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Knowledge Management in the 21st Century: Resilience, Creativity and Co-creation

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Contemporary knowledge management tools for supporting of knowledge intensive processes and improving quality of client care

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Structured Abstract

Purpose – Nowadays, the focus on supporting knowledge workers is very significant and on the first place, there is a need to support the knowledge intensive processes – processes of reasonable and right decision-making. These processes can be improved by implementation of knowledge management tools that allows of reducing the cost of gathering and disseminating knowledge. The problem the author works with here is: How organizations can successfully use case management for forming corporate knowledge. The purpose of this paper is consideration of the issues of ICT and information systems (IS) applications for supporting of knowledge-oriented case management and improve quality of client care.

Design/methodology/approach – Scientific methodology of the research rests upon system approach, complex and comparative analysis. In this stage of the study, the author uses the research method based on literature review, analysis of large volumes of information, and findings of investigations in the field of knowledge management tools successful implementation for knowledge intensive processes supporting and improving quality of client care.

Originality/value – Original contribution of the work is analysis and classification of case management tools, used for knowledge workers support. The research also considers the cultural aspect related to the case management practical application. The implementation of CM systems requires consolidation of infrastructure and people to understand the impact of modern technologies on everyday business practices and the need for data management and analysis.

Practical implications – Currently adaptive case management systems are used actively in the following areas:

- Complex services provision in health care, jurisprudence, finance, reporting and informational support, conduct of client affairs;
- Development of complex products and conducting marketing campaigns;
- Social sphere and social initiatives, etc.

Case management solution based on Business Process Management (BPM) technology provides the best way for support of capturing, gathering, sharing, and retrieval of knowledge for knowledge workers within a business processes. Systems of BPM and

Enterprise Content Management (ECM) with specific support for knowledge-intensive processes can be discussed as a more appropriate optimal decision to case management. Moreover, case management system can combine the best features of several classes of information systems.

Keywords – Knowledge management, Knowledge-intensive processes, Case management tools and systems

Paper type – Academic Research Paper

1 Introduction

The knowledge-driven economy launches new challenges and opportunities for society and business. Obviously, that peculiar actions, technologies and information systems are needed to support and take advantage of these processes. This evolution can be enhanced by the adoption of case management (CM) that is able to reduce the cost of dissemination and gathering knowledge. Case management is the management of collaborative processes that coordinate content, knowledge, and resources to progress a business to achieve a particular goal, where the path of execution is often unpredictable and where human judgment has significant influence for determination of how the end goal can be achieved.

Nowadays case management can be discussed as an effective tool for forming corporate knowledge. Information society development is characterized by a number of peculiarities, among which the most important are such as increasing the role of information and knowledge in society, the creation of a global information space, the development of the knowledge economy and innovative approaches to the use of modern information communication technologies (ICT). This paper deals with the issues of Russian and international researches in the field of knowledge-oriented CM implementation and discusses how CM can be properly supported by contemporary information technologies. It is theoretical study based on literature review, analysis of large volumes of information, and findings of investigations in this field. The main goal of this paper is consideration of the issues of ICT and information systems applications for supporting of knowledge-oriented case management and improve quality of client care. The objectives of this paper are features and capabilities of contemporary ICT and systems applications for supporting of knowledge-oriented case management. In other words, the problem the author works with here is: How organizations can successfully use case management for support of knowledge-intensive processes and forming corporate knowledge. This paper focuses on the issues of capturing, gathering and sharing knowledge within an organization with the use of CM and ICT for CM. The main research question is - what classes of information systems are more appropriate for case

management successful practical application and achieve efficiency of knowledge processes?

Original contribution of the work is based on consideration and evaluation of case management systems (CMS) as tools for knowledge workers support, achieving efficiency of knowledge processes, and improving quality of client care.

The rest of this paper is structured as follows: theoretical background and literature review; research methodology, the key characteristics and main functions of case management; knowledge management tools for case management supporting; practices of case management implementation: analysis of Russian and international experience; conclusion.

2 Theoretical background and literature review

The theory of the Information Society considers the information and media as the primary sources of social development. It prioritizes knowledge and its applications. The term “knowledge economy” was introduced in the 1960s to describe a transition from traditional economies to ones where the production, dissemination, and use of knowledge are very significant, nowadays the term "knowledge economy" is often used (Drucker, 1969; Grant, 1993; Romer, 2001; Snellman and Powell, 2004). We have now progressed from the knowledge-based economy to the knowledge-driven economy. Moreover, it can be accumulated in a powerful system of national and international resources, paying its way many times and bringing profit. The term “innovation economy” is also used to describe a new form of economic organization that highlights a special role of knowledge and innovation, primarily scientific knowledge (Davenport, Leibold, and Voelpel, 2006; Nevel et al, 2009). Andreeva, Garanina and Ryzhko (2015, p. 2) insist that the ability to manage the company's intangible assets - intellectual capital - is one of the core competencies of the company in today's economy. Such assets may generate up to 50% of the market value of the company. According to (Roos and Roos, 1997, p. 415) Intellectual capital is the sum of the “hidden” assets of the company not fully captured on the balance sheet, and thus includes both what is in the heads of organizational members, and what is left in the company when they leave. Intellectual capital can be divided into three main elements: human capital, relationship capital, and organizational (structural) capital (Volkov and Garanina, 2007, p. 87).

Intellectual capital is the most important source for sustainable competitive advantages of companies (Inkinen, Kianto and Vanhala, 2015). Therefore, nowadays, the focus on supporting knowledge workers is very significant and on the first place, there is a need to support the knowledge intensive process – processes of reasonable and right decision-making. These processes can be improved by implementation of case management that allows of reducing the cost of gathering and disseminating knowledge. The contribution of adaptive (advanced) case management (ACM) to innovation has been achieved most notably by reducing transaction costs between companies and other actors, especially in

areas such as information search, saving, analysis, and sharing. Case management is the management of long-lived collaborative processes that coordinate knowledge, content, correspondence and resources to progress a case to achieve a particular goal; where the path of execution cannot be predetermined in advance of execution; where human judgment is required to determine how the end goal can be achieved; and where the state of a case can be altered by external out-of-band events (White M., 2009). Case management is vital to the successful work of many companies, and is considered as an important factor to supporting knowledge intensive process.

Davenport (2011) and Richardson and Hope (2003) state that case management recognizes the importance of knowledgeable case managers for better customer service who, instead of being eliminated through process automation, are given the authority to make decisions about the progress of client cases and coordinate the service provision with other parts of the organisation. With the emergence of knowledge work, case management was picked up by knowledge management experts and it was seen to take on a new role – that of improving knowledge workers' productivity (Davenport, 2011; Richardson and Hope, 2003).

The term adaptive case management was proposed by Workflow Management Coalition (WfMC) in 2010. Adaptive case management is information technology that exposes structured and unstructured business information (business data and content) and allows structured (business) and unstructured (social) organizations to execute work (routine and emergent processes) in a secure but transparent manner (WfMC, 2010). Adaptive case management is an approach to work that supports knowledge workers to get their work done; it is a technology that allows managing the process of solving the problem, depending on the situation. One of the main characteristics of ACM is flexibility.

Production case management (PCM) is an approach to supporting knowledge workers, which is programmed by specially trained technical people (programmers) to produce a case management application. That application is deployed for use by knowledge workers to get their work done. The application offers collections of operations that the knowledge worker can select to use or not use depending on the specific needs of the case (WfMC, 2010).

Throughout the literature case management has been considered as a strategy (Ross et al., 2011), a process (Davenport and Grover, 2001; White, 2009), and technology (Davenport, 2011; De Man, 2009; Reijers et al, 2003; Van der Aalst et al., 2005; Weber et al, 2010). The more widely used definition is provided by the Case Management Society of America (CMSA): "Case management is a collaborative process of assessment, planning, facilitation and advocacy for options and services to meet an individual's health needs through communication and available resources to promote quality cost-effective outcomes" (CMSA, 2009). This is a standard definition used by the authors from varying business spheres (without the healthcare context), for example, technology/process

management literature (De Man, 2009). Previously, custom-built case management solutions could be found across a number of traditional domains such as healthcare, social care, legal practices and government cases, but more recently renewed efforts have been made to apply case management applications in new knowledge-intensive domains and strategic areas such as project management, incident management, investigations, and audit (Janachkova and Li, 2013).

3 Research methodology. The key characteristics and main functions of case management

Scientific methodology of the research rests upon system approach, complex and comparative analysis. In this stage of the study, the author uses the research method based on literature review, analysis of large volumes of information, and findings of investigations in the field of knowledge management tools successful implementation for knowledge intensive processes supporting and improving quality of client care.

Interest in case management has climbed higher and higher throughout 2009. According to Forrester Research "Dynamic Case Management — an Old Idea Catches New Fire" (Moore C, Craig Le Clair, Viti R., 2009) CM Drivers include:

- An increased need to manage the costs and risks of servicing customer requests — like loans, claims, and benefits;
- A greater emphasis on automating and tracking inconsistent "incidents" that do not follow a well-defined process;
- New pressure on government agencies to respond to a higher number of citizen requests;
- New demands that regulators, auditors, and litigants place on businesses to respond to external regulations;
- The increased use of collaboration and social media to support unstructured business processes.

The key characteristics of case management include information complexity, knowledge-intensive, and variability. CMSA (2009) suggests that the goals of case management are: The case manager shall facilitate coordination, communication, and collaboration with consumers, providers, ancillary services, and others in order to achieve goals and maximize positive consumer outcomes based upon individual assessments of consumers' needs. According to Case Management Society of America (2009) there are sixteen CM functions, the author believes that the main of them include:

- Use a consumer-centred, strengths-based, collaborative partnership approach;
- Use a comprehensive, holistic approach;
- Practice cultural competence, with awareness and respect for diversity;
- Facilitate informed choice, consent, and decision-making;

- Pursue professional excellence and maintain competence in practice; and/or
- Use process and outcome measurement, evaluation, and management tools to improve quality performance.

4 Knowledge management tools for case management supporting

Case management has evolved into a knowledge-based system, which leverages multiple technologies (such as BPM, content management, document management, collaboration tools and predictive analytics) to analyse and bring structure to knowledge-intensive processes (Forrester, 2010; Davenport 2011). However, such systems are only beginning to arise and scientific researches and empirical data will be required to validate these claims and assess the effectiveness of newly emerging case management systems on the market. The main reasons for implementation of case management systems are limited data collection and data extraction capabilities. One more reason for this is poor coordination and communication between business actors, in particular uncoordinated transitions of clients between providers and duplication of business-processes across different departments because of inability to share information and work collaboratively.

The first information systems for case management supporting appeared at the end of last century, in the early 1990s. They were starting with client databases, calendar, documents, and basic reporting tools. At the last ten years IS supporting case management practices have developed significantly.

At present, ACM systems are at the junction of classic enterprise applications (Fig 1):

- Business Process Management (BPM);
- Enterprise Content Management (ECM);
- Customer Relationship Management (CRM);
- Project Management (PM);
- Teamwork.

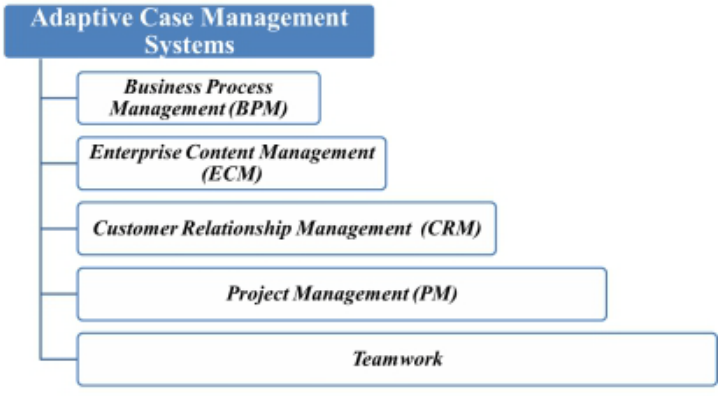

Figure 1 Adaptive case management systems

However, these technologies and systems are not sufficient to address the key problems, which are mentioned above: limited data collection and data extraction capabilities, poor coordination and communication between business actors, in particular uncoordinated transitions of clients between providers and duplication of business-processes across different departments because of inability to share information and work collaboratively. At the same time, Business Process Management and Content Management Systems have the necessary functional capabilities for solving such kind of problems. BPM and ECM systems with specific support for knowledge intensive processes can be discussed as the more appropriate solutions to case management.

One of the key advantages of CM applications is that they enable easier integration between departments than many other systems approaches. Moreover, this approach ensures smooth integration between departments whose internal processes might be drastically different.

As a rule, case management is implemented on client level and doesn't interfere with existing organisational processes and structures. The other challenge of case management applying is cultural. The implementation of CM systems requires consolidation of infrastructure and people to understand the impact of modern technologies on everyday business practices and the need for data management and analysis.

4.1 Case management solution based on BPM technology

Organizations can successfully use case management for forming corporate knowledge by using features and capabilities of modern software, such as BPM and ECM systems.

Business Process Management is a systematic approach to improving an organization's business processes. BPM activities seek to make business processes more effective, more efficient, and more cable of adapting to an ever-changing environment. BPM systems and ACM are useful for different kinds of business situations:

- Highly predictable and highly repeatable business situations are best supported with BPM.
- Unpredictable and unrepeatable business situations are best handled with ACM.

Comparison of the ACM and BPM leads to the following conclusions (WfMC, Workflow Management Coalition 2010):

- Both are used to help workers within organization to coordinate better, to achieve goals more efficiently, and used to better meet the needs of their customers.
- Both involve data, process, roles, communications, integration and analytics.

However, they take very different approaches to doing this, which is effective in different business situations.

As opposed to traditional systems of business processes automation, in BPM-based case management systems the emphasis is not on the observance of a fixed sequence of works, but on data organization, their completeness and accessibility for participants in a business process. Under "data" is meant not only documents, but also information about business processes: tasks, user roles, work history, events that influence the process. BPM-based case management can take into account unpredictable or uncertain nature of cases and effectively combine processes and knowledge.

4.2 ECM-based case management

For effective ECM system implementation for CM support one shall take into account the following provisions:

- Specificity of applications. Content management automation applications and applied systems are entity-specific.
- Unified information space organization necessity. One must pay special attention to generalization of mechanisms of search, knowledge acquisition, statistical information accumulation and process analysis. Notably, it is important to have access to information on employees' participation in various business processes. Availability of such integrated mechanisms enables acquisition of essentially new information on the entity work.
- Need for flexible application modification tools. The main task of document management automation consists in propagation of automation to involve the managerial process formalized part. However, the formalization process proper is periodical and iterative. During a specific process implementation, one discovers its weak points and realizes the necessity of its structural changes.
- Complexity of managing an array of applications. In case of progressive implementation of numerous applications automating specific document processing tasks that are not integrated into a unified system, their support becomes critically more complicated and costly. This may finally render null the automation effect and requires implementation of applications within the framework of a unified administration and support system.

All functions of an electronic document management system are to be classified into eight groups (Serova, 2011, p. 5):

- Functions of navigation and organization of access to information ensure convenient user access to different applications and include such basic tools as personal and group queues of document processing jobs, tools for navigation within the system data hierarchy, data representation adjustment possibility, document processing functions initialization tools etc.
- Functions of document accounting or file deployment tools provide for recording documents forwarding information, document and reference attributes, directory maintenance, document account cards development, definition of a business logic

for the account cards processing (field value verification, provision for uniqueness, automatic number assignment), definition of document processing operations, support of document processing life cycle etc.

- Functions of work with a document archive include storage of document files, lock and version management, storage costs optimization. Here also belong document text scanning and recognition etc.
- Functions of documents routing and status control provide for delivery of documents to users' workplaces, enable document processing in online and offline modes (via e-mail), collection of information on users' actions, control of current document status etc.
- Business processes automation tools include business process modeling tools, imitation modeling tools and an environment for process actualization and monitoring as well as tools for accumulating statistical data on process performance and their costs and efficiency analysis.
- Group work organization tools include tools for group discussion and document elaboration.
- Functions of search and knowledge management include full-text and attribute search, search by classifiers, tools for complex search queries organization, varied smart search technologies, document cataloguing and classification tools, creation of knowledge bases on different data domains, receipt of aggregated information (reports) etc.
- Functionalities extension capabilities play an important role in selection of a content management system. In the course of applications creation the standard tools of their adjustment as provided by the platform may turn insufficient. This also necessitates usage of program platform interfaces.

CM system can combine the best features of several classes of information systems. From systems for Business Process Management - Case Management takes the abilities to appoint tasks to individual employees, control of execution of commissions, management of business rules and reporting tools. From systems of Enterprise Content Management - ability to work with unstructured data, the possibility of a flexible classification and building hierarchies of such data, support of different versions, access control mechanisms and logging changes.

5 Practices of case management implementation: analysis of Russian and international experience

Currently ACM actively are used in the following areas:

- Complex services provision in health care, jurisprudence, finance, reporting and informational support, conduct of client affairs;
- Development of complex products and conducting marketing campaigns;

- Social sphere and social initiatives, etc.

The best practices of case management successful implementation are related to the health care and social sphere. One of the main goals of case management is to provide social services by the most effective way. National Association of Social Workers (USA) has been developed the Standards for Social Work Case Management (NASW, 2013). Thus, the case management - is a client support in solving its problems from the beginning to the end.

Business Process Management and Enterprise Content Management suites alone are insufficient for dynamic case management, but the convergence of BPM, ECM, business analytics, and event processing will breathe new life into case management. Lean initiatives to improve business processes will also shine a spotlight on case management. These forces will push document-centric BPM suites toward packaged case management offerings (Moore et al, 2009).

As a rule, implementation of CM in organizations is carried out in the following four stages (Figure 2):

- Statement of the task and case opening
- Research and choice of the way of solution
- Realization, monitoring, and evaluation
- Closing of the case, reporting, pattern saving, and archiving.

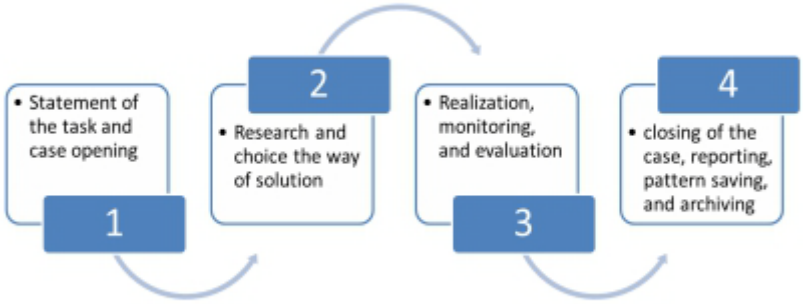

Figure 2 The main stages of case management implementation

In the Russian market there are now the most famous case-products of the following vendors: IBM: Adaptive Case Management; SAP: RCM; EMC Documentum: xCP; Open Text: Case Management Framework. Each of the vendors implements their understanding of the concept of the case management, taking into account the best features of its own platform (Table 1).

Table 1 - The most famous Case Management Systems in Russia

Vendor	Soft - CMS	Distinctive characteristic
IBM	Adaptive Case Management	Completeness of Case Management functionality Industrial system integration of business rules management iLog
SAP	RCM	Integration of Case Management and Record Management in a single package Unlimited mutual nesting cases and records
EMC	xCP	**Integration of the system mass input Captiva** **Integration with industrial systems of business process management**
Open Text	Case Management Framework	Built-in ad-hoc workflow management system Integration with SAP ERP and SAP RCM - for example, the ability to establish a connection between the business-object and case

Source*:* CNews Analytics. (2011). *Will it help case management business?,* Available: http://www.cnews.ru/reviews/index.shtml?2011/02/03/425818_2 [accessed 05.04. 2017].

6 Conclusions

Intellectual capital is the most important source for sustainable competitive advantages of company. So, nowadays, the focus on supporting knowledge workers is very significant and on the first place, there is a need to support the knowledge intensive processes – processes of reasonable and right decision-making. These processes can be improved by implementation of knowledge-oriented case management that allows of reducing the cost of gathering and disseminating knowledge.

One of the key advantages of CM applications is that they enable easier integration between departments than many other systems approaches. Furthermore, this approach ensures smooth integration between departments whose internal processes might be drastically different.

But, as a rule, case management is implemented on client level and doesn't interfere with existing organisational processes and structures. The other challenge of case management applying is cultural. The implementation of CM systems requires consolidation of infrastructure and people to understand the impact of modern technologies on everyday business practices and the need for data management and analysis.

Case management solution based on BPM technology provides the best way for support of capturing, gathering, sharing, and retrieval of knowledge for knowledge workers within a business processes. Systems of Business Process Management and Enterprise Content Management with specific support for knowledge-intensive processes can be discussed as the more appropriate solutions to case management. Moreover, Case Management System can combine the best features of several classes of information systems.

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