

Strategy Execution through Enterprise Architecture: Capability-based Management as a Foundation for Successful (Digital) Transformations

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Abstract

One of the most considerable challenges organizations face is to remain relevant in a volatile, uncertain, complex, and ambiguous (VUCA) world where the pace of technological and economic change is particularly high. Consequently, swift technology adoption has recently become increasingly important to stay relevant as an organization. The focus of related transformations has thus gained a significant digital component, further adding to the complexity of realizing a successful (digital) transformation. Due to this complexity, organizations struggle with their digital transformations in practice, mainly due to a lack of perspective and common language. This research explores how Enterprise Architecture and Capability-Based Management can provide solutions for these problems. In particular, this research project aims to define a framework that contains methods and other artifacts for capability-based management that organizations (and their managers, architects, analysts) can apply in practice. The research additionally focuses on the design of specific artifacts within this framework. This paper presents the research questions and their relevance, the practical implications, the adopted and projected research method, preliminary results, and the current state of our research.

Keywords

Business Capabilities, Capability-Based Management, Business Architecture, Enterprise Architecture, Strategy Execution, Digital Transformation

1. Introduction

One of the most considerable challenges organizations face is to remain relevant in a volatile, uncertain, complex, and ambiguous (VUCA) world where the pace of technological and economic change is particularly high [1][2]. Furthermore, we also observe that established companies (incumbents) have recently been greatly challenged by new players (disruptors). These new organizations are often at an advantage because their adoption rate of new technology is particularly high and because they are agile, both in terms of business organization and technical debt, due to the absence of established structures that slow this adoption down [3]. On the other hand, these new players often struggle to scale up in a structured way because they face a lack of corporate structure due to the rapid pace of their growth.

Every company (and by extension, organization) that has the ambition to achieve specific strategic goals through strategy execution to cope with the abovementioned changing environment will aim to transform itself from a current to a future form. Transformations are not a new concept yet can be majorly complex for different reasons. Additionally, the focus of transformations has gained a

Proceedings of the Doctoral Consortium Papers Presented at the 34th International Conference on Advanced Information Systems Engineering (CAiSE 2022), June 06–10, 2022, Leuven, Belgium

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CEUR Workshop Proceedings (CEUR-WS.org)

significant digital component, further adding to this complexity. Therefore, the concept of a so-called digital transformation is relatively novel and adds a partially different focus. A digital transformation is considered a regular transformation with a heavy impact on the digital aspects of an organization. This means that organizations that transform either their business model (new digital products and services), their operating model (new digital processes and ways of working), or both by leveraging digital technologies can be considered the subject of a digital transformation. The latter has been similarly described by [4].

Strategy execution and the related transformations are as important as strategy formulation, if not more [5], and much of successful strategy execution revolves around aligning key organizational factors with strategy. Viaene [6] indicates that *a lack of perspective and common language are primary reasons why so many people and organizations continue to struggle with digital transformations*. Additionally, strategies are currently changed more often, with significant changes occurring so frequently in the business environment. The alignment process and translation of strategic ambitions towards executable actions have thus become an even greater challenge. According to [7], *the challenge is to offer sufficient direction and guidance to avoid chaos but not so much as to suffocate creativity, initiative, experimentation, and responsiveness to changing conditions*. As [8] describes, multiple factors contribute to the successful outcomes of digital transformations. One of these factors is how an organization can align its different organizational components. In summary, the lack of alignment and structure regarding these different organizational components can thus cause transformations to fail, but the solution to this problem should leave room for creativity, initiative, and agility.

The main focus of this Ph.D. research lies in providing scientifically grounded solutions, currently missing in the field, starting from the Enterprise Architecture domain and extending to the Strategic Management domain. These solutions aim to improve the lack of efficiency and effectiveness of strategy translation, strategy execution, and related digital transformations of both incumbents and disruptors. We aim to provide answers to the following problem statement.

How to improve the translation of an organization's strategic ambitions to an enterprise design that facilitates achieving these strategic ambitions?

There is often no clear overview of the linkage between organizational domains and their related responsibilities in terms of business aspects (people, processes, information, resources) and technology (applications, infrastructure). Consequently, if a clear and holistic view of the organization is missing, it is impossible to properly define the target state of the organization based on the strategic ambitions. Therefore, the related impact on the organization and the required effort to realize this future state cannot be understood. This ultimately leaves the organization unable to realize the required digital transformation through scaling up/down, outsourcing, or developing new capabilities.

In line with the problem statement above, the research rationale is translated into three phases (with related research questions) and described in section two, which covers, in addition, the practical purpose and objectives. The projected research methodology and the corresponding research techniques are then explained in section three. Finally, the preliminary results, the current research stage, and the conclusions and future work are covered in sections four and five.

2. Research Questions

Finding solutions that provide answers and the right balance to deal with this challenge is the main focus of this research, where the Enterprise Architecture (EA) domain will have a central place as it is believed to be a proper base for viable candidate solutions. The EA practice serves three purposes: value creation, enterprise coherence, and strategic alignment. *Value creation* means that EA ensures that the organizational structures, processes, information, applications, and technology that an enterprise needs to fulfill its purpose are employed to create value according to that purpose. *Enterprise coherence* means that these different resources are integrated and aligned and form a coherent system where they work

together. Finally, *strategic alignment* concerns the translation of the strategic choices of resources for value creation (i.e., the question of ‘how’ to create value) into a proactive blueprint for the organization that allows for effective value creation in line with the strategic goals and overall vision. This blueprint is commonly referred to as the EA description of the organization [9] and is driven by enterprise modeling [10].

(Business) Capability-based planning (CBP) is a common and important EA approach to strategic alignment [11]. A capability in the EA context exposes ‘what’ an enterprise does to achieve a specific purpose or outcome and does this without implying where, when, by whom and how this is done [12]. More precisely, a capability has been defined as the ability and capacity that enables an enterprise to achieve a goal in a specific context [13]. Both the notions of ability and capacity are essential in this definition. *Capacity* refers to the availability of resources of possibly different kinds. *Ability* means the competence to use the available resources to accomplish goals and to (re)configure this resource base depending on the specific context in which goals need to be achieved. The goals referred to can range from strategic to operational and can be very diverse in terms of internal and external value creation (e.g., service delivery to customers, resolution of IT incidents); hence, many capabilities are needed.

CBP can be considered an important part of the more comprehensive Capability-Based Management (CBM), which is a new concept presented in this research. *Management* is a distinct process consisting of planning, organizing, actuating, and controlling to accomplish pre-determined objectives [14], and CBM should cover these. Where CBP focuses on the planning, engineering, and delivery of strategic business capabilities [11] and CDD (Capability-Driven Development) focuses on agile and model-driven information systems development driven by business capabilities [13], CBM can include the previous but has a broader scope. It focuses on using the Capability concept as a central cornerstone based upon which the organization can be managed, especially in transformations. CBM thus can be defined as *the practice of making management decisions based on insights gained from analyses, and focuses on enterprise alignment and strategy execution. The organization's capability-based structure (presented through a Capability Map) is the central viewpoint of CBM and allows for a proper translation of strategic ambitions and facilitates the projected alignment.* In other words, different types of analyses should start from the Capability-based structure, or the outcomes from the analyses should be linked to and presented on the structure. These analyses can be related to the operating model dimensions (e.g. resources, organizational structures, processes, information, technology solutions), other management practices (e.g. cost or management accounting) or external factors (compliance with regulation, customer journeys, relations with or within ecosystems).

The main instrument of CBM is the capability map, which provides a structured and hierarchical overview of an organization’s capabilities [15]. Different information can be included in a capability map, which provides a baseline for evaluating the impact and feasibility of strategic initiatives. Capability maps thus support formulating a new strategy, analyzing the required changes in capabilities, and planning the transformation journey needed for strategy execution.

This research aims to properly define the scope of CBM, build and validate design methods for the Capability Map, and define and validate the relevant types of analysis for CBM. These artifacts are deemed necessary to facilitate the effective and efficient translation of strategic ambitions into an enterprise design and the related Digital Transformation to realize these ambitions. In doing so, we thus aim to provide an answer to the problem statement as described above and build a bridge between the Strategic Management and the Enterprise Architecture domain. However, the method to translate strategic ambitions into an Enterprise Design and further into supporting or enabling information systems is excluded from the PhD research. We believe that the proposed scope of the research is the first necessary step towards this method, but the inclusion of this method would lead to a too extensive and ambitious scope for one PhD. To achieve the presented goals, we defined three phases with related research questions to build the right solutions incrementally.

Phase 1: Proof of concept; building a generic capability map for a specific industry

RQ1. How to design a generic capability map for a specific industry?

RQ2. Is a generic, industry-specific capability map useful for developing organization-specific capability maps?

The proof of concept phase will provide an opportunity to explore the domain, resulting in a base method to build capability maps and have a first indication of the value of being able to design generic capability maps.

Phase 2: Value and use cases of capability-based management

RQ3. What are essential drivers for realizing strategy execution and related digital transformations?

RQ4. What use cases can be identified for CBM in the scope of digital transformations, and what is their adoption level in organizations?

RQ5. How can CBM, as a part of the academic discipline of EA, and by extension Strategic Management, enable organizations to organize themselves better so that change is facilitated and digital transformations become more effective? What can be considered the correct scope of the proposed CBM practice? What value can use cases of CBM bring within the scope of digital transformations?

Phase two aims to bring forward use cases of capability mapping (and CBM in general) that contribute to strategy execution and the realization of the related digital transformations. However, a critical remark is that the outcome of this phase will greatly influence phase three, and should phase two yield a different result than anticipated, phase three will have to be reshaped.

Phase 3: Defining and validating the foundation methods for building the capability map and for capability-based management

RQ6. How can a well-defined method be designed to build a capability map, generic to a sector or specific to an organization within any sector?

RQ7. How can a well-defined method be designed to adopt a generic capability map within a specific organization?

RQ8. How can the most relevant analysis use cases, established in phase two, be executed appropriately based on a capability map?

RQ9. How can the results of these analysis use cases be most effectively represented on a capability map?

Phase three aims to formalize the findings of phase two by designing well-defined methods and other artifacts related to the use cases discovered in phase two.

The outlined problem is experienced in practice, and the current approaches to reach solutions are insufficient due to the lack of scientific knowledge (e.g. How to develop a capability map? How to translate strategic choices into a company structure?). Therefore, next to the scientific contribution, this research project aims to define and (to some extent) design a framework that contains methods and other artifacts for capability-based management that organizations (and their managers, architects, analysts) can apply in practice.

3. Research Method

The research goals involve designing new and applicable artifacts (e.g. methods, models, visualizations) which also reflect the knowledge needed to answer the research questions. The research methodology of choice is Design Science [16][17]. This methodology focuses on designing solutions to previously unsolved problems or problems for which current solutions are inadequate in a scientific manner, i.e., based on existing scientific knowledge (e.g., theories, models) and using methods of scientific inquiry. In particular, Design Science focuses on problems experienced in practice and on solutions that can be applied in the same practice in the form of artifacts. The research project presented

in this paper has all the characteristics of a Design Science project. The next part describes the (projected) research method and approach for the different phases.

Phase 1: Proof of concept; building a generic capability map for a specific industry

The professional sport industry was selected as the application field for our design-based research. We investigated how to design a generic capability map for this application field through case studies. In other words, we involved different professional sport clubs as case study organizations in our research. We aimed to design a solution that is a ‘situated implementation of artifact’ according to the types of Design Science Research contribution defined by [17]. This artifact is the generic capability map for professional sport clubs. By reflecting on the artifact’s design process and theorizing about the underlying design principles, our research contributes to articulating a method for developing industry/sector-specific capability maps as a ‘nascent design theory’.

We organized our design-based research in design cycles, where each new design cycle built upon what was learned in the previous cycle(s), and each cycle consisted of an open interview and a validation after the interview. In addition, our strategy was to invite a different professional sport club for each design cycle. A senior management team member was selected to serve as a subject matter expert and representative within each case study organization. The order in which we selected and invited professional sport clubs to participate (i.e., our theoretical sampling approach) was carefully deliberated to create the potential for convergence and to avoid being stuck in a continuous design process.

This process was repeated until we reached theoretical saturation [18]. The most recent version of the capability map as obtained in the previous design cycle was thus validated as representing the capabilities and capability structure of the last case study organization. When this condition was met, the iterative design process could be ended, so no new design cycle needed to be initiated. This last version of the generic capability map was then proposed as the final solution.

Phase 2: Value and use cases of capability-based management

The proposed research method aims to gather data via a matched paired survey data collection technique and is inspired by the research conducted in [19]. The model below shows an overview of the projected research method.

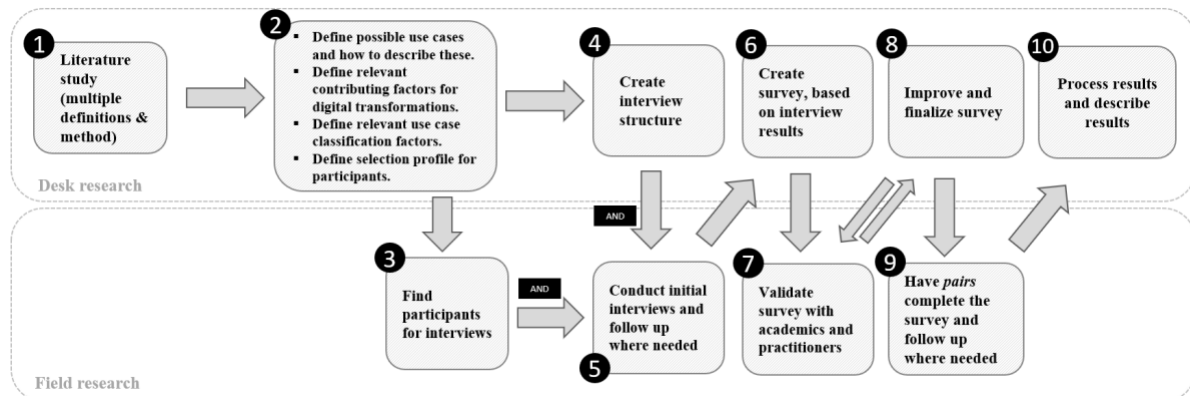


Figure 1: proposed research method outline

In *step one*, a literature study was conducted to achieve multiple outcomes; First, we aimed to describe different relevant concepts for this research. Next, we explored the concepts of focused interviews, surveys, and paired respondents to build our research method. In *step two*, which is the current state of our research, a strong focus lies on the concept of digital transformation. First, we aim to define its critical drivers for success. Secondly, and based on a study of the relevant literature, we explore why CBM could offer a solution to improve or strengthen these critical drivers. Next, we aim to define how to describe and classify use cases, list relevant use cases found in the literature, and define how to describe their value. Finally, we focus on the selection profile for participants who will participate in interviews and surveys.

In *step three*, we will contact selected participants for the interviews, and *step four* will focus on creating the proper (semi-structured) interview structure and the format for the interviews. Steps *three* and *four* both need to be completed before *step five* can be started, which is conducting the actual interviews.

We aim to complete 14 interviews in 7 organizations (with one EA practitioner and one C-level counterpart in each organization), including validation of the transcribed interview. Given that we assume CBM impacts critical drivers for the success of digital transformations, having someone from the demand side (C-level) and someone from the implementation/design side (EA practitioner) will help us confirm or debunk certain assumptions/propositions. Additionally, as we will mainly capture perceived value, having two separate viewpoints on this will help to lower the bias.

In *step six*, the results of the interviews will be used to create a (digital) survey, which will be validated with a resonance group (*step seven*) and improved where needed (*step eight*). Steps *seven* and *eight* could be repeated iteratively if needed. In *step nine*, respondents will be selected (in pairs, in line with the reasoning above) and asked to complete the survey. Next, we will collect and process the respondent data and follow-up with respondents where necessary to clarify and validate the data. Finally, the results will be processed and described for publication in a final *step ten*.

Phase 3: Defining and validating the foundation methods for building the capability map and for capability-based management

As the outcome of phase two will impact phase three, it is too early to define the research method for this part in detail. However, the to-be-investigated methods (see RQ6, RQ7, RQ8, and RQ9) have not been researched before. Therefore, we aim to contribute knowledge again through design-based research. More specifically, the intended research methodology for this phase will be based on Action Design Research (ADR) [20], which combines Action Research [21] and Design Science [16]. Action Research is a common research method in the Social Sciences, while Design Science, also applied in phase one of this research, originates in the Engineering disciplines.

4. Preliminary Results and Current Stage

This PhD research started with phase one, aiming to provide an answer to RQ1 and RQ2. The resulting paper (which is, at the time of writing, being revised for resubmission to a field journal), addresses the question of how a generic capability map for organizations within the same industry can be developed. Professional sport clubs were used as the application field for our Design Science research. The research was executed in collaboration with three major, premier league Belgian clubs that operate in the highest tier of their respective professional sport competition. After different iterations of joint development and evaluation activities with these clubs, the final design of a generic capability map was obtained, which gives managers a tool they can use to investigate strategic alignment within their professional sport clubs (i.e., the question of whether the strategic direction decided by the board is translated into a proper organizational design, related to RQ2). The knowledge acquired for developing generic capability maps is an original contribution to the Enterprise Architecture discipline and provides an answer to RQ1.

The second phase of the research started in June 2021. As described in section three, this part of the research aims to find both use cases of CBM and capture the (perceived) value of applying these use cases in the scope of a digital transformation. At the time of writing, we are working on step two and will soon start with steps three and four.

5. Conclusions and Future Work

This paper presents our research project, which aims to design a framework, based on concepts from the Enterprise Architecture practice, that contains methods and other artifacts for capability-based management that organizations (and their managers, architects, analysts) can apply in practice to improve the effectiveness and efficiency of digital transformations. In other words, it aims to define the practice of CBM better. In the first phase, we addressed the question of how a generic capability map for organizations within the same industry can be developed. Professional sport clubs were used as the application field for our Design Science research. The resulting artifact, a generic capability map for the professional sport industry, and its adoption gave a first indication of the value CBM can bring. The knowledge acquired for developing generic capability maps is an original contribution to the Enterprise Architecture discipline. At the time of writing, we are working on the second phase, which aims to bring forward use cases of capability mapping and CBM that contribute to strategy execution and the realization of the related digital transformations. Finally, we aim to formalize the findings of phase two by designing well-defined methods and other artifacts for CBM related to the use cases discovered in phase two. In conclusion, the novelty of this Ph.D. research project lies in its contribution to both the practical and scientific domains by aiming to define the practice of CBM better.

Acknowledgments

This Ph.D. research is supervised by Prof. Dr. Geert Poels (Ghent University). Additional supervision for the second phase of the research is provided by Prof. Dr. Stijn Viaene (KU Leuven, Vlerick Business School).

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