THE NECESSITY OF REDEFINING THE PRINCIPLES OF PROCESS MANAGEMENT

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Abstract

The rapid development of process management and its practical uses stems from the changing conditions of business, which are the result of overlapping and mutually stimulating changes in business culture, social conventions, the development of information and communication technologies, as well as the process of globalization and changes in the principles of competition themselves. For several years now it has become apparent that practical methodologies and IT systems supporting the implementation and use of process management in organizations are developing at a much more rapid pace than their theoretical underpinnings. The 3rd wave of development of process management, which has been initiated around the year 2003, is becoming increasingly less responsive to the requirements of modern business. The first aim of this article is to stress the need for further theoretical reflection on traditional process management, which due to changes in the paradigms of the knowledge economy may be used in the case of a mere 20%-30% of the processes within the organization. The second aim of the article is to showcase the direction and the characteristics of the 4th wave of process management, which mostly stem from practical solutions. The article presents the development of BPMS and CMS systems and the implementation methodologies which use them, showing how both are becoming closer to one another, or rather, how both are turning in the direction brought about by the needs of the clients. This development has a fundamental significance for practitioners dealing with the preparation of tools and the implementation of methodologies pertaining to process management and knowledge management within organizations, by defining the direction of further development for both their systems and services. At the same time, it allows scholars researching process management to analyze and, if the need arises, introduce corrections to the concept of the 4th wave of BPM, as well as make insights into the effects of the change, which, for all intents and purposes, is ongoing.

Keywords: *business process management (BPM), dynamic business process management (dynamic BPM), case management, knowledge management (KM), the third wave of BPM, the fourth wave of BPM.*

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1. Introduction

Modern economy is undergoing accelerating, unforeseeable changes, which are the result of overlapping and mutually stimulating changes in the business culture, social conventions, the development of information and communication technologies, as well as the process of globalization and changes in the principles of competition themselves. Both the rapid pace of development, as well as the qualitative character of the undergoing changes, result in the necessity of searching for new solutions, which would fundamentally change current fields and principles of business management. The characteristics of this new order remain unknown. Undoubtedly, process management remains a crucial part thereof, as it adapts the management of organizations to the conditions set by both the global market and individual consumers at a faster pace than other concepts. Alternatively, has it adapted – in the past tense? In the course of the evolution of process management thus far, theoretical reflection has been rooted in practical considerations, with one and the other existing in harmonious equilibrium. At present, however, the practical aspect is developing at a much faster pace than its theoretical underpinnings and foundations. At the same time, theoretical studies seem blind to such practical changes or even go as far as to negate them outright. The aim of this article is not only to stress the importance of theoretical reflection on traditional process management but also point to the main breaking points in terms of the synergy between theory and the practical considerations stemming from the needs of the organization. Such breaking points are the management of unstructured and unforeseen processes and the support of business process management provided to knowledge management within the organization. The aim is also to highlight a solution which would satisfy the needs of the organization for a theoretical generalization, the direction of which is increasingly more clearly defined by practical solutions. The goal is to remove the practical-theoretical gap and to predict the further direction of changes. This, however, requires the verification and redefinition of our understanding of process management, beginning with the most fundamental definitions.

2. Definitions

The exceptionally fast pace of the development of process management and its practical uses, including its methodologies and supporting IT systems, has led to the emergence of new concepts, as well as the reinterpretation of existing concepts, which might lead to some confusion on the part of scholars and practitioners alike. One cause of this confusion is the fact that different authors describe the same concepts under different names. In order to avoid

misunderstanding in the later part of the article, I would like to define the fundamental terms associated with process management.

Business process
The term business process shall be understood as an organized set of actions leading to a specified goal (Davenport & Short, 1990, 3[2]; Bitkowska, 2013, 29).

Traditional business process management
Traditional business process management (traditional BPM, static BPM) is a concept of management, as well as a methodology and a set of ICT tools used in the scope of identification, improvement, automation, and measurement of the results of the execution of business processes, used with the aim of raising their efficiency and profitability, assuming that process performers are not authorized to introduce changes to the process in the course of its performance (Gartner IT Glossary, 2016a). Descriptions (models) of traditional business processes change at a much slower pace than required for their performance, which allows us to conclude that the process does not change the course of performance itself. In turn, it is possible to improve processes on the basis of standard mechanisms of business process improvement (BPI). Most of these stem from the Deming concept and are based on different modifications of the PDSA cycle (Deming 1982; Davenport, 1996; 34-40; Pande, Neuman & Cavanagh, 2000).

Dynamic business process management
Dynamic business process management (dynamic BPM) shall be understood as an extension of traditional (static) process management with the freedom of process performance to introduce dynamic process adaptations to the requirements of performance in the course of process performance itself.
The implementation of dynamic BPM should be performed in such a manner that the performance of a process will be equal with its documentation, including the documentation of all changes and improvements (Szeląg owski, 2014; 61-68; Gartner IT Glossary, 2016b).

Case management
Case management (CM), which is also known as adaptive case management (ACM) and dynamic case management (DCM), shall be understood as IT technologies along with their methodologies, which allow for work management on the basis of both structured and unstructured information used

2 To borrow from Davenport and Short: "We define business processes as a set of logically related tasks performed to achieve a defined business outcome."

in business processes performed in a manner which is completely dependent on the decisions of the knowledge workers performing the processes (WfMC, 2010; Swenson, 2010; Belaychuk, 2011).

3. The Main Factors Behind Changes to Management in Organizations

Modern economy is undergoing accelerating, multifaceted changes, which are tied to the growing needs of the customers in regard to easier access to individualized products and services. Both the pace, as well as the qualitative character and the unpredictable nature of the undergoing changes result in standard principles of management, which are rooted in the specialization of workers and departments, becoming obsolete. This, in turn, necessitates the search for new solutions, which would fundamentally change current fields and principles of business. The characteristics of this new order remain unknown.

Furthermore, the characteristics themselves change due to the unending:

- changes in business culture and social conventions;
- globalization and changes in the principles of competition;
- development of information and communication technologies.

The aforementioned list of factors necessitating changes to the methods of management in organizations is not itself exhaustive. Furthermore, all such factors are mutually stimulating in a manner which is hard, if not impossible, to foresee. However, it is assumed that organizations which meet the new expectations will be "slimmer," flatter in terms of their structure, more focused on the work of teams, flexible, continually adapting their actions to the needs and requirements of their clients (Płoszajski, 2005).

It is becoming increasingly more apparent that solutions which were once (perhaps even the day before) something to be proud of, should now be seen in terms of a failure in regard to the needs of the client, who is searching for products with diverse features, available on demand, within a reasonable price range, and of perfect quality.Organizations must be committed to working toward meeting both requirements voiced in the past, as well as emerging, often vaguely foreseen requirements of the future. They must remain on top of the changing needs of their clients. To this end, companies should analyze the habits and choices of their clients on an ongoing basis. However, it is no longer possible to understand the clients' ongoing needs on the basis of evaluating their past choices. Changes in client habits resulting from globalization, technological changes, and the implementation of scientific innovation (e.g., IT and medicine) are so rapid that it is becoming crucial to gain an understanding and work in the present itself, on the basis of knowledge of the foreseeable future (Kisielnicki & Szyjewski, 2004, 1). This requires

organizations to make a daily effort to adapt their principles of operation and update their knowledge on the present and future requirements of their clients. It has become necessary to constantly broaden knowledge, as well as collect and analyze experiences resulting from ongoing contacts with clients, partners, and even competitors. In short, organizations must constantly learn how to take action. They must stay on top of rapid changes in terms of both technology and their surroundings, and, first and foremost, stay on top of the growing individual needs of their clients. Companies are forced to raise the appeal of their offer not just by lowering costs and improving efficiency but also through the personalization of products and services. The aim is to approach the new ideal: the single-client market. On this market, there is no optimal or ideal method of managing the business (Champy, 2003, 48).

Competition is not only becoming more fierce but also more rapid (Abell, 2000, 256). Besides traditional competitive fields, such as design and quality, competition is fast becoming a test of speed. According to the spokesperson for Boeing, Scott Griffin, "a fast company will always win with a slow one" (Champy, 2003, 164). The founder of the Yankee Group, Howard Anderson, believes that companies must now have one supreme goal: speed. Speed at any cost, hyper speed. (Tofler, 2003, 328). A company which will manage to adapt itself and its products to the requirements of its clients at a faster pace than the competition will gain a competitive advantage regardless of its current state of resources and possibilities. Fixed assets and expansive organizational structures are no longer a benefit, but merely an operational cost; one which might lead to failure.

In large organizations with extensive multilevel structures speed is forfeit due to the slow pace of the decision-making process, the need to hold internal negotiations, the need to accept changes to the budget, (D'Aveni, 1995, 45-60). Preparing the organization to meet the conditions of the modern knowledge economy requires us to abandon the "foresee and control" approach in favor of "act and learn."

Recent years have witnessed multiple "expensive surprises," which had an enormous influence on entire sectors of the economy. They have demonstrated that organizations without access to cutting-edge management methods were unable to use the opportunities in their surroundings to their advantage (Gierszewska & Romanowska, 2003, 76-91). They were unprepared for the emergence of sudden qualitative changes, which were not included in broadly accepted predictions. They had no knowledge-management system which would enable them to collect, interpret, and react to delicate anticipatory signals coming from their environment (Murray & Myers, 1997). It is, therefore, not surprising that their reaction to changes was usually belated, and oftentimes simply mistaken. With the growing pace of hyper competition

and growing dynamic strategic interactions between competitors on the global market, companies require the implementation of new management methods and tools (Onken, 2003, 233). Methods which allow for flexible adaptation and innovation supported by the ongoing measurement of the needs of the clients, the capabilities of the competition, and the efficiency of the company's processes, as well as tools, allow the company to influence and stay on top of the changing needs of the clients by way of broad, unrestrained experimenting and the rapid implementation of the acquired knowledge in the fundamental operation of the enterprise.

4. The Development of the Concept of Business Process Management

Process management is not a new concept of business management. It started to develop at the beginning of the 20th century. We can divide this time into three, or perhaps four different stages of development, which in relevant literature are often called "waves of process management" (Smith & Fingar, 2003; Bitkowska, 2009, 13):

- industrial engineering;
- value chain management;
- evolutionary adaptation to the needs of the clients.

The aforementioned stages showcase the methods of adapting process management to the requirements set by changes to business, as well as changes in approach to management itself.

I. The First Wave of Process Management – "Industrial Engineering"

The main goal of process management in the 1st wave was better time utilization, cost reduction, and expanding the production volume. This approach was used in the analysis and improvement of the functioning of production processes. The main assumptions of this approach were:

- an understanding of the process as a sequence of actions describing subsequent work operations;
- the elimination of redundant actions and unnecessary losses;
- the division of the process into fundamentals, or even the atomization of work (Drucker, 2000, 140);
- the complete expendability of workers performing simple, simple tasks;
- the elimination of initiative, both innovative and performative, among workers;

The Ford construction line has become the symbol of industrial engineering. It necessitated workers performing as "industrial robots" to perform a specific sequence of action within a specific time range in order to meet the tempo of production. Tofler (2003, 290-293) writes: "On principle,

work did not require any skills; it was tiresome, standardized, divided into the easiest tasks possible." Despite the fact that Taylor (1911) was the first to connect knowledge on working with working itself, he was also the one who separated thinking from the action, set in stone for a long time the division between managers ("thinkers") and those performing the actual work ("workers"). In this concept, the worker is a kind of a robot, which operates thanks to the control of the manager. (Hammer, 1999, 43). In the first half of the 20th century, the use of industrial engineering has allowed companies for the increase in the efficiency of physical workers by order of magnitude. The most benefits went to those companies who were the first to introduce the concept (e.g., Ford Motor Company) or were able to coordinate all of its operations to perfection (e.g., Toyota).

However, due to the separation of thinking and performance, the concept of industrial engineering has been burdened with two crucial faults:

- It allowed for raising the efficiency of physical work, but it failed in regard to mental work. The latter requires creative thinking due to its very nature, and it is impossible to compartmentalize it into simple performing actions which would require no thinking whatsoever. For this reason, it is also impossible to automate, which in the scope of "industrial engineering" would mean full repetition regardless of the individual personnel performing the work required.
- It requires both the technological process and the product itself to remain unchanged for long durations.
- If management, planning, and quality control are separated from the actual performance of work, the proper preparation and coordination of the production process require a long time due to the very precise nature of the analysis of all of the possible scenarios in order to defend the organization from all probable or simply possible threats. This, in turn, means that it is impossible to introduce rapid changes to the product line, nor rapid changes of a single product to the requirements of the client.

Industrial engineering yielded great results at a time when:

- the main problem was the organization of physical labor
- technologies were practically unchanging, and work was performed in stable conditions
- the product was standardized and shipped without taking into account the individual needs of the client.

However, following the growing needs of the clients and the growing pace of changes introduced to both products and services the principles of industrial engineering had ceased to provide a competitive advantage. They had started to become a burden, or even the cause of failure, at a time of

increased market change and increased customer interest in access to a diverse range of products. A good example of the erosion of the benefits provided at first by the implementation of the principles of the 1st wave of process management is the history of the Ford Motor Company. The company had been producing a single model of an automobile for 20 years, which in the years 1914-1926 has also been offered in one color. However, what provided a considerable competitive advantage in the years 1908-1920 almost lead to the company's downfall in the years 1920-1927. The response to changing requirements in the practical dimension of business management was the 2nd wave of process management.

II. The Second Wave of Process Management – "Value Chain Management"

The main goal of the 2nd wave of process management took the form of management focused on the value offered to the client. Its main assumptions were:

- the total operations of an organization should be focused on providing products and services to the client and the processes within the organization should be subordinated to this task;
- each action or group of actions should provide value to the client;
- the value is dependent not only on the quality of work performed in the course of specific actions or their groups but on their coordination as well.

Porter's research on the value chain (1985) is considered to be the beginning of the 2nd wave of process management. In 1986 Deming (1986) formulated the "Deming Flow Diagram," which described the horizontal connections within a vertical organization, running from the supplier to the client, as a process which can be measured and improved upon. In their article "New industrial engineering: Information technology and business process redesign" (1990), Thomas Davenport and James Short stated that the principles of process orientation are fundamental to the organization. In the same year, Michael Hammer (1990) presented the concept of process orientation as the fundamental component of reengineering. Such a proliferation of meaningful and often game-changing works in a single decade demonstrates the rapid pace of undergoing changes and the strong pressure of business to adjust management to the changing rules of competition and conditions of operation.

The main directions of the development of process management in the course of the 2nd wave of process management were:

Revolutionary concepts and methodologies

The most known among the concepts of revolutionary changes to managing the organization is the concept of Business Process Reengineering (Hammer & Champy, 1993). It calls for:

- the radical redesign of the organization and its processes;
- the rejection of existing principles of action (in regard to the organization and its processes);
- with the aim of a sharp rise in efficiency, followed by a rise in profit, by 50%, 100%, or more;

However, the actual execution of those principles has led to:

- significant problems with the management of human resources;
- stemming from the irrational expectation of abrupt changes in organizational culture;
- the loss of a significant part of the knowledge of the organization.

Most attempts at implementing Business Process Reengineering have failed. At present, no more concepts and methodologies are introduced with the mindset of a "fundamental rethinking and a radical redesigning of the organization" and there seem to be no practical implementations of the concept of Business Process Reengineering (Davenport, 1995).

Evolutionary concepts and methodologies

Evolutionary concepts and methodologies were based on various modifications and practical extensions of the Deming PDCA (or rather, PDSA) Cycle. They called for:

- the ongoing, evolutionary innovation within the organization;
- the operation of the organization in a way which enables constant innovation.

The most representative among the evolutionary concepts is the concept of Business Process Redesign (Davenport & Short, 1990; Davenport, 1996).

However, despite multiple successes, with the rising pace and the unforeseeable character of changes in the market economy, implementations stemming from this group of concepts have begun to fall short of the requirements that organizations started facing in effect of their:

- over-focus on perfecting instead of innovating;
- lack of openness to radical changes caused by, e.g., new groundbreaking technologies or rapid changes to social life and work culture;
- slow and limited approach to knowledge management.

Process management concepts within the 2nd wave of process management have developed under the influence of the needs and expectations of business, and, first and foremost, the experiences gained during subsequent implementation. The cause of this was the growing pressure of doing business, caused by:

- the growing volatility and pace of operations;
- globalization;
- the rapid development of information and communication technology (ICT);
- changes to social culture as the result of e.g. widespread digitization of life and work;

which forced organizations to search for new methods of operation and, as a result, new methods of management. This constant practical verification of a theoretical process management concept pointed to the cumulating changes, which have become the basis of formulating the theoretical framework for the 3rd wave of process management.

III. The Third Wave of Process Management – "Evolutionary Adaptation to the Needs of the Clients"

The main goal of the 3rd wave of process management is to enable organizations to adapt to the changing needs of their clients on an ongoing, evolutionary basis. Its main assumptions are:

- process management as a coherent and flexible system of operation and innovation within the organization;
- management of the entire process from the point of view of the client, also engaging the organization's suppliers and partners;
- the harmonious use of ICT technologies in order to raise the quality of management (flexibility speed, accessibility mobility, transparency) and shorten the process optimization loop (Smith & Fingar, 2003).

The 3rd wave of process management stresses the importance of using information and communication technologies in order to ensure day-to-day business flexibility, all the while keeping in mind the necessity to delegate powers in places which are close to the place of operation.

Unfortunately, the assumptions of the 3rd wave did not include the needs and the attempts of using process management to manage unstructured processes, which have been going on since the '90s, also with the use of methodologies and tools of case management. In result, the proposed solutions still do not encompass the accelerating individualization of the needs of the clients, nor the growing significance of creativity and inventiveness on the part of knowledge workers. With changes to the social culture and work culture due to the widespread digitization of work and life alike, such factors have a growing influence on the management of modern organizations.At the same time, the paradigm of the superiority of a process diagram over different forms of process description, which is promoted by a large number of scholars and practitioners of process management, results in most organizations becoming unable to implement process management in accordance with 3rd wave principles. Failing to notice or dismissing outright the undergoing changes

results in a widening chasm between theoretical reflection and the expectations and practical solutions implemented in the organization.

The proposed evolution of process management in the course of the last 100 years demonstrates how fundamental changes in requirements and expectations of holding business resulted in changes to conceptions and practical rules (sometimes even implicit unwritten rules) of implementing process management (Table 1).

Table 1. Factors behind changes and changes in approach to process management

Wave of process management		**Rules (assumptions)**	**Fundamental change factors**
I	Industrial engineering (1911-1980)	• No process changes or slow pace of process changes • Elimination of redundant actions and unnecessary losses • Division of the process into simple elements • Full expendability of workers performing simple tasks	• Larger product and service variability, which necessitates larger production process variability • Bigger significance of intellectual work • Bigger focus on services
II	Value chain management (1985-2003)	• Each task or group of tasks must provide value for the client • The value is dependent not only on the quality of the work performed during different actions or their groups but also on their coordination as well • Processes within the organization are innovated upon through evolutionary or revolutionary means	• Globalization • Growing volatility and pace of operations • Rapid development of common information and telecommunication technologies

Wave of process management		Rules (assumptions)	Fundamental change factors
III	Evolutionary adaptation to the needs of the clients (2003-2015)	• Process management as a cohesive and flexible system of operation and innovation within the organization • The entire process is being managed from the point of view of the client, while also taking into consideration the organization's suppliers and partners • Harmonious use of information and communication technologies (ICT) in order to raise the efficiency of management and shorten the process optimization loop	• Changes to social culture due to the common digitization of work and life • Growing importance of knowledge and the practical use of intellectual capital for the organization

The direction of the development of process management is determined by two fundamental, mutually stimulating and strengthening factors:

- the development of information and communication technologies (ICT);
- changes in work and life social culture.

Both resulted in the rapid acceleration and globalization of business operations as the result of the rapid acceleration and expansion of the possibility to share knowledge and the de facto dismantling of the barriers that distance once put up for holding business. Due to their rapid, widespread adoption of the private sphere, information and communication technologies are also used without cultural barriers in business. New business technologies and models, such as the personalization of products and services, e-commerce, mobile technologies, cloud computing, the Internet of Things, and elements of Artificial Intelligence have practically entered business at the same time as entering the private lives of millions, if not billions of potential workers and clients. In effect, it is impossible to ignore new factors which necessitate introducing changes to process management in organizations, such as:

- the growing digitization of business;
- further changes to social norms due to the widespread digitization of work and life (forced digitization);
- required individualization of processes with the use of big data techniques and Artificial Intelligence.

5. The actual state of the practical implementation of process management in organizations

The implementation of traditional business process management in accordance with the principles of the 3rd wave of process management is facing problems which are the result of failing to notice (or negating outright) the changes that have been introduced and which are still being introduced in the market economy. They are the results of attempts at implementing traditional, that is, static management in business, which itself is becoming increasingly more dynamic. As numerous research by various organizations and research institutes demonstrates, static processes account for about 20-40% of all the processes within the organization (Kemsley, 2009a; Pucher, 2010; Ukelson, 2010; HandySoft, 2012).

These processes are primarily:

- processes regulated by external laws (e.g., accounting, or financial processes);
- internal processes of the organization which have no substantive contact with client-facing processes;
- production processes highly regulated due to objective external criteria (e.g., biological, physical, chemical) or held patents, concessions, and licenses.

In the case of the remaining 70% to 80% of business processes, particularly those which pertain to the creation or supply of innovative, modern products and services dedicated to outside clients, it is impossible to simply repeat in detail a once-defined "ideal" process, as there are simply no ideal processes in the knowledge economy, to begin with. Each performance of a given diagnostic-therapeutic or e-commerce necessitates the awareness of the specific content of the performance, which often cannot be foreseen (vom Brocke, Zeit & Schmiedel, 2015).

As recently as in 2012 it was widely believed that "unstructured" processes cannot be modeled at all (Di Ciccio, Marrella & Russo, 2012). In consequence, within traditional process management such processes are de facto impossible to manage or improve on, as according to the definition of the Deming Circle or Thomas Davenport's concept of Business Process Redesign, modeling is the first fundamental stage of management and innovation (Deming, 1986; Davenport, 1996). In this case, it seems obvious that in reality most of the processes within an organization in the knowledge-based economy are beyond the scope of traditional business process management. This group includes processes which are critical to the knowledge economy, such as research and development processes or processes pertaining to supplying products and services to clients.

Despite having reached the end of the cognitive potential of traditional process management and the end of a new, cohesive, theoretically sound concept, which would be able to respond to the needs of the organization, new methodologies, and tools pertaining to process management are still being developed in practice. Both process management and its supporting IT systems (Business Process Management Systems – BPMS), as well as case management and Case Management Systems (CMS), are evolving rapidly in response to the pressures exerted by the client (Szelągowski 2013). In contrast to theoreticians, creators and suppliers of implementation methodologies and BPMS systems had to take into consideration the fact that only 30% of processes within organizations are static.

Multiple companies which for years have been specializing in solutions supporting process management began to create solutions in the form of hybrids of BPMS and CMS (Appian, Bizflow, BOC, IBM, K2, Kofax, Pegasystems, …). In turn, proponents of case management had to account for the requirements of the users in terms of preparing and agreeing on specific scenarios of performance, which are sometimes unofficial or have the form of suggestions (de facto predefined patterns or process scenarios). At the same time, the pressures of the users of Case Management System (CMS) tools have first led to the adoption of business rules, then process patterns, and finally process scenarios in the form of business process models prepared in different notations (Keirstead, 2013; ISIS Papyrus, 2016). For example, the Adaptive Case Management system offered by ISIS Papyrus allows for the modeling of processes in BPMN, EPC, and UML notations. At the same time, on March 12, 2012, Gartner published the first Magic Quadrant for BPM-Platform-Based Case Management Frameworks report (Gartner 2015a). Less than a week later, another Magic Quadrant For Intelligent Process Management Suites report was published, which was partly prepared by the same analysts and for the most part covered the same range of products (Gartner, 2015b). Furthermore, 2015 saw the publication of Gartner and Forrester's reports on traditional BPM Suites and Case Management systems, as well as similar fields of operation, document management systems (DMS), and workflow systems (Antunes & Mourão, 2010; Bider & Perjons, 2015). This multitude of analyses and reports on changes offered on the market of methodologies and IT systems shows just how intensely business process management is evolving. Also, how we are missing an in-depth reflection as regards management theory; one which would attempt to unify and provide direction to the numerous business experiences and the development of BPMS/CMS systems (Trkman, 2009).

6. The 4th wave of process management – „Business Process and Knowledge Management"

The main requisite for the emerging 4th wave of process management is the cohesive use of business process management and case management in order to ensure ongoing efficiency and the constant refreshing of the competitive advantage of the organization, which is fragile in a hypercompetitive environment (D'Aveni, 1994).
Its focal assumption is the broadest use of the organization's intellectual capital as the source of a competitive advantage thanks to:

- allowing for the ongoing, widespread use and creation of knowledge by the entire personnel of the organization in the course of performed business processes;
- managing processes not through data and information, but also thanks to the organization's knowledge;
- rapid adaptation and eliminating the gap between business needs and IT solutions.

This leads to the natural bringing together of process management and case management. The integration of both concepts on the basis of acknowledging the material role of the personnel and the new role of management allows for the creation of a concept without the previously described deficiencies. It enables process management to allow for the ongoing, systemic opening of organizations to rapid, qualitative, unforeseen changes in the hypercompetitive environment. Process management in the knowledge economy cannot be limited to the routine, repeated execution of the same, even best-optimized and best-managed process. Because of the specific character of the business, it must also encompass unstructured processes, which require real-time knowledge management, and the execution of which is dependent on the knowledge (including the experience) of the knowledge worker, as well as the individual needs of the client (the context of execution). In effect, process management must be dynamic following the definition formulated at the beginning of the article, in order to allow knowledge workers the freedom to make full use of their knowledge (including tacit knowledge) in the course of all business processes performed within the organization.

7. Conclusions

In over 100 years of the development of business process management, the scope of its use in organizations hadchanged. In the course of the 1st wave of process management, which was initiated by Taylor's works in 1911, it was limited to production processes alone. At present, process management is used in all fields of management, both within organizations and between

the organization and its surroundings. The approach to process management had been changing as well. At first, the aim of process management was the formulation and execution of an optimal, ideal method of work. Later, this goal has been supplemented with the side goal of constant process improvement. Later still, another goal of process management was to adapt processes to the changing needs of clients and the rules of competition (Armistead, Pritchard & Machin, 1999, 96-106; Smith & Fingar, 2003). As the article has demonstrated, changes to the concept of process management were introduced in reaction to changes in the conditions of holding business itself. Theoretical reflection supported practical attempts at adapting process management to the changing expectations of the organization. At present, there is also the need for critical theoretical reflection on traditional process management. The article also points to the direction of further developments of process management, which is primarily set by practical solutions. It is apparent that this direction is determined by two mutually stimulating and strengthening factors with large dynamics:

- the development of information and communication technologies (ICT);
- changes in business culture and social conventions.

The technical possibilities created in effect of the factors above, as well as the evolution of client needs, lead the evolution of process management in the direction of maintaining the efficiency of operations and the quality of the supplies products and services. As well as the direction of the ongoing, systemic adaptation of operations to the changing needs of the clients and the conditions of process performance. The aim is not just "operational perfection," but also the ability to use the entire knowledge (the entire intellectual capital) of the organization in order to be able to offer individualized products and services at the time and place required by the client (Kohl, Orth & Steinhöfel, 2015).

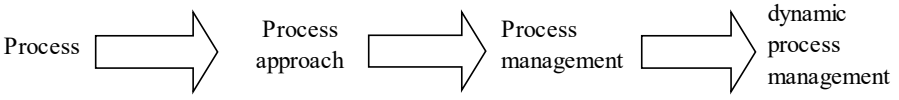

Figure 1. The evolution of process management

Source: Bitkowska A. (2013). Zarządzanie procesowe we współczesnych organizacjach (Process management in modern organizations). Warszawa: Difin SA, 40.

This goal falls outside the scope of traditional process management. Its achievement requires the use of dynamic business process management, in which process performers can, in the range of process performance itself,

use their knowledge with the aim of adapting the performed processes to the requirements of the clients and the context of performance (Figure 1).

This knowledge is revealed and managed within the organization in a systemic manner, which allows the organization to broaden the scope and intensify the use of its intellectual capital to an extent which is not available with the use of traditional process management. Only then can process management extend not to 20%-30%, but to all of the processes in the organization in the knowledge economy. As experiences from recent years show, failing to notice or negating outright the ongoing changes will not stop the development of practical methodologies and tools pertaining to process management. It will not stop the integration of process management with case management, nor its integration with knowledge management. It will only widen the chasm between theoretical reflection and practical solutions implemented within the organization, as well as lead to growing confusion resulting from operating through trial and error. Unfortunately, "theory without practice is immaterial, and practice without theory is blind." We are blind at present. Without a doubt, we are not at threat of being immaterial.

Changes to IT systems supporting process management described in this article have far exceeded their theoretical underpinnings. One substantive benefit of the emerging 4th wave of process management will be (or perhaps is at present):

1) Thanks to the adoption of experiences collected in the course of case management within dynamic business process management, process modeling will not only be focused on reflecting the current knowledge of the organization on its methods of holding business but also on the implementation and constant verification of current and new knowledge within the organization. This will allow for more rapid adaptation of the organization to the changing conditions of business.
2) The practical optimization of not just static processes, as has been the case to date, but also dynamic processes, which will considerably broaden the scope of using methodologies and BPM tools, and, in turn, bring about more benefits to the organization.
3) The implementation of knowledge management focused on acquiring knowledge during process performance, will considerably affect competitiveness and the pace of development of the organization in the knowledge economy (Jung, Choi & Song, 2006).

The group of beneficiaries of theoretical research within the concept of the 4th wave of process management will also include practitioners dealing with the preparation and implementation of process management methodologies and tools within organizations, including:

- suppliers of modelers and BPMS and CMS systems, as well as ERP/MRPII;
- consulting and implementation companies operating in the field of process management and the broadly understood use of IT systems in management; and
- the public administration and business in the scope of both ongoing and planned implementation projects pertaining to process management, the digital economy, crisis management.

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