Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 238 (2018) 182 – 191

Procedia
Social and Behavioral Sciences

SIM 2017 / 14th International Symposium in Management

Knowledge Management – The Foundation for a Successful Business Process Management

Daniel Paschek,[a]* Larisa Ivascu[a], Anca Draghici[a]

[a] *Management Deaprtment, Politehnica University of Timisoara, Remus str. 14, Timisoara 300191, Romania*

Abstract

In today's dynamic business environment, organizations need up-to-date knowledge to execute their business in the best way. Through the ongoing digitalization and linked communities, companies and businesses, changing parameters as well as varying business framework conditions must be analyzed fast as possible to optimize the processes and gain the best direction for the own company. Therefore, organization use Business Process Management (BPM) to model and manage the existing processes. To perform BPM and optimize processes, data and information there have to be developed a knowledge inventory regarding all processes in order to model the organizational processes together with the required resources. In the following paper, this necessary knowledge process will be analyzed as foundation to perform BPM regarding the known BPM Trends. In addition, the relevance of digitalization will be matched to the Knowledge Management and BPM approach to underline the importance of the correct data and information as BPM infrastructure. Therefore, the mandatory terms will be defined and described theoretically. This literature research will be the starting basis for the approach and following scientific research. To evaluate the KM-BPM Model a survey with different companies has been developed. The research results will contributed to a combined Knowledge and BPM approach for the application in the business in times of digitalization.

Peer-review under responsibility of SIM 2017 / 14th International Symposium in Management.

Keywords: KM-BPM Model, Knowledge Management; Business Process Management; Business Process Trends; Digitalization

* Daniel Paschek. Tel.: +49 171 2016798
E-mail address: paschi88@gmx.net

Peer-review under responsibility of SIM 2017 / 14th International Symposium in Management.
doi:10.1016/j.sbspro.2018.03.022

1. Introduction

Knowledge and the handling of Knowledge in a wide range becoming more and more a significant role in our society and companies. In the economy, knowledge has become a serious competition factor which is influenced by everyone (Guretzky, 2000). Due to these developments, question about the management of this "knowledge capital" have to be answered by Business strategy considerations. Because of the demographic change, companies suspect more and more competitive disadvantages because of the leave of experienced colleagues and knowledge drain (Hommel, 2015). Therefore, the organization of the handover to a successor can save expensive training time and keep the company specific and general knowledge within the organization. In addition, Knowledge Management (KM) can be described as the discipline of exploiting information, people, processes, mindset and collective experience, that will support or lead to the development of new skills, innovation and understanding which turn improves business output or business requirement (Zhu, 2015). From this KM can be understand as type of Business Process Management with specific relations.

In times of digitalization, information and communication technology, in particular, the Internet, provides the global technical infrastructure because of which a fundamental new value-added system based on the exchange of information and knowledge is created (Guretzky, 2000). This systematic increase in productivity in "knowledge production" becomes a challenge for the business and developed industries in general to handle and save Knowledge to operate and improve their processes in the best way, to know and satisfy customer requirements and to be competitive at the market (Guretzky, 2000).

This paper analyzes the Knowledge Management to support Business Process Management (BPM) in times of digitalization (started from the consideration of (Ternai, 2014)). Therefore, the core terms will be defined to set a mutual understanding by the different literature definitions. Next to theoretical analysis, practical BPM-Trends will be considered as well as proposed methodology that connect KM processes with BPM. To underline the theoretical study's a specific survey will executed. The outcome of this paper will be an approach for the business to understand better, how KM supports BPM in an optimal way.

2. Scientific status of the research

2.1 Definition of Digitalization

Digitalization is used in many different interpretations like: digital society, digital transformation, digital change, digital business processes, digital management, and digital revolution. In the literature, Digitalization can be defined as the transfer of analogue information into digital data and the effect, which is triggered by it (Köhler-Schute, 2016).

The goal is to transform all the information that arrives in organizations into a uniform digital format, to process them electronically in the processes with the electronic documents and thus to increase the efficiency, flexibility and the service level internally and externally to customers. The goal must also be to read the data that contains the document in such a way that they can be further processed in subsequent systems. Digitalization means in this way to implement digital business processes in the company environment and over the supply chain supplemented by the customer focus (Köhler-Schute, 2016).

The advantages of Digitalization are time and location independent availability of data, speed of access, space-saving storage and loss-free reproduction to name just a few. (Köhler-Schute, 2016)

2.2 Definition of Knowledge

Without a concrete idea of knowledge, no knowledge management project can be successful. Therefore, it is important to understand what constitutes knowledge and what the differences to the terms information and data are. The term knowledge is used all the time. Sometimes it means expertise and on the other hand wisdom (Frost, 2017).

Mainly the term knowledge is used to refer to information. The difficulty of defining knowledge arises from its relationship to the terms data and information. At the following Figure 1 the definition between the mentioned terms are presented by Allan Frost (2017).

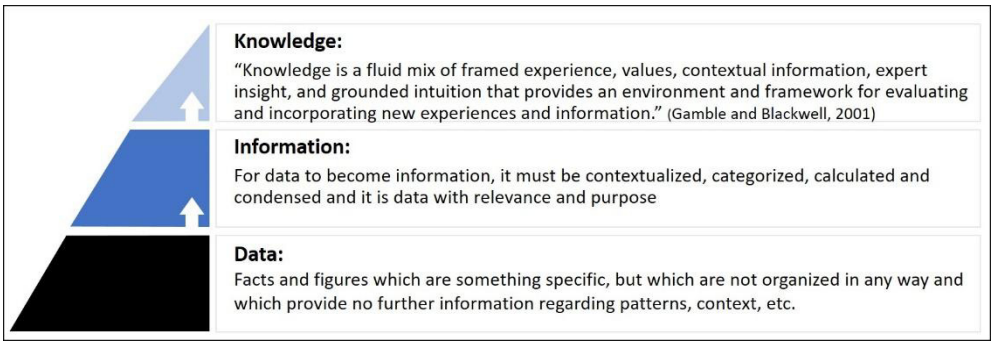

Fig. 1. Definition of Data, Information, Knowledge (own presentation)

Concisely knowledge arises when people consciously assign information by comparing, evaluating, linking, or by sharing with other meanings. Overall, knowledge is a network of knowledge, skills, and skills that someone uses to solve a task or problem (Jain, 2016). In the literature, knowledge can further be classified and characterized by three different specifications. The most known types are Explicit Knowledge, Tacit Knowledge and Embedded Knowledge, which are distinguished in the following (Mohapatra, 2016):

- *Explicit Knowledge*, is record and represent in tangible forms and available in digital format, paper format etc.
- *Tacit Knowledge* refers to the knowledge that resides in an individual's mind, which is usually difficult to articulate and put in words.
- *Embedded Knowledge* refers to the knowledge that is locked in processes, products, culture, routines, artefacts, or structures and applies the other two knowledge types. (Paschek, 2017).

2.3 Definition of Knowledge Management

KM is a strategic management concept, which deals with the sensible use of the knowledge resource and its purposeful application in the company and develops strategies for how knowledge can be promoted and deployed in a future-oriented way as a value-enhancing resource (Frost, 2017). The knowledge base, which consist of the individual knowledge of the employees and the collective knowledge of the company, should be made transparent, actively and systematically developed as well as strategically applied for the achievement of company goals (Frost, 2017). Because of the variety of concepts, defining Knowledge Management has always been a challenge mentioned John. P. Girade (2015). He summarizes more than 100 KM definitions and describes KM as: "… the process of creating, sharing, using and managing the knowledge and information of an organization."

Gartner define KM as a "business process that formalizes the management and use of an enterprise's intellectual assets. KM promotes a collaborative and integrative approach to the creation, capture, organization, access and use of information assets, including the tacit, uncaptured knowledge of people" (Gartner, 2017).

KM is a holistic process, which consists of several steps that illuminate and deal with all aspects of a company's organizational knowledge base (Frost, 2017). The KM process contains knowledge acquisition, creation, refinement, storage, transfer, sharing, and utilization like can be seen in Figure 2 (King, 2009). KM operates in the organization these process steps, develops methodologies and systems to support them, and motivate people to participate in them with the goal of KM improvement of the organization's knowledge assets (King, 2009).

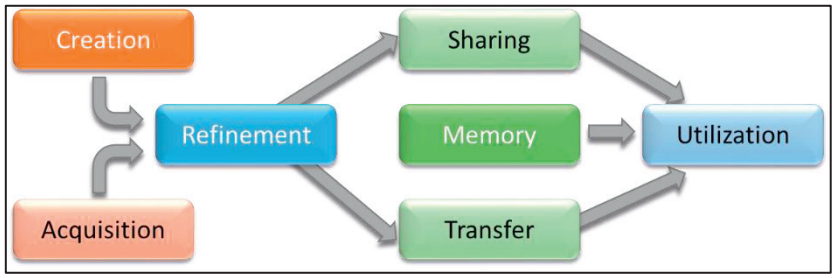

Fig. 2. Knowledge Management Process Steps (own presentation)

The concrete aim of KM is to identify sources of knowledge within the company, to uncover knowledge deficits, to store and use knowledge and to control and evaluate the company's internal knowledge processes to achieve better knowledge practices, improved organizational behaviors, better decisions and improved organizational performance (Frost, 2017).

Different theoretical KM Models underline the definition of KM. One of the common models is the so-called SECI-Modell, from Nonaka und Takeuchi, where the continuous transformation from implicit to explicit knowledge and vice versa is described (Nonaka, 1997). SECI means Socialization, Externalization, Combination, Internalization (Pandey, 2016). Like displayed in Figure 3, the SECI Modell is built up by the four SECI quadrants.

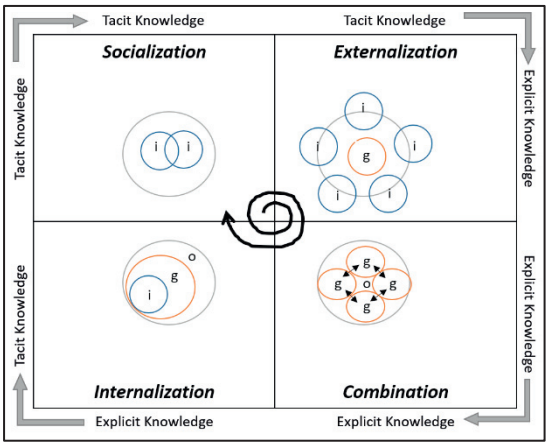

Fig. 3. SECI Modell (own presentation according to Nagel-Piciorus, 2016)

The main basic point of the model is the distinction between tacit or implicit knowledge, which is personal, context-specific and thus hard to formalize and communicate and explicit knowledge, which is transmissible in systematic and formal language among individuals or groups (Pandey, 2016). In the SECI model, the knowledge can be seen on three various levels: individual (i), group (g) and organization (o) like displayed in Figure 3. Through consecutive processes of "socialization" (implicit to implicit),"externalization" (implicitly to explicit), "combination" (explicit to explicit) and "internalization" (explicit to implicit) knowledge within an organization becomes spiral of individual knowledge higher organizational levels such as groups of persons and entire companies. Within these quadrants, the KM process takes place in a spiral mode to support knowledge progression. (Pandey, 2016).

2.4 Definition of Business Process Management

The European Association of Business Process Management (EABPM) defines Business Process Management (BPM) as a systematic approach, to capture, shape, execute, document, measure, monitor and steering automatic and

non-automatic processes to reach coordinated and sustainable company targets (EABPM, 2009). From this perspective, BPM includes the IT supported assignment, improvement, innovation and sustainment of End-to-End-processes (EABPM, 2009). The aim of BPM is to improve the corporate performance by optimizing and managing business processes of the company (Schmelzer, 2013).

Summarizing, BPM can be defined as corporate business process optimization and management over the integrated network and single systems like ERP, CRM or SCM (Schmelzer, 2013). Additionally, a BPM System has the assignment to manage the execution of a business process at the entire phase step by step. By monitoring, evaluating and identifying trouble or crash within a business process, the BPM System shows where the process had issues and the business get the opportunity to optimize their processes to avoid disadvantages (Schmelzer, 2013) .

BPM is understood as an integrated approach considering the systematic design on the management and control to the further development of the business processes (Chang, 2006). BPM therefore covers the strategic process management as well as the process design, process modelling, process execution and process monitoring and process optimization like displayed at Figure 4 (Thome, 2011).

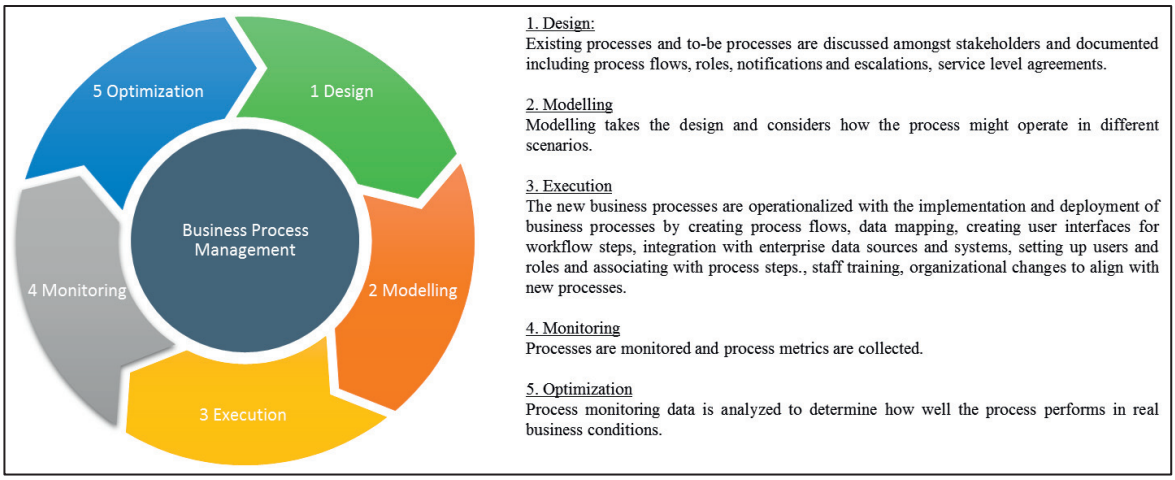

Fig. 4. BPM Process (own presentation according to Komus, 2011)

The business processes should be aligned with the business strategy, customer needs and business objectives, so that the achievement of process objectives can be measured and controlled. Briefly, the aims of BPM are to achieve the strategic and operational enterprise objectives as well as the increase of effectiveness and efficiency (Schmelzer, 2013).

2.5 Business Process Management Trends

"Clearly, no one can predict the future - however there is a significant difference between a 'guess' and an informed estimate" (bplogix, 2017). This statement point that future trends can be derived based on solid information and knowledge. In the following the key potential workflow and BPM trends for the future by BP Logix are depict (bplogix, 2017):

1. *Championing Simplicity:* Companies will take actions to reduce technology options and, instead, rely more heavily on processes, checklists and repeatable methods to create desired behaviors. Organizations will use processes that are easy to build and change as-needed, updated when necessary, and managed by the business users themselves in real-time and on-the-fly, reducing the reliance on IT;
2. *A Prediction about Predicting:* More organizations will be claiming on using analytics to provide insights. They will anticipate and predict outcomes based on both historical references and current operations. Having insight into your organization's operations and rhythm, then applying that information to 'predict and prepare' is one of the most important advantages a company can have. These companies are going to plan and allocate resources more effectively, becoming more agile and efficient;

3. *The Value of Collaboration*: Companies will implement collaboration at a greater level driven by workflows that keep employees engaged with one and other more easily resulting in increased productivity.

Next to the mentioned trends of BPLogix, further possible trends by Leandro Jesus and Michael Roseman and Partha DeSarkar are:

- *SHIFT from business processes to customer processes* (journeys). This clearly expands the traditional view, as customer processes are not confined to organizational boundaries.
- *Mass produced process will be replaced by the mass individualized process*
- *Digitized with robotic algorithms* probably doing most of the job with no human intervention. In addition, in many cases, humans, machines and things will co-exist and lead to new forms of augmentation where such hybrid resourcing creates entire new process capabilities. (DeSarkar,2017)
- *Anticipate customer needs*, acting before a customer interacts with existing processes. In this world, processes will be triggered by life events provided by customers who are willing to share private data
- *'Design-by-doing'* approach with successive iterations based on experimentation. It is now about learning from customers, as soon as possible, with prototypes and beta versions of processes (Jesus, 2017).

2.6 Evaluation of scientific status

Derived from the literature research two facets regarding the relationship of KM and BPM can be analyzed.

On the one hand KM as a meta-process in relation to BPM if KM is placed on top of BPM. In this scenario, KM is used at the strategic level as a generator, amplifier, and accelerator of value creation (Zhu, 2015). This means KM improve BPM performance as a process riding on top of business process improving and accelerating of the creation of value (Zhu, 2015). In this case, knowledge is the critical component in the business process, even because process is knowledge itself.

On the other hand, KM is placed under BPM, because KM supports other basic processes like research, Customer relationship Management, etc. In this scenario BPM build the framework to KM and specifies how and when KM content is used in the process. It can be conducted, that BPM act as a kind of structure to KM (Zhu, 2015).

Concisely, KM and BPM are interdependent and has bring together because the knowledge hast to be taken within the organization through business processes. Without Knowledge and KM an optimization of processes as well as the definition of new processes wouldn't be possible. This will be underlined by the consideration of Zhu (2015):" All the knowledge in the world will not do anything unless it happens to be followed as a process. In the same way, every process in the world of business without the appropriate enhancement of knowledge will become out of context and pointless". He specifies that the company without the combination of Knowledge and BPM will not be able to be competitive and survive." It is a fair statement to say that in an environment where knowledge and processes are managed separately, they quickly become obsolete and will not be competitive against organizations that allow their teams a synergistic approach of KM and BPM" (Zhu, 2015). This show the dependency of BPM to the Knowledge of the company.

3. The KM-BPM Model

Due to the digitalization, more and more data and information will be generated in shorter time which should be collected and processed to internal knowledge to be competitive. This connection between the KM and BPM in times of digitalization can be seen in the following Figure 5.

The different databases for the knowledge acquisition show the diversity of the consider pools of information. Though just a selection is illustrated. To clarify the "Creation" process of Knowledge the BPM process lifecycle symbolizes the own compilation of knowledge in case of internal processes and data pools like the CRM system or Data Warehouse.

Through the variety of data and information, a well-grounded knowledge database can be developed and used for the adaption and optimization of Business Processes. It is to recognize, that KM plays an essential role as background for the best management, adjustment and implementation of processes. These awareness is underpinned by the mentioned trends like "A Prediction about Predicting", "The Value of Collaboration" where internal data and the information's about the customer supply chain play more and more an essential role. Furthermore, the shift from business processes to individualized customer processes and the use of robotics, artificial intelligence in times of digitalization lead to more customer focus and the process optimization on-the-fly. However, this will only be possible by an, actual and fundamental database with an integrated KM process.

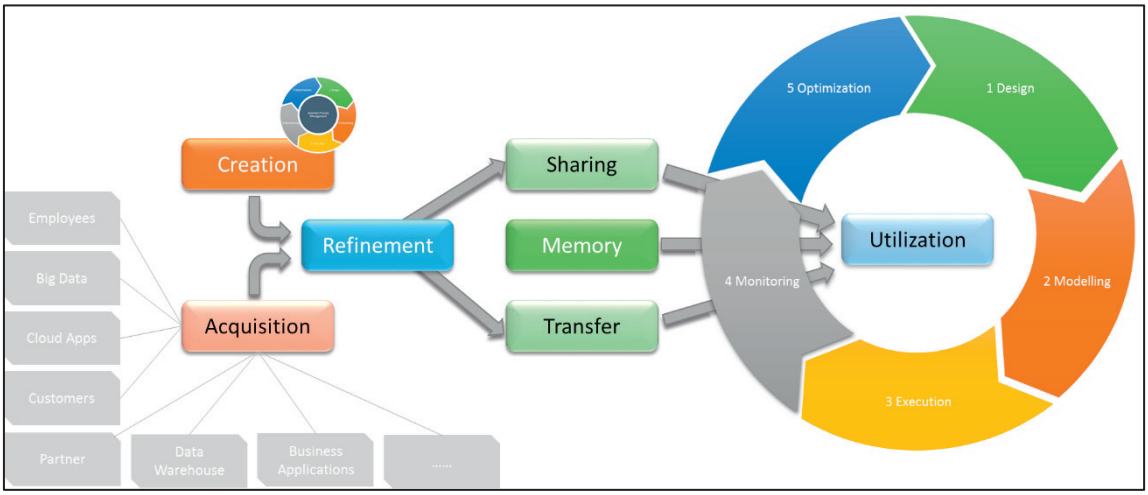

Fig. 5 KM - BPM Process Model (own presentation)

4. The Research Methodology & Research Results

To evaluate the practical relevance of the model an anonymous survey method was used. Target persons were Chief Information Officers, Chief Execution Officer, Chief Technology Officers, Chief Digital Officer as well as IT process managers to make sure, the respondents will have experiences with the topic. The base line is set up by 150 valid survey replies. The survey started with the introduction of the topic KM and BPM. After this, socio-demographic information about the respondent were asked. Next, the topical main part with dichotomous questions, grouping and rating questions like the Likert Scale and open questions followed. The core of the survey was to evaluate how the respondents notice KM in their company and in which way they work with data and information regarding BPM and process optimization. Do the participants recognize KM as important basis for BPM and what are the relevant factors with relations to BPM?

In the following, the results of the survey are presented. 150 requested Managers of 40 companies support with answering the survey; 59 were women and 91 were men, in totally with an average age of 45 years old and 100% KM and BPM experiences participated at the survey. The companies of the respondents were medium-sized enterprises with less than 1500 employees.

Regarding to the questions of using KM at the company 100% mentioned that they use an internal system to collect and provide data as well as information. The most common results of the questioned main advantages and disadvantages of using KM regarding BPM can be seen in the following Figure 6. With 56% a Data Base linked with Big Data for process optimization as well as process and benchmark indicators and with 22% the information about competitors as well as customers and supplier. The remaining percentages are spread over the management of internal employee knowledge with 12% and a wide range of data with 10%. As big challenge, especially the use of incorrect or outdated information at least more than once a week pointed 60% while 12% of the requested employees do not have the information they urgently need. Such delays will cause to restricted competition as well as slow and error-prone process and thus dissatisfied customers and to loss in sales. 28% be of the mind that the amount of data

and information lead to high complexity and the problem of analyzing which information and knowledge will be the important as well as correct one.

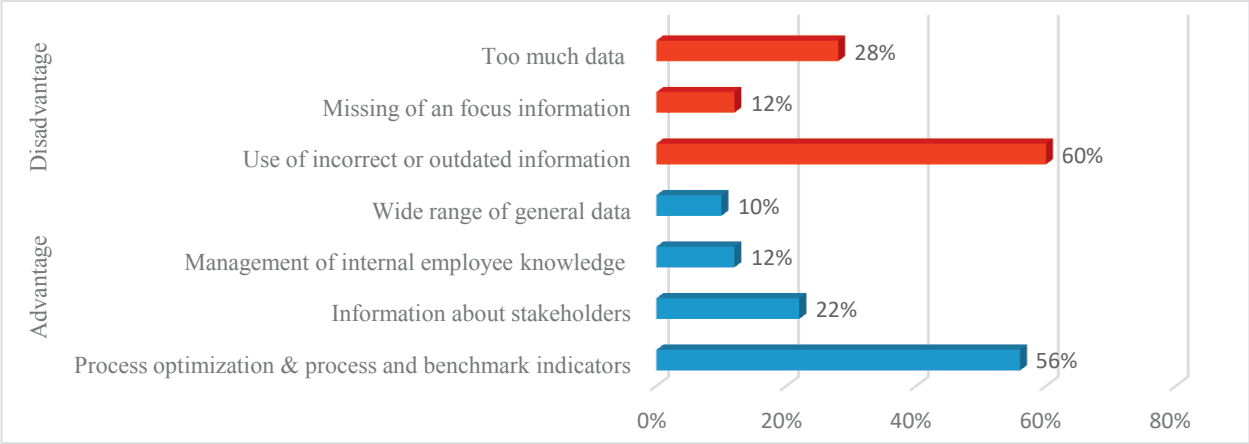

Fig. 6 Advantages and disadvantages of using KM regarding BPM (own presentation)

Considering the KM-BPM Model the participants have not paid attention to the relation of KM and BPM yet. The majority with 72% recognized, that the own business can be optimized by a meaningful KM as Basis for BPM. 12% of the participants did not use KM for BPM. Until now they worked only with several Key Performance Indicators to measure and compare processes. Only 16% are ahead and think about automated information and knowledge filtering and management with new technologies like Artificial Intelligence. The question regarding future developments within BPM in times of digitalization and Industry 4.0 the survey participants replied to the open questions with the following grouped answers like displayed in Figure 7.

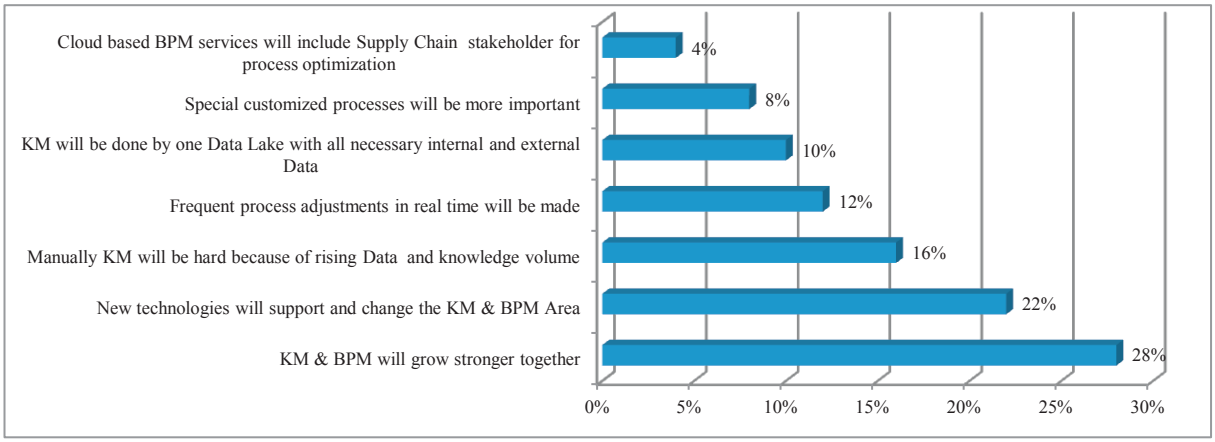

Fig. 7 Future Developments within BPM (own presentation)

It can be analyzed, that some executed answers can be matched to the mentioned BPM Trends at section 2.5 of this paper. Trough can be deflected, that the survey participants are up-to-date and familiar with the topics and developments in the fields of KM and BPM. Very interesting is the highest given answer with 28% and the common strong evolution of BPM and KM. This underlines the concern of examination the relation of KM and BPM within

the KM-BPM Model. In addition, the modern technologies in times of digitalization will have a big impact regarding the development of KM and BPM like mentioned as the second most answer with 22%.

4. Conclusion

The paper shows that in the age of digitalization, information has been a major good for the business. With the availability of a mass of data and cheap information, the knowledge and so the use of this becomes the essential activity for the company in the field of KM. This essential activity is a basic foundation of a holistic BPM approach to be able to manage processes in the best way. Throughout the growing amount of data modern technologies have to be used to select appropriate data and information for the KM. Based on the virtualization customer, supplier and other stakeholder will come closer together with the opportunity to manage and handle processes area specific and on demand by real time adoptions. Thereby a whole Supply Chain for example can be optimized and managed better. The BPM system will manage the process and only through new information the Process Manager will be triggered to confirm a suggested optimization by the system.

It can be summarized, that the goal of KM is to improve organizational capabilities through better use of the organization's individual and collective knowledge resources as well as external data and knowledge resources. Processes support such business capability. Therefore, BPM and KM need to go hand in hand to enable competitive ability in times of faster changing framework conditions and global competitors. The explained KM - BPM Process Model support companies in this mentioned changing times, if the implementation will be correct.

References

BP Logix (2017) Workflow and BPM Trends 2017, Retrived May 27.2017 from: https://www.bplogix.com/blog/workflow-bpm-trends

Chang, J.F.(2006) *Business Process Management Systems: Strategy and Implementation*, Auerbach

DeSarkar,P.(2017) *Top 5 BPM trends to watch out for in 2017*, , Retrived August,22.2017 from: http://www.moneycontrol.com/news/business/companies/top-5-bpm-trends-to-watch-out-for2017-941670.html

European Association of Business Process Management – EABPM (2009). *Business Process Management*. *Common Body of Knowledge*, Gießen

Frost,A. (2017) Defining Knowledge, Information, Data, Retrieved May, 21.2017 from http://www.knowledge-management-tools.net/knowledge-information-data.html

Gartner IT Glossary (2017) *Knowledge Management (KM)*, Retrieved: May 21.2017 from: http://www.gartner.com/it-glossary/km-knowledge-management

Girard, J.P., Girard, J.L. (2015). *Defining knowledge management: Toward an applied compendium*, Online Journal of Applied Knowledge Management. 3(1), 1-20

Guretzky, B.v.(2000) *Die Bedeutung des Wissensmanagement und seine Implementierung mittels Intranet und Unternehmensportalen*, Retrived Mai 20.2017 from: http://www.community-of-knowledge.de/beitrag/die-bedeutung-des-wissensmanagement-und-seine-implementierung-mittels-intranet-und-unternehmensporta

Hommel, E.M. (2015) *Der Kollege, mein Lehrer*, Retrived May 21.2017 from: http://www.manager-magazin.de/unternehmen/karriere/wissen-teilen-unternehmen-unterstuetzen-lernen-vom-kollegen-a-1054521.html

Jain, P. ,Mnjama, N. (2016) *Managing Knowledge Resources and Records in Modern Organizations;*IGI Global, USA

Jesus, L., Rosemann,M., (2017) *The Future BPM: Seven Opportunities to Become the Butcher and not the Turkey*, Retrived May 27.2017 from:

http://www.bptrends.com/bpt/wp-content/uploads/02-07-2017-ART-Future-BPM-Jesus-and-Rosemann-MR.pdf

King, W.R., (2009) *Knowledge Management and Organizational Learning*, Springer Science+Business Media, LLC 2009

Komus, A. (2011) *BPM Best Practice Wie führende Unternehmen ihre Geschäftsprozesse managen*, Springer, Heidelberg

Köhler-Schute, C. (2016) *Digitalisierung und Transformation in Unternehmen: Strategien und Konzepte, Methoden und Technologien, Praxisbeispiele*, Berlin, Germany KS-Energy-Verlag

Nagel-Piciorus, C., (2016) *Die Wissensspirale (SECI-Modell),* Retrived May 27.2017 from: https://www.claus-nagel.de/die-wissensspirale-seci-modell/

Nonaka, I., Takeuchi, H., (1997) *Die Organisation des Wissens: Wie japanische Unternehmen eine brachliegende Ressource nutzbar machen*, Campus

Pandey, K.N., (2016) *Paradigms of Knowledge Management: With Systems Modelling Case Studies*, Springer, India

Paschek, D., Mocan, A. Dufor, C.M., Draghici, A. (2017) Organizational Knowledge Management with Big Data- the foundation of using Artificial Intelligence, Germany

Schmelzer, J.H., Sesselmann, W. (2013). *Geschäftsprozessmanagement in der* Praxis.8th Edition, Carl Hanser Verlag (p. 5-7).

Thome Prof.Dr. R, Papay CJ., (2011) *Zukunftsthema Geschäftsprozessmanagement*, PricewaterhouseCoopers AG

Ternai,K.,Török,M.,Varga, K. (2017) *Combining Knowledge Management and Business Process Management – A Solution for Information Extraction from Business Process Models Focusing on BPM Challenges* ; Springer

Zhu,P. (2015) *Knowledge Management (KM) vs. Business Process Management (BPM),* Retrived May 21.2017 from: http://futureofcio.blogspot.de/2013/10/knowledge-management-km-vs-business.html