International Journal of Business, Human and Social Sciences
ISSN: 2517-9411
Vol:11, No:5, 2017

Social Business Process Management and Business Process Management Maturity

Dalia Suša Vugec, Vesna Bosilj Vukšić, Ljubica Milanović Glavan

***Abstract*—**Business process management (BPM) is a well-known holistic discipline focused on managing business processes with the intention of achieving higher level of BPM maturity and better organizational performance. In recent period, traditional BPM faced some of its limitations like model-reality divide and lost innovation. Following latest trends, as an attempt to overcome the issues of traditional BPM, there has been an introduction of applying the principles of social software in managing business processes which led to the development of social BPM. However, there are not many authors or studies dealing with this topic so this study aims to contribute to that literature gap and to examine the link between the level of BPM maturity and the usage of social BPM. To meet these objectives, a survey within the companies with more than 50 employees has been conducted. The results reveal that the usage of social BPM is higher within the companies which achieved higher level of BPM maturity. This paper provides an overview, analysis and discussion of collected data regarding BPM maturity and social BPM within the observed companies and identifies the main social BPM principles.

***Keywords*—**Business process management, BPM maturity, process performance index, social BPM.

I. Introduction

BPM is a management discipline focused on improving organizational performance by managing its business processes [1]. This definition is just one of the many BPM definitions existing nowadays, ranging from technically oriented to the ones referring to BPM as a holistic discipline [2], [3]. Various authors agree that BPM should be studied as a holistic discipline, stressing out its multidisciplinary nature [2], [4]-[6]. In that sense, it is important to include different aspects (technological, managerial, social, cultural, etc.) into BPM studies. However, there is still a literature gap regarding the studies which include more than managerial or technical aspects into investigating BPM.

The concept of BPM refers to the design, improvement, measurement and management of all important processes in the organization. Nowadays, business processes are understood as a core part of an organization, and there is growing number of those organizations which are aware of the importance of their processes. Moreover, there are several empirical confirmations of BPM positively effecting organizational performance (e.g. [7], [8]). Numerous organizations are embracing BPM as a path towards improving their processes and their overall organizational performance. However, not all initiated BPM implementation projects end in a successful way. Although there are many studies dealing with the success of BPM implementation initiatives (e.g. [9]), there are still underinvestigated areas. One of those areas is development of a new discipline focused on using social software when managing business processes of a company. This new discipline is called social BPM. The main purpose of approaching BPM following the social software principles is to overcome the limitations which occur with the traditional BPM approach. For example, those limitations refer to the model-reality divide, loss of innovation, lack of information fusioning and information pass-on threshold [10].

This research has been fully supported by Croatian Science Foundation under the PROSPER (Process and Business Intelligence for Business Performance) project (IP-2014-09-3729). One of the objectives of the PROSPER project is to define the concept of social BPM and to investigate to which extent this concept has been accepted within the organizations in Croatia and Slovenia. Moreover, it is important to see if there is a link between the usage of social BPM within the organization and its BPM maturity.

With the purpose of achieving the stated objective, a quantitative survey has been carried out and the data on BPM maturity and usage of social BPM has been collected. The aim of this paper is, therefore, to give an overview of the data collected in Croatia.

In order to achieve the stated aim, in the next section of the paper a short theoretical background regarding BPM maturity and SBPM is given, following by description of the research methodology in the third part of the paper. Next, an overview of the research results and discussion are presented followed by the short conclusion.

II. Theoretical Background

A. BPM Maturity

Maturity models comprise of a certain number of levels where each has its set of requirements that need to be fulfilled in order to evolve from a current to a higher one. A considerable amount of literature has been published on many different models for assessing BPM maturity. Moreover, there are some papers giving literature review of existing maturity models. For example, [11] gives an overview of 14 BPM maturity models, while [12] analyzes a sample of 10 BPM

D. Suša Vugec is with the Department of Informatics, Faculty of Economics and Business, University of Zagreb, Croatia (phone: 385-1-238-3280; fax: 385-1-233-5633; e-mail: dsusa@efzg.hr).

V. Bosilj Vukšić and Lj. Milanović Glavan are with the Department of Informatics, Faculty of Economics and Business, University of Zagreb, Croatia (e-mail: vbosilj@efzg.hr, ljmilanovic@efzg.hr).

This work has been fully supported by Croatian Science Foundation under the project PROSPER - Process and Business Intelligence for Business Performance (IP-2014-09-3729).

maturity models providing their systematic in-depth review. The most recent literature review on this topic is given by [13] who, based on the search of BPM maturity studies from 1990 to 2014, selected 61 out of 2899 studies for their study and concluded that the use of maturity models in practice is limited in spite of the large number of existing models [13]. In 2010, Rosemann and vom Brocke selected nine BPM maturity models with the purpose of identifying the core elements of BPM [14].

One of the numerous BPM maturity models which is widely used today is Process Performance Index (PPI). It was developed in 2004 by Rummler-Brache Group as a descriptive model for assessing BPM maturity. This model is based on ten statements given to respondents in order to state their level of agreement with each statement. The statements refer to ten BPM success factors, namely: (1) alignment with strategy, (2) holistic approach, (3) process awareness by management and employees, (4) portfolio of process management initiatives, (5) process improvement methodology, (6) process metrics, (7) customer focus, (8) process management, (9) information systems and (10) change management [15]. According to PPI, there are three levels of BPM maturity. First BPM maturity level is called "process management initiation" where the organizations are just at the beginning of using BPM. In the second one, organizations are aware of their processes but there could be still many improvements done and it is the "process management evolution" stage. The third and highest BPM maturity level refers to the "process management mastery" where BPM is highly used within the organizations like a way of life [16].

B. Social BPM

In recent period, there have been a rising number of papers referring to a new term - social BPM. Over the time, several issues regarding traditional approach to BPM have been indicated. Most authors emphasize the model-reality divide as the main issue of traditional BPM (e.g. [10]). This issue refers to employees acting different in practice from the model. A company could have well designed and structured processes and BPM models, but there is a great possibility that employees would not follow the rules and procedures as stated in those models. This often happens in cases where employees are not satisfied with the models designed and presented by the third party (management, BPM department or consultants) and they execute them the way they are used to or find more convenient than the officially designed. This issue could be avoided if all relevant stakeholders are included in the process and models design, which is one of the main principles of social software, since it allows a greater integration of all stakeholders into the life cycle of business processes [17]. Further to this topic, there is also lost innovations as another major traditional BPM related issue [17]. Sometimes knowledge which could be used to improve processes exists within the organization. However, in traditional BPM approach, this knowledge is often lost due to the fact that process owner or the person responsible for BPM is not aware of its existence [17].

Both model-reality divide and lost innovations could find their causes in two other related BPM issues like lack of information fusioning and information pass-on threshold issue. Lack of information fusioning is an issue which deals with absence of employees' involvement into BPM [10]. It causes employees to feel like they must follow the designed process without being asked about them which leads to employees' sense of force and imposition. The barriers for information fusioning exist mostly in organizations where process modeling is done through formalized modeling tool or stakeholders are excluded from it by organizational means [17].

Similar, information pass-on threshold is an issue which refers to difficulties in submitting the ideas for process improvement to those responsible of BPM. This happens for multiple reasons like too much effort and lack of self-confidence of the improvement proposer or its concerns about further suggestion processing [10]. Also, information pass-on threshold issue appears in organizations with strong hierarchy and regulations where proposing an idea takes too much time and effort due to many approval stages and restrictions [17].

Besides the stated causes, the model-reality divide can also appear as an issue in those organizations where employees do not properly understand the designed processes and BPM models due to inappropriate unification of terms.

Social BPM can, therefore, be understood as an attempt to overcome stated issues of standard, traditional BPM by introducing usage of social software and following the principles of social software in BPM. According to [18], it is the intersection of BPM and social software with the purpose of integrating social features through different BPM stages, where user engagement is the key factor.

III. Research Methodology

For the purpose of meeting the goals of the PROSPER project, the research group did an extensive literature review and based on that developed a questionnaire containing, among others, questions for assessing BPM maturity and the level of SBPM usage.

BPM maturity has been assessed by using PPI [15], as described earlier in the paper. PPI uses a Likert scale from 1 to 5, with 1 meaning the respondent strongly disagrees with the statement and 5 meaning the respondent strongly agrees with the statement. PPI is calculated on the basis of grades given to each of the ten statements in a way that the overall sum of those grades is organization's PPI. If the overall score is between 10 and 25, the organization is at the "process management initiation" level. If the PPI is between 26 and 40, the organization is at the middle, "process management evolution" level, and if the score is between 41 and 50, it means that the organization has achieved the highest, "process management mastery" level of BPM maturity.

The assessment of the usage of social BPM within the organization has been made by using the constructs developed by the PROSPER research group. The constructs development has been based on the broad literature review of the area after which total of four statements have been made. Following the

state-of-the-art literature [10], [17], [19]-[21], the PROSPER research group indicated the main principles of social BPM, which were further elaborated through statements of the questionnaire. These main social BPM principles are: (1) egalitarianism, (2) collective intelligence, (3) self-organization and (4) social production. Table I presents the main social BPM principles along with the statements used in questionnaire for assessing the level of usage of social BPM in companies according to those principles.

TABLE I
MAIN SOCIAL BPM PRINCIPLES [10], [17], [19]-[21]

Social BPM principle	Statement used in questionnaire
Egalitarianism	Our BPM approach relies highly on the idea of giving all participants the same rights to contribute to business process design and change.
Collective intelligence	Business processes are designed and modified based on the ideas and knowledge of a group (collective) rather than individual experts or external influence.
Self-organization	Employees are self-organized and interactively design and change business processes in bottom-up rather than top-down fashion.
Social production	Stakeholders use social software and Enterprise 2.0 tools (e.g. blogs, wikis, social networks, Lync, Yammer) to suggest and create process content and context.

Like in the PPI part of the questionnaire, the usage of social BPM set of questions also uses the Likert scale from 1 to 5, with 1 representing strong disagreement, while 5 represents strong agreement with each statement. The overall level of social BPM usage is calculated as the average of the grades for the social BPM group of statements. Higher overall average of the social BPM score refers to a higher level of usage of social BPM within the surveyed organization.

The questionnaire has been sent to the organizations in Croatia with more than 50 employees in paper form and as an online survey. The sample selection frame was a Registry of business entities, a service offered by Croatian Chamber of Economy [22]. Total of 101 responses have been received which have been purified so that all questionnaires with more than 5 missing values have been excluded from the further analysis. This left 79 responses for the analysis.

In the end, our sample consisted of 45.57% companies with more than 50 and up to 249 employees, 21.52% with number of employees between 250 and 1000 and 32.91% companies with more than 1000 employees. When looking at the sales revenue in 2015, 22.78% of the surveyed companies had up to and including 10 million euros of sales revenue in 2015, 21.25% of them had more than 10 million and up to and including 50 million euros of sales revenue in 2015, while 40.51% had more than 50 million euros of sales revenue in 2015. 15.19% of the surveyed companies did not want to give an answer to this question.

IV. RESULTS AND DISCUSSION

The purpose of this research was to examine the link between the level of BPM maturity and the usage of social BPM within the companies operating in Croatia. The first set of questions and analyses examined the PPI of the observed companies. Overall average PPI score for Croatian companies in this research is 36.16, which means that Croatian companies are in the middle phase of BPM maturity according to [15], called "process management evolution" level of BPM maturity. The results of the PPI index through BPM maturity stages are presented in Table II. Minority of the surveyed companies, only 8.86% of them are still in the first phase of BPM maturity – initiation, while majority of them, 58.23% is at the second stage – evolution, which is in line with the overall average PPI score for Croatia. A great number of Croatian companies, almost 33% is at the highest BPM maturity level – process management mastery. These results indicate shift towards higher BPM maturity in Croatia. Also, these results show that Croatian companies understand the benefits of implementing and using BPM in a proper way and with the purpose of exploitation of the benefits offered by reaching the higher BPM maturity phase.

TABLE II
BPM MATURITY IN CROATIAN COMPANIES THROUGH MATURITY PHASES

BPM maturity phase	N	%
1-process management initiation	7	8.86
2-process management evolution	46	58.23
3-process management mastery	26	32.91

If we look at the average scores through each of the BPM success factor, it is visible that average score for every statement is between 3 and 4, as it is presented by Fig. 1. In Croatian companies, the lowest average PPI score is achieved in „process improvement methodology", where the calculated average PPI score is 3.32. There are two BPM sucess factors where achieved average PPI scores are the highest calculated. Those are „customer focus" and „portfolio of process management initiatives" (for both factors the average PPI is 3.95), followed by „alignment with strategy" where the average PPI is 3.89. Those scores indicate that Croatian companies recognised customers as high business success factors and are concentrated on creating value for customers when manufacturing their products or providing services as well as in analysing and designing their processes. High score of „portfolio of process management initiatives" indicates that many Croatian companies prioritize their process improvement efforts according to their connection with current issues and also according to the process needs. However, there is room for improvement as there is a great number of Croatian companies which do not act this way.

High score of „alignment with strategy" factor is a good sign for Croatian companies since it means they are on the good path towards aligning their strategies with their business processes, which is one of the key aspects of successfull business. It is not enoguh only to have a good strategy but it is also neccessery that this strategy is linked with the business processes since they are the core of every business nowdays. According to [23], PPI score in this category is higher as more business processes are linked to the strategy of the company and have clear performance goals. On the other side, relatively low score of „process improvement methodology" indicates

that standard approach in process analyis and design is used by process management teams only to a certain extent in Croatian companies.

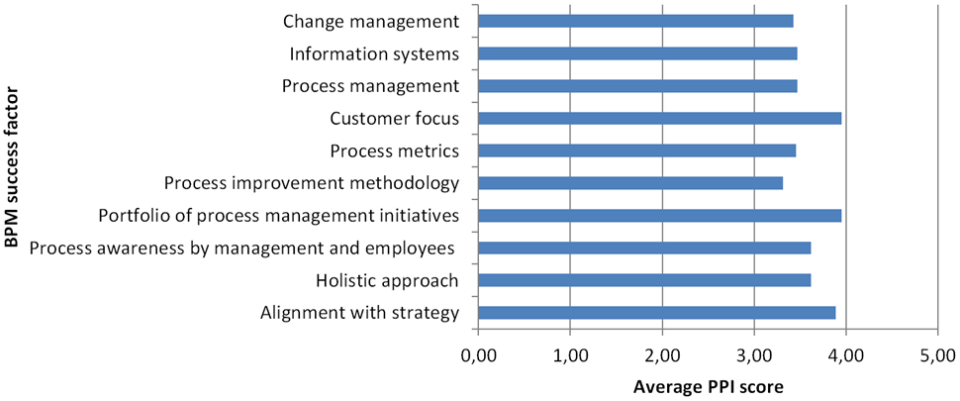

Fig. 1 PPI scores through BPM success factors in Croatian companies

The next section of the survey was concerned with the usage of social BPM within the observed companies. The total average of the social BPM scores for Croatian companies is 3.0 which clearly states that Croatian companies are somewhere in the middle of accepting, implementing and using social BPM. Since the usage of social BPM has been assessed through 5-point Likert scale, for the purpose of this research, those grades have been classified into three levels: (1) average rounded grades 1 and 2 are representing low level of social BPM usage, (2) average rounded grade 3 is the middle level of social BPM usage, while (3) average rounded grades 4 and 5 are representing high level of social BPM usage in a company. When looking at the observed companies' individual assessment of the social BPM usage, most of the companies (41.77%) have average grades above 3, which puts them in high level group of grades. This means that most of the surveyed companies in Croatia follow social software principles in their BPM practices. Average scores through levels set for this research are shown in Table III.

TABLE III
SOCIAL BPM USAGE IN CROATIAN COMPANIES

Social BPM average score	N	%
Low level (average grades 1 & 2)	23	29.11
Middle level (average grade 3)	23	29.11
High level (average grades 4 & 5)	33	41.77

The average usage of social BPM scores across the BPM maturity levels are presented by Fig. 2. It is clearly visible how the average scores for the usage of social BPM in Croatian companies progressively increases from the lowest BPM maturity phase to the highest BPM maturity phase. Companies which are at the process management initiation level have an average usage of social BPM score of 2.14, which is the lowest among the three BPM maturity levels. On the other hand, companies which are at the process management mastery level have the highest calculated average score in usage of social BPM, which is 3.67. These results reveal that the companies which achieved the higher BPM maturity level also have higher scores in using social BPM.

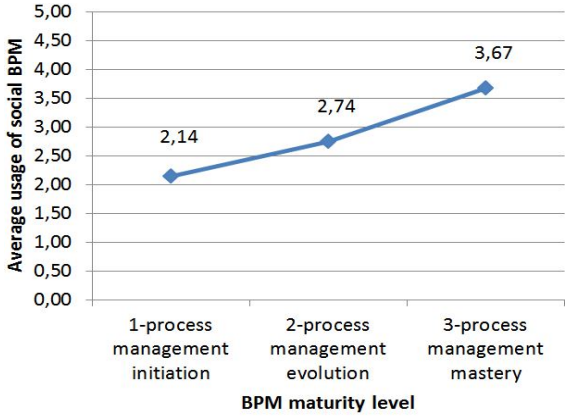

Fig. 2 Average usage of social BPM across BPM maturity levels

TABLE IV
ONE-WAY ANOVA RESULTS FOR THE USAGE OF SOCIAL BPM THROUGHOUT BPM MATURITY LEVELS

Social BPM	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4,870	2	2,435	2,923	0.060
Within Groups	63,317	76	,833		
Total	68,187	78			

Further, a one-way ANOVA statistics has been used for examining if there are statistically significant differences between average usage of social BPM scores throughout the BPM maturity levels. Before conducting a one-way ANOVA, the collected data have been tested for normality of distributions by Kolmogorov-Smirnov (K-S) and for the homogeneity of variance by Levene's test. Since the assumptions for parametric test have been confirmed in both tests, a one-way ANOVA has been used for further data analysis. The results revealed that there are statistically significant differences at 10% level between different BPM maturity levels regarding the usage of social BPM, as it is

presented in Table IV.

V. Conclusion

This research investigated the level of BPM maturity and the usage of social BPM in Croatian companies. The results indicated that majority of Croatian companies are at the middle stage of BPM maturity – "process management evolution" phase which still leaves enough room for improvement and making efforts towards reaching the "process management mastery" phase. However, although total average score for the usage of social BPM indicates majority of Croatian companies use social BPM to some extent in managing their processes, the average scores throughout levels of social BPM reveal that there is a growing number of those companies which follow principles of social software in analyzing, designing and managing their business processes. Moreover, based on extensive literature review, this study has identified the main social BPM principles.

Although this research extends the body of knowledge regarding the development of social BPM and its link to the BPM maturity, it also has some limitations. Since the study was limited to analyzing the data collected from companies operating in Croatia, one should be careful in generalizing the results. Furthermore, a relatively small size of the sample is another limitation of this study.

In order to overcome the limitations of this study, a further studies need to be carried out. It would be interesting to expand the research to other countries and compare the results obtained from Croatian companies with those obtained in other countries. Additionally, more research should be done with the purpose of investigating the causal relationship between the usage of social BPM and the BPM maturity level. It should be examined whether the usage of social BPM supports the company in achieving the higher BPM maturity level. Finally, further analysis needs to be done to establish what and where are the differences between the levels of social BPM usage across different BPM maturity levels.

References

[1] P. Harmon, *Business Process Change: a Guide for Business Managers and BPM and Six Sigma Professionals.* Waltham: Morgan Kaufmann Publishers, July 2007.

[2] M. Rosemann, and T. de Bruin, "Application of a Holistic Model for Determining BPM Maturity," *BPTrends*, Available from: www.bptrends.com, pp. 1-21, February 2005, Accessed on 29/03/2016.

[3] P. Willaert, J. Van den Bergh, J. Willems, and D. Deschoolmeester, "The Process–Oriented Organisation: A Holistic View Developing a Framework for Business Process Orientation Maturity," *Business Process Management Lecture Notes in Computer Science*, vol. 4714, pp. 1–15, 2007.

[4] D. R. Shaw, C. P. Holland, P. Kawalek, B. Snowdon, and B. Warboys, "Elements of business process management system: theory and practice," *Business Process Management Journal*, vol. 13, no. 1, pp. 91–107, 2007.

[5] C. Grau, and J. Moormann, "Investigating the Relationship between Process Management and Organizatinal Culture: Literature Review and Research Agenga," *Management and Organizational Studies*, vol.1, no.2, pp. 1-17, 2014.

[6] J. vom Brocke, T. Schmiedel, J. C. Recker, P. Trkman, W. Mertens, and S. Viaene, "Ten principles of good business process management," *Business Process Management Journal*, vol. 20, no. 4, pp. 530-548, 2014.

[7] R. Škrinjar, V. Bosilj Vukšić and M. Indihar-Štemberger, "The impact of business process orientation on financial and non-financial performance," *Business Process Management Journal*, vol. 14, no. 5, pp. 738 – 754, 2008.

[8] T. Hernaus, M. Pejić Bach and V. Bosilj Vukšić, "Influence of strategic approach to BPM on financial and non-financial performance," *Baltic Journal of Managment*, vol. 7, no. 4, pp. 376-396, 2012.

[9] B. Buh, *Approaches towards business process management adoption under different organizational cultures*, doctoral dissertation. Ljubjana, Slovenia: Faculty of Economics, 2016.

[10] R. Schmidt, and S. Nurcan, "BPM and social software," In: *Business Process Management Workshops*, Berlin Heidelberg: Springer, pp. 649-658, 2009.

[11] P. Harmon, *Process maturity models*, available from: www.bptrends.com/publicationfiles/spotlight_051909.pdf, 2009. Accessed on 29/03/2016

[12] M. Röglinger, J. Pöppelbuß, and J. Becker, "Maturity models in business process management," *Business Process Management Journal*, vol. 18, no. 2, pp. 328 – 346, 2012.

[13] A. Tarhan, O. Turetken, and H. A. Reijers, "Business process maturity models: a systematic literature review," *Information and Software Technology*, vol. 75, pp. 122-134, 2016.

[14] M. Rosemann, and J. vom Brocke, "The Six Core Elements of Business Process Management," in Handbook on Business Process Management 1: Introduction, Methods and Information Systems, J. vom Brocke and M. Rosemann, Eds. Berlin: Springer, 2010, pp. 107-122.

[15] Rummler-Brache Group, *Business process management in US firms today*, available at: http://rummler-brache.com/upload/files/PPI_Research_Results.pdf, 2004, Accessed on 05/12/2015.

[16] V. Bosilj Vukšić, Lj. Milanović Glavan, and Z. Merkaš, "The Success Factors of Business Process Management: a Case Study of Croatian Company," in *Proceedings of the 8th International Conference "An Enterprise Odyssey: Saving the Sinking Ship Through Human Capital", June 08 – 11, 2016*, L. Galetić, I. Načinović Braje and B. Jaković, Eds. Zagreb, Croatia: Faculty of Economics and Business, June 2016, pp. 697-706.

[17] S. Erol, M. Granitzer, S. Happ, S. Jantunen, B. Jennings, P. Johannesson, A. Koschmider, S. Nurcan, D. Rossi, and R. Schmidt, "Combining BPM and social software: contradiction or chance?," *Journal of software maintenance and evolution: research and practice*, vol. 22, no. 6/7, pp. 449-476, 2010.

[18] M. E. Rangiha, and B. Karakostas, "A Socially Driven, Goal-Oriented Approach to Business Process Management," *International Journal of Advanced Computer Science and Applications*, Special Issue on Extended Papers from Science and Information Conference, pp. 8-13, 2013.

[19] G. Bruno, F. Dengler, B. Jennings, R. Khalaf, S. Nurcan, M. Prilla, M. Sarini, R. Schmidt, and R. Silva, "Key challenges for enabling agile BPM with social software," *Journal of Software Maintenance and Evolution: Research and Practice*, vol. 23, no. 4, pp. 297-326, 2011.

[20] M. Kocbek, G. Jošt, and G. Polančič, "Introduction to Social Business Process Management," in *Knowledge Management in Organizations*, L. Uden, M. Heričko, and I. H. Ting, Eds. Switzerland: Springer International Publishing, 2015, pp. 425-437.

[21] N. Pflanzl, and G. Vossen, „Human-Oriented Challenges of Social BPM: An Overview," in *Enterprise Modelling and Information Systems Architectures, Lecture Notes in Informatics*, vol. P-222, R. Jung, and M. Reichert, Eds. Bonn, Germany: Köllen Druck and Verlag GmbH, 2013, pp. 163–176.

[22] Registry of business entities, available online at: http://www1.biznet.hr/HgkWeb/do/extlogon, Accessed on 15/01/2016.

[23] V. Bosilj Vukšić, Business Process Management Maturity in Croatian Companies, *CBPIM 2016: 18th International Conference on Business Process Integration and Management*, July 11-12, 2016, Stockholm, Sweden, July 2016, pp. 696-701.