A Bibliographical Study of Software Product Management Research

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***Abstract*—Software Product Management (SPM) is a relatively young research area which aims to understand how to productise a software product or a service as well as how to align it with the organisation's strategy. While the research of an academic discipline of SPM started to emerge as yearly as 1990s, the most impactful works have been published during 2006–2007. To understand how this young field has emerged and developed, this paper presents a bibliometric study on SPM publications found from Scopus (n=142). The identified studies have been produced by a small set of authors and institutions, which are mainly located in Europe. By using Bibliographic Coupling and Co-Citation metrics, the study shows that Software Product Management literature is drawing from several different related fields. Furthermore, the studied literature is tightly interconnected. The study also shows that the SPM field might be lacking a coherent intellectual background and new openings due to scattered research foci. To prevent this development, this work calls for a formation of a shared research agenda for the Software Product Management field.**

***Index Terms*—Software Product Management, Bibliometrical study, Literature study, productisation**

I. Introduction

Software Product Management (SPM) is an evolving area of science for understanding how to productise a software product or a service and how to align it with its producing organisation's strategy [1]. While there has been lots of discussion of related or similar concepts previously [c.f. 2], Fricker [1] coins the first academic use or the presentation of the 'Software Product Management' concept to a series of work published by Kilpi [3]–[6] during 1997–1998. For a comparison, the discipline of Product Management has been considered born in the Procter & Gamble Company in 1931 [7].

The emergence of the new discipline gained momentum during 2006–2009 when some of the most highly cited SPM studies were published by, e.g., van de Weerd et al. [8], Ebert [9], [10] and Kittlaus & Clough [11]. Furthermore, the non-profit International Software Product Management Association (ISPMA) was founded in 2009 and the series of the International Workshop on Software Product Management (IWSPM) was started in 2006.

As shown in Fig. 1, the yearly number of SPM publications in Scopus publication database peaked after shortly after the momentum years in 2010 and the yearly number of published SPM articles has since stabilised. Thus, there has been more than a decade of active research in the area and SPM can be considered—at least from the time perspective—to be matured. However, some questions raised more than a decade ago are still present.

A. Motivation and objectives

Since the emergence of the new discipline of Software Product Management, the question how it relates to the more general field of product management has raised. Moreover, the same discussion has been taken place in the emergence of software business as a research discipline (c.f. [12], [13]).

In one of the first studies [6] aiming to define the field, SPM is related to Software Configuration Management, yet the theoretical underpinning is from the product management field. Ebert [9] relates SPM to requirements engineering as well as to general product management, project management and marketing fields. For an emerging field, this is expected as a new field seeks to help and use more matured fields theories and analogies to explain different phenomena. However, in more recent work, it seems that the weight of the direct linkage to the general product management field has been decreasing.

Therefore, to understand how the SPM research field is shaping and whether it has already formed a shared intellectual background—being it product management or not—we set the following research questions:

RQ1 How is SPM developing in terms of publications, institutions and authors?
RQ2 What are the focus areas inside the SPM literature?
RQ3 Do SPM studies share the intellectual background?
RQ4 To what extent SPM is linked to product management literature?

RQ1 aims to understand how the literature is shaping and who are the main authors and institutions driving it. Moreover, RQ2 seeks to understand what are the research clusters — or 'hot topics' — inside the SPM literature. RQ3 seeks to reveal whether the SPM literature has shaped and collectively agreed on a set of work forming an intellectual background for the field. In addition, we aim to understand how well SPM literature is connected to more general product management body of knowledge (RQ4). As a new field, it would be expected that it would draw from a more mature

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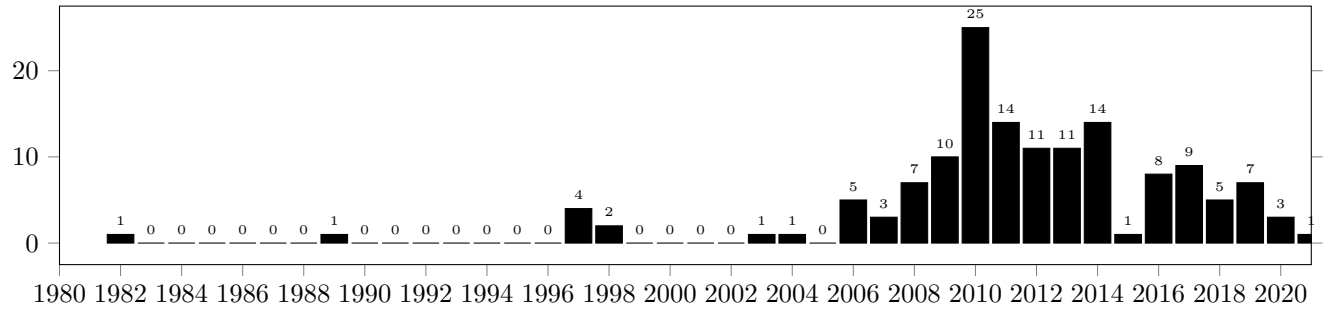

Fig. 1. The number of yearly published studies having the term 'software product management' or 'digital product management' included into the title, abstract or keyword according to Scopus publication database (March 1st, 2021). The sudden drop in publications in 2015 is unexpected. We have verified the result from Scopus, but the authors do not have explanation for this phenomenon. The lack of IWSPM workshop in this year partially explain the result; however, in adjacent years a majority of publications have been from other venues. Another explanation would be unevenly registered studies in different years — yearly average between 2014 and 2017 would be eight.

field; however, after a while, those connections are expected to loosen as the area matures a field of its own.

B. The research method and related work

Compared to *literature reviews*, which aim to summarise the content on reviewed literature [14], *bibliographical studies* analyse the literature and its connections itself. Bibliographical studies have been frequently been present in the fields of software engineering and business. For example, in software engineering there is a series of bibliometric studies published (c.f. [15], [16]) to understand highly performing individuals and institutions in the field. In addition, Fernandes [17] and Garousi & Fernandes [18] have studied how publication trends have changed in software engineering; furthermore, Garousi & Fernandes [19, Section 2] reviews related bibliometric studies in the field. In software business, e.g., Seppänen et al. [20] and Suominen et al. [21] have used bibliometrics to study the research literature on software ecosystems, and Hyrynsalmi & Suominen [22] to evaluate a conference series.

However, to the best of the authors' knowledge, no previous work has systematically studied the Software Product Management literature with bibliographical approach. Yet, extant literature has provided unstructured reviews on the emerging field. For example, Maglyas [23] reviews software product management compared to product management; also, Kittlaus and Fricker [7] have summarised the most important developments in the SPM field in their recent handbook.

In this study, we use bibliometrics to analyse the emergence and connections of the software product management literature. Moreover, we focus on which studies an article refers to. We use two established bibliometrical measures: Bibliographic coupling (BC) [24] and Co-Citation (CoC) analysis [25]. These metrics are presented with more details in Section II-B. By using these metrics, we aim to understand the development and dynamics of the SPM literature.

C. Structure

The remaining of this report is structured as follow. Section II reviews the research process and materials used in this literature study. The following section shows the results of this study. Section IV points the key findings and discusses on the limitations. Finally, Section V concludes the study.

II. Materials and methods

A. Overview

The set of scientific publications to be used in our review was downloaded from the Scopus database in September 2020. The search used was constructed to focus strictly on SPM, thus the the database was search for the expression "Software Product Management" or "Digital Product Management" being used in the title, abstract, keywords. The created dataset consists of 142 publications and as shown in Table I, the majority of documents in the dataset are articles and proceedings papers, with the latter comprising close to two thirds of the dataset.

B. Bibliographic coupling and co-citations

To analyse the data, two separate bibliometric methods were used, namely Bibliographic coupling and Co-citation analysis. Bibliographic coupling was used to understand the shared intellectual background of the publications [24]. BC is an well-established approach for measuring the shared intellectual background among documents, where a strength value is calculated between each document in the dataset based on the number of shared references. Kessler [24] elaborates that *"... a single item of reference shared by two documents is defined as a unit of coupling between them"* and if multiple items share the same reference, it increases the weight of the coupling.

TABLE I
Document types and numbers for the dataset.

Document type	Count
Conference Paper	87
Article	27
Conference Review	20
Book	3
Book Chapter	2
Review	2
Editorial	1

The BC approach suggests that the more shared references, the stronger the intellectual background shared by the two documents. We also used co-citation analysis [25] to identify the shared background of the publications in our datasets. In CoC, two documents are co-cited if there are one or more documents that cite both articles. The weight of co-citation is based on the count of articles that co-cite the two documents. CoC creates a network of cited documents rather than linking the documents in the dataset [26].

The reasoning of analysing the data with both methods is in the vantage point the approaches create. BC highlights hot topics [27] and links documents with similar research focus [28]. This ultimately creates a knowledge structure of a field. The CoC analysis creates a historical view on the field, highlighting central papers shared in their citations by the articles in the dataset.

The BC and CoC calculations were done using VOSviewer software [29]. Data was calculated using full counting and VOSViewer was allowed to remove publications that were not connected to the larger network (i.e., isolates). This meant that the final analysis for BC included 104 articles and for CoC 2,661. The results were into network data in VOSviewer and then imported to Gephi software for further analysis. Using the OpenOrd layout algorithm [30] we visually analysed the proximities among documents or references. The visual analysis was supported by the tabular information extracted and clustering done using Community detection in Gephi [31]. Key metrics were also extracted for each network cluster, namely the count of documents in each community, cluster density, cluster degree and document eigenvector centrality.

The communities created were labelled according to the following procedure. Through individual reading by researchers of the documents in each cluster, the authors labelled each community independently, and then worked towards a consensus label until the authors agreed on the label for a particular cluster.

III. Results

A. Descriptive statistics

As seen in Fig. 1 the publication count has a clear temporal dynamic. There are only sporadic publications prior 2006. The publication activity spikes in 2011 to the drop significantly by 2015. Since 2015 there has been increased interest and we should consider values for 2019 and 2020 to be underrepresented (as the search was done in the midst of the year 2020, all works from previous year or that year are not yet indexed). Focusing on the subject areas of the research publications, it is understandable that Computer Science is the subject area of approximately 50 % of the publications. Mathematics, Business, Management and Accounting, Engineering and Decision Sciences share together an equal volume. With the Table II we should note that a publication can have multiple subject category designations.

The articles are relatively scattered. The 142 publications have been published in 30 different publication forums and many with only a few publications on the SPM topic. Only 11 different forums have more than three publications in the studied set of papers (Table III). The largest discussion on the topic has been taken place in the Springer's LNBIP series. Interesting is that only few journal sources, mainly *Journal of Systems and Software*, have a notable amount of publications on the topic.

TABLE II
Documents by subject category.

Subject category	Count
Computer Science	130
Mathematics	32
Business, Management and Accounting	31
Engineering	25
Decision Sciences	19
Other	9

TABLE III
Publication sources with over three publications in the dataset.

Source	Count
Lecture Notes in Business Information Processing (LNBIP)	14
Communications in Computer and Information Science (CCIS)	9
Lecture Notes in Computer Science including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics (LNCS)	8
CEUR Workshop Proceedings	7
Journal of Systems and Software (JSS)	7
ACM International Conference Proceeding Series	3
IEEE Software	3
Information and Software Technology (IST)	3
International Journal of Information System Modeling and Design (IJISMD)	3
Journal of Software Evolution and Process (JSEP)	3

The publications are attributed to a small number of academic institutions. The most significant number of publications come from Utrecht University, the Netherlands, with nearly one third of the publications. The majority of the academic institutions with more than three publications, seen in Table IV, are European institutions. Overall, 86 institutions have been involved in publishing the 142 publications.

TABLE IV
Publication affiliations with over 3 publications.

Institution	Country	Count
Utrecht University	the Netherlands	43
LUT University	Finland	13
Blekinge Tekniska Högskola	Sweden	10
Lunds Universitet	Sweden	7
Vrije Universiteit Amsterdam	the Netherlands	6
University of Oulu	Finland	5
Software Competence Center Hagenberg	Austria	4
Universität Mannheim	Germany	3
Universität Stuttgart	Germany	3
National Research University Higher School of Economics	Russia	3
University of Alberta	Canada	3
Aalto University	Finland	3

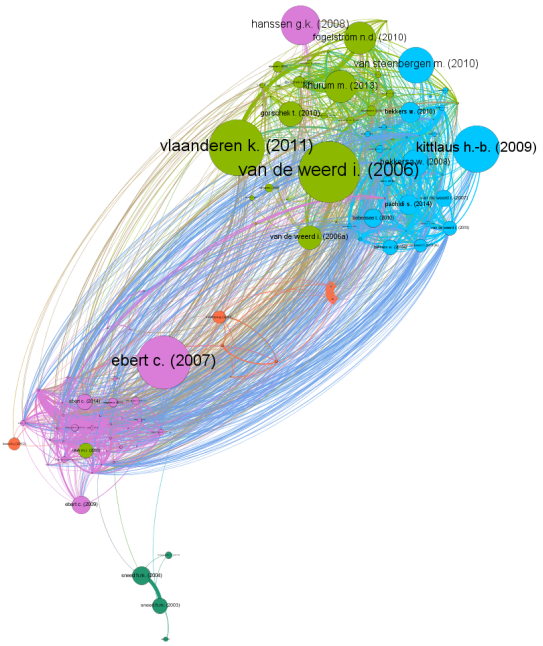

Fig. 2. A network graph based on BC. Colour references community and node size citation count. Image data is available from authors.

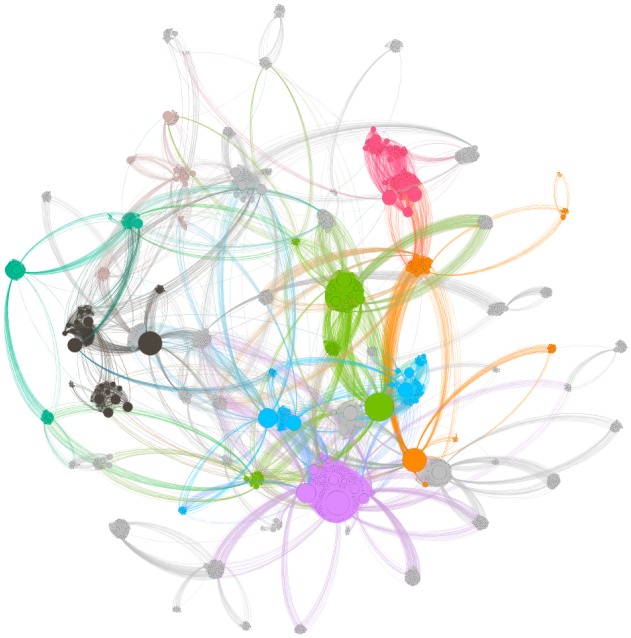

Fig. 3. A network graph based on CoC. Colour references community and node size citation count. Image data is available from authors.

Table V shows some differences in publication outlet between research institutes. Utrech University and LUT University have a solid number in conference publications whereas for others in the top five most productive institutions, the publications are rather scattered over many outlets. However, due to small numbers it may be justified to say only that there is no dominating research outlet for SPM research.

B. Bibliometrics

a) Bibliographic coupling: The BC analysis resulted in five communities of research. The communities created a network of 104 (73.2% of all) documents, with an average degree of 15.029, density of 0.292 and with an average path length of 1.845. The network graph, where colour indicates communities and publication nodes are sized by citations received, is illustrated in Fig. 2. As shown in the figure, the documents which are linked to each others, are heavily interlinked with only a few exceptions, located in the bottom part of the figure.

For the qualitative analysis, the communities were ranked by Eigenvector centrality and for each community five most Eigenvector central articles were taken to inform the community labelling. Seen in Table VI the resulting in five communities are not equally sized. Two of the communities are extremely small, with only four and seven publications. The remaining three communities have approximately 30 publications each. In addition to two largest communities, the remaining three share some common themes, yet they are often authored by same researchers or by people in the same institutions.

b) Co-citation analysis: The CoC analysis was based on a relatively large number of cited articles. With 142 publications, there were 3,472 unique cited articles. After removing non-connected outliers, the remaining 2,661 cited articles formed a network. We should note that Scopus data is not perfect with how it handles references, resulting duplicate entries due to differences in writing citations. This focuses our attention to the most central publications to the network.

The CoC network had 87,957 edges between the 2,661 nodes. The average degree of the network was 33.017, density 0.025 and average path length 3.804. Using a resolution of 1.0 the modularity algorithm resulted in 31 communities of theoretical foundation. This is a large value and suggests that the relatively small number of publications draw from a broad theoretical foundations with limited cohesiveness. Seen in Fig. 3, the network is extremely sparse, incoherent and the communities of shared theoretical foundations remain small.

The largest community from the CoC analysis has 9.51 percent of the cited publications. From there only three have more than five percent of the cited publications with 27 communities having less. Our focus is on understanding the four largest cited communities, seen in Table VII.

IV. Discussion

A. Objectives and key findings

a) Answers to the RQs: This study seeks to understand the evolution of SPM research literature through the used references. First we took an overview on the available SPM publications in Scopus, their type and yearly distribution and who have authored them. To answer the **RQ1**, the result show

TABLE V
THE FIVE MOST PRODUCTIVE INSTITUTIONS AND THEIR PUBLICATIONS IN THE MOST FREQUENTLY USED CONFERENCE SERIES (3) AND JOURNALS (5) FOR SPM STUDIES.

	Conference series			Journals					
Institution	*LNBIP*	*CCIS*	*LNCS*	*JSS*	*IEEE SW*	*IST*	*IJISMD*	*JSEP*	**All**
Utrecht University	6	1	6	1	0	2	3	0	43
LUT University	3	0	0	2	1	0	0	0	13
Blekinge Tekniska Högskola	0	1	0	0	1	0	0	2	10
Lunds Universitet	1	0	0	0	0	1	0	0	7
Vrije Universiteit Amsterdam	1	0	0	0	0	1	1	0	6
All	14	9	8	7	3	3	3	3	142

TABLE VI
RESEARCH COMMUNITIES AMONG THE DATASET AS CLUSTERED WITH BC

Count	Reference articles	Community label
30	Regnell B. (2011) Fogelström N.D. (2010) Gorschek T. (2012) Vlaanderen K. (2011) van de Weerd I. (2006)	Agile management
4	Sneed H.M. (2004) Sneed H.M. (2003) Ramasubbu N. (2016) Shigo O. (1982)	Software maintenance
36	Bertram M. (2016) Lucassen G. (2014) Jansen S. (2013) Maglyas A. (2017) Maglyas A. (2011)	Product management
7	Linaker J. (2019) Linaker J. (2020) Valenca G. (2014) Valenca G. (2016) Bosch J. (2013)	Requirement engineering and ecosystems
27	Brinkkemper S. (2008) van de Weerd I. (2012) Vlaanderen K. (2013) Katchow R. (2014) van de Weerd I. (2010)	Method engineering

that there is a stable number of SPM studies published yearly, the publications appear in a variety of forums and in a variety of formats (including books and journal articles) as shown in Fig. 1 and Table I. However, it is worth to note that the overall trend of publications is slightly decreasing. While publications are registered into database with delays up to a few years, it is still visible from the data that highest peak of research activity has been around 2010–2014 while the number of studies indexed in Scopus is falling. Moreover, the studies are produced by a small group of core authors.

The BC analysis, given in Fig. 2 and Table VI, shows that there five research clusters inside the studied SPM articles (**RQ2**). We labelled them as agile management, product management, method engineering, requirements engineering, and maintenance. The clusters are not well-balanced and the three firsts contain 65 % of the articles. In addition, 38 (26.7 %) articles were not clustered in the BC analysis. It is worth to note that these articles were also found with the same exact search term, thus showing that they aim to contribute to discussions going in the SPM field. However, their removal due to the lack of connections might indicate that there are several individual research streams or studies appearing in the extant SPM literature and not that much of concentration to commonly shared problems and themes. To tackle this issue, a commonly shared research agenda may help to steer the progress of the field.

The results also show that extant SPM literature does not concentrate around a shared intellectual background (**RQ3**); instead, the studied 142 publications refer to more than 3,000 individual sources. The sources, which were referred more than two times in the dataset, are clustered into 31 communities. SPM literature draws broadly from different venues as illustrated in Fig. 3. Given that SPM is a multi-disciplinary research area focusing on a management of a software product, the multitude of various background clusters is not a surprise. However, the created clusters are broad and general in their topics; thus, no indication of focus on the core studies in a shared intellectual background is detected.

The most important communities of referred works in CoC analyses are labelled as management sciences, requirement engineering and software process improvement. Among the clustered 31 communities, there are no clear and strong linkage to the general product management literature (**RQ4**). On the one hand, this is partially surprising as one would expect software product management and product management sharing similar themes; on the other hand, given the specific nature of software and its production, it seems that there the fields are deviating too much for a meaningful intellectual background stream from product management to SPM to be emerged in the literature.

b) Key takeaways: We summarise our study's central observations in the following two points:

First, while we found 142 publications with our search term from Scopus, most of the retrieved studies were produced by a small number of institutions and authors. For example, the top three institutions have authored 62 (43,6 %) studies and the three most active authors–all of them being from the Netherlands—have contributed to

TABLE VII
THE FOUR LARGEST COMMUNITIES IN THE COC ANALYSIS.

Count	Articles	Community label
253	Zollo, M., Winter, S.G., Deliberate learning and the evolution of dynamic capabilities (2002) Organization science, 13 (3), pp. 339-351. Zander, U., Kogut, B., Knowledge and the speed of the transfer and imitation of organizational capabilities: an empirical test (1995) Organization science, 6 (1), pp. 76-92. Xu, L., Brinkkemper, S., Concepts of product software (2007) European journal of information systems, 16 (5), pp. 531-541. Zahra, S.A., Sapienza, H.J., Davidsson, P., Entrepreneurship and dynamic capabilities: a review, model and research agenda (2006) Journal of management studies, 43 (4), pp. 917-955. Yin, R., (2009) Case study research: design and methods, , Sage publications, London.	Management sciences
196	Zairi, M., (1999) Best practice: process innovation management, Butterworth-Heinemann: Boston MA. Zahran, S., (1998) Software process improvement: practical guidelines for business success, Addison-Wesley: Reading MA. Yeh, A.C., Requirements engineering support technique (request): a market driven requirements management process (1992) Proceedings 2nd symposium on assessment of quality software development tools, pp. 211-223. IEEE. Wohlin, C., Aurum, A., What is important when deciding to include a software requirement in a project or release? (2005) International symposium on empirical software engineering, pp. 237-246. Wohlin, C., Aurum, A., Aligning requirements with business objectives: a framework for requirements engineering decisions (2005) Proceedings of requirements engineering decision support workshop.	Requirement and process engineering.
158	Yin, R.K., (2003) Case study research - design and methods, Sage publications Wnuk, K., Regnell, B., Schrewelius, C., Architecting and coordinating thousands of requirements an industrial case study (2009) Requirements engineering: foundation for software quality, Ser. LNCS, 5512, pp. 118-123. Springer. Whalen, M.W., Gacek, A., Cofer, D., Murugesan, A., Heimdahl, M.P.E., Rayadurgam, S., Your "What" Is My "How": Iteration and Hierarchy in System Design (2013). IEEE Software, 30 (2), pp. 54-60. Ward, P.T., Mellor, S.J., (1986) Structured development for real-time systems, Prentice hall Vogl, H., Lehner, H., Grunbacher, P., Egyed, A., Reconciling requirements and architectures with the CBSP approach in an iPhone app project (2011) Requirements engineering conference, 2011 19th IEEE international, pp. 273-278. ,	Requirements engineering.
137	Xu, L., Brinkkemper, S., Concepts of product software (2007) European journal of information systems, 16, pp. 531-541 Wiegers, K., First things first: prioritizing requirements (1999) Software development, 7 (9), pp. 48-53 Wiegers, K., Automating requirements management (1999) Software development, 7 (7), pp. s1-s6 Weerd, I.V., Brinkkemper, S., Nieuwenhuis, R., Versendaal, J., Bijlsma, L., Towards a reference framework for software product management (2006) Requirements engineering, ieee international conference on, pp. 319-322 Weerd, I.V., Brinkkemper, S., Nieuwenhuis, R., Versendaal, J., Bijlsma, A., On the creation of a reference framework for software product management: validation and tool support (2006) Proceedings of the international workshop on software product management, pp. 3-12.	Software products, process and improvement.

40 (28,1 %) publications in our dataset. Thus, while the field is steadily maturing in the number and variety of publications, a small core of authors and institutions are heavily influencing to the development of the field.

To some extent, this is an alarming finding. While the core group of authors are able to advance the field with their work, the concentrated number of institutions involved might prevent variety and new, colliding ideas to enter into active discussion in the field. In the long run, this might endanger the field's ability to renew itself and respond to external changes.

Second, it seems that SPM field is not sharing a coherent set of intellectual background nor it is too heavily connected to general product management or new product development literature. As shown by Fig. 3, there are 31 different communities formed with CoC analysis and modularity algorithm. While this show that SPM literature is broadly drawing from different disciplines and schools of thought, it also raises the question why SPM literature is lacking central publications that would form a coherent intellectual background. There are several possible explanations. For example, it could be that the field itself is broad that no clear works would stand out. Furthermore, the field of Software Engineering has theoretically thin results in a sense that there are no strong, coherent and largely accepted SE theories but mostly theories are borrowing or leaning from other fields such as management theories. This may be results from traditional belief in which SE is considered more as an area of craftmanship than science. Alternatively, it might be that field is still immature and the central work is not yet visible in CoC analysis; for instance, one of the first software product management handbooks was published as late as 2017 [c.f. 7].

B. Reflection and implications

Software has eaten the world, has been said[1]. Software has profound impact on all industries, and software-based products and services are major sources of revenue and wealth for many incumbents. Benefits and importance of developing a software product has been recognised a while ago (e.g., [32], [33]). Software product is defined as a packaged configuration which consists of software components or a software-based service. Due to high clockspeed of software engineering industry, operations need to be flexible and capable to adapt new forms of value creation quickly. Different hardware innovations (e.g. touchscreens or bluetooth) or software innovations (platforms

[1]Andreessen & Conde (2019) https://a16z.com/2019/08/16/software-eaten-world-healthcare/

or APIs) have created new means to create value for all parties in software ecosystems. This high speed of innovation calls for relevant research results, that can help companies to adapt their innovation procedures and practices to suit new situation.

Furthermore, software industry's importance for societies well-being and wealthiness would benefit from highly ambitious research in order to balance between short- and long-term research investments. Research in SPM, based on the results of this study, seems to be still quite immature phases as there are rather few many publications devoted to theoretical advancements. In addition, the actual number of researchers and active research units raises questions whether European research in software product management is capable to respond to global competition. For instance, platform-driven technology companies such as Amazon, Facebook, Tesla are producing such astronomical valuations in stock exchange that bring them enormous resources to invest in research, also in SPM as well as in software engineering. These actions poses major policy level questions how different nations or even European Union is able to survive in this competition [34], [35].

The research work done implies that the SPM field could benefit from a defined and shared research agenda, which could move the field forward. Given also the practical implications of the field, the research agenda formation could be driven by the industry or an industrial agent. In addition, the research agenda could be used to recruit researchers of related disciplines and areas considering contributing in the advancement of the field.

C. Limitations and future work

Naturally, this study has certain limitations that should be acknowledged. Firstly, we restrict the study to the papers that mentions SPM either in title, abstract or in keywords. While this may exclude relevant publications from the analysis, it allows us to concentrate on publications that intentionally claims themselves into the SPM body of knowledge and therefore also reduces noise from the results. Yet, this approach leaves out all relevant studies that does not specifically claim to contribute to the SPM field, for instance software pricing has a rich literature that is essential for product management work (c.f. [36]), but it is mainly omitted in this study due to the selection of search terms. Therefore, this limits our dataset and further studies should utilise other approaches to in selecting the core publications.

Secondly, the analysis is limited by the references patterns and habits of the scholars. The analysis used does not recognise the context where a reference is made and therefore all of them are treated with equal weight despite their actual importance for a study. That is, some of the referred work might be mentioned shortly in the introduction only once while it is not a central part of a paper's intellectual background. This might cause some biases into the results. However, as the number of studies included into analysis grow, also the role of these biases will become smaller.

To summarise, as software products and services are the most valuable assets in the world—seven out of the world's ten most valuable companies[2] are large software product and service producing organisations—it remains a surprise that the software product management has been addressed so little. One potential reason may be that this search term driven methodology cannot cover all relevant research that may be done, for instance, under the umbrella of generic software management. However, there seems to be a completely lack of USA based institutions among the most active research organisations in the SPM field. This could be explained by the different terminology which should be verified in further studies.

V. Conclusions

This study reviewed evolution of Software Product Management research by using a bibliographic study. While the development of the field started as yearly as 1990s, the number of publications have growth remarkably after and during the momentum years in 2006–2009. After a decade or so of SPM research, the field is dominated by a small number of authors and institutions. Furthermore, based on the analysis, the field seems to be fragment and would benefit from setting up an ambitious research agenda to guide the development of the field.

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