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# BPM Implementation Critical Success Factors: Applying Meta-synthesis Approach

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***Abstract*—the improvement of business processes has been recently emerged as one of the top business priorities for IT managers, and business process management (BPM) is currently being seen as the best way to facilitate process improvements. The challenges of BPM implementation have been widely cited in the literature but research on the critical factors for initial and ongoing BPM implementation success is rare and fragmented. The aim of this research is to elicit and categorize success factors that influence BPM implementation. Qualitative meta-synthesis research method was conducted which is based on previous qualitative studies with different methods. Seven clusters of CSFs are identified: strategy, people, IT architecture, optimization and process management, standards and measurement, process architecture and project management. Result demonstrated that strategy, people, and process architecture are the most important clusters affect BPM implementation base of experts' viewpoint. Envisaging these mentioned CSF categories by managers and implementers would be helpful to set down BMP successfully.**

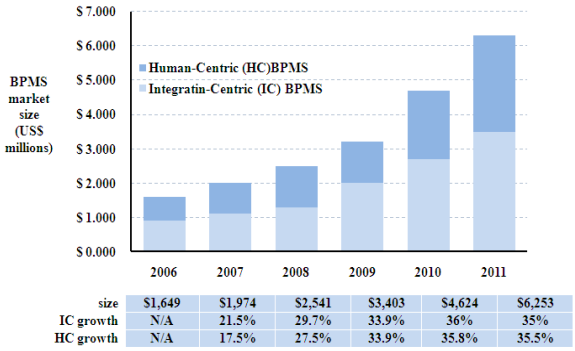
***Keywords- Business Process Management (BPM); BPM implementation; critical success factors (CSFs); qualitative meta-synthesis.***

## I. INTRODUCTION

For forty years the issue of fit between an organization and its strategy, structure, processes, technology and environment has been a basis for theory construction and research [1]. With intensified globalization, the effective management of an organization's business processes became ever more important. Many factors are challenging the profitability and survival of big and small companies [2]. One of the fields dealing with these challenges is business process management (BPM) [1].

BPM is defined for the purpose of the paper as all efforts in an organization include concepts, methods, and techniques to support the design, administration, configuration, enactment, and analysis of business processes [3].

For understanding the importance of Business process management (BPM) we can mention to the global market growth of it. Gartner research estimates that the BPMS market will have a compound annual growth rate of more than 24 per cent from 2006 to 2011[4]. (from approximately $1.6 billion in 2006 to $6.3 billion by 2011). This growth is powered by enterprises seeking to improve the efficiency, effectiveness, and strategic value of key business processes that span a range of scenarios including human interactions, system and application integration, document processing, and complex decision making [5].




| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|
| size | $1,649 | $1,974 | $2,541 | $3,403 | $4,624 | $6,253 |
| IC growth | N/A | 21.5% | 29.7% | 33.9% | 36% | 35% |
| HC growth | N/A | 17.5% | 27.5% | 33.9% | 35.8% | 35.5% |

Figure 1. BPM global market growth [6]

Business process management helps organizations by providing real benefits such as Automation of Standard Procedures and Processes, Ability to Visualize, Simulate and Trouble-Shoot Business Processes, Change Business Rules and Processes without Impacting Underlying Applications, Manage and Monitoring the Performance of Operations and Personnel [7].

Regardless of the high amount of research in BPM success and failure, most past studies were limited to identifying and reporting only a list of high-level factors [8]. Therefore the main contribution of this paper is to address the research question "which factors influence BPM implementation in organization?" through a comprehensive qualitative study applying qualitative meta-synthesis research method.

The structure of the paper is as follows: First, BPM is defined from various perspectives and the historical roadmap to BPMS is explained; then, the BPM implementation framework is described; in the next step the research method applied in this study is demonstrated; finally, the critical success factors influence the success of BPM implementation that are extracted throughout qualitative meta-synthesis research method are discussed.

## II. BUSINESS PROCESS MANAGEMENT

A business process is the complete and dynamically coordinated set of collaborative and transactional activities that deliver value to customers [9].

Business process management includes concepts, methods, and techniques to support the design, administration, configuration, enactment, and analysis of business processes. The basis of business process management is the explicit representation of business processes with their activities and the execution constraints between them [3].

Business Process Management Systems is a (suite of) software application(s) that enable the modeling, execution, technical and operational monitoring, and user representation of business processes and rules, based on integration of both existing and new information systems functionality that is orchestrated and integrated via services [10].

Business Process Management Systems are based on developments in both the business and IT domain. First, two major business trends that relate to BPM are Total Quality Management (TQM), Business Process Re-engineering (BPR) and is also closely related to Service Oriented Architecture [10]. Second, we can identify a rise in the implementation and use of new types of information systems like Enterprise Resource Planning (ERP) systems, Workflow Management (WFM) systems, Enterprise Application Integration (EAI), advanced planning systems and so on. What once started as the automation of a company's internal processes has now become digitization of supply chains [8].

BPMS implementation framework shows the most important aspects that should be part of a BPMS implementation methodology (figure 2). The framework distinguishes three different areas, (1) the ongoing domain of the business organization itself, (2) the measurement and control function and (3) the BPMS implementation project area. It should also be clear that a BPMS implementation is a continuous process consisting of many different projects. This continuous character is shown in the framework by the blue line. When implementing a BPMS it is important to understand the underlying principles of Business Process Management [12].

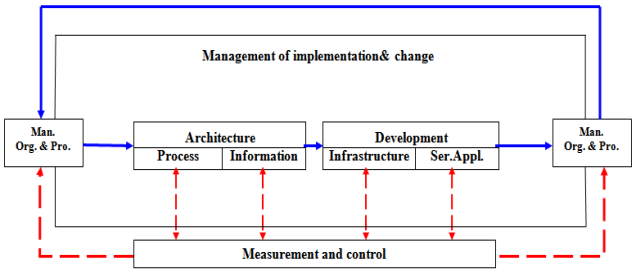



Figure 2. BPMS implementation framework [12]

The critical success factors that are derived from the different qualitative research studies to BPM are expected to influence the success of a BPMS implementation. Based on a meta-analysis of the literature study of 104 articles and books a list was complied with over 337 critical success factors. This list was based upon the principles according to the following composition: 3.86% of the factors came from TQM, 17.51% from BPR, 29.97% BPM, 11.57% WFM, 12.76% EAI, 2.08% BAM, 12.17% from the BPMS domain, and 10.08% from various other related areas [13].

## III. Research Method: Qualitative Meta-Synthesis

Meta-synthesis is perhaps the most well developed methodology for synthesizing qualitative studies. Meta-synthesis is 'research of research' which incorporates analysis of the theory, methods and findings of existing qualitative research studies and subsequent synthesis of these insights to provide new understandings of the phenomenon [14].

In our study, we are interested in critical success factors of BPM and are attempting to extract factors influencing BPM implementation in organizations. Most of these papers are qualitative studies without quantitative data. Therefore, meta-synthesis might be an appropriate method for us to achieve a comprehensive synthesis of factors based on 24 primary qualitative studies.

This paper includes two sections: in first section, qualitative meta-synthesis was conducted to extract factors influencing BPM implementation in organizations. Our study adapts Noblit and Hare (1988) seven-step approach, which encompasses the following phases: getting started, deciding what is relevant to the initial interest, reading the studies, determining how the studies are related, translating the studies into one another, synthesizing translations and expressing the synthesis. We categorized the seven-step process into three major steps: selecting studies, synthesizing translations, and presenting the synthesis [15].

In the first step, selecting studies, In order to identify the most important factors that influence the success of BPMS implementation, a literature study of 24 articles and studies was conducted from different data bases. In the second step, synthesizing translations, we first assembled all the studies together and determined how they are related to each other. We then translated the studies with each other based on a comparative approach. In the last step, expressing the synthesis, we presented our new metaphor (seven CSFs' clusters) with both table and expressions to facilitate understanding.

In second section of this article, we used expert judgment analysis to ensure categories are well ordered. To accomplish this goal, questionnaires were distributed to university instructors, researchers and experts whom involved in BPM is implemented. In order to compare and prioritized these CSFs a five point Likert scale was conducted. For statistical analysis Binomial test was applied.

## IV. PBM Critical Success Factors

CSFs in general have been one of the earliest and most actively researched topics. They can be defined as a limited number of areas, in which results, if they are satisfactory, will assure successful performance [1]. According to this definition, our purpose is to define the groups of CSFs that influence the success of BPM implementation.

In first phase through meta-synthesis research, seven clusters are identified. The extracted categories are based on literature review and the logic of relation between previous studies and our findings is illustrated in Table 1.

TABLE I. CLASSIFICATION OF BPM IMPLEMENTATION CSFS

| Cluster | Categories of BPM CSFs (previous studies) |
|---|---|
| **1 - Strategy** | **1 – 1- strategic alignment** (16,17,18,19,20,21,22,23,12,24,25,8,26, 1,27)<br>Precise goal definition (28,27)<br>Discover process opportunities(8)<br>understanding BPM concept and strategy (12,29,30)<br>**1 – 2 - top management support** (31,22,25,7,32,28)<br>Management commitment and involvement (19,33,12,7)<br>**1 – 3 - governance** (20,31,23,25,26)<br>Well-defined accountability (12,20)<br>Governance of process change (26)<br>Governance of process initiatives (26) |
| **2 - People** | **2 – 1 - management of people** (29)<br>organizational culture (20,23,34,25,8,26,7)<br>people (28,20,23,8,26,27)<br>communication (32,28,25,8)<br>Focus on customer and their requirements (7,24,21,18,32,17)<br>Provide conditions for effective team-work (8,32)<br>**2 – 2 - roles , responsibilities and skills**<br>Leadership (23,25,8)<br>appointment of process owners (16,1,24)<br>Training and empowerment of employees (32,19,22,1)<br>level of employee's specialization (1,16)<br>Awareness and understanding of the Process by employers (17,18,21,12,30,28)<br>Establish a suitable team (8) |
| **3 - Optimization and process management** | **3 – 1 - process improvement methodology** (17,18,21)<br>Process continuous improvement (32,19,12,24,30,1)<br>Getting proposals for improvement from employees (33)<br>**3 – 2 - BPM methods and methodology** (29,20,31,23,8,26)<br>Use suitable techniques and tools in implementation(8)<br>**3 – 3 - process management** (7,21,18,17)<br>Identification of right key business processes (28,33,31,34)<br>Process application (17,18)<br>portfolio of process management initiatives (17,18) |
| **4 - Project management** | **4 – 1 - project planning, executing and control** (28,24)<br>Project management (22,8,34,12,28,32,17,30)<br>Apply adequate planning and scheduling in the project (8)<br>Identifying and addressing the risks (8)<br>**4 – 2 - involving the right people in the project** (12,34,30)<br>Establish a suitable team (8) |
| | **5 – 1 - change management** (30,17,25,12,21,19,18,32)<br>Organizational changes (16,1)<br>implementation of proposed changes |
| **5 – process architecture** | (16,1)<br>Readiness for changes (28,33)<br>Mandate/need/appetite for change (25)<br>**5 – 2 - process modeling** (31)<br>A well organized design phase (modeling) (12,30)<br>Well organized maintenance and control of the process models (12,30)<br>Not to many details in process modeling(33)<br>Using the best modeling standards and techniques (12,30)<br>process maps (32)<br>Discover process opportunities(8) |
| **6 - IT architecture** | **6 – 1 - Information Technology**<br>Obtain a good understanding of IT (8)<br>Use suitable IT tools and infrastructure (8)<br>IT/IS (26,8,23,21,20,18,17)<br>Understanding how to develop and use web services (23,30)<br>Level of IT investment (1,16)<br>Integration of processes and data (12,30) Automation (1,16)<br>**6 – 2 - BPM suites**<br>Integration-centric BPM suites (IC-BPMS) (34)<br>Human-centric BPM suites (HC-BPMS) (34)<br>Document-centric BPM suites (DC-BPMS) (34)<br>Technical capabilities of BPM solution (28,31,25) |
| **7 - Standards and measurements** | **7 – 1 - measurement techniques**<br>Benchmarking (32,7)<br>**7 – 2 - process performance measurement** (16,17,19,1,8,31,22,18,21)<br>Design appropriate measures for processes (12,27,32,8)<br>Revise reward and motivation systems(8)<br>**7 – 3 -standards**<br>Standardization of processes (1)<br>Implemented internal and external standards (24)<br>Using XML standards (31)<br>Using the best modeling standards and techniques (12,30) |

The following sub-sections discuss the major factors inhibiting BPM implementation in more detail.

*A. Strategy:*

Strategy required two approaches. Firstly, there needs to be to be a clear link between the corporate strategy and the company's core processes. And secondly, whenever the corporate strategy is altered, the required process changes need to be reviewed [26]. Different researchers indicate the role of alignment between business objectives and the goal of the BPM efforts as an essential element for the success of projects [8]. Strategy is characterized further by following sub factors such as: strategic alignment, top management support, governance.

*B. People:*

The people The people in BPM context refers to the individuals and groups who continually enhance and apply their process related expertise and knowledge [35]. People are one of the most important elements in the business process change since processes should be conducted by people in organization [8]. The factor can be further described by two sub factors : management of people, and roles, responsibilities and skills.

*C. Optimization and process management:*

Optimization and process management focus on the management and improvement of cross functional processes. This involves continues monitoring, evaluation, measurement (e.g. cost, quality, time) and process innovation [37]. Process management teams use a standard approach to navigate process analysis and design [18]. This factor includes the following sub factors: process management, BPM methods, process improvement methodology.

*D. Project management:*

Lack of suitable project management is one of the important problems that organizations are faced during the BPM implementation [8]. It is the discipline of planning, organizing, securing and managing resources to bring about the successful completion of specific engineering project goals and objectives [39]. The following sub factors explain project management; project planning, executing and control, and involving the right people in the project.

*E. Process architecture:*

Existing literature specifically recognized the vital role of process architecture in BPM efforts. The role of process architecture in structural design of general process systems and applies to fields such as computers (software, hardware, networks, etc.), business processes (enterprise architecture, policy and procedures, logistics, project management, etc.), and any other process system of varying degrees of complexity is very important [38]. Process architecture in a BPM Success context can be further characterized with two other sub factors: change management and process modeling.

*F. IT architecture:*

The IT architecture is an organized set of consensus decisions on policies & principles, services & common solutions, standards & guidelines as well as specific vendor products used by IT providers both inside and outside the Information Technology Branch (ITB) [36]. IT architecture is explained further by the sub factors such as: information technology and BPM suites.

*G. Standards and measurments:*

Performance measure refers to measurements of the processes, project and people performance. The processes performance should be measure correctly to compare them with the goals and benchmarks and choose the suitable process for change in addition of assessment of the improvement. BPM projects need some metrics and standards to monitor the progress and ensure that the goals are achieved [8]. It is explained by these sub factors: Measurement techniques, process performance measurement, standards.

In second section, in order to validate the complete list of success factors those were identified, 300 questionnaires were distributed to university instructors, consultants and BPM professionals, ultimately 102 completed questionnaires were surveyed. In order to compare these success factors, a five point Likert scale was used (from 1 for strongly disagree to 5 for strongly agree). Binomial test was applied to analyze the result of collected data from questionnaires. We assumed that 1-3 ranked factors means disagreement and 4-5 ranked factors represent agreement of respondents. Subsequently, the factors were prioritized based on their calculated mean values.

## V. CONCLUSION

BPM implementation success in particular can be very complex; it will have success factors that change over time as priorities and capabilities are moving, those in different contextual situations (e.g., country, organizational size or maturity, project purpose, etc.). Nevertheless, the simplification and explanation of a top seven groups of critical success factors is appealing for a start. As this study we attempted to bring together all past BPM success factors studies in a holistic manner, most of them are qualitative studies without quantitative data. Therefore, meta-synthesis research is a suitable method for us to achieve a comprehensive synthesis of factors as illustrated in previous section. We also attempted to determine the priority of extracted clusters and categories. Result of our statistical analysis is shown in Table 2. Importance of factors is determined via questionnaire-based survey. Strategy is the most important cluster and after that people, process architecture and IT architecture are major clusters for successful BPM implementation. Based on statistical analysis, strategic alignment is the most important factor. Top management support, management of people, and change management are main factors from expert's viewpoint. For further research, proposed classification in this study can be examined in organizations. Also expanding BPM success model could be helpful.

TABLE II. IMPORTANCE OF CSFS FOR BPM IMPLEMENTATION

| cluster | CSFs | N* | High importance (p) | Low importance (q) | z | mean |
|---|---|---|---|---|---|---|
| strategy | 1-1<br>1-2<br>1-3 | 98<br>95<br>89 | 0.96<br>0.93<br>0.87 | 0.04<br>0.07<br>0.13 | 9.12<br>8.41<br>7.03 | 8.19 |
| people | 2-1<br>2-2 | 92<br>87 | 0.90<br>0.85 | 0.10<br>0.15 | 7.71<br>6.58 | 7.15 |
| process architecture | 5-1<br>5-2 | 90<br>83 | 0.88<br>0.81 | 0.12<br>0.19 | 7.25<br>5.72 | 6.49 |

| | | | | | | |
|---|---|---|---|---|---|---|
| IT architecture | 6-1<br>6-2 | 88<br>75 | 0.86<br>0.74 | 0.14<br>0.26 | 6.81<br>4.08 | 5.4<br>4 |
| Optimization and process management | 3-1<br>3-3<br>3-2 | 87<br>81<br>75 | 0.85<br>0.79<br>0.74 | 0.15<br>0.21<br>0.26 | 6.58<br>5.29<br>4.08 | 5.3<br>2 |
| Standards and measurements | 7-2<br>7-3<br>7-1 | 89<br>71<br>63 | 0.87<br>0.70<br>0.62 | 0.13<br>0.30<br>0.38 | 7.03<br>3.30<br>1.87 | 4.0<br>7 |
| Project management | 4-1<br>4-2 | 79<br>68 | 0.77<br>0.67 | 0.23<br>0.33 | 4.88<br>2.75 | 3.8<br>1 |

*By N we mean expert's number indicates 4-5 rank for the factor.

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## REFERENCES

[1] P. Trkman, "the critical success factors of business process management," International Journal of Information Management, article in press, pp.1-10, 2009

[2] K.L. Ko. Ryan, S.G. Lee. Stephen, Wah Lee. Eng, "Business process management (BPM) standards: a survey," Business Process Management Journal, Vol. 15, No. 5, pp. 744-791, 2009

[3] M. Weske, "Business Process Management - Concepts, Languages, Architectures", Springer, 2007

[4] J.B. Hill, M. Kerremans, T. Bell, "Cool Vendors in Business Process Management," Gartner Research, Stamford, CT, 2007

[5] k. Vollmer, M. Connie, T. Colin, "BPMS Market Overview, Forrester presentation BPM: Market Milestone Report," Delphi Group www.delphigroup.com, 2005

[6] K. Vollmer, and C. Teubner, "BPMS Revenue to Reach $6.3 Billion by 2011", Forrester, 2007

[7] S. Cleveland, "BPM from a Business Point of View, business process management, Greatest Benefit from BPM," available from: http://www.ebizq.net/blogs/bpm_business, 2010

[8] W. Bandara, A. Alibabaei, and M. Aghdasi, "Means of achieving Business Process Management success factors," In: Proceedings of the 4th Mediterranean Conference on Information Systems, Athens University of Economics and Business, Athens, 25-27 September, 2009

[9] H. Smith, P. Fingar, "Business Process Management: The Third Wave," Meghan-Kiffer, New York, NY, 2003

[10] P. Ravesteyn, Batenburg, de Waal, "In Search of Competencies Needed in BPM Projects," Communications of the IIM, Vol. 8, Issue. 2, 2008

[11] P. Ravesteyn, "Business Process Management Systems: Hype or New Paradigm." Proceedings of the 18th conference of the International Information Management Association (IIMA), Beijing, 15–17 October, 2007

[12] P. Ravesteyn, J. Versendaal, "Success Factors of Business Process Management Systems Implementation." Proceedings of the 18th Australasian Conference on Information Systems (ACIS), Toowoomba, 2007

[13] P. Ravesteyn, "a Study into the Critical Success Factors when Implementing Business Process Management Systems," 2007

[14] R. Bernie, S. Marlene, B. Owen, F. Dobbs, G. Crealey, "A meta-synthesis of pregnant women's decision-making processes with regard to antenatal screening for Down syndrome," Journal Social Science & Medicine, PP. 1561–1573, 2009

[15] S. Keng, L. Yuan, "Synthesizing e-government stage models – a meta-synthesis based on meta-ethnography approach," Industrial Management & Data Systems, Vol. 105, No. 4, pp. 443-458, 2005

[16] M. Haghighi, A. Mojodi, "Business Process Management: implementation methods and critical success factors for implementing of methods," national conference of Business Process, Tehran University, Management College, 1388

[17] B. Hajisadeghi, P. Niromand, "designing method for evaluation of readiness BPM implementation in organizations, national conference of Process Management," national conference of business process, Tehran University, Management college, 1388

[18] Rummler-Brache Group ,Business Process Management in U.S. Firms Today . Astudy commissioned by Rummler-Brache Group, March, 2004

[19] A. Spanyi," towards process competence," business process management group, 2004, http://www.spanyi.com/images/BPM%20Towards.pdf

[20] T. Bruin de, M. Rosemann, "Towards a Business Process Management Maturity Model." Proceedings of the 13th European Conference on Information Systems (ECIS), Regensburg, and 26 – 28 May, 2005. Available from:http://www.bptrends.com/publicationfiles

[21] S. Sarang, "the implementation of business process management in the retail banking sector," business management journals, Vol.11, no.4, pp.45-5, 2006

[22] Jeston and Neiles, "business process management, practical Guidelines to successful implementations." 2006, Available from: http://www.IQPC%20Conference-2006May

[23] J. Hill, "BPM: Key Roles That Enable a Process- Managed Organization," 2007

[24] A. McSweeney, "BPM Implementation - Success Criteria and Best Practice," 2009, http://www.docstoc.com

[25] M. Rosemann, (2009), "The Gap between Interest and Importance in the BPM Community," By in group ARIS BPM Blog

[26] G. Thompson, L.F. Seymour, B. O'Donovan, (2009), "Towards a BPM Success Model: An Analysis in South African Financial Services Organizations," Centre for Information Technology and National Development in Africa, BPMDS, 2009

[27] B. Rosser, "Seven Major Guidelines for a Successful Business Process Management Project" Information Management Newsletters, 2010

[28] Lia, zur Muehlen. Stohr, "Identifying Workflows," 2004

[29] P. Brudaru, "success factors within the implementation of the business process management solutions for the Romanian companies intensively using document flows," Metalurgia international, vol. XIV, special issue, no.12, 2009

[30] P. Ravesteyn, J. Slinger, "a Situational Implementation Method for Business Process Management Systems, "Proceedings of the Fifteenth Americas Conference on Information Systems, San Francisco, California, 2009

[31] S. Sadiq, M. Indulska, W. Bandara, S. Chong, "Major Issues in Business Process Management: A Vendor Perspective," 2007

[32] K. Rezaee, S. Tadayon, B. Ostadi, M. Aghdasi, "Critical Success Factors of BPM implementation and present a framework for evaluating of organization readiness," industrial management journal, Vol. 1, NO. 3, pp. 37-52, 1388

[33] M. Stemberger, R. Skrinjar, "CSFs of business process management – Experiences and findings from central Europe," Presentations BPI Conference, University of Liubljana, 13 October, 2009

[34] K. Vollmer, G. Leganza, (2008), "Critical Success Factors for BPM Implementation," 2008

[35] M. Melenovsky, J. Sinur, "Having a BPM Maturity Model is Important for Long Lasting BPM Success," Business Rules Journal, Vol. 7, No. 12, 2006

[36] D. A. McAfee, "An Information Technology (IT) Architecture for the Department," 1997, http://www.ewita.com/earlywork/itb.htm

[37] L. Meyer, T. Scrima, “Business Process Optimization: Combining Project Management and Six Sigma Best Practices to Better Understand and Optimize Critical Business Processes,” 2006

[38] E.P. Dawis, J. F. Dawis, Wei-Pin Koo, “Architecture of Computer-based Systems using Dualistic Petri Nets,” IEEE International Conference, Vol 3, PP. 1554 – 1558, 2001

[39] C. Chatfield, “a short course in project management,” Microsoft. http://office.microsoft.com/en us/project/HA102354821033.aspx. ).