and amounted to 25.85%, and Euclidean distance was established at the level of 0.64%. In contrast, there was a wide variation in opinions concerning the positive effects of the IT project. In 2017, the largest number of survey respondents (21%) indicated achieving a product or service that was successful in the market, and 17% emphasized conformity with the basic parameters of the project - adherence to budget and timeline, even with an expanded scope. Concerning 2023, the differences were established at 14-16%, and the effects were assessed quite differently. The most significant effect was the satisfaction of the customer, recipients, and contractors (22%) and the achievement of the goals of the project (20%), with differences concerning 2017 established at the level of 10-19%. This explains the city distance at the level of 78.35% and the Euclidean distance established at 9.96%. The recommendation to improve process management in projects includes setting up dedicated teams, called Competency Centres, which specialize in Business

Process Modelling and Project Management. Currently, 60% of survey participants (compared to 62% in 2017) acknowledge that their organization has a unit responsible for modelling or analysing processes for designing management information systems. There is a significant consensus within these major categories. Unfortunately, in the remaining areas, there are discrepancies reaching 6-7%. Existing organizational units like Competence Centres are now mainly concerned with participating in projects to improve processes (18% at present, an increase of 7%) and setting rules and methods for all process initiatives in the organization (17%, in 2017 at the level of 10%).

The results presented in all sections of the study confirmed most of the trends observed in the literature (Gabryelczyk et al., 2022; Karagiannis, 2022; Szelagowski, 2018).

If not directly, then in the form of the attributes associated with these trends. Recent trends have highlighted a growing imperative to integrate advanced business intelligence systems into modern design strategies and move away from traditional methodologies (Creasey, 2024). The increased importance of hybrid and agile methods was confirmed. There was also a clear expression of the need for specialized software in process management. Most attention was paid to the “human” elements of project management, i.e., the need to hire highly qualified personnel who are open to change, responsible and flexible regarding customer preferences, and have excellent teamwork skills.

In the first section, there was a statistically significant variation in the attributes of awareness of the necessity to implement information systems in the organization in 2017 and 2023. The Fisher-Snedecor ratio calculated for this group was 2.6216, with a critical value of 2.5769, which makes it possible to consider the alternative hypothesis H1 to be confirmed.

In the second section, there was a slight exceedance of the critical threshold of the Fisher-Snedecor index ($F_{Scr}=2.0302$) by the calculated index ($F_{Scalculated}=2.0878$), $F_{Scr}<F_{Scalculated}$, which shows the significance of the variation in responses in this section and substantiates the validity of H2 hypothesis.

Despite the detailed analysis of the discrepancies present in the third section, a significant difference between the critical value of the Fisher-Snedecor inverse test ($F_{Scr}=2.4381$) and the value counted for all attributes $F_{Scalculated}=6.0054$ was obtained only for the question concerning the tasks of the Competence Centre, so only in this case, a statistically significant difference in the respondents' evaluations occurred. The remaining evaluations (especially those concerning the theoretical issues) did not confirm this significance. Thus, overall, the value of the Fisher-Snedecor inverse test for the entire third section ($F_{Scalculated}=1.0266$) was less than the critical value ($F_{Scr}=2.3723$), which means that hypothesis H3 was not supported.

Following the confirmation of auxiliary hypotheses H1 and H2, the main hypothesis H0 concerning the existence of significant differences between experts' awareness and perception of IT project management in 2017 and five years later, in 2023, has also been positively verified. In this case, the value of the Fisher-Snedecor inverse test for the entire study ($F_{Scalculated}=1.5075$) was greater than the critical value ($F_{Scr}=1.2365$), which means that hypothesis H0 was verified positively.

The results presented in all sections of the study confirmed most of the trends observed in the literature (Driver, 2022). If not directly, then in the form of the attributes associated with these trends. Recent trends have highlighted a growing imperative to integrate advanced business intelligence systems into modern design strategies and move away from traditional methodologies. The increased importance of hybrid and agile methods was confirmed. There was also a clear expression of the need for specialized software in the area of process management. Most attention was paid to the “human” elements of project management, i.e., the need to hire highly qualified personnel who are open to change, responsible and flexible as regards customer preferences, and have excellent teamwork skills.

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To summarize the discussion there are some basics:

- over the past five years, i.e., the period 2017-2023, there has been a change in the experts' perception of IT project management, as proven by this study (hypothesis H0 was confirmed),
- in particular, significant discrepancies occurred regarding the need to implement IT systems in the organization as a success factor (hypothesis H1 was proven) and awareness of the need to apply process management during the implementation of IT projects (hypothesis H2 was positively verified),
- however, there were no statistically significant changes regarding the awareness and perceptions of the IT project management concepts, conditions, and effects (hypothesis H3 was not validated).

Conclusions

The main results and findings of the research were determined by the validity of the hypotheses using the Fisher-Snedecor test. In addition, differences in city distance and Euclidean distance indices were calculated, which indicated the directions of changes in experts' views on the place and role of project management. The results pointed to the existence of significant discrepancies between experts' awareness in 2017 and 2023. The conclusions obtained from the survey may have important implications for business practitioners and educational purposes. The results obtained in the course of the study allow the authors to draw the following conclusions:

- the changes that have occurred are positive and coincide with project management development trends found in the literature (Longhurst & Choi, 2024; Sharman, 2023),
- among experts, in most cases, there was a consensus in understanding the basic concepts and conditions of project management against the background of project management theory (Gurnov, 2024; Nathaniel, 2023), whose awareness was analysed in 2017 and 2023. However, when it came to references to practical attributes, the diversity of opinions and views increased,
- recognition of process management as a supporting, or even necessary, tool for IT project management has increased (Gabryelczyk, et al. 2022; Landau, 2023; Pogue, 2022), especially in the context of the analysis of complex project-related problems, awareness of the determinants (a 10% increase in the importance of modern project management methods) and barriers to project management (lack of business user involvement and information from business users, incomplete business and functional requirements or their frequent change) has not changed in recent years, which is in line with studies presented by, for example, the Standish

Group (2021), there has been a diversification regarding awareness of the positive effects of applying IT in the organization, where the satisfaction of the customer, the recipients or final users, the contractors and the achievement of the set goals of the project came to the fore, contrary to the 2017 assessments, experts assessed that the dominant methodologies today are hybrid and agile methodologies (81%), but the realistic approach visible in their perspectives is substantiated by the fact that 29% of the applications are attributed to conventional methodologies (comparable to LinkedIn Workplace Learning Report, 2023).

The surveys conducted among experts had certain limitations. First of all, they included also individuals with a strong research interest and those with an academic background. It also incorporated respondents with substantial practical experience. However, it is worth noting that there were a limited number of representatives from Generation Z, the demographic currently entering the workforce.

Therefore, further research should also cover the population of young people - future potential IT employees to analyse their opinions regarding the place and role of IT projects in the implementation of management support systems. In addition, it would be beneficial to conduct research examining the relationship between process management and project management, as well as the potential for integrating artificial intelligence within these domains.

The importance and novelty of the research showed the findings based on the opinions of experts including individuals with a strong research interest and those with an academic background, and also incorporated respondents with substantial practical experience. Part of the respondents' competence was related to years of using traditional project management methods, which in some way also shapes the approach to agile and hybrid methodologies.

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