Business capabilities: a systematic literature review and a research agenda

Offerman, T.D.; Stettina, C.J.; Plaat, A.; Jardim-Goncalves, R.; Mendonca, J.P.; Pallot, M.; ... ; Margues, M.

Business Capabilities: A Systematic Literature Review and a Research Agenda

Tyron Offerman[1,2], Christoph Johann Stettina[1,3,4], and Aske Plaat[1]

[1]LIACS, Leiden University, Niels Bohrweg 1, 2333 CA Leiden, The Netherlands
[2]BearingPoint B.V., De Entree 89, 1011 BH Amsterdam, The Netherlands
[3]Centre for Innovation, Leiden University, Schouwburgstraat 2, 2511 VA The Hague, The Netherlands
[4]Accenture B.V., Gustav Mahlerplein 90, 1082 MA Amsterdam, The Netherlands

***Abstract*—The omnipresent need for business transformations, be it digital, agile, or lean, forces organizations to make good choices regarding their optimal business capabilities. Business capabilities provide a link between strategy (the 'why') and implementation (the 'how'). Currently, a comprehensive view on business capabilities is missing. We conducted a systematic literature review on business capabilities. We identified 720 scientific studies, of which 20 were analyzed in-depth. In this review, we investigate how business capabilities are defined, what business capability frameworks are available, and what future research has been suggested for business capability research. From this literature review emerges an extensive analysis on the state of art in business capability research, a new definition for business capabilities, and a potential research agenda for future research.**

Keywords*—*Business Capabilities, Business Capability frameworks, Capability-Based View, Systematic Literature Review, Information and Communications Technology (ICT)

I. Introduction

In this age of increasing change, organizations need to reinvent their business capabilities frequently in order to survive. Ongoing transformations such as the shift towards digital [1] and agile ways of working [2] require organizations to understand and assess their capabilities to make good strategic choices. Organizations need to decide on 'how' activities are performed [3], and 'what' activities are performed [4], [5] — the latter often referred to as 'business capabilities'.

After decades of scientific work a comprehensive view on business capabilities is missing [6]. As of yet there is no agreed upon definition of business capabilities. Wißotzki [6] notes that existing literature is (1) fragmented, (2) lacks clear categorization of capability types, and (3) no overarching view across different capability types exists.

In order to address this situation we performed a systematic literature review. Based on an original selection of 720 articles, we provide an overview of scientific literature on business capabilities. Our main contribution is:

- an extensive analysis on the state of art in business capability research
- a focused and aggregated definition for business capabilities
- a potential research agenda for future research

In the remainder of this article we work towards an extensive overview of business capability research. In section II the relevant literature is presented. We provide a brief overview of the history of business capability research, followed by an overview of related concepts, and an overview of related literature reviews. The objective of this research is presented in section III. This literature review follows a systematic literature review approach [7]. Section IV details the approach we used for this research. The results are presented in section V. In section VI we discuss the definitions of business capabilities, the existing business capability frameworks, and the potential research agenda. In section VII we answer the research questions and state our contributions.

II. Background and related work

The notion of business capabilities has been on the agenda of researchers and professionals for a long time already. It has been a topic of discussion, because of its role in discovering the sources of an organization's competitive advantage [8]. Surprisingly, a clear and agreed upon definition is missing for business capabilities [6].

Capability research in business environments dates back to 1987 when Ulrich introduced the term organizational capability [13]. His main goal was to introduce people management as a fourth mean to create competitive advantage in addition to financial, strategic and technological management. Subsequently, specific types of capabilities have been introduced in literature, such as enterprise architecture [14] capabilities and dynamic capabilities [15]. One particular type of capabilities are so called 'business capabilities', the topic of this paper.

Business capability research has its origins in two dominant literature streams, namely the Resource-Based View and enterprise architecture. Prior to Ulrich, the concept of activities/abilities crossing operating divisions was already mentioned in the Resource-Based View (RBV) of the firm [12]. In RBV research, capabilities refer to a bundle of skills and the knowledge that is strategically important to manage assets and coordinate activities effectively [8].

Enterprise architecture research describes the notion of business capabilities as the combination of process, technology, economic goods and persons [16], [17]. Business capabilities are also a key component of The Open Group Architecture Framework (TOGAF) [18], which is extended by Barroero et

978-1-5386-0774-9/17/$31.00 ©2017 IEEE

TABLE I: Related concepts of business capabilities

Concepts	Dictionary	Literature
Capabilities	The facility or potential for an indicated use or deployment [9]	The capacities or abilities within a firm, which can be linked together as business processes, in order to enable a specific purpose or outcome [4]
Skills	The ability to use one's knowledge effectively and readily in execution or performance [9]	Not Available
Competences	The quality or state of being competent; having requisite or adequate ability or qualities [9]	Competences are the set of skills and production techniques [10]
Processes	Series of actions or operations conducing to an end [9]	The routines or activities of an organization [11]
Resources	A source of supply or support :an available means [9]	(tangible and intangible) Assets which are tied semi-permanently to the firm in the Resource-Based View-theory [12]

al. to make the bridge to the data, application, and technology architecture [19].

As of yet these two research streams have not aligned into a converged and comprehensive view on business capabilities. This results in confusion and misinterpretation when discussing business capabilities. In this paper we provide a converged definition and view on business capabilities.

A. Capabilities, skills, competences, processes and resources

Business capabilities are closely related to the concepts of skills, competences, processes, and resources. tab:related-concepts shows an overview of the definitions of these concepts from the Merriam-Webster dictionary as well as from literature. Skills refer to the abilities of persons, while capabilities, processes, and resources refer to organizational components. Competences comprises of both the personal and organizational elements.

The Merriam-Webster dictionary [9] provides three definitions of capabilities, namely (1) "the quality or state of being capable", (2) "a feature or faculty capable of development", and (3) "the facility or potential for an indicated use or deployment". There is a distinction in the essence of the definitions. The first definition refers to the level of capability, while the latter two definitions refer to the availability of a capability. This difference also adds to the confusion on (business) capabilities.

B. Understanding of business capabilities in previous reviews

To further understand and determine the current state of art of business capabilities, we explored academic literature for reviews. Surprisingly, we could not identify any literature reviews specifically on business capabilities. We did identify three reviews that are closely related, namely: (1) Wißotzki's review on capability research [6], (2) Barreto's review on dynamic capabilities [20], and (3) Wu and Liu's review on E-business capabilities [21]. We now summarize these three reviews.

An overview of capability research was given by Wißotzki [6]. In total Wißotzki identified 184 relevant articles in the period 2000 to 2014, by using 'capability' and 'capabilities' as search terms. Wißotzki found that research fields were very diverse. Therefore, he categorized them into 8 research subjects, namely; Business Strategy Management, Software Development, Knowledge Management, Project Management, Architecture Management, IT-Management, Supplier and Contract Management, and Development and Assessment processes. Within these research subjects, he categorized five capability types, namely Dynamic Capabilities, Core Capabilities, Business Capabilities, Enterprise Architecture Management Capabilities, and IT-Capabilities. Dynamic capabilities are external capabilities, while the latter four refer to the internal operations of the organization. According to Wißotzki, capabilities can best be described by the following elements: resource, (enterprise/business) context, goals, processes, information/knowledge, and role/actor. He states future work is still required to further define a clear categorization of capability types.

Barreto [20] found 1534 articles that mentioned 'dynamic capabilities' in the period from 1997 to 2007. He identified 40 articles that were published in leading management journals. He found differences in the conceptualization of dynamic capabilities, through the definitions of dynamic capabilities by several authors. Key contributors to these differences were: the nature of dynamic capabilities (ability versus capacity), and the outcomes of dynamic capabilities (direct versus indirect effect on performance). These differences also lead to Barreto stating that the dynamic capabilities approach is not yet a theory. Barreto summed the literature review up as that even though there is a large body of knowledge on dynamic capabilities, dynamic capability research has been disconnected.

Wu and Liu [21] performed a systematic literature review on E-business capability research. They found that E-business capability research is divided into three streams: innovation diffusion model, net-enabled theory, and resources complementary theory. Wu and Liu state that existing literature on E-business capabilities provide a better insight in the relationship between E-business technology and organizational performance. However, they found that E-business capability research is mainly focused on the acceptance of the E-business systems. They concluded that E-business capabilities is the driver of the success of E-business strategy by linking investment and value of E-business technology.

III. Objectives of this review

Although many academic, as well as professional, literature uses the term *business capability*, it remains vague what is meant. Currently, a comprehensive view on business capabilities is missing. Existing literature [6] is (1) fragmented, (2) lacks clear categorization of capability types, and (3) has no overarching view across different capability types. Barreto [20]

describes that, for dynamic capabilities, as the literature being disconnected. This is hindering further research.

The goal of this research is to identify the current state of art in business capability research. To reach this goal, we pose the following research questions:

1) How are business capabilities defined?
2) What frameworks are discussed in academic literature to assess or improve business capabilities?
3) What future research has been proposed in the field of business capabilities?

IV. Review method

This systematic literature review is based on the guidelines provided by Kitchenham [7]. Systematic literature reviews aim at providing trustworthy, and verifiable evaluation of an existing research topic using a rigorous methodology. Following the guidelines, we organized the review in three stages: (1) protocol development, (2) conducting the review, and (3) analysis and reporting. In this section, we first present the search strategy. Second, the inclusion and exclusion criteria for the different stages are presented. Third and last, we detail out the data extraction and analysis process.

A. Search strategy

Based on our research questions, we created and tested search terms. The search key is decomposed as follows: the main concept — business capabilities, the scope – frameworks and models, the usage, and the relevant literature streams. The relevant literature streams is based on the segmentation for capabilities as identified by Wißotzki [6]. We identified the selected streams as most relevant for business capabilities.

We used the following search terms, each combined using an *AND* operator:

- ("business capability" *OR* "business capabilities")
- (map *OR* model *OR* framework *OR* classification)
- (improvement *OR* assessment)
- ("Business Strategy Management" *OR* "Architecture Management" *OR* "IT Management" *OR* "Business and IT Alignment")

B. Inclusion and exclusion criteria

In the first stage, we excluded titles that were clearly not related to this review. If there was doubt whether an article should be excluded based on its title, the article was always included for the next stage. We also cleansed the list from duplicates and non-English literature in this stage. In the second stage, we collected the abstracts of these articles. We excluded articles of which the abstract did not clearly refer to any capability type. In the third and last stage, we read and conducted an in-depth analysis of the articles which referred to business capabilities in their abstract.

C. Data extraction and analysis

We entered the search key into Google Scholar in January 2016, which resulted in 720 articles. The citations of these articles were imported into and managed in Mendeley. We exported the citations, via JabRef, to Excel. For each subsequent stage, separate Excel sheets were created.

In the first stage, we cleansed the articles and removed articles based on their title. This yielded a result of 355 articles. In the second stage, we identified 103 articles that referred to a capability type in the abstract. We categorized each of these 103 articles to the capability type that was the focus of the abstract (e.g., including dynamic capabilities, E-business, enterprise architecture, and organizational capabilities). For these 103 articles we collected the full documents. Per capability type, we parsed the PDF documents with QDA Miner. We used the QDA Miner addon Wordstat to text mine the articles in order to determine word distribution. In Wordstat we used substitution, so that conjugations such as capability and capabilities are counted as the same word, and we used Wordstat's standard exclusion list, so that words such as 'and' were excluded.

Twenty articles referred to business capabilities in their abstract. In the third stage, we used an Excel-based data extraction form [22], to collect the relevant information for our research from these 20 articles. We extracted information on study description, research design, and study findings. As part of the study description we retrieved the keywords, the journal or conference, year, the authors and their institutes, and the research field. Research design section was used to capture the study aims, design of the study (quantitative/qualitative), data collection, and the classification of papers [23]. Study findings comprised the definition of business capabilities, the findings and conclusions, the validity, the relevance to practice and academia, and future research.

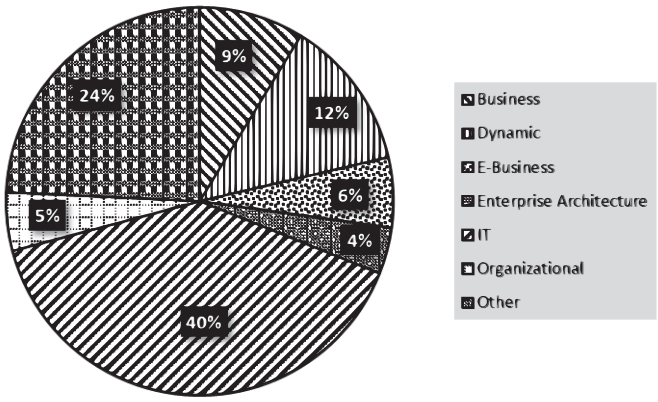

Fig. 1: Classification of capability types

V. Results

In this section we present the results of our analysis. First, we give an overview of capability types. Second, we present the definitions of business capabilities and other capability types. Third, we provide an overview of business capability

frameworks. Towards the end, we show the identified future research.

A. Overview of capability types

In stage 2 of our systematic literature review, we reviewed 355 abstracts. In 103 abstracts a capability type was mentioned. In this phase we identified other capability types next to business capabilities. Only 9% of the 103 abstracts focused solely on business capabilities, as shown in Fig. 1. Whilst 40% of the 103 abstracts mentioned IT capabilities and 12% dynamic capabilities. E-business capabilities, organizational and enterprise architecture capabilities were mentioned, respectively, in 6%, 5% and 4% of the abstracts. The other category, which comprises 24%, contains capabilities type that were mentioned less than four times, such as strategic capability or team capabilities.

B. Research question 1: How are business capabilities defined?

In this subsection, we present the definitions of business capabilities and the other capability types. In tab:definitions we have listed the definitions per capability type, which articles cited to it, and the emphasis of the definition. Per capability type we have sorted the definitions based on the number of articles that referred to the definitions.

There is no dominant definition of business capabilities or a common emphasis on what business capabilities are. Homann [24] and Wißotzki [6] even contradict each other in their view on resources as part of the definition of business capabilities. Homann states that capabilities are regardless of the resources, while Wißotzki includes resources as an element of a business capability. Although there is also no dominant definition of E-business capabilities, the emphases of the definitions are closely related. Key concepts are Internet, resources, and value. Enterprise architecture capabilities have one dominant definition, but this definition has been proposed by the same author, namely Wißotzki.

Dynamic capabilities and IT capabilities both have one dominant definition and all of the definitions emphasize common concepts. Six articles referred to the definition of dynamic capabilities by Teece et al. [25]. This definition emphasizes competences and the changing environment. The other definitions emphasize mainly on routines and resources, with the context of change. Four articles on the topic of IT capabilities referred to the definition by Bharadwaj [26]. Bharadwaj emphasized resources, infrastructure, skills, processes, and competitive advantage. Other definitions emphasized routines, strategy/management, and value. Organizational capabilities also has a dominant definition, but only one article within our scope referred to that definition. In our data there are two key distinctions between the definitions, namely the view on resources and competitive advantage. Beimborn et al. [4] does not refer to resources as being part of a capability. In contrast to that, Bharadwaj [26] and Wißotzki [14], [6] emphasize the role of resources in their definitions of, respectively, IT and business capabilities. Beimborn et al. [4] also does not make a judgement of value in his definition of capabilities. In contrast to that, Bharadwaj [26] emphasizes the competitive advantage of IT capabilities. Thus, there is no alignment in the definitions among the different capability types.

TABLE II: Most frequent words per capability type

Capability types	Frequent words
Business, Dynamic, E-business, Enterprise architecture, IT	resource, business, system, research, process, model, information, management, capability
Business	work, flexibility, product, article, hypothesis, time, software, year, pepsiamericas, china, chinese
IT	high, infrastructure, alignment, acquisition, integration, item
Dynamic	case, manager, ESR, relate, ability, CRM, respond, competence, organisation, sense, ESS, organisational, enable, oa
E-business	theory, partner, competitor, table, growth, environment, adoption, commerce, small, doi, fit, impact, orientation, present, smes
Enterprise architecture	framework, approach, identify, specific, method, literature, paper, artifact, function, block, maturity, EAM, science, design, EA, building, practice, element, assessment, wißotzki, eacn, action, object, architecture, concept, evaluation, MMDP, state, context

Frequency of words per capability type. Using a text-mining approach, we identified the frequency of words used in the articles per capability type. This resulted in a top 50 of most frequent words. We compared this top 50 per capability type, to see which words overlap and which words are only mentioned per capability type. tab:freqwords shows the (1) overlap of words for each capability type , and (2) the words only used in articles the specific capability types.

C. Research question 2: What frameworks are discussed in academic literature to assess or improve business capabilities?

In this subsection, we present the identified business capability frameworks. When analysing the articles in-depth, we noticed almost no specific frameworks were mentioned. Only Vermeulen et al. [59] provided a list of business process capability frameworks. Therefore, we did an additional search on "business capability framework" in Google Scholar to identify any frameworks that we missed. tab:bcframeworks shows the list of identified capability frameworks. We identified seven potential capability frameworks. Two of these can be categorized as business capability frameworks [60], [18]. The other ones can be categorized as process frameworks [61], maturity models [62], [63], and e-business capability frameworks [64], [48].

We found two business capability frameworks in literature [60], [18]. Brits et al. [60] provided a conceptual framework for modeling business capabilities and a capability construction feedback loop. In their research they propose that business capabilities are modeled over perspectives (external environmental knowledge, ends, international environmental knowledge, and means) and abstractions (elements of guidance, business processes, resources, technology, and people). The Open Group Architecture Framework's capability based planning [18] provides an approach on how to model business capabilities in the business domain of an enterprise architecture. As the capability based planning is part of the overall enterprise architecture methodology, it provides a good overview of how to get from strategy, to capabilities, to implementation (building blocks).

TABLE III: Definitions of capability types

Definition	Cited in	Emphasis
Capabilities		
Capabilities are what the business does (e.g. pay employee or ship product) regardless of what resources being used or how those resources are configured (e.g. whether it is in-sourced or outsourced, or manual or automated) [24]	[27]	what, business, regardless of resources
A capability represents a manageable unit of change and supports incremental development through an explicit distinction between systems and their capabilities [28]	[28]	change and development
Business Capabilities		
A particular ability or capacity that a business may possess or exchange to achieve a specific purpose or outcome [24]	[27]	ability, capacity, purpose, and outcome
Referred to a corporate business goal the aim of business capabilities is to activate, use and maintain resources for specific business activities [6]	[6]	business goal, resources, and activities
Dynamic Capabilities		
The firms ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments [25]	[29], [30], [31], [32], [33], [34]	competences, changing environments
Organisational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die [35]	[31], [36]	routines, configurations, strategy
The capacity of an organisation to purpose fully create, extend, or modify its resource base [37]	[37]	resource base
IT Capabilities		
The ability to effectively combine and apply IT resources, including IT infrastructure and human IT skills, to organizational processes, is a source of competitive advantage [26]	[38], [39], [40], [41]	combine, resources, infrastructure, skills, processes, competitive advantage
The ability to execute stable and repeatable patterns of IT management activities in support of value creation [42]	[42]	patterns, management activities, value
The focused strategic deployment of IT resources and competencies in support of the organizations goals in summary, it is what the IT organisation can collectively do for the enterprise [43]	[43]	strategy, resources, competencies, goals
An organizations capacity to utilize and structure information in a meaningful fashion that supports decision making [40]	[40]	information, decision making
Combinations of IT-based assets and routines that support business conduct in value-adding ways [44]	[41]	assets, routines, value
E-business Capabilities		
The application of information and communication technologies to conduct business activities along value chains [34], based on Lin & Lin [45] and Zhu & Kraemer [46]	[34]	ICT, business activities, value chain
A firm's ability to interact with its customers and business partners and conduct businesses over the Internet [47]	[48]	interaction, Internet
The combination of e-commerce technology resources, e-commerce managerial skills and business networks [49]	[48]	resources, managerial skills, business networks
High-performance routines that can reside within and between organizations and confer a firm with a temporary competitive advantage [50]	[48]	routines, competitive advantage
Mobilize and deploy Internet-based resources, in combination with or in the presence of other valued resources [51]	[48]	Internet, resources, value
A strategic ability to use Internet to share information, promote transaction, improve customer service and enhance supplier linkage [21]	[21]	Strategy, Internet
Enterprise Architecture Capabilities		
The specific combination of know-how in terms of organizational knowledge, procedures and resources able to externalize this knowledge in a specific process with appropriate resources to achieve a specific outcome for a defined enterprise initiative [14]	[52], [14], [53], [54]	organizational knowledge, resources, outcome
Organizational Capabilities		
A companys abilities to perform a set of,tasks, while utilizing organizational resources [55] based on Barnett and Helfat [56], Carmeli and Tishler [57], and Peng et al. [58]	[55]	tasks, resources

D. Research question 3: What future research has been proposed in the field of business capabilities?

In this subsection, we present an overview of the future research that has been proposed in the articles. We identified three main directions of future research, namely: (1) future research into frameworks, (2) future research into finding empirical evidence, and (3) future research into related fields. The mapping of the articles and future research is shown in tab:researchagenda. The connection to other fields is the result of the aggregation of the individual fields (the rows below).

Four articles refer to further improve proposed frameworks and to converge frameworks within this field. In 10 articles it was proposed to find (additional) empirical evidence for the findings. In 7 articles, authors identified the relation to other fields and proposed to further investigate these relations.

VI. Discussion

In this section we will discuss the current state of business capability research. First, we will discuss the definitions of business capabilities and delineate the definitions of the other capability types. Second, we will discuss the existing business capability frameworks. Third and last, we will propose a research agenda.

A. Definition of business capabilities and the delineation of capability types

In our data we found two definitions for business capabilities, namely: (1) A particular ability or capacity that a business may possess or exchange to achieve a specific purpose or outcome [24], and (2) A corporate business goal the aim of business capabilities is to activate, use and maintain resources for specific business activities [6]. There is no dominant definition for business capabilities. The definitions by Homann and Wißotzki [24], [6] do not align with the most frequent words used in the articles related to business capabilities, as shown in tab:freqwords. However the definitions do align with the most frequent used words in articles across all capability types. Therefore, we propose the following definition for business capabilities, which is based on Homann's and Wißotzki's definitions [24], [6]: "**A particular ability that a business may possess or exchange to achieve a specific corporate goal**".

To illustrate this definition we provide examples and counter-examples of business capabilities.

- *Examples*: electronic service delivery [18], Sarbanes-Oxley compliance [18], human resource management [72], develop product or service [73], and customer management [6]

TABLE IV: Capability frameworks

Framework	Goal	Perspective	Domain
The Open Group Architecture Framework's capability based planning [18]	Planning, engineering, and delivery of business capabilities	Operationalizing strategy	Enterprise Architecture
The business capability model by Brits et al. [60]	Organizational analysis and supporting the architecture of an agile organization	Assessment and architecture	Business Capabilities
American Productivity and Quality Centre (APQC) Process Classification Framework [61]	Common language and defining work processes	Performance management	Best practices and processes
Capability Maturity Model [62]	Maturity assessment	Process improvement	Software development and business processes
Crosby's Quality Management Maturity Grid [63]	Measuring and benchmarking quality management	Maturity	Quality Management
E-business capability framework [64]	Identifying factors affecting business performance of a firm	Strategy	E-business
E-B capability model [48]	Assessing a firm's competence	Strategy	E-business

TABLE V: Identified future research

	[27]	[28]	[30]	[65]	[66]	[67]	[68]	[64]	[69]	[48]	[41]	[37]	[70]	[71]	[6]	[21]	total
Frameworks			X						X		X	X					4
Empirical evidence	X		X		X	X		X		X		X	X	X	X		10
Connection to related fields		X	X	X			X				X			X		X	7
Reference architecture		X															1
Transformation projects			X													X	2
Changing business conditions			X														1
IT governance			X														1
Enterprise Architecture				X													1
Strategy				X							X						2
Post-merger							X										1
IT ambidexterity							X										1
Investments							X							X		X	3

- *Counter-examples*: resources (e.g., people or assets), strategy, processes

In the next paragraphs we will further delineate the definitions for each type of capability. Based on the definition of the business capability we discuss whether we agree with the dominant definition in our data. In case we did not agree with the definition, we proposed a new definition.

1) Definition of dynamic capabilities: Teece et al. [25] defined dynamic capabilities as "The firms ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments". In our scope this definition of dynamic capabilities is seen as the dominant definition. It emphasizes the ability of an organization and competences to address the changing environment. This emphasis is also in line with the frequent used words in the dynamic capabilities' articles, namely *ability, respond, and competence*. The definition does not contradict the other definitions of dynamic capabilities, and follows a similar breakdown structure as the definition of business capabilities. Therefore, we agree with this definition of dynamic capabilities.

In comparison to business capabilities, the concept of dynamic capabilities primarily focuses with dealing with the external factors that affect an organization, than the internal organization.

2) Definition of IT capabilities: Bharadwaj's definition of IT capabilities [26], referred to by 4 articles within our scope, is the dominant IT capabilities' definition. Bharadwaj's definition is "The ability to effectively combine and apply IT resources, including IT infrastructure and human IT skills, to organizational processes, is a source of competitive advantage". The emphasis of this definition is in line with the frequent used words in the IT capabilities' articles, namely *infrastructure, alignment, and integration*, where we interpret alignment and integration as the *combine* emphasis of the definition. The definition is however not regardless of the level of performance. Based on Bharadwaj [26] and our definition of business capabilities, we therefore propose the following definition: "The ability to effectively combine and apply IT resources, including IT infrastructure and human IT skills, to organizational processes.".

IT capabilities are primarily technology focused, whereas business capabilities have a holistic view on an organization. IT capabilities provide means to assess (information) technology in more detail than business capabilities. Business capabilities and IT capabilities both are internally focused.

3) Definition of E-business capabilities: As stated before there is no dominant definition for E-business capabilities. As Bi's definition [34] is based on multiple definitions, it gets our preference. Bi defined E-business capabilities as "The application of information and communication technologies to conduct business activities along value chains". The frequent word *commerce* is the only one that is mentioned in most of the definitions. Even though Bi's definition is based on multiple sources, it misses the 'ability' element in its definition.

It also misses the emphasis of the Internet [47]. We propose to alter the definition to: "The ability to apply information and communication technologies to conduct business activities along value chain, via the Internet".

E-business capabilities only look at doing business via the Internet. Traditional businesses are not included in E-business capabilities, whereas this is the case for business capabilities. E-business capabilities are also focused on the internal organization.

4) Definition of enterprise architecture capabilities: In our scope there is only one definition of enterprise architecture capabilities [14], which has only been referred to by the same author. He defined enterprise architecture capabilities as "The specific combination of know-how in terms of organizational knowledge, procedures and resources able to externalize this knowledge in a specific process with appropriate resources to achieve a specific outcome for a defined enterprise initiative". This definition refers to the most frequent words *specific, EAM, architecture, and EA*. To align the definition of EA capabilities with the definition of business capabilities, we propose to remove "with appropriate resources" from the current definition. This results in the following definition: "The specific combination of know-how in terms of organizational knowledge, procedures and resources able to externalize this knowledge in a specific process to achieve a specific outcome for a defined enterprise initiative".

Enterprise architecture capabilities are closely related to business capabilities. They also provide a holistic view on an organization and are also internally focused. However, enterprise architecture is often more associated with IT, computer science, and engineering principles [74]. Business capabilities are more associated with management, strategy, and performance management.

B. Existing business capability frameworks

Through this research we identified the breadth of literature discussing capability frameworks, which is also supported by Bernoider et al. [30]. However, we only identified two business capability frameworks [18], [60]. We found limited empirical evidence in scientific literature of the application of the framework by Brits et al. [60]. As the capability-based planning approach [18], is an part of the TOGAF methodology it is harder to pin-point the specific implementation of the business capability framework.

Although, we identified only two frameworks to model and implement business capabilities. We were able to identify many more business capability maps, such as IBM's Component Business Models [72] and Microsoft's capability map [73]. A business capability map is a set of business capabilities, often composed of different levels of detail, that are applicable for a certain industry or specific organization. APQC's process classification framework [61] has also been applied as a business capability map [75], taking the level one processes as capabilities. These maps are often part of a capability approach. Software vendors or consultancy firms use the maps as the set of business capabilities in an organization. These approaches and frameworks are often not publicly accessible.

Capability-Based View versus Resource-Based View. The Capability-Based View is closely related to the Resource-Based View. However, it is unclear how what the overlap and the distinction is between the two views. tab:cbvrbv provides an overview of the Capability-Based View (CBV) and the Resource-Based View (RBV). The RBV is a more broadly researched and applied concept compared to the CBV. However the RBV has its limits [27]. The definition of resources in the RBV is very broad, making it an tautology [76]. Another limitation of the RBV is that source of competitive advantage is only based on internal resources.

The RBV looks at the organization from a 'how' perspective, i.e., making it specific which processes, which resources are used to achieve the strategy. The CBV looks at the organization from a 'what' perspective [24], abstracting from the implementation. Therefore, a business capabilities does not entail a certain structure for an organization.

C. Potential research agenda

Based on the findings of our literature study we will now discuss a potential research agenda. Based on tab:researchagenda, we particularly identified three different directions, namely: (1) Designing of an open business capability framework, (2) Empirical evidence of business capability research findings, and (3) Connection to related fields.

Designing of an open business capability framework We mentioned before that the RBV provides an all-inclusive definition on resources and the firm, which leads to a tautology. Business capabilities tend to be more exclusive in what it comprises and more stable over time, which makes it more convenient for analyzing an organization's performance [27], [24]. *To what extent do business capabilities explain the difference in performance between organizations compared to the Resource-Based View?* To answer this question a business capability framework would be useful. However, there is no business capability framework publicly available that prescribes how to model a business capability, apply a business capability map, and that prescribes the approach of deriving the appropriate set of business capabilities from strategy and implementing the business capabilities. We propose to create an open business capability framework.

We identified two approaches to model business capabilities, one by TOGAF and one by Brits et al. [18], [60]. These approaches should be incorporated into the open business capability framework. *How can we integrate TOGAF's capability based planning and Brits et al. conceptual business capability framework [18], [60]?*

- *Soft aspects of organizations.* Currently, business capabilities research and frameworks are quite focused on the hard aspects of an organization. This, while the soft aspects organizations, such as culture, ways of working, and change management, are increasingly being researched and are becoming more important for professionals [78]. *To what extent can the soft aspects be covered in the current view on business capabilities? What extensions will be necessary to the business capability framework to incorporate soft aspects in order to improve the assessments of organizations?*

- *Measuring and evaluating.* Business capabilities frameworks can be used to analyze and improve organizations [59], [24]. To do this analysis and improvement properly, the business capabilities need to be measured. *How can we measure*

TABLE VI: Capability-Based View versus Resource-Based View

	Capability-Based View	**Resource-Based View**
Source of competitive advantage	Internal and external	Internal
Focus	Capability building	Resource picking
Perspective	What an organization does	How an organization does it
View on the firm	N/A	Bundle of resources
View on resources	Resources are executing capabilities	all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness [77]
View on capabilities	'What' an organization does regardless of the resources used [24](i.e., capabilities are distinguished from resources)	Bundle of skills and knowledge to manage assets and activities effectively [8] (i.e., capabilities are a type of resource)
Organizational aspects	Hard and soft	Hard
Keywords	End-to-end, goal-oriented, stable	Silo, assets, implementation
Examples	Order fulfillment, HR management, Procurement, Resource Management and Development, Innovation Management	People, Buildings, Machinery, Processes, Cash
Counter-examples	People, Buildings, Machinery, Processes, Cash	Strategy

business capabilities? Khalid et al. [64] designed a framework which uses structural equation modelling to evaluate E-business strategic capabilities. As E-business capabilities are closely related to business capabilities, we believe that structural equation modelling could possibly be used to evaluate business capabilities as well. *How can we apply structural equation modelling to evaluate business capabilities?*

Empirical evidence of business capability research findings. Business capabilities research show promising results in alignment of business and IT [18], improvement of communication [27], and investment decisions [21]. However, this is often based on literature or single case studies. Therefore, we suggest to further validate these findings in practice.

• *Alignment of business and IT.* Alignment between business and IT is still a high priority in organizations [79]. The concept of business capabilities is argued to improve alignment between business and IT, by assisting architects to focus on business value [18]. *Does the alignment of business and IT improve through the application of business capabilities? What are the benefits for business and IT alignment when applying business capabilities?*

• *Improvement of communication.* One key aspect of the misalignment between business and IT is the communication between business and IT, especially between senior management [80]. It is hypothesized by Amiri et al. [27] that using the Capability-Based View will improve communication between senior management, especially focused on the communication of the CIO towards the other members of the management team. *Does the capability-based terminology improve communication in senior management [27]? How are other organisational levels benefiting from the capability-based terminology?*

• *Investments.* There is a trend emerging of shifting investments on technical resources to investments on capabilities [21]. *To what extent does a capability-based approach improve investments? What is the role of business capabilities in future technology investment strategies?*

Connection to related fields. As business capabilities cover the entire organization, it is related to many other research fields. In our data we identified three related fields, namely digital transformations, strategy, and changing environments.

• *Digital transformations.* Bernoider et al. [30] argue that improved understanding on aligning IT governance effectively with IT driven business transformation projects is necessary. As discussed before, business capabilities could make this alignment easier. *How can a business capability framework make business/digital transformation easier for (project) managers [30]?* To become a Digital Master, an organization has to develop new capabilities [1], but by going through such a transformation not only will there be new capabilities developed, current capabilities will also be affected. *How are IT/Digital transformations affecting the capabilities of an organization? What are the benefits of IT/Digital transformations driven by a change in business capabilities?*

• *Strategy.* Business capabilities provide a missing link between the strategy and implementation of an organization [18]. However, it is not fully clear on how the alignment between strategy and implementation is. *What is the role of business capabilities between strategy and implementation? How can we formalize this role in the business capability framework? Is there an optimal set or balance of capabilities in for an organization?*

According to its definition, business capabilities can be exchanged between organizations. In IT capabilities we see the phenomenon of sharing IT capabilities [41]. This could also be the case for business capabilities. *What are the mechanisms underlying the strategic consequences of shares business capabilities?*

The relationship between ontology and implementation has already been given form through organization implementation variables [3]. Business capabilities have resembles with the ontology of an organization. *How do business capabilities differ from the ontology of an organization? What are the conditions in which business capabilities are preferred as to the ontology of an organization?*

• *Changing environments.* Organizations are increasingly dealing with internal and external changes. This requires them to be flexible. However, business capabilities are stable [27],

[24]. *What is role of business capabilities in an increasing changing organization? How can business capabilities be altered over time?* To deal with these changes, the topic of (IT) ambidexterity is increasingly being researched [69]. *How can we apply IT ambidexterity theory to business capabilities?*

• *Organizational Routines as a Source of Capabilities.* Salvato [81], [82] and others explore the role of routines, concrete patters of day-to-day activity, in capability evolution. He argues for a shift of focus in understanding capabilities as aggregated entities, to that of practical micro activities.*How can we better understand the connection of business capabilities and organizational routines? How can business capability frameworks account for more fine-grained perspectives on capabilities so help accounting for their development?*

VII. Conclusion

The goal of this research was to identify the current state of business capability research. In order to do this we performed a systematic literature review, based on guidelines by Kitchenham [7]. We identified 720 articles of which 103 were subject to a broad analysis, including using text mining to identify the distribution of words used in the articles, and we did in-depth analysis of 20 articles.

Our main contributions in this paper are: (1) an extensive analysis on the state of art in business capability research, (2) a focused and aggregated definition for business capabilities, and (3) a potential research agenda for future research.

We found that there are only two business capability frameworks available in literature and limited empirical evidence on these frameworks. This is in contrast to professional literature, where there are more approaches on business capabilities available. In our analysis, the number of definitions for business capabilities were limited and they were also not aligned. Therefore, we propose the following definitions for business capabilities: "A particular ability that a business may possess or exchange to achieve a specific corporate goal".

For future research we proposed a potential research agenda with three different directions, namely: (1) Designing of an open business capability framework, (2) Empirical evidence of business capability research findings, and (3) the connection to related fields. For each of the directions we posed possible research questions such as (1) To what extent do business capabilities explain the difference in performance between organizations compared to the Resource-Based View?, (2) Does the alignment of business and IT improve through the application of business capabilities?, and (3) How are IT/Digital transformations affecting the capabilities of an organization?

Based on our analysis, we conclude that business capabilities and the Capability-Based View provide a stable view on organizations and their performance, regardless of the resources implemented. Business capabilities provide a holistic view on organization that can be understood by senior management. The research directions given in this article can help fill the gap between strategy and implementation and provide better analysis tools for comparison between organizations.

References

[1] G. Westerman, D. Bonnet, and A. McAfee, *Leading digital: Turning technology into business transformation*. Harvard Business Press, 2014.

[2] M. van Oosterhout, E. Waarts, and J. van Hillegersberg, "Change factors requiring agility and implications for it," *European Journal of Information Systems*, vol. 15, no. 2, pp. 132–145, 2006.

[3] M. R. Krouwel, M. Opt Land, and T. Offerman, "Formalizing organization implementation," in *Enterprise Engineering Working Conference*. Springer, 2016, pp. 3–18.

[4] D. Beimborn, S. F. Martin, and U. Homann, "Capability-oriented modeling of the firm," in *IPSI Conference*, 2005.

[5] J. Fleischer, M. Herm, and J. Ude, "Business capabilities as configuration elements of value added networks," *Production Engineering*, vol. 1, no. 2, pp. 187–192, 2007.

[6] M. Wißotzki, "An exploration of capability research," in *Enterprise Distributed Object Computing Conference (EDOC), 2015 IEEE 19th International*. IEEE, 2015, pp. 179–184.

[7] B. Kitchenham, "Procedures for performing systematic reviews. 2004," *Department of Computer Science, Keele University and National ICT, Australia Ltd*, p. 33, 2011.

[8] A. Zafer Acar and C. Zehir, "Development and validation of a multidimensional business capabilities measurement instrument," *Journal of Transnational Management*, vol. 14, no. 3, pp. 215–240, 2009.

[9] "Merriam-webster," Nov 2016. [Online]. Available: http://www.merriam-webster.com/dictionary/capability

[10] C. K. Prahalad and G. Hamel, "The core competence of the corporation," in *Strategische unternehmungsplanungstrategische unternehmungsführung*. Springer, 2006, pp. 275–292.

[11] R. R. Nelson and S. G. Winter, *An evolutionary theory of economic change*. Harvard University Press, 2009.

[12] B. Wernerfelt, "A resource-based view of the firm," *Strategic management journal*, vol. 5, no. 2, pp. 171–180, 1984.

[13] D. Ulrich, "Organizational capability as a competitive advantage: Human resource professionals as strategic partners," *Human Resource Planning*, vol. 10, no. 4, 1986.

[14] M. Wißotzki and H. Koç, "A project driven approach for enhanced maturity model development for eam capability evaluation," in *2013 17th IEEE International Enterprise Distributed Object Computing Conference Workshops*. IEEE, 2013, pp. 296–304.

[15] D. J. Teece, G. Pisano, and A. Shuen, "Dynamic capabilities and strategic management," *Strategic management journal*, pp. 509–533, 1997.

[16] D. Bredemeyer, R. Malan, R. Krishnan, and A. Lafrenz, "Enterprise architecture as business capabilities architecture," *Bredemeyer Consulting*, 2003.

[17] B. Iyer and R. Gottlieb, "The four-domain architecture: An approach to support enterprise architecture design," *IBM Systems Journal*, vol. 43, no. 3, pp. 587–597, 2004.

[18] T. Version, "9, the open group architecture framework (togaf)," *The Open Group*, vol. 1, 2009.

[19] T. Barroero, G. Motta, and G. Pignatelli, "Business capabilities centric enterprise architecture," in *Enterprise architecture, integration and interoperability*. Springer, 2010, pp. 32–43.

[20] I. Barreto, "Dynamic capabilities: A review of past research and an agenda for the future," *Journal of management*, vol. 36, no. 1, pp. 256–280, 2010.

[21] J.-N. Wu and L. Liu, "E-business capability research: A systematic literature review," in *2010 3rd International Conference on Information Management, Innovation Management and Industrial Engineering*, vol. 1. IEEE, 2010, pp. 142–147.

[22] T. Dybå and T. Dingsøyr, "Empirical studies of agile software development: A systematic review," *Information and software technology*, vol. 50, no. 9, pp. 833–859, 2008.

[23] R. Wieringa, N. Maiden, N. Mead, and C. Rolland, "Requirements engineering paper classification and evaluation criteria: a proposal and a discussion," *Requirements Engineering*, vol. 11, no. 1, pp. 102–107, 2006.

[24] U. Homann, "business-oriented foundation for service orientation," 2016.

[25] D. J. Teece, "Explicating dynamic capabilities: the nature and micro-foundations of (sustainable) enterprise performance," *Strategic management journal*, vol. 28, no. 13, pp. 1319–1350, 2007.

[26] A. S. Bharadwaj, "A resource-based perspective on information technology capability and firm performance: an empirical investigation," *MIS quarterly*, pp. 169–196, 2000.

[27] A. Khodabandeh Amiri, H. Cavusoglu, and I. Benbasat, "Enhancing strategic it alignment through common language: Using the terminology of the resource-based view or the capability-based view?" 2015.

[28] C. Becker, G. Antunes, J. Barateiro, R. Vieira, and J. Borbinha, "Modeling digital preservation capabilities in enterprise architecture," in *Proceedings of the 12th Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times*. ACM, 2011, pp. 84–93.

[29] M. Curley, "Enabling dynamic capabilities through agile it and beyond budgeting practices," in *Lean Enterprise Software and Systems*. Springer, 2010, pp. 175–184.

[30] E. W. Bernroider, C. W. Wong, and K.-h. Lai, "From dynamic capabilities to erp enabled business improvements: The mediating effect of the implementation project," *International Journal of Project Management*, vol. 32, no. 2, pp. 350–362, 2014.

[31] J. L. Gogan, R. J. Baxter, B. Sakaranaryanan, and M. E. Johnson, "Aiming at a moving target: It alignment in toy companies." in *ECIS*, 2010.

[32] A. Jain, "Towards a systemic view of organizational dynamic it capability: An empirical assessment," 2007.

[33] P. Mikalef, "Developing it-enabled dynamic capabilities: a service science approach," in *International Conference on Business Informatics Research*. Springer, 2014, pp. 87–100.

[34] R. Bi, "An integrative model of e-business capability, dynamic capability, and e-business value for fast growth small-to-medium enterprises," Ph.D. dissertation, RMIT University, 2011.

[35] K. M. Eisenhardt and J. A. Martin, "Dynamic capabilities: what are they?" *Strategic management journal*, vol. 21, no. 10-11, pp. 1105–1121, 2000.

[36] C. D. Pedron, "Using the dynamic capabilities perspective to analyse crm adoption: A multiple case study in portuguese organisations," Ph.D. dissertation, Citeseer, 2009.

[37] S. Pult and S. Manwani, "Towards a framework for managing it-enabled change, sourcing and governance," in *Proceedings of the 2nd International Conference on Management, Leadership and Governance: ICMLG 2014*. Academic Conferences Limited, 2014, p. 228.

[38] R. Bi, K. X. Smyrnios, and B. Kam, "Information system capabilities as a driving force in enhancing organizational performance: An empirical study." in *PACIS*, 2010, p. 32.

[39] V. Dutot, F. Bergeron, and L. Raymond, "Aligning it capabilities with the information requirements of international smes: Information processing theory revisited," in *2014 47th Hawaii International Conference on System Sciences*. IEEE, 2014, pp. 4254–4263.

[40] ——, "Information management for the internationalization of smes: An exploratory study based on a strategic alignment perspective," *International Journal of Information Management*, vol. 34, no. 5, pp. 672–681, 2014.

[41] L. Fink, "How do it capabilities create strategic value? toward greater integration of insights from reductionistic and holistic approaches," *European Journal of Information Systems*, vol. 20, no. 1, pp. 16–33, 2011.

[42] M. Curley, "The it capability maturity framework: A theory for continuously improving the value delivered from it capability." Ph.D. dissertation, National University of Ireland Maynooth, 2008.

[43] M. Curley and J. Kenneally, "Using the it capability maturity framework to improve it capability and value creation: An intel it case study," in *Enterprise Distributed Object Computing Conference (EDOC), 2011 15th IEEE International*. IEEE, 2011, pp. 107–115.

[44] V. Sambamurthy and R. W. Zmud, "The organizing logic for an enterprise's it activities in the digital eraa prognosis of practice and a call for research," *Information systems research*, vol. 11, no. 2, pp. 105–114, 2000.

[45] H.-F. Lin and S.-M. Lin, "Determinants of e-business diffusion: A test of the technology diffusion perspective," *Technovation*, vol. 28, no. 3, pp. 135–145, 2008.

[46] K. Zhu and K. L. Kraemer, "Post-adoption variations in usage and value of e-business by organizations: cross-country evidence from the retail industry," *Information systems research*, vol. 16, no. 1, pp. 61–84, 2005.

[47] ——, "E-commerce metrics for net-enhanced organizations: Assessing the value of e-commerce to firm performance in the manufacturing sector," *Information systems research*, vol. 13, no. 3, pp. 275–295, 2002.

[48] P. Liu, Y. Wang, and N. Cai, "A theoretical research to the construct of electronic-business capability," in *E-Business and E-Government (ICEE), 2010 International Conference on*. IEEE, 2010, pp. 2374–2377.

[49] C. J. T. Lawrence, "Building and sustaining the sources of competitive advantage in e-commerce capability," *Doctoral Disserta-tion, University of South Australia*, 2004.

[50] P. Andersson and M. Kaplan, "Patterns of capability acquisition in electronic commerce," *Journal of Strategic Marketing*, vol. 12, no. 2, pp. 97–109, 2004.

[51] P. Soto-Acosta and A. L. MeroñO-Cerdan, "Analyzing e-business value creation from a resource-based perspective," *International Journal of Information Management*, vol. 28, no. 1, pp. 49–60, 2008.

[52] M. Wißotzki and H. Koç, "Evaluation concept of the enterprise architecture management capability navigator." in *ICEIS (3)*, 2014, pp. 319–327.

[53] M. Wißotzki, H. Koç, T. Weichert, and K. Sandkuhl, "Development of an enterprise architecture management capability catalog," in *International Conference on Business Informatics Research*. Springer, 2013, pp. 112–126.

[54] M. Wißotzki and K. Sandkuhl, "Elements and characteristics of enterprise architecture capabilities," in *International Conference on Business Informatics Research*. Springer, 2015, pp. 82–96.

[55] W. Hwang, "The drivers of erp implementation and its impact on organizational capabilities and performance and customer value," Ph.D. dissertation, The University of Toledo, 2011.

[56] M. L. Barnett and C. E. Helfat, "The sms blackwell handbook of organizational capabilities: Emergence, development, and change," 2005.

[57] A. Carmeli and A. Tishler, "Resources, capabilities, and the performance of industrial firms: A multivariate analysis," *Managerial and decision economics*, vol. 25, no. 6-7, pp. 299–315, 2004.

[58] D. X. Peng, R. G. Schroeder, and R. Shah, "Linking routines to operations capabilities: A new perspective," *Journal of operations management*, vol. 26, no. 6, pp. 730–748, 2008.

[59] A. Vermeulen, J.-H. C. Pretorius, and D. Kruger, "Business processes capability and performance: A south african perspective," in *2012 Proceedings of PICMET'12: Technology Management for Emerging Technologies*. IEEE, 2012, pp. 547–559.

[60] J. Brits, G. Botha, and M. Herselman, "Conceptual framework for modeling business capabilities," in *Proceedings of the 2007 informing science and IT education joint conference*, 2007, pp. 151–170.

[61] "American productivity and quality centre (apqc). process classification framework (pcf)." [Online]. Available: https://www.apqc.org/

[62] M. C. Paulk, B. Curtis, M. B. Chrissis, and C. V. Weber, "Capability maturity model, version 1.1," *IEEE software*, vol. 10, no. 4, pp. 18–27, 1993.

[63] P. B. Crosby, *Quality is free: The art of making quality certain*. Signet, 1980.

[64] P. H. Ketikidis, S. Lenny Koh, A. Gunasekaran, K. Hafeez, K. Hooi Keoy, and R. Hanneman, "E-business capabilities model: Validation and comparison between adopter and non-adopter of e-business companies in uk," *Journal of Manufacturing Technology Management*, vol. 17, no. 6, pp. 806–828, 2006.

[65] S. Blomqvist, M. Halén, and M. Helenius, "Connecting enterprise architecture with strategic planning processes: Case study of a large nordic finance organization," in *2015 IEEE 17th Conference on Business Informatics*, vol. 1. IEEE, 2015, pp. 43–50.

[66] C. Dänekas, "Deriving business requirements from technology roadmaps to support ict-architecture management," in *Smart Grid Technology, Economics and Policies (SG-TEP), 2012 International Conference on*. IEEE, 2012, pp. 1–4.

[67] N. Dino, A. Dico, and M. Dida, "Business and it strategic alignment applying soea framework," *International Refereed Journal of Engineering and Science (IRJES)*, 2012.

[68] S. Henningsson and P. Yetton, "Managing the it integration of acquisitions by multi-business organizations," 2011.

[69] O.-K. Lee, V. Sambamurthy, K. H. Lim, and K. K. Wei, "How does it ambidexterity impact organizational agility?" *Information Systems Research*, vol. 26, no. 2, pp. 398–417, 2015.

[70] M. Sartor, G. Orzes, G. Nassimbeni, F. Jia, and R. Lamming, "International purchasing offices in china: roles and resource/capability requirements," *International Journal of Operations & Production Management*, vol. 35, no. 8, pp. 1125–1157, 2015.

[71] A. Saxena and M. Jaiswal, "Impact of business flexibility capabilities on firm performance: Es perspective."

[72] "Get more value out of your business process by adopting a holistic perspective on business modeling," http://www.ibm.com/, (Accessed on 02/09/2017).

[73] U. Homann and J. Tobey, "From capabilities to services: Moving from a business architecture to an it implementation," 2006.

[74] J. Dietz, E. Proper, J. Tribolet, T. Halpin, J. Hoogervorst, M. Opt Land, R. G. Ross, and R. Winter, "The enterprise engineering series," 2009.

[75] "Leveraging business processes and business capabilities for transformation planning at regis corporation," https://www.apqc.org/knowledge-base/documents/leveraging-business-processes-and-business-capabilities-transformation-plan, 2013, (Accessed on 02/12/2017).

[76] J. Kraaijenbrink, J.-C. Spender, and A. J. Groen, "The resource-based view: a review and assessment of its critiques," *Journal of management*, vol. 36, no. 1, pp. 349–372, 2010.

[77] J. Barney, "Firm resources and sustained competitive advantage," *Journal of management*, vol. 17, no. 1, pp. 99–120, 1991.

[78] J. Iivari and N. Iivari, "The relationship between organizational culture and the deployment of agile methods," *Information and Software Technology*, vol. 53, no. 5, pp. 509–520, 2011.

[79] J. E. Gerow, J. B. Thatcher, and V. Grover, "Six types of it-business strategic alignment: An investigation of the constructs and their measurement," *European Journal of Information Systems*, vol. 24, no. 5, pp. 465–491, 2015.

[80] D. S. Preston and E. Karahanna, "Antecedents of is strategic alignment: a nomological network," *Information Systems Research*, vol. 20, no. 2, pp. 159–179, 2009.

[81] C. Salvato, "Capabilities unveiled: The role of ordinary activities in the evolution of product development processes," *Organization Science*, vol. 20, no. 2, pp. 384–409, 2009.

[82] C. J. Stettina and J. Hörz, "Agile portfolio management: An empirical perspective on the practice in use," *International Journal of Project Management*, vol. 33, no. 1, pp. 140–152, 2015.