

MANAGEMENT OF THE CREATION PROCESS OF RESIDENTIAL BUILDINGS

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Abstract: The focus of the study was on the analysis of the process of management of investment projects in housing development market by developers with consideration for a new approach to management. The study presents the effects of housing estate development in Poland, importance of housing estate to developer's activities and the process of real estate creation was analysed. The hypothesis of improved effectiveness of management in housing development and the effect of IT solution on facilitation and optimization of business processes that are performed in developer enterprises was verified. The results obtained in the study confirmed the hypothesis, leading to the conclusion that implementation of the IT system should substantially support optimization and controlling of the investment projects.

Key words: developer, real estate, investment project, project management

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Introduction

Over several recent years, Poland has seen changes in terms of real estate management, with solutions used in Poland being similar to those used in the countries of the Western European countries and the USA.

The starting point for considerations for the management and real estate management are the work of Etzkowitz and Leydesdorff (2000), Preissla (2000), Doshea and Stoltwedel (2006) and research on the assessment of conditions and changes affecting the development trends of the real estate market in Poland (Sitek, 2010). An interesting item in the extensive literature on the subject area is the in-depth study titled "*Housing and the business cycle*" (World Economic Outlook, 2008). The study discusses the results of a global survey in selected highly-developed countries and groups of countries at varied level of economic growth. The most important economic phenomena and economic categories were also analysed, pointing to different correlations and relationships, including those between housing, financial system, monetary policy and general rate of economic development. The study also discussed the management process in the creation of residential buildings. Another study that is concerned with the importance and role of housing for other areas of social and economic life is the book published by (Tibaijuka, 2009), focused on housing and social development (The housing and human settlements programme of the United Nations). This study emphasized great

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importance of housing to social and economic development, but also demonstrated that supporting housing from public resources should be considered not only as an expenditure for financing of social goals but also as an investment which can be returned through economic growth, leading consequently to higher tax revenues. The study demonstrated that improvements in housing conditions lead to the reduction in expenditures for health care stimulate economic growth and, especially, facilitate implementation of new technologies while ensuring labour mobility. These changes lead to the creation, presentation and effective management of real property (Brauner, 2003). Innovative systems and technological solutions and software are designed for effective and innovative real estate management.

The aim of the study was to analyse the quality of management of investments made by developers in the housing development market and to demonstrate optimization of IT solutions as an effective aspect of a new approach to management in this sector. One of the technologies concerning network services in computing environments is cloud computing. It has now become one of the most important development tendencies in the IT sector (Chojka, 2012) and a different form of using modern IT solutions that represent connection of grid computing and utility computing.

The research problem analysed in the study was to verify the assumption concerning the improvement in the effectiveness of management in developer companies. The above hypothesis was verified based on the questionnaire survey concerning identification of the areas that generate the biggest problems in management of investment processes from the standpoint of investor.

The data for problem analysis were derived from the Central Statistical Office for the period of 1991-2014, materials of the Production Department: Housing Construction, Statistical Yearbooks of the Republic of Poland and periodicals of the Polish Banking Association and from the published data of a survey conducted in the local real estate market concerning situation in selected developers (Prestige Development and Edilgy Sp. z o.o.) (Kobyłkiewicz and Sitek, 2013). The findings allowed for evaluation of banks in terms of cooperation in financing and management of housing development investments.

Housing Development in Poland and its Importance to Developer Activities

Since its beginnings, real estate development investments in Poland have concerned in particular housing estate investments (Łopiański, 2004). Before the Housing Development Act was implemented (Ustawa, 2011), a model was established to finance this sector by future owners (customers), which substantially limited the number of people interested in this method of obtaining flats (Ziółkowska, 2010). Despite this fact, an increase in this form of obtaining flats was observed from 2004 to 2009. The number of flats handed over to the users in total in 1991-2015, with the focus on development activity for sale/rent and individual construction, is presented in Table 1 (GUS, 1991-2015).

Table 1. Flats delivered in Poland in 1991-2015 (in thousands)

	Specification	1991	1992	1993	1994	1995					
1	Total	136.8	133.0	94.4	76.1	67.1					
2	Private investors, including:										
	a)	flats delivered	40.0	36.9	33.4	35.5	31.7				
	b)	their contribution in %	29.2	27.7	35.4	46.6	47.2				
3	Flats for sale/rent, including:										
	a)	flats for sale/rent	0	0	0.5	1.5	2.8				
	b)	growth rate (y_{n+1}/y_n) in %	-	-	-	300	221				
	c)	their contribution in %	-	-	0.5	2.0	4.0				
continuation											
		1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1		62.1	73.7	75.3	82.0	87.7	106.0	99.1	162.6	108.1	114.1
2											
a)		30.1	35.1	37.3	33.3	35.5	40.7	51.7	117.9	64.9	63.3
b)		48.5	47.6	49.5	40.6	40.5	38.4	52.2	72.5	60.0	55.5
3											
a)		2.7	5.1	9.0	14.0	20.7	29.4	23.8	23.9	24.3	33.0
b)		96.4	188	176.4	157.7	145.7	142.1	80.9	100.4	101.6	135.8
c)		4.3	7.0	12.0	17.3	23.6	27.7	24.0	14.7	22.5	29.0
continuation											
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
1		115.2	133.8	165.2	160.0	135.8	131.1	152.9	145.4	143.2	147,7
2											
a)		57.6	71.6	83.3	72.2	70.4	73.1	81.0	81.3	76.2	79,7
b)		50.0	53.5	50.4	45.1	51.9	55.7	53.0	56.0	53.2	54,0
3											
a)		38.0	45.7	66.7	72.1	53.5	49.6	63.6	56.6	59.1	62,4
b)		114.8	120.6	146.0	108.1	74.2	92.7	128.2	89.0	104.4	105,6
c)		33.0	34.2	40.4	45.0	39.4	37.8	41.6	39,	41.3	42,2

It is noticeable that in 1995, the number of flats handed over by developers to the users was 2,800 compared to 500 flats in 1993. In 1996-2001, the increase in the number of flats handed over to the users in total was 43,900, of which 61% of the increase was caused by development projects. Furthermore, in 2009, developers delivered 72,100 flats to the market, that is, over 45.0% of all flats (Bryx, 2001; Wadley, 2004). In the next years (2010-2015), the number of flats handed over by developers was around 40% of all the flats. The investments made by developers were very dynamic (Lis, 2008; Czischke and Pittini, 2007). The changes in percentage shares of individual construction and the flats for sale and rent in 1991-2014 presented in Table 1 reflect the stages in evolution of the housing development market in Poland after 1989 (Czerkas, 2011).

In light of evolution in the housing estate market in Poland, analysis of the data presented in Table 1 reveals that in 1991-2006, the structure of flats delivered was dominated by the flats built by individual investors in the economic system for the internal needs (Lis, 2008). In the phase of stagnation and downturn (2000-2002), the supply of flats was decreased. However, mortgages for private customers outweighed mortgages for institutional customers (Matkowski, 2006; Ławińska, 2013). Poland's accession to the EU in 2004 brought a rapid revival in the demand in the housing estate market. In the period of 2004-2009, developers became attractive customers for banks. Flat developers started to operate in all housing estate market segments, from luxury projects of apartments in city centres (Psilander, 2002) to the segment of holiday flats with the service of flat management (Czerkas, 2011). In order to protect the rights of purchasers of flats of houses (Ustawa, 2011), a new housing estate development act started to be used at the end of 2012. The intention of the legislator was to protect the rights of people who attempted to purchase a flat or a house in the primary market from developers. Among the most important benefits of the new act was in particular lower risk involved in purchasing the flats and houses in the primary market and the increase in opportunities of comparison of the offers by purchasers due to the necessity of preparation of information prospectuses by developers. A negative consequence of the Housing Development Act is the problem of excessively strong involvement of banks in the development processes. The problems and barriers faced by developers during their activities were revealed in a survey among the enterprises operating in the local market and associated in the Polish Association of Developers.

The findings of the survey conducted in the local market are supported by the questionnaire survey conducted by Błaszczak (2016), which demonstrated that cooperation with banks is much easier than several years ago. Furthermore, the analysis showed that some 90% of developers in 2015 used bank loans to build their housing estates, whereas this percentage in 2014 was only 81%. Some 81% companies claimed in 2015 that they already had escrow accounts, whereas in 2014 only 10% of investors had such accounts (Błaszczak, 2016). However, in light of these positive changes concerning the Housing Development Act, it can be expected that if the conditions occur in the nearest future for a dynamic development of the housing development market, the escrow account, increasing the safety of settlements between the parties in the commercial transactions may, similar to the advance sale, should attract substantial interest.

Management of the Creation Process of the Real Estate (Developer Projects)

Management of housing development investments is an ability to manage the investment process and creation of the system of fast response to the threats that occur (Marcinek, 2001; Logue, 2006). The basic aims of management of processes can be presented through their basic features: primary (the scope of activities that form the process and their interrelations "S" and requirements that determine

the expectations in terms of the results of the process "E") and secondary (time: period needed for implementation of the process "T" and costs necessary to implement the process "C"). Relationships between the basic features of the investment process are presented in Figure 1 (Trocki et al., 2003).

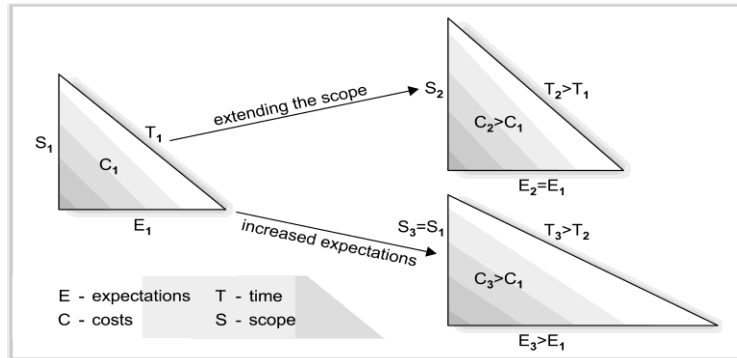


Figure 1. Relationships between the basic features of the process (Trocki et al., 2003)

As results from Figure 1, extending the scope of activities that form the process and their interrelations ($S_2 > S_1$) while maintaining constant expectations in term of the process outcome ($E_2 = E_1$) causes the increase in the costs necessary for process implementation ($C_2 > C_1$) and time necessary for process implementation ($T_2 > T_1$). The increase in expectations ($E_3 > E_1$) with the specific scope of activities that from the process ($S_3 = S_1$) causes that increase in the costs necessary to be incurred to implement the process ($C_3 > C_1$) and elongation of the time needed for implementation ($T_3 > T_1$).

Managers of developer projects (usually investors/developers) have to manage the life cycle of the investment project so that basic initial project parameters are not exceeded in terms of the Scope S, expectations E and time T and costs C, which are closely interrelated as the characteristics of the investment project.

This represents the main goal of investment project management, supported by the aspects of a new approach in management i.e. one of the IT tools: the Intense Platform (Jagodzińska, 2014). Most basically, project management can be illustrated as a triangle of project compromises, with its sides represented by costs (C), time (T) and range (S). Even more pronounced are correlations between the basic characteristics of the process in the case of the use of the method based on the analysis of the S curve of the investment costs (Figure 2) (Kietliński, 2016).

Using the arrangement of cost of project versus project execution status for the project Z (S curve), Figure 2 presents the example of the accumulated investment cost as higher than planned, with the project execution status lower than planned.

The expected status of the relationships between the time and cost of the investment process is $C_b < C_r < C_a$ at $S_r = S_p$ (r – execution; p – investment planning). The method of S curve, which allows for continuous control and analysis of time and cost of the investment project, requires access to credible

information about costs of planned and actual execution of the investment project with respect to the planned scope of works.

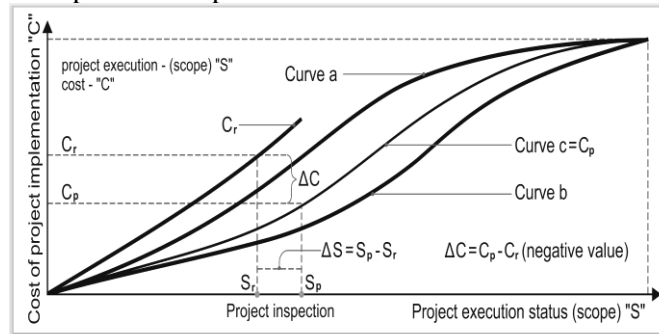


Figure 2. Graphical representation of the S curve $C_r > C_p$ at $S_r < S_p$ (Kietliński, 2016)

Accordingly, the improvement in the effectiveness of management requires adaptation of IT solutions by the manager, such as BMP (Business Process Management) systems that support processes of information flow, document flow and facilitation of economic and financial processes by using the Intense Platform (Jagodzińska, 2014).

The anonymous survey concerning the problems and barriers in management of investment processes, conducted in the half of 2012 showed (Siwek et al., 2012), that the macroeconomic situation, administrative barriers and market situation with particular focus on financing housing development projects, created barriers which made it particularly difficult to execute investments. Furthermore, the analysis of the areas that generate the biggest problems in management of the investment process from the standpoint of the (Tkaczyk et. al., 2015) revealed:

- mistakes in project documentation and inter - sectoral inconsistencies in project execution,
- difficulties in keeping material and financial schedule and budget,
- administrative barriers,
- difficulties in contacts with executors,
- no support from local government.

Involvement of the investor in solving these problems was evaluated at around 10%.

Since maintaining of the parameters of the investment adopted in the project determines the effectiveness of management, the following analyses can be used to determine the tools and their utilization for management of the investment process over the whole project life:

- analysis of execution of the investment project with consideration for changes in basic project characteristics,
- analysis of the S curve at determines changes in costs versus process progress,
- analysis of the triangle of project compromises.

According to Hajduk (1993), the investment cycle can be identified with the life cycle of the construction building (the most important activity is finding the location). WGN experts and real estate appraisers agree that location is the strongest factor that stimulates real estate prices. In this phase, the land should be acquired for implementation of the investment.

Since 2005, the greatest developers, in proportion to the increase in revenues of the companies that build the flats, have been increasing the reserves of land for investments, thus establishing their own land banks to build new structures in several years. Developers-investors, who are also the managers in the process of real estate creation, coordinate, as early as in the phase of preparation of the whole investment cycle, the design process and the choice of a designer and they find the contractor to implement the project. The decision have the greatest effect on the level of costs in consecutive phases of the project life cycle: investment expenditures and operating management costs (Redlein, 2004).

Beginning of this phase of the investment cycle means finding the entity to implement the building project (a developer-investor or external contractor) and the necessary contract should be negotiated and signed (Logue, 2006; Grodzka, 2001). Since attractive price and good location determine the purchase of the flat, the solution is offered by advance sale (Sitek, 2014). The management phase is ended with the investment completion. This phase closes the investment cycle. Given all the threats of the conventional approach to investment project management, one should take into consideration the dynamic changes that are forcing the use of new solutions in management. Improvement in the effectiveness of management of organizations will be ensured by optimization of IT solutions such as Business Process Management (BPM) that helps manage processes of workflow, information and documents with integrated Business Intelligence (BI) layer (Jagodzińska, 2014).

A tool that allows for preparation and conducting the process of organization of the investment process, floor area rent, use and management can be offered by the BMP/Workflow-Intense Platform system, which has been already used by developers during construction of e.g. office buildings. The process connected with development of the concept of execution of the investment and analysis of the idea can be supported by information technology as a tool for facilitation, collecting and verification of the data necessary for making the decision on starting of the investment project. During the investment preparation process, the technological, economic and financial problems are supported by IT technology through utilization of the Intense Platform to:

- record all the documents connected with the construction project,
- organize workflow in the case of developing of a business plan for the project,
- prepare financial budget and the first schedule of works and expenditures.

IT solution in the process of renting flats offers a tool to facilitate contacts with customers whether in the processes of project use, this function is performed by the

Intense Platform, which facilitates services for tenants through automation of work and processing of service requests.

In light of the above conclusions and the results of surveys conducted among developers in 2012 (Siwek et al., 2012) and in 2015 (Tkaczyk et al., 2015; Błaszczak, 2016), the system of solutions of IT–Intense Platform, as a tool adjusted to the specific nature of this sector, represents a system that supports optimization and complete controlling of the building projects. This contributes to facilitation, optimization and opportunities for monitoring of the status and degree of work progress and offers access to current information about project budget.

In the management of the process of real estate creation, the substantial interest of entrepreneurs and employees over the whole investment cycle is attracted to the outsourcing sector of IT services (Coolpeople, 2016). The increasing popularity of outsourcing of IT services is mainly attributable to the dynamic increase in the importance of IT solutions in business management and such benefits as lower costs and risk, time efficiency, high quality of services and convenience.

Therefore, it can be concluded that IT outsourcing represents a global trend and a very effective method of IT management. These benefits determine both the advantage of the IT-Intense Platform system as a new tool in management, affecting facilitation and optimization of business processes which occur in developer enterprises and cloud computing, which removes the investment barriers, improves opportunities and efficiency of management and limits investment risks and other costs (European Social Housing Observatory, 2012). Therefore, the new approach in management of investment projects guarantees, more than the conventional waterfall approach, that the project goals are achieved and they meet the requirements of the mnemotechnical SMART rule, which says that the investment project is: specific (S), measurable (M), achievable (A), realistic (R) and time-bound (T).

Conclusion

The investigations presented in this study showed that, among many forms of housing estate development, the number of flats delivered by developers is on the increase. The study discusses the importance of housing estate in developer activities, emphasizing the role of the new real estate development act to protecting rights of flat purchasers.

The paper demonstrated that because management of investment projects is characterized by large variability (objects of management, participant entities, effect of the environment and relations with administration); it requires fast decision-making with substantial level of risk. Therefore, management of investment projects forces managers to adjust management styles and techniques to concrete investment conditions and to use increasingly modern tools to facilitate supervision of the project. Analysis of the results of the surveys on cooperation of developers with banks and problems with management of the investment process showed the necessity to implement the IT system, with particular focus on

BMP/Workflow–Intense Platform and the use of cloud computing as a new tool that significantly supports optimization and controlling of the business projects. In conclusion, the explorations concerning investment project management led to the verification of the hypothesis of improved effectiveness of management and indication of IT as a universal tool for facilitation of the effectiveness of investment project management, investment execution process and real estate management. The paper is summarized with the conclusion of achievement of the study aim.

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ZARZĄDZANIE PROCESEM TWORZENIA NIERUCHOMOŚCI MIESZKANIOWYCH

Streszczenie: Celem pracy jest analiza procesu zarządzania projektami inwestycyjnymi na rynku nieruchomości mieszkaniowych przez deweloperów, z uwzględnieniem aspektu nowego podejścia do zarządzania. W pracy zaprezentowano efekty budownictwa mieszkaniowego w Polsce, znaczenie nieruchomości mieszkaniowych w działalności deweloperskiej oraz przeanalizowano zarządzanie procesem tworzenia nieruchomości. Zweryfikowano hipotezę o poprawie efektywności zarządzania w przedsiębiorstwach deweloperskich oraz wpływie rozwiązań IT na usprawnienie i optymalizację procesów biznesowych zachodzących w przedsiębiorstwach deweloperskich. Uzyskane wyniki potwierdzają przyjętą hipotezę prowadząc do konkluzji, że wdrożenie systemu IT znacząco będzie wspierać optymalizację i pełen controlling realizowanych projektów inwestycyjnych.

Słowa kluczowe: deweloper, nieruchomości, projekt inwestycyjny, zarządzanie projektem

住宅建築創建過程的管理

摘要：本研究的重點是開發商對房地產開發市場投資項目管理過程的分析，考慮了新的管理方法。該研究介紹了波蘭的房地產開發，房地產對開發商活動的重要性以及房地產創造過程的影響。驗證了改進管理在房屋開發中的有效性的假設以及IT解決方案對在開發者企業中執行的業務流程的促進和優化的影響。研究結果證實了這一假設，得出結論認為，IT系統的實施應該大大支持投資項目的優化和控制。

關鍵詞：開發商，房地產，投資項目，項目管理