Stakeholder engagement in enterprise architecture practice: What inhibitors are there?

Sherah Kurnia [a], Svyatoslav Kotusev [b,*], Graeme Shanks [a], Rod Dilnutt [a], Simon Milton [a]

[a] *University of Melbourne, Melbourne, Australia*
[b] *HSE University, Moscow, Russia*

ARTICLE INFO

ABSTRACT

Context: Enterprise architecture (EA) is a collection of artifacts describing various aspects of an organization from an integrated business and IT perspective. EA practice is an organizational activity that implies using EA artifacts for facilitating decision-making and improving business and IT alignment. EA practice involves numerous participants ranging from C-level executives to project teams and effective engagement between these stakeholders and architects is critically important for success. Moreover, many practical problems with EA practice can be also attributed to insufficient engagement between architects and other EA stakeholders. However, the notion of engagement received only limited attention in the EA literature and the problem of establishing engagement has not been intentionally studied.

Objective: This paper intends to explore in detail the problem of achieving effective engagement between architects and other EA stakeholders in an organization, identify the main inhibitors of engagement and present a theoretical model explaining the problem of establishing engagement in practice.

Method: This paper is based on a single in-depth revelatory case study including nine interviews with different participants of EA practice (e.g. architects and other EA stakeholders) and documentation analysis. It leverages the grounded theory method to construct a conceptual model explaining the problem of engagement in the studied organization.

Results: This paper identifies 28 direct and indirect inhibitors of engagement and unifies them into a holistic conceptual model addressing the problem of achieving engagement that covers the factors undermining both strategic and initiative-based engagement between architects and other EA stakeholders.

Conclusions: This paper focuses on the notion of engagement and offers arguably the first available theoretical model that explains how typical engagement problems between architects and other stakeholders inhibit the realization of value from EA practice. However, the developed model has a number of limitations and we call for further empirical research on engagement problems in EA practice and coping strategies for addressing these problems.

1. Introduction

The current epoch of digital business transformation compels organizations to rethink their attitude towards IT [73, 162, 163]. The recent developments of technology are not only modifying established business models, but also continually creating new opportunities for many companies to innovate [129, 160, 164]. These profound shifts in the competitive business environment inspired by digitization magnify the importance of achieving tighter business and IT alignment in organizations [99]. Alignment leads to numerous benefits for organizations including increased agility [146], financial business performance [52, 53] and overall organizational success [27, 105, 165].

Enterprise architecture (EA) is a collection of documents, typically called artifacts and consisting of various models, describing different

aspects of an organization from an integrated business and IT perspective[1] [79, 116]. EA intends to bridge the communication gap between business and IT stakeholders, facilitate information systems planning and thereby improve business and IT alignment [79, 117, 147].

EA practice is an organizational activity that implies using EA artifacts for facilitating decision-making and improving business and IT alignment [1, 77, 114]. EA practice includes defining an overarching strategic direction and moving towards this direction through implementing specific initiatives [1, 77, 130]. Participants of EA practices in organizations range from C-level executives to project teams [78, 116, 151].

EA practices have multiple diverse success factors, e.g. quality of EA artifacts, organizational anchoring and tool support [67, 89, 169]. Besides those factors, effective EA practices require achieving engagement between architects[2] and other EA stakeholders [4, 47, 98]. On the one hand, different facets of engagement (e.g. communication, collaboration and partnership) are consistently found among the most critical success factors of EA practice [5, 19, 133, 151]. On the other hand, among various problems associated with EA practices [2, 32, 86], the challenges related specifically to establishing engagement can be considered as the most common and acute ones [11, 28, 60].

However, although the importance of strong engagement between architects and other EA stakeholders is widely recognized and the lack of engagement is acknowledged as a major issue [11], the very notion of engagement received only limited attention in the existing EA literature [4, 98] and the problem of achieving engagement in EA practice has never been intentionally studied. In order to address this gap, this study explores various inhibitors of engagement between architects and other stakeholders in EA practice.

Based on a revelatory in-depth case study of a troublesome EA practice and a grounded theory-based analysis approach, we identify a number of factors undermining engagement between architects and EA stakeholders, join these factors into a holistic theoretical model and classify them into a two-dimensional analytical framework according to their relative novelty and specificity to the studied organization. The resulting theoretical model conceptualizes the problem of achieving engagement in EA practice and explains the relationship between different direct and indirect negative factors complicating engagement. Our study contributes to theory via proposing the first explicit conceptualization of the engagement problem as well as to practice by means of providing a "checklist" of potential issues to watch for.

This paper continues as follows: (1) we discuss EA practice and its stakeholders, the notion of engagement, two different types of engagement and motivation for this research, (2) we describe the research design, data collection and analysis procedures, (3) we present the set of identified inhibitors of engagement and the resulting theoretical model, (4) we discuss our findings in light of the existing EA literature, (5) we conclude the paper, describe the theoretical and practical contribution of our study, outline its limitations and propose directions for future research.

2. Literature review

In this section, we define EA practice and the notion of engagement between architects and EA stakeholders. Then, we discuss the importance of effective engagement, two different types of engagement in the context of EA practice and problems related to EA practice. Lastly, we explain in detail the study motivation and the research question of this study.

2.1. Enterprise architecture practice and its stakeholders

EA practice is a complex and multifaceted organizational activity that implies using EA artifacts for facilitating decision-making and improving business and IT alignment [41, 75, 123]. Besides various EA artifacts (e.g. principles, standards, roadmaps as well as many types of models and diagrams), EA practice involves many other diverse elements including communication processes, governance bodies, modeling languages, specialized and general-purpose software tools, measurement techniques and some other elements [1, 77].

EA practice is an overarching endeavor that affects various activities related to business and IT alignment at different levels of the organizational hierarchy [82]. Most important of these activities include strategic planning [7, 18, 118, 141], portfolio management [90, 109, 120, 125] and implementation of IT systems [6, 31, 48, 49]. Kurnia et al. [88] articulate eight distinct activity areas constituting EA practice: business capability modeling, roadmapping and portfolio planning, IT asset management, opportunity assessment, project governance, communication and coordination, consulting and mentoring, audit of mergers and acquisitions. Generally, EA practice implies defining an organization-wide strategic direction, then shaping a more detailed investment portfolio and finally delivering all planned initiatives in an optimal manner ([1]; EAP [37, 77, 130]).

Unsurprisingly, EA practice involves multiple stakeholders in organizations working at different organizational levels. Since an exact list of EA stakeholders is extremely difficult to define and is likely to be organization-specific [150, 154], only high-level generalities regarding hypothetical EA stakeholder groups can be articulated. For instance, Fonstad and Robertson [47] classify all potential EA stakeholders according to two orthogonal dimensions. First, EA stakeholders tend to be either business or IT stakeholders. Second, EA stakeholders can be related to corporate, business unit or project levels. Thereby, Fonstad and Robertson [47] distinguish six main groups of EA stakeholders with different objectives as an intersection of these two dimensions. Moreover, Fonstad [45] also demonstrates that external vendors and outsourcers can be also considered as EA stakeholders. Put it simply, direct or indirect participants of EA practices range from senior executives to project teams [78, 116, 151, 152].

2.2. Engagement in enterprise architecture practice

Establishing strong engagement between architects and other EA stakeholders has been long recognized as one of the prerequisites of successful EA practices [47, 154]. The term "engagement" in the EA context has no commonly accepted definition and is used rather loosely by different authors. For example, Fonstad and Robertson [[47], p. 2] understand engagement rather broadly as "negotiating, influencing, educating, socializing, and interacting in other ways across organizational levels and functional boundaries", while more recent studies

---

[1] The term "enterprise architecture" has no single commonly accepted definition in the literature [70, 85, 91, 121, 131, 134, 140]. In some sources it is understood as a "noun" (e.g. collection of documents) [42, 143, 170], while in others as a "verb" (e.g. process of planning) [43, 93]. In this paper we stick to the former view, understand EA as a set of documents and adjust our terminology accordingly

[2] Here and further in this paper we intentionally stick to the general notion of "architects" instead of using any more concrete terms (e.g. "enterprise architects") due to at least three different reasons. First, there may be many different positions in organizations that clearly relate to EA, but do not represent literally "enterprise architects", e.g. domain architects. Second, formal titles of architects in organizations are often peculiar and highly organization-specific (e.g. lead architects) and organizations practicing EA may not have specific positions titled exactly "enterprise architects". Finally, in practice architects often combine diverse responsibilities (e.g. organization-wide and project-level planning) that may relate to different "classic" archetypes of architects (e.g. enterprise and solution architects respectively). "In numerous discussions with various international organizations, FEAPO has found a wide array of "architect roles" described. This creates some confusion, since these roles are inconsistent between organizations and even within a single enterprise" ([44], p. 6). Therefore, when referring to "architects", we refer to all members of EA functions regardless of their formal titles

actively using this term in relation to EA [4, 21, 98, 113] do not provide any explicit definitions of engagement whatsoever. However, in all cases, engagement is implicitly understood as an umbrella term for communication, collaboration, mutual understanding and partnership between architects and other EA stakeholders. For this reason, in this paper we define engagement specifically as an active communication between architects and EA stakeholders, conscious participation of stakeholders in EA-related processes, collaborative decision-making and mutual commitment to the made planning decisions. Put it simply, engagement implies working together, rather than working separately.

The vital importance of engagement between architects and EA stakeholders is widely acknowledged in the existing EA literature. For instance, effective communication, stakeholder participation and buy-in are consistently found among the critical success factors of EA practice [19, 81, 133, 169]. van der Raadt et al. [[151], p. 1954] argue that "active participation of EA stakeholders is one of the main critical success factors for EA". Moreover, the survey by Ambler [5] demonstrates that different aspects of engagement represent the top four EA success factors: (1) active involvement of business leaders in the EA program, (2) active involvement of IT leaders in the EA program, (3) enterprise architects actively participate in project teams and (4) enterprise architects are trusted advisors to the business.

These findings on the critical importance of engagement in EA practice also highly correlate with the earlier findings on business and IT alignment. On the one hand, numerous authors identified effective communication, mutual understanding and partnership between business and IT stakeholders as the most significant enablers of business and IT alignment [26, 103, 115, 119, 124, 149]. On the other hand, the lack of effective engagement between business and IT stakeholders is widely recognized as one of the most significant inhibitors of alignment [95, 104, 106, 107].

At the same time, the consequences of poor engagement between architects and EA stakeholders are also widely understood in the EA literature. In particular, the lack of adequate engagement is most often manifested as the so-called "ivory tower" syndrome, when architects essentially exist separately from the rest of the organization and produce idealistic architectures distant from the actual business problems that eventually end up laying on shelves [5, 23, 60, 61, 98, 151, 153]. The ivory tower syndrome may have various manifestations including a disconnection between the contents of EA artifacts and the informational needs of EA stakeholders, a mismatch between architectural plans and business objectives and attempts of architects to impose a desirable course of action to other stakeholders instead of reaching a collective agreement. Ross et al. [[130], p. 65] acknowledge this situation as rather common in the industry and describe it in the following way: "In many companies enterprise architecture design is the responsibility of a small IT staff sequestered in a back room for several months, emerging only after drawing a book's worth of diagrams. [...] Most of these architecture exercises end up abandoned on a shelf". For example, one EA practitioner describes the ivory tower syndrome in the following way: "Architectures, like fondue sets and sandwich makers, are rarely used. We occasionally dig them out and wonder why we ever spent the money on them" ([46], pp. 1-2). Likewise, another EA practitioner comments that "the paradox is that EA efforts are aimed at integrating the various organizational elements, whereas the architecture efforts are not integrated in the organization" ([66], p. 32). Levy [98] even considers the state of ivory tower essentially as the situation opposite to engagement. In light of this evidence, effective engagement can be considered as one of the most critical success factors of EA practice.

2.3. Strategic and initiative-based engagement

All comprehensive evidence-based EA sources in some or the other form articulate two key processes that require engagement between architects and other stakeholders as part of EA practice: strategic planning and initiative delivery [1, 77, 114, 130]. These two EA-related processes involve different groups of stakeholders and require different types of engagement, which we call strategic engagement and initiative-based engagement respectively (the existing EA literature arguably does not offer any established terminology to distinguish these notions).

On the one hand, the process of strategic planning implies making global long-term planning decisions, i.e. developing an overarching strategic vision for the entire organization (EAP [37, 77, 122, 130, 141]). This process is integrated with regular strategic management and involves senior business leaders and architects. As part of this process business and IT leaders may establish a mutually agreed set of architecture principles or maxims [20, 34, 55], develop a core diagram or desired target state [126, 130, 147], highlight required business capabilities in capability models or maps [24, 80, 135] and develop more detailed investment roadmaps [79, 147]. Therefore, strategic engagement represents the loose collaboration of architects and senior business decision-makers at the level of organization-wide planning, where the circle of stakeholders is rather broad and their meetings are relatively infrequent [77, 122].

On the other hand, the process of initiative delivery implies making local short-term planning decisions in order to deliver separate initiatives aligned to the global strategic vision (EAP [37, 77, 108, 130, 156]). This process is integrated with a regular project delivery lifecycle and involves architects, project sponsors, business analysts and other members of project teams [14]. The initiative delivery process is usually linked to the phases of the adopted project delivery methodology (e.g. concept, business case, design, implementation and rollout) where different EA artifacts inform decision-making at the respective approval gates [77, 108, 130]. For example, as part of this process architects and other project stakeholders may explore possible solution options [79, 108], prepare a solution overview and business case [108, 156], approve the solution and secure the necessary funding, then develop a more detailed solution design or project-start architecture [50, 79, 156] and finally implement the solution. Therefore, initiative-based engagement represents the tight collaboration of architects and various project stakeholders at the level of project implementation, where different participants are joined into consistent and well-defined project teams to work together on a full-time basis during the entire project lifecycle [108, 156]. The differences between strategic and initiative-based engagement discussed above are summarized in Table 1.

A separation identical to the one presented in Table 1 has been also made earlier in the literature on business and IT alignment by Tarafdar and Qrunfleh [[148], p. 346]: "While strategic IT-business alignment processes are needed for identifying applications important for supporting and enabling business strategies, tactical [or initiative-based] IT-business alignment processes are necessary for ensuring that envisioned applications are implemented and deployed".

Table 1
Strategic and initiative-based engagement in EA practice.

Aspect	Strategic engagement	Initiative-based engagement
Goal	Develop an overarching architectural vision	Deliver initiatives aligned to the global vision
Scope	Entire organization	Separate initiatives
Integration	Strategic management	Project delivery lifecycle
Stakeholders involved	Strategic decision-makers, e.g. C-level executives, senior business leaders and heads of departments	Project teams, e.g. business sponsors, project managers, business analysts and various IT staff
Relevant EA artifacts	Principles, core diagrams, business capability models and roadmaps	Options assessments, solution overviews and solution designs
Type of teamwork	Permanent, broad and loosely coupled collaboration of many decision-makers, who meet relatively infrequently	Temporary, small and tightly coupled teams formed to deliver specific initiatives, whose participants collaborate on a daily basis

2.4. Problems in enterprise architecture practice

Various pitfalls associated with EA practice have been rather widely studied in the EA literature. For instance, Kotusev [76] identified 39 publications discussing potential problems, challenges, risks and common reasons for failure in EA practice that appeared in print by the end of 2015. A number of more recent relevant studies have been also published [2, 10, 32]. These studies have identified a very broad spectrum of problems associated with EA practice, but these problems can be grouped into a rather small number of major problem areas. A brief overview of the most notable EA-related problem areas in alphabetical order with their brief descriptions and supporting publications is provided in Table 2.

An examination of the identified challenges related to EA practice presented in Table 2 suggests that communication and stakeholders represent key problem areas in EA practice. These weak areas have been identified by the largest number of independent authors and both the areas have also been identified by most authors exploring EA-related problems [2, 11, 28, 32, 60, 98, 102]. The existing EA literature, thus, clearly recognizes the problem of achieving engagement between architects and other EA stakeholders among the most prominent challenges of EA practice.

Furthermore, one of the recent and most comprehensive studies of obstacles in EA practice conducted by Banaeianjahromi and Smolander [[11], p. 20] "identified lack of communication and collaboration as the core obstacle that can explain most of the other obstacles". In light of these findings, the problem of achieving effective engagement can be considered as one of the core issues related to EA practice, if not as the single most important issue representing a root cause of many other issues.

2.5. Study motivation and research question

Although the critical importance of engagement between architects and other EA stakeholders is widely acknowledged in the EA literature [5, 11, 130, 151], the notion of engagement has received only limited attention among researchers [4, 98, 154]. For instance, Al-Kharusi et al. [[4], p. 2] notice that "there is scarcity of studies that uncover the factors dominating the engagement between the enterprise architects and the EA stakeholders". In particular, none of the studies of EA-related challenges (see Table 2) focused specifically on the problem of achieving engagement. Although these studies unanimously recognize insufficient engagement as a major problem, they generally focus on broader issues troubling EA practice many of which are unrelated to engagement. For example, insufficient resources [137], lack of experienced architects [102], misunderstanding of benefits [60], obsolescence of EA documentation [101], lack of change management tools [10], complexity of the IT landscape [2] and many other EA-related issues identified in the literature are not related to engagement.

To summarize, the problem of achieving engagement has never been intentionally studied in detail in the existing EA literature. Therefore, the research question of this study can be formulated as follows: *"What factors hinder engagement between architects and other stakeholders in EA practice?"* Taking into account the significant distinction between strategic and initiative-based engagement in the context of EA practice (see Table 1), this study aims to explicitly address both types of engagement and explore the factors inhibiting each of these types separately.

3. Research method

This study is qualitative, inductive and exploratory in nature because the question under investigation is arguably not described in the EA literature well enough to formulate any reasonable deductive propositions or quantitative hypotheses. For this reason, we selected the case study research method as the most suitable approach for studying qualitatively a contemporary, but insufficiently explored phenomenon

Table 2
Overview of major EA-related problem areas and supporting publications.

Problem area	Brief description	Supporting publication(s)
Architects	Abilities of architects left much to be desired and architects are perceived negatively, experienced architects are hard to find on the job market, while cohesive EA teams are hard to form	Chuang and van Loggerenberg [28], Lucke et al. [102], Hauder et al. [60] and Dang and Pekkola [32]
Artifacts	EA artifacts are too large, overly sophisticated, have inappropriate scope and level of abstraction, fail to meet real information needs and, as a result, are left essentially unused	Lucke et al. [102], Lohe and Legner [100], Hauder et al. [60] and Lohe and Legner [101]
Benefits	Conflicting objectives and misunderstood benefits of EA practice	Hauder et al. [60], Dang and Pekkola [32] and Ajer and Olsen [2]
Communication	Poor communication, coordination, collaboration, knowledge transfer, mutual trust and shared understanding of goals and requirements between architects and other EA stakeholders	Chuang and van Loggerenberg [28], Lucke et al. [102], Hauder et al. [60], Levy [98], Banaeianjahromi and Smolander [10], Banaeianjahromi and Smolander [11], Ajer and Olsen [2] and Banaeianjahromi [9]
Complexity	The overall complexity of organizations and their IT landscapes	Lucke et al. [102] and Ajer and Olsen [2]
Governance	Inadequate governance procedures and inability to enforce compliance with the decisions documented in EA artifacts	Seppanen et al. [137] and Lucke et al. [102]
Maintenance	Quick obsolescence of EA artifacts and problems while trying to keep them up-to-date	Kaisler et al. [69], Lohe and Legner [100], Hauder et al. [60], Lohe and Legner [101] and Kaisler and Armour [68]
Modeling	Inadequate quality of modeling	Kaisler et al. [69] and Kaisler and Armour [68]
Organization	Sophisticated organizational structures inhibit effective decision-making	Dang and Pekkola [32] and Ajer and Olsen [2]
Politics	Organizational politics and conflicts among stakeholders prevent effective decision-making	Chuang and van Loggerenberg [28] and Dang and Pekkola [32]
Resources	Insufficient time, financial and human resources to develop necessary EA artifacts and then maintain them current	Seppanen et al. [137], Lohe and Legner [100] and Lohe and Legner [101]
Resistance	Personal resistance to change, reluctance to participate in EA-related activities and the resulting lack of organizational acceptance of EA	Lohe and Legner [100], Hauder et al. [60], Lohe and Legner [101], Banaeianjahromi and Smolander [10], Banaeianjahromi and Smolander [11] and Banaeianjahromi [9]
Stakeholders	Unavailability of stakeholders, problems obtaining stakeholder buy-in, conflicting interests among stakeholders, poor motivation and insufficient understanding of EA by stakeholders	Chuang and van Loggerenberg [28], Lucke et al. [102], Hauder et al. [60], Banaeianjahromi and Smolander [10], Dang and Pekkola [32], Banaeianjahromi and Smolander [11], Ajer and Olsen [2] and Banaeianjahromi [9]
Support	Insufficient top management support of EA practice and commitment to its demands	Seppanen et al. [137], Lucke et al. [102], Banaeianjahromi and Smolander [10], Dang and Pekkola [32],

Table 2 (*continued*)

Problem area	Brief description	Supporting publication(s)
Tools	Insufficient tool support of EA-related activities	Banaeianjahromi and Smolander [11] and Banaeianjahromi [9] Lucke et al. [102]

in its full complexity and natural settings [39, 96, 167]. We focused specifically on a single revelatory case study since this approach is consistent with our research question and is more suitable for a detailed exploratory analysis of rarely observed but theoretically interesting situations, where depth is more important than breadth [15, 33, 167].

3.1. Data collection

In order to answer our research question, a case organization should (1) be sufficiently large and complex to have a genuine need and desire for full-fledged EA practice and (2) experience significant problems with establishing engagement between its architecture team and other EA stakeholders. Organizations in such situations are rather uncommon due to their transitory nature, i.e. engagement problems might be more characteristic for low-maturity EA practices, but most large organizations in developed countries arguably have already passed this stage in their development. According to these criteria, we have chosen a large government department in one of the Australian states with an immature but developing EA practice as a case organization for our research.

Data in this study was collected from two sources: semi-structured interviews and documentation analysis. First, we took nine face-to-face one-hour interviews with representatives of all key participants of the EA practice: two with the architecture team manager, one with the CIO, one with an architect working at both the enterprise and solution levels, one with the engagement and innovation team leader, one with a program manager, one with a project manager, one with an infrastructure service delivery manager and one with a member of corporate IT services. The interviewing schedule intentionally started and ended with the architecture team manager to outline the overall context of EA practice in the beginning and then to answer a number of finalizing follow-up questions. All the interviews were conducted by three interviewers, where one of them acted as a leader and the others as note-takers. In order to achieve better consistency of data collection, all the interviews were guided by two separate interview protocols intended for architects and non-architects. On the one hand, interviews with architecture-side participants, besides general contextual questions, have been focused primarily on discussing the issues that complicate their engagement with the relevant groups of stakeholders. On the other hand, interviews with non-architecture participants have been focused mostly on discussing the practical experience of their interaction with architects as well as specific issues that complicate their collaboration. However, these protocols were periodically deviated from in order to explore in greater detail various themes emerging during the interviews and relevant from the perspective of engagement. For this reason, most of the collected interviews had a considerable unstructured element. All the interviews have been recorded with the permission of the interviewees and transcribed verbatim for further analysis with the involvement of an external transcription service provider. In total, the resulting interview transcripts contained 179 pages of single-spaced text and around 80,000 words.

Second, we studied the EA documentation existing in the organization including the samples of all EA artifacts mentioned by the interviewees. In particular, we inspected the business capability model with various overlays (e.g. strategy, capability maturity and underlying applications), current and target application portfolio models, conceptual data model, technology reference model, application roadmap, several samples of solution architecture documents and some other EA artifacts. During the EA documentation analysis, we focused on assessing the quality of EA artifacts and their fitness-for-purpose, i.e. their potential ability to facilitate the engagement between architects and other EA stakeholders based on the insights gained from the earlier extensive study of EA artifacts and their usage [79, 83]. Specifically, we checked (1) whether the existing artifacts looked similar to EA artifacts that proved useful in other organizations and (2) whether the expectations on their usage for supporting engagement corresponded to regular industry practices observed in other organizations. As a result, the adequacy of key EA artifacts used in the organization and associated expectations have been confirmed and assured.

During the process of data collection, we used a theoretical sampling technique to select interviewees that are likely to provide new, interesting and unique perspectives on engagement aspects of the EA practice [39]. As strategic and initiative-based engagement essentially represent different areas of EA practice (see Table 1), we aimed to interview participants directly involved in both types of engagement activities and knowledgeable in the respective issues. The data collection process stopped when a deep understanding of the challenges related to engagement has been achieved and a theoretical saturation has been reached [54, 144], i.e. new interviews did not add any significant facts about the problem of achieving strategic and initiative-based engagement in this particular organization (though, other organizations might experience rather different variations of this problem).

3.2. Data analysis

Since the research question of this study addresses an insufficiently explored area of the EA discipline, the grounded theory method [54, 144] was selected as the most suitable approach to data analysis. During the data analysis, we followed the essential steps of the grounded theory method: open coding, axial coding and selective coding [30, 144].

The first step, open coding, included reading the recorded text line-by-line and identifying significant concepts and categories relevant in the context of the studied phenomenon. As part of this step, concrete lower-level codes that were deemed pertinent have been marked in the transcripts and then grouped into broader coherent concepts reflecting their overall meaning. The open coding step resulted in the list of major concepts and categories representing various direct factors preventing effective engagement as well as aggravating indirect factors. Illustrative samples of the applied open coding procedures are provided in Table 3.

The second step, axial coding, included rereading the recorded text and establishing links between various concepts and categories relevant in the context of the studied phenomenon. As part of this step, cause-and-effect relationships between the concepts that can be traced in the transcripts have been identified. The axial coding step resulted in the relationship network explaining the existing connections between all the factors and their consequences identified previously during the open coding step. Illustrative samples of the applied axial coding procedures are provided in Table 4.

The final step, selective coding, included selecting engagement as the core category and unifying all the previously established concepts, categories and relationships between them around this core category into a consistent logical picture describing the studied phenomenon. As part of this step, the overall relationship network established during the previous axial coding step has been analyzed and the most intuitive ways to represent the emerging theory have been searched. The selective coding step resulted in the holistic theoretical model explaining the influence of the identified direct and indirect negative factors on strategic and initiative-based engagement described in the next section.

The grounded theory-based analytical procedures have been performed collaboratively by the first and second authors, but the authors played different roles in the analysis process. Specifically, the initial comprehensive data analysis had been undertaken by the second author. Then, the results of the analysis had been validated independently by the first author and a number of disagreements between the authors had

Table 3
Illustrative samples of the applied open coding procedures.

Interviewee quote	Identified code(s)	Resulting factor
"Business units and divisions do whatever they want [1]. As long as they deliver their numbers, who cares. It is futile in this type of organization to run enterprise-wide architecture or to have a large centralized IT department [2], even though there are technical justifications for it. It is misaligned with the organizational fabric [3]" (CIO)	[1] Unit Independence [2] Centralized Architecture [3] Structural Misalignment	IT Governance Mismatch
"Procurement, legal, security, privacy, business… they all often have a role to play depending upon [the decision that needs to be made]. So, there are lots of stakeholders [1]. How do we engage with all of them? There is a bit of ad hoc-ness in it" (Architecture team manager)	[1] Diversity of Stakeholders	Multitude of Stakeholders
"In order to [sell the benefits architects provide], they need to understand the business [1] because they have to be able to articulate the benefits in a way that the business will understand, not in terms of technology [2] and in a way that we might define the IT benefits" (Project manager)	[1] Understanding Business [2] Communicating to Business	Insufficient Business Acumen
"We had one project on a strategic project list where architecture spent nearly twelve months with it [1] to get it to a stage where we went to RFQ [request for quotation]" (Program manager)	[1] Project Delay	Tardiness of Architects

Table 4
Illustrative samples of the applied axial coding procedures.

Interviewee quote	Relevant concepts	Identified relationship
"[We in the] application development unit have a particular way of doing things. We have our own application architects and […] we want to be able to deliver [initiatives]. We have our own methodology [1]. […] We have not really got a lot of value from the architecture team to date, so as much as possible we would like to avoid them [2] because we are going to get entangled in time-consuming activities that may not deliver the value that is needed [3]" (Program manager)	[1] Initiative-Based Context [2] Engagement Problem [3] Tardiness of Architects	Tardiness of Architects leads to problems with Initiative-Based Engagement
"[Our leaders] want enterprise architecture to get involved [1], to be able to do that strategic roadmapping [2] and be able to show that we do not need to spend 10 million dollars to upgrade Oracle financials because we are pretty [up to date]. While our CIO would like us to become more involved [3], I am skeptical about whether we will get [involved]. I hate producing documents that just sit and gather dust somewhere. [They] are articulate and well-thought-through, but, in reality, I do not know if they deliver a lot of business value [4]" (Architecture team manager)	[1] Engagement [2] Strategic Context [3] Engagement [4] Skepticism Towards Architecture	Skepticism Towards Architecture contributes to problems with Strategic Engagement
"You cannot make decisions, really important strategic decisions [1], very quickly in government, you just cannot. And I am not trying to be a bureaucrat, I am just explaining the cultural challenge of government. If I were in a business where I could bring one or two business stakeholders and these persons can make some key decisions to allow us to move forward, then that would be fantastic. But here often it has to go back to a committee, then it goes back to a working party [2] and we might need to engage with other members [3]" (Architecture team manager)	[1] Strategic Context [2] Multitude of Stakeholders [3] Engagement Problem	Multitude of Stakeholders leads to problems with Strategic Engagement

been resolved via personal communication. Additionally, a full draft of the research findings section had been validated by one of the interviewees (architect), who helped correct some factual inaccuracies in the description of the organization and improve definitions of the identified factors. These measures allowed us to minimize personal bias in data analysis inherent to the grounded theory method, though complete objectivity certainly cannot be claimed.

4. Research findings

In this section, we describe the studied organization, discuss the identified direct inhibitors of strategic and initiative-based engagement as well as the indirect aggravating factors influencing engagement, and finally present the resulting theoretical model explaining the problem of achieving engagement.

4.1. Description of the organization

The case organization referred to as GovDept (fictional name to preserve anonymity) is a major government department in one of the Australian states. GovDept is controlled by the State Government and its ministers. It is responsible for a state-wide provision of important services of a social nature to the population of the whole state. In total, GovDept employs more than 14,000 people, including around 250 IT staff.

GovDept has been formed as a result of a recent merger of two previously independent government departments with somewhat related and partially overlapping responsibilities. GovDept is a decentralized organization consisting of multiple diverse units fulfilling largely independent functions. Traditionally, different parts of GovDept worked autonomously and were rather loosely unified under common leadership.

From the technology perspective, GovDept can be considered as a rather late adopter of innovations and characterized by relative under-investment in IT, which has certain implications for both its IT landscape and respective management practices. On the one hand, GovDept's IT landscape is very heterogeneous and includes many legacy information systems and technologies some of which have been in use for decades.

"[Function one, function two, function three, etc.] are all starving for funding, starving for capacity with aging infrastructure, out-of-date systems, systems years out of support, chronic underinvestment" (CIO)

On the other hand, IT-related management practices are also rather archaic. For instance, the relationships between business and IT leaders in GovDept exhibit evident signs of "us and them" mentality, while new investments in IT are viewed by business mostly as a means to reduce costs of the existing operations.

"I think this is an artifact of the way we operated historically: the information systems branch or division was very separate from the business. In this historical context, the rest of the business is a client for IT as opposed to IT as a business partner, strategic business partner. [...] This is something that I have observed here: we seem to be pretty insular" (Project management)

GovDept has a centralized IT department responsible for developing and supporting information systems for the whole organization. The IT department is headed by the CIO and consists of four main subunits: engagement, architecture, development and service. However, the groups of IT professionals specialized in different technologies and products act largely as independent teams within their subunits.

Although the architecture function in some form existed in GovDept at least for several years, its value has been periodically questioned by the leadership. Historically, architects struggled to demonstrate their worth and deliver tangible business outcomes. They were criticized for their remoteness from the organization and considered irrelevant for the business. For this reason, the previous architecture team has been disbanded and reorganized.

"With the previous CIO, the architecture group was not seen to deliver business value. They delivered frameworks, they delivered policies, they worked at a high level with the business around their objectives, strategies and so forth, but it was not really seen as delivering capability. [As a result, the new CIO] purged the old architectural group" (Architecture team manager)

Earlier GovDept also tried to engage a rather well-known boutique EA consultancy to help establish full-fledged EA practice. Consultants worked for 2-3 months, analyzed the department and developed a number of EA artifacts which were considered as high-quality deliverables by GovDept's IT leadership. However, after the consulting engagement was finished, internal architects were largely unable to leverage these EA artifacts, embed them into regular decision-making processes and institutionalize their usage. As a result, most of the produced EA artifacts had been abandoned and shelved.

"We spent a quarter-million dollars getting [consultants] in to do an enterprise architecture model across [our department]. That was an extremely well-executed, disciplined, insightful, robust piece of work, which produced a huge body of documentation, which I think has not been used at all, tragically" (CIO)

Presently, GovDept's architecture function is governed by the architecture manager, who reports directly to the CIO, and employs four subordinate architects fulfilling the mixed roles of enterprise architects and solution architects, i.e. involved in both organization-wide and project-level planning. Different EA-related processes in GovDept have disparate levels of maturity. On the one hand, the initiative delivery process is pretty mature and followed systematically, though not always smoothly. From the perspective of EA artifacts, this process employs mostly initiative proposals, options assessments and then detailed solution designs (EA [36, 79]). Initiative-based engagement associated with the initiative delivery process encompasses architects, business analysts, functional analysts, project managers and other team members from the IT department involved in project implementation.

On the other hand, the strategic planning process is less mature and systematic. As part of this process, architects are using the business capability model, enterprise systems portfolio, roadmaps and some other EA artifacts (EA [36, 79]). Strategic engagement associated with the strategic planning process encompasses the architecture team

manager, architects and a vast circle of business stakeholders including senior managers from different units of GovDept, external auditors and commissioners, members of various government committees and even ministers themselves.

Like in most organizations [13, 22, 41, 58, 63, 78, 87, 112, 142, 147], the EA practice in GovDept does not follow recommendations of any EA frameworks, while various modeling languages are used by architects selectively when appropriate. Generally, the architecture function in GovDept can be considered as a typical low-maturity EA function, where project-level architectural practices (e.g. the use of business cases for IT initiatives and staged solution delivery methodology leveraging EA artifacts) are institutionalized, but more strategic and global architectural practices (e.g. involvement of senior business leaders and C-level architecture governance) are only emerging [77, 130].

4.2. Factors influencing engagement

The grounded theory analysis procedures described earlier identified 28 diverse factors affecting engagement between architects and other EA stakeholders in GovDept. Not all of these factors are completely new and some of them have been mentioned earlier in some or the other form among general challenges of EA practice (see Table 2). However, previously these factors have not been recognized specifically as inhibitors of engagement and have not been put into the relevant context, e.g. related to different types of engagement activities (see Table 1) with an explanation of underlying cause-and-effect mechanisms. The 28 identified factors can be grouped into three major categories: inhibitors of strategic engagement, inhibitors of initiative-based engagement and indirect aggravating factors.

4.2.1. Inhibitors of strategic engagement

As discussed above, strategic engagement represents the loose collaboration of architects and senior business decision-makers at the level of organization-wide planning (see Table 1). Of the 28 identified factors, 16 are direct inhibitors of strategic engagement in GovDept. Although some of these factors have been mentioned earlier in the existing EA literature, most of them are previously unidentified. While some factors are clearly organization-specific, most of them seem perfectly generalizable to other organizations and industries. Many factors also have a solid underlying theoretical grounding (these questions will be analyzed in detail later in the discussion section). The 16 identified inhibitors of strategic engagement can be grouped into five higher-level categories: structural factors, stakeholder factors, priority factors, financing factors and behavioral factors[3]. These factors are briefly summarized in Table 5, while their detailed description with illustrative quotes is provided in the Appendix.

4.2.2. Inhibitors of initiative-based engagement

As discussed above, initiative-based engagement represents the tight collaboration of architects and various project stakeholders at the level

---

[3] The previous studies of EA-related problems (see Table 2) proposed a number of high-level classification schemes for organizing these problems. For example, Kaisler and Armour (2017) organized EA-related problems into eight categories: design tools, methodology, modeling, management and governance, maintenance, assessment, frameworks and other challenges. Ajer and Olsen (2018) organized EA-related problems into five broad categories: (1) complexity, (2) objectives, strategy, and benefit, (3) organization, (4) people and processes and (5) understanding and trust. However, these and other existing classification schemes seem too generic and inappropriate for classifying the engagement inhibitors identified in this study in a meaningful fashion. Moreover, none of the earlier schemes distinguished strategic and initiative-based contexts as disparate areas of EA practice in a way similar to this study. For these reasons, we developed a completely new, engagement-specific classification scheme for the identified factors in a grounded theory-based manner

Table 5

Inhibitors of strategic engagement.

Category	Factor	Explanation
Structural Factors	Lack of a Clearly Defined Enterprise	The absence of clarity provokes constant debates among stakeholders regarding what the structure of the organization is and where the organization actually starts and ends
	Dynamic Organizational Structure	Periodical structural changes discourage stakeholders from discussing future visions or developing any clearly defined long-term architectural plans
	IT Governance Mismatch	Mismatching governance arrangements create tension between decentralized business governance and centralized IT governance complicating the dialog between business and IT
Stakeholder Factors	Multitude of Stakeholders	A broad circle of stakeholders makes it hard for architects to identify, involve, build relationships and reach agreements on architectural questions
	Frequent Rotation of Leadership	Rotation of leadership breaks existing relationships between stakeholders and architects and creates the need for architects to periodically reestablish these relationships anew
	Presence of External Stakeholders	External stakeholders participate in internal decision-making processes, but may not be easily reachable by architects in a way similar to regular stakeholders
Priority Factors	Overall Environmental Volatility	A rather unstable and whimsical nature of the governmental environment reduces the value of planning exercises and discourages stakeholders from participating in such efforts
	Conflicting Priorities of Stakeholders	Conflicting priorities and the absence of a shared view of the organization-wide future provokes tension and discourages stakeholders from developing common strategic plans
	Susceptibility to Urgent Needs	Excessive focus on critical urgent needs demotivates stakeholders from initiating conversations on the desired long-term future and questions the value of systematic planning
Financing Factors	Shifting Annual Budget	Unclear budgetary forecasts discourage stakeholders from discussing investment programs and questions the possibility of developing long-range plans for IT investments
	Non-Transparent Investment Funding Procedures	Poor transparency of investment procedures demotivates stakeholders from having rational conversations regarding necessary IT investments and developing investment plans
Behavioral Factors	Insufficient Business Acumen Among Architects	Due to their insufficient business competence, architects are not always able to communicate with business stakeholders in a language they can understand
	Unwillingness to Treat IT as a Business Partner	Business leaders consider architects as mere subordinates inferior to the business and are not eager to discuss strategic questions directly with architects
	Inability to Work with EA Artifacts	Due to the inability of business stakeholders to work with EA artifacts, the dialog between business and IT decision-makers becomes

Table 5 (*continued*)

Category	Factor	Explanation
		problematic and some artifacts remain unused
	Hierarchical Stratification	Hierarchical stratification between employees occupying different levels of the organizational pyramid raises communication barriers between architects and stakeholders
	Crisis-Driven Culture	The culture of "firefighting" discourages proactive, future-focused discussions among business and IT stakeholders regarding the desired state of the organization in the long run

of project implementation (see Table 1). Of the 28 identified factors, eight are direct inhibitors of initiative-based engagement in GovDept. The vast majority of these factors have not been mentioned earlier in the existing EA literature and none of them seems to be government-specific (these questions will be analyzed in detail later in the discussion section). The eight identified inhibitors of initiative-based engagement can be grouped into two higher-level categories: quality factors and teamwork factors[4]. These factors are briefly summarized in Table 6, while their detailed description with illustrative quotes is provided in the Appendix.

4.2.3. Indirect aggravating factors

Besides the 16 direct inhibitors of strategic engagement and eight direct inhibitors of initiative-based engagement described above, the grounded theory analysis procedures also identified four indirect aggravating factors affecting engagement. Unlike direct inhibitors of engagement, where an immediate causal relationship between respective factors and ensuing engagement problems is traceable rather clearly (and was explained in the corresponding sections earlier), these indirect factors seemingly do not lead to engagement problems per se since in their case no evident cause-and-effect relationships could be traced. However, these factors still have often been mentioned by the interviewees as adverse background influencers shaping an overall organizational context for the existing engagement problems. For this reason, it could be theorized that these factors do not reduce the quality of engagement on their own, but rather exacerbate the negative influence of all other direct factors on engagement. Essentially, these indirect factors can be considered as moderators that strengthen the relationship between the primary inhibitors and deteriorated engagement. These factors are briefly summarized in Table 7, while their detailed description with illustrative quotes is provided in the Appendix.

4.3. The resulting theoretical model

Combining the identified direct inhibitors of strategic and initiative-based engagement with the indirect aggravating factors and relevant cause-and-effect relationships discussed above, the findings of the study can be represented as a holistic theoretical model explaining the influence of various negative factors on engagement in the context of EA practice. The theoretical model describing the problem of achieving engagement that emerged from this study is shown in Fig. 1.

The resulting theoretical model shown in Fig. 1 explains the direct factors undermining both strategic and initiative-based engagement, indirect factors exacerbating engagement and relationships existing between these factors and the EA value realization. In particular, the inability to establish strategic and initiative-based engagement both

---

[4] As noted earlier, due to poor applicability of the problem classification schemes proposed earlier, we developed a new classification scheme in a grounded theory-based manner

Table 6
Inhibitors of initiative-based engagement.

Category	Factor	Explanation
Quality Factors	Tardiness of Architects	Due to slowness of input from architects, project managers and other team members are motivated to avoid the involvement of architects in their projects altogether
	Lack of Relevant Advice from Architects	Irrelevance of advice from architects makes their input unhelpful or useless for IT project teams contributing to the disconnection between these parties
	Insufficient Decisiveness Among Architects	Acting more as analysts or observers, than as real decision-makers, architects reduce their value proposition for IT project teams, which undermines effective communication
	Disagreements with Project Teams	Disputes between architects and project teams regarding the preferable solution implementation approaches cause tension and make the presence of architects in IT projects undesirable
	Perceived Over-Complication	Acquaintance of architects with the requirements of various legislative acts creates a false impression of adding more complexity, which alienates architects from project teams
Teamwork Factors	Poor Change Management	Organizational incoherence of business and IT-related change management processes leads to communication problems between architects and other members of project teams
	Silos within the IT Department	Organizational boundaries existing between different professional groups of IT specialists complicate cooperation and inhibit the formation of cohesive projects teams
	Insufficient Trust between Architects and Project Teams	Mistrust between architects and other members of project teams provokes conflicts within IT projects and reduces the overall quality of collaboration

Table 7
Indirect aggravating factors.

Factor	Explanation
Weariness of Constant Change	Weariness of constant change exacerbates all other direct inhibitors of engagement due to its overall demotivating effect on employees, which reduces their enthusiasm for solving the existing problems related to poor engagement as part of EA practice
History of Failed Architecture Efforts	The history of failures with architecture exacerbates all other direct inhibitors of engagement through its disappointing influence on organizational actors undermining their faith in the possibility of establishing successful EA practice
Failed Consulting Engagements	Previous failed EA consulting engagements exacerbate all other direct inhibitors of engagement due to an analogous demotivating effect on the participants of EA practice, which contributes to the overall situation of "learned helplessness"
General Skepticism Towards Architecture	The skepticism towards architecture exacerbates all other direct inhibitors of engagement via undermining the motivation of participants at different levels of the organizational hierarchy to cope with the existing engagement problems

eventually undermine the business value realized from practicing EA. Strategic engagement is itself inhibited by various structural, behavioral, financing, priority and stakeholder-related factors, whereas initiative-based engagement is inhibited by quality and teamwork-related factors. A group of aggravating factors act as moderators strengthening the detrimental influence of all inhibitors on both strategic and initiative-based engagement and some of these factors, namely the skepticism towards architecture, are themselves strengthened by the inability to realize value from practicing EA. These relationships form a self-reinforcing negative feedback loop, or a "vicious circle", where some factors lead to the poor performance of EA practice and at the same time are themselves reinforced by its poor performance.

5. Discussion of findings

This exploratory study focuses on the notion of engagement as one of the core issues of EA practice, which undeservingly received only limited attention in the existing EA literature. It aims to deepen our understanding of engagement in EA practice and explicitly distinguishes between strategic engagement, as the interaction of business leaders and architects, and initiative-based engagement, as the interaction of architects and project teams, due to their disparate nature (see Table 1). The primary outcome of this study is the list of factors undermining engagement identified from the empirical evidence using an inductive, grounded theory-based approach.

5.1. Factors undermining engagement

The negative factors undermining engagement identified in this study include both direct inhibitors of engagement and indirect factors aggravating engagement. Some of these factors have been mentioned previously in the existing EA literature among many other EA-related challenges, while other factors are newly identified. Some of these factors may be also highly organization-specific, whereas other factors can be considered as potentially generic and industry-agnostic.

5.1.1. Identified direct inhibitors of engagement
The existing, rather extensive literature on the challenges related to EA practice (see Table 2) identified numerous problems that complicate EA practices in organizations. However, the previous studies took a broader perspective on EA-related challenges and none of these studies focused specifically on the problem of engagement. Nonetheless, some of the engagement inhibitors identified in this study have been also recognized earlier as general impediments of EA practice, while other engagement inhibitors have not been mentioned previously in the EA literature.

For example, generic challenges related to communication [9, 28, 102], stakeholder involvement [28, 60, 102], conflicting interests [60], understanding EA artifacts [101], uncertain environment [60, 102] and conflicts between urgent and strategic needs [2] have been identified in the existing publications among many other challenges unrelated directly to engagement, e.g. considerable investments of time and money [101], legacy systems [2] and insufficient tools support [102]. However, such highly engagement-specific factors as a frequent rotation of leadership, non-transparent funding procedures, crisis-driven culture, hierarchical stratification, insufficient trust, tardiness of architects, the lack of relevant advice, insufficient decisiveness and poor change management (see Fig. 1) have been barely, if ever, mentioned in the
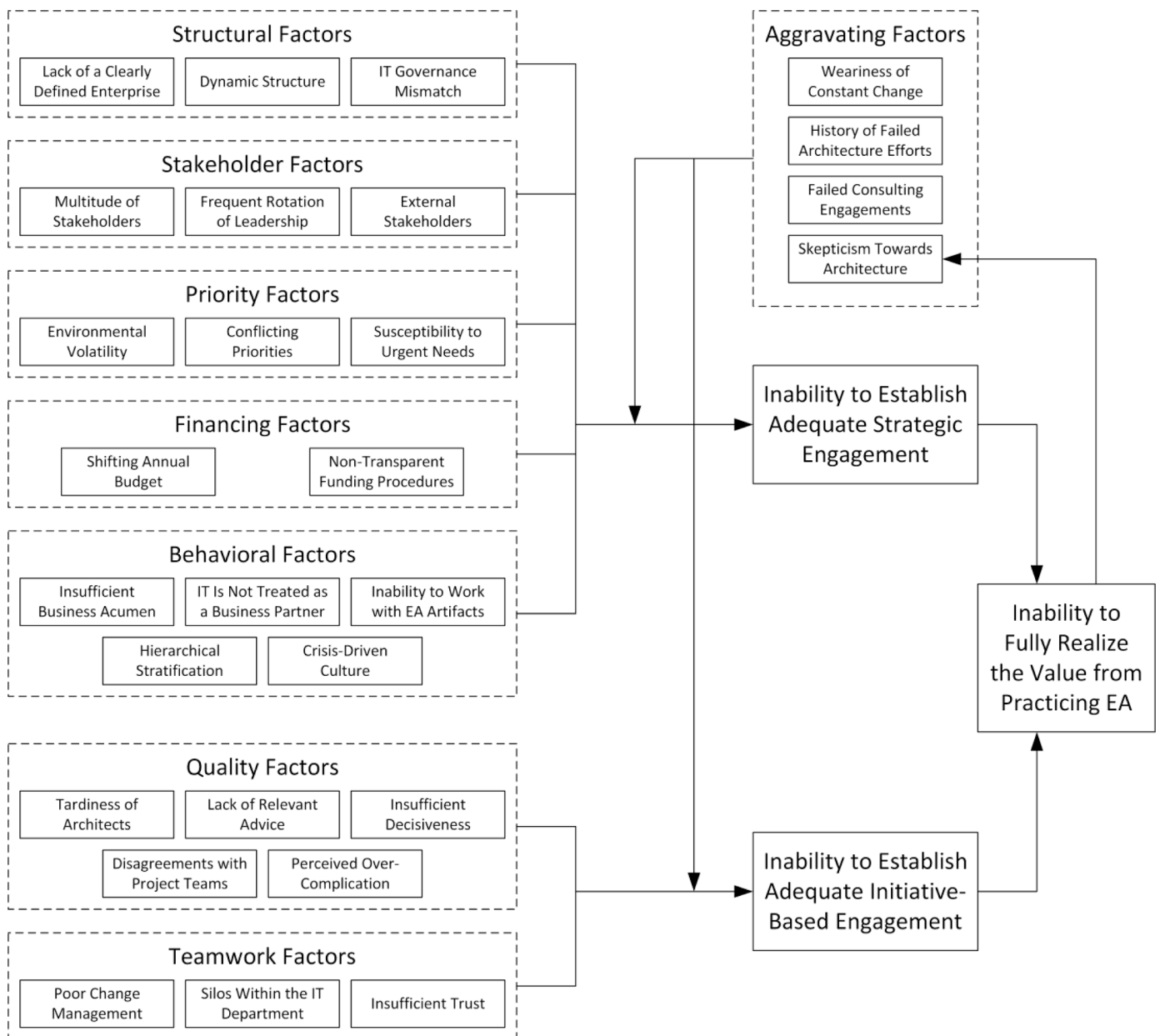
Fig. 1. The resulting theoretical model describing the problem of engagement.

existing EA literature[5]. Consequently, the identified inhibitors partially overlap with, but at the same time also refine the earlier findings on EA-related challenges with an in-depth focus specifically on engagement.

More importantly, all the existing studies of EA-related challenges do not differentiate between strategic and initiative-based engagement and, therefore, mix various challenges of a diverse nature together in a common list of issues not associated with any specific context. On the contrary, this study explicitly distinguishes strategic and initiative-based engagement as separate areas of EA practice, clearly relates the identified inhibitors to these types of engagement and puts them into the context of relevant goals, activities, artifacts and stakeholders (see Table 1).

One of the most notable findings of this study is that strategic and initiative-based engagement are actually impeded by rather different, non-overlapping factors. While some overarching problems like poor communication and insufficient stakeholder buy-in are certainly relevant to all types of engagement, other more fine-grained problems are relevant only to specific types of engagement. On the one hand, such widely recognized issues as environmental volatility and conflicting priorities are actually relevant only to strategic engagement, but irrelevant to initiative-based engagement. On the other hand, such issues as poor change management and disagreements with project teams are relevant only to initiative-based engagement. In light of the significant differences between strategic and initiative-based types of engagement (see Table 1), the fact that the identified engagement inhibitors are

---

[5] Certainly, such factors as crisis-driven culture, hierarchical stratification, insufficient trust and poor change management periodically appear as problems, pitfalls or merely undesirable features in various contexts in the organizational, managerial and IS literature. However, these factors have not been recognized previously in the EA literature specifically as inhibitors of engagement between architects and other stakeholders. In particular, none of the earlier studies of EA-related problems arguably traced and explained the existing cause-and-effect relationships between these factors and the ensuing organizational problems with EA practice

highly type-specific in nature should not look surprising.

5.1.2. Identified indirect factors aggravating engagement

This study identified four indirect factors, or moderators, strengthening the negative influence of direct factors on engagement: weariness of constant change, history of failed EA efforts and consulting engagements as well as the general skepticism towards architecture. The existing academic EA literature arguably does not discuss or even identify any of these factors as problems in relation to EA practice.

However, some of these factors are still acknowledged in industry publications on EA. For instance, regarding the historically inspired skepticism towards EA, Gartner reports that the very term "architecture" is discredited in many organizations and using some other words instead may help secure top management support [65]. Bittler and Burton [[17], p. 4] put it in the following way: "Many restarted [EA] programs find that the negative "baggage" associated with the term "EA" is too strong to overcome, and it is simply easier and more effective to call it something else". At the same time, available anecdotal evidence suggests that these problems might actually be rather widespread in the industry [17, 65, 71, 128]: "In fact, architecture has become a bad word in some companies, mostly because architects in those companies are seen as more of an obstacle than a problem solver" ([128], p. 1).

Likewise, problems with one-shot EA consulting projects similar to the one experienced by GovDept are also acknowledged in the existing industry EA literature [74, 92]. For example, Lapkin and Allega [[92], p. 3] very accurately describe these problems: "Consultants tend to treat client engagements as "projects". [...] If you and your consultant are treating EA as a project, then, typically, there comes a time when EA is declared "finished". At that point, the EA deliverables are stamped "complete", put on a shelf and (in most cases) completely ignored. [...] Taking a "project-centric" approach to the EA effort invariably leads to a significant expenditure on the part of the client for shelfware that never delivers value to the enterprise". This is exactly what happened with the EA consulting engagement in GovDept. The ability of unsuccessful consulting engagements to undermine future EA efforts in organizations is acknowledged as well: "Gartner has observed [...] clients who have derailed the EA effort (and any *subsequent* attempts) through improper use of consultants. This usually happens when the client engages a consultant to do the architecture "to them" rather than "with them". Without the active participation of the client in the EA effort, the critical link to the business is lost" ([92], p. 3).

5.1.3. Generalizability of the identified factors

Some of the identified factors undermining engagement can be fairly considered as government-specific or even as organization-specific. For example, frequent rotation of leadership and shifting annual budget represent organization-specific, or at least government-specific, factors since both of them evidently result from the political processes external to the organization, e.g. parliamentary elections and budget allocations respectively[6]. Similarly, the lack of a clearly defined enterprise arguably also represents a highly organization-specific factor since the structure of GovDept, as a governmental organization, indeed does not resemble the corporate structure of typical commercial companies. At the same

---

[6] Certainly, both rotation of leadership and adjustments of annual budgets routinely happen in private, commercial companies as well. However, in governmental organizations the detrimental influence of these two factors can arguably be much more significant at least by two different reasons. First, in governmental settings the corresponding decisions are subject to external control. They are made by decision-makers that do not belong to the organization itself (e.g. government ministers) and, thus, often come as a surprise and cannot be anticipated by internal planners. Second, both the decisions are also subject to political "whims" often dictated largely by irrational reasons (e.g. public sentiments), rather than by sound facts-based judgement, which also makes them more disruptive for internal actors

time, many of these factors seem to be rather generic and can hardly be related specifically to the studied organization. For example, such factors as IT governance mismatch, susceptibility to urgent needs and tardiness of architects have no government-specific features and may be equally applicable to any commercial companies as well.

The relative novelty and specificity of the identified factors can be best illustrated graphically by organizing all these factors in a simple taxonomy with two orthogonal dimensions: novelty and specificity. On the one hand, the novelty dimension classifies factors based on their coverage in the existing EA literature. On the other hand, the specificity dimension classifies factors based on their presumable uniqueness to the studied organization. Positions of all the identified factors in the taxonomy deduced from the discussions of their novelty and specificity provided earlier are shown schematically in Fig. 2.

Generalizations from individual case studies are widely viewed as analytic generalizations [97, 136, 168], which rely on "similarity between causal drivers in the sample and those likely to exist in other settings" ([136], p. 13). Therefore, based on the logic of analytic generalization, we argue that the knowledge claims on the factors inhibiting stakeholder engagement deduced from our revelatory case study are likely to be relevant in other public sector organizations with similar characteristics as those of our case organization. In a narrow sense, since the studied organization is a governmental organization in one of the Australian states, we believe that our findings are highly applicable to other governmental organizations in Australia and other countries with similar economic, political and technological conditions. In a broader sense, except for a number of organization-specific factors mentioned above (see Fig. 2), the resulting model is potentially generalizable to other industries and companies as well, though these companies could also have their own unique factors impeding effective engagement in their EA practices.

5.2. Inhibitors and success factors of engagement

Besides the ample literature on EA-related challenges, some authors discussed the success factors and enablers of productive engagement between architects and EA stakeholders [4, 98, 154]. Many of these factors can be considered as reciprocal to the inhibitors of engagement identified in this study. For instance, Verley [154] argues that establishing appropriate governance bodies, placing IT at the strategic business table and ensuring business accountability for IT projects, among other strategies, represent effective instruments for promoting engagement. These strategies can be considered as a natural means to address the problems of IT governance mismatch, lack of business and IT partnership and poor change management respectively (see Fig. 1). Levy [98] identifies social engagement, value-based understanding, group ownership and interpersonal skills as key success factors of engagement. These enablers correlate with such inhibitors as conflicting priorities, insufficient business acumen among architects, hierarchical stratification and silos within the IT department. Finally, Al-Kharusi et al. [4] found in the literature 12 broad areas potentially influencing engagement between architects and EA stakeholders many of which, most notably organization culture, governance, awareness, conflict of interest and stakeholders identification, resemble the respective inhibitors of engagement identified in this study, i.e. crisis-driven culture, IT governance mismatch, inability to work with EA artifacts, conflicting priorities and multitude of stakeholders.

5.3. Theoretical grounding of engagement inhibitors

Many of the engagement inhibitors identified in this study (see Fig. 1) are actually strongly grounded in the existing "grand" theories or other established streams of research. For example, such inhibitors as conflicting priorities, susceptibility to urgent needs and non-transparent funding procedures are rooted in the organizational theory and can arguably be best explained specifically by the "garbage can" model of
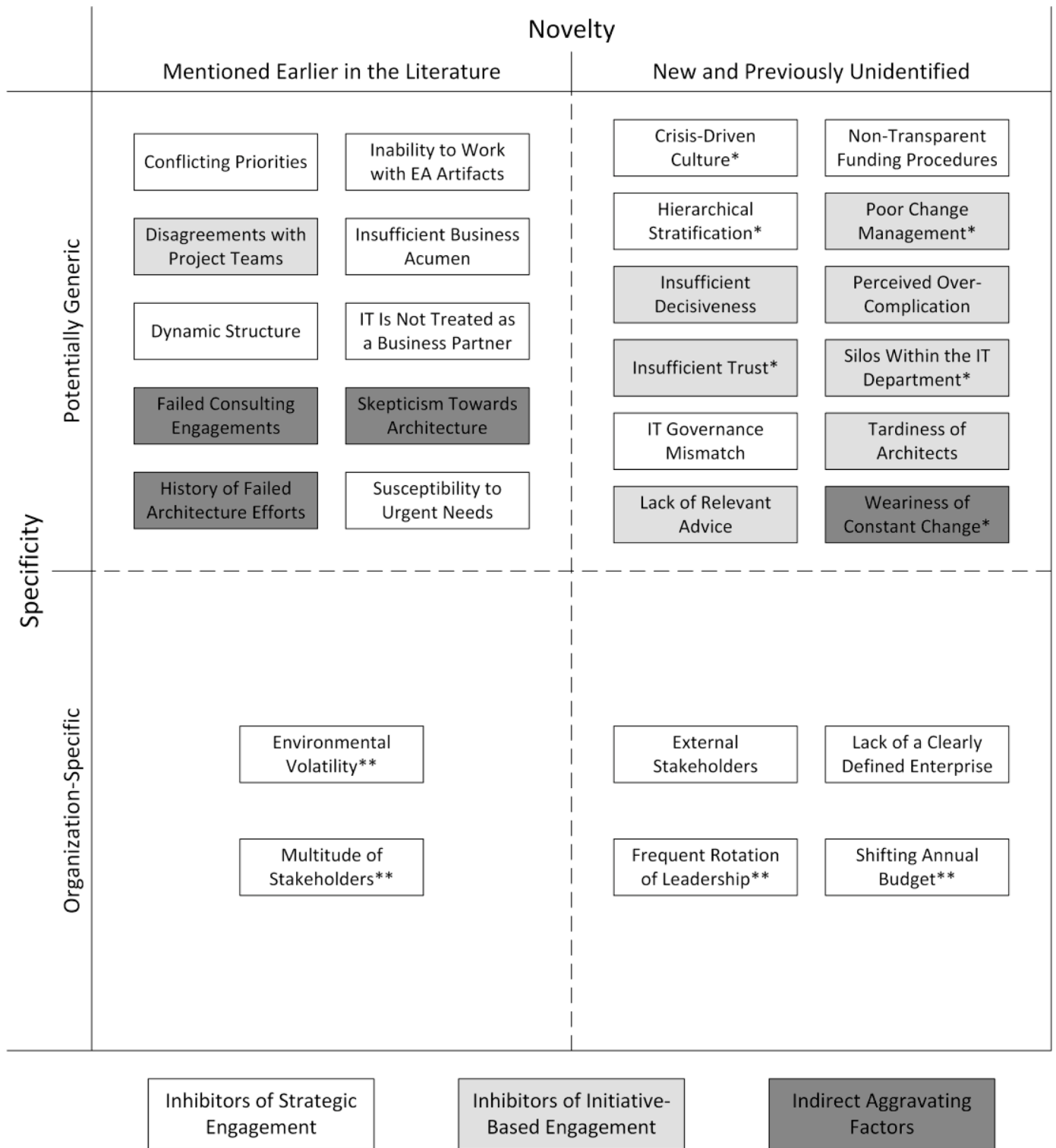
Fig. 2. Relative novelty and specificity of the identified factors.

organizational choice [29]. This model views organizations as "organized anarchies" that can be interpreted as "collections of choices looking for problems, issues and feelings looking for decision situations in which they might be aired, solutions looking for issues to which they might be an answer, and decision makers looking for work" ([29], p. 1). The absence of a clear, actionable and stable strategic direction in many companies was also widely acknowledged earlier in the broad stream of research on business and IT alignment [8, 25, 26, 84, 95, 139, 155].

Strong hierarchical stratification, as an inhibitor of engagement between architects and business executives in GovDept, can be attributed specifically to the high-power-distance culture [62]. In organizations where such cultures are prevalent "contacts between superiors and

subordinates are supposed to be initiated by the superiors only" ([62], p. 73). Some other behavioral inhibitors, most importantly the inability of business leaders to treat IT as a serious business partner and insufficient business acumen among architects, naturally ensue from the essential differences in respective occupational cultures long recognized in the literature [57, 132, 157] and improving business competence of IT professionals has been proven to increase their intention to develop a trustful partnership with business [12]. The presence of poor change management among the identified inhibitors of engagement also does not look particularly surprising taking into account that the necessity to address organizational, managerial and technological aspects of information systems together was recognized long ago [16] and is now acknowledged even in basic "IS 101" courses [94].

5.4. Vicious circle of skepticism and inability to establish engagement

One of the noteworthy features of the developed theoretical model is the feedback loop existing between the inability to establish engagement and the skepticism towards architecture (see Fig. 1). In particular, the skepticism towards architecture exacerbates the negative influence of all other engagement inhibitors and, thereby, reduces the overall quality of engagement and the ensuing value from practicing EA. At the same time, this skepticism itself is constantly reinforced by the inability to establish effective engagement and realize the full potential of EA. This feedback loop forms a certain self-reinforcing vicious circle that prevents GovDept from organizing value-adding EA practice. The existence of this or similar vicious circles in EA practice has not been recognized previously in the EA literature.

However, various feedback effects have been observed earlier in many available organizational studies. For instance, March and Sutton [[110], p. 700] explain that "there are mechanisms by which performance in one time period is affected [...] by performance in previous periods. Many of the cognitive and affective factors that seem likely to influence performance [...] are themselves likely to be influenced by prior performance". Moreover, the influence of past performance on current outcomes may be positive as well as negative. On the one hand, people affected by positive emotions tend to be more persistent, creative, helping and quicker-to-act [64]. For this reason, earlier successes may be conducive to later achievements. On the other hand, poor performance assessments are also likely to have a detrimental impact on future performance [145]. Such assessments create an atmosphere of failure, which may contribute to organizational decline [56]. Masuch [111] demonstrates that many business problems can be attributed to sophisticated vicious circles existing in organizations. Unsurprisingly, virtuous and vicious circles have been uncovered by various authors in diverse organizational initiatives, e.g. implementation of ERP systems [3] and knowledge management [51].

6. Conclusion

In the epoch of "total digitization" [159] EA, as a proven means for linking business and IT, can be viewed as an essential tool in the organizational toolkit necessary for implementing innovative digital business models and strategies [127, 129]. Digital transformation is fueled by ubiquitous digital information, virtually unlimited connectivity and massive processing capacity and is closely associated with such technologies as social networks, mobile devices, analytics, cloud and the Internet of Things [127, 129]. Digitally empowered companies are characterized by higher customer centricity, better customer experience, more intimate understanding of client needs, integrated multi-channel or even omnichannel offerings and mobile-first strategies [161, 162]. Their IT landscapes often represent flexible digitized platforms automating all routine business operations, providing reusable internal and externally exposed services through standardized application programming interfaces (APIs) and seamlessly integrated with partner companies into large business ecosystems [127, 162].

Moreover, the progressing digital business transformation requires advanced dynamic capabilities to be able to react to the emerging digital disruptions and keep up with the onward velocity of change [72, 166]. One of the most essential components enabling these dynamic capabilities and the corresponding digital business models is mature digitized platforms, or operational backbones [73, 127, 158, 160], and the architectural complexity of IT platforms is continuously expanding as these platforms become more and more comprehensive and sophisticated in nature [35]. At the same time, these digitized platforms should support flexible and scalable business processes [138], integrated customer experience and communication channels [163], leverage existing legacy systems [38] while containing the overall diversity in organizations [161].

These and other conflicting demands put additional pressure on senior business and IT managers to achieve a shared mindset and common architectural view to intertwine business and IT plans together and develop innovative digital strategies [59, 99]. This study explores the problem of achieving effective engagement between architects and other EA stakeholders in an organization, which is currently insufficiently researched. Based on a single revelatory case study, we identify 28 direct and indirect inhibitors of engagement, relate them either to strategic or to initiative-based engagement and develop a theoretical model explaining the problem of establishing engagement in EA practice. The study enhances the current understanding of stakeholder engagement in EA practice.

6.1. Contribution of this study

This study offers both theoretical and practical contributions to the EA discipline in the following ways. From the theoretical perspective, the developed model represents arguably the first available theoretical model addressing the problem of engagement in EA practice and most factors included in the model have not been identified previously by other studies of EA-related challenges. More importantly, all the existing studies of EA-related challenges do not differentiate between strategic and initiative-based engagement and, therefore, mix various challenges of a diverse nature together in a common list of issues not associated with any specific context. By contrast, this study explicitly distinguishes strategic and initiative-based engagement as separate areas of EA practice, clearly relates the identified inhibitors to these types of engagement and puts them into the context of relevant goals, activities, artifacts and stakeholders.

Furthermore, the findings of this study demonstrate that strategic and initiative-based engagement are actually impeded by rather different, non-overlapping factors. While some general, overarching problems like poor communication and stakeholder buy-in are certainly relevant to all types of engagement, other more fine-grained problems are relevant only to specific types of engagement. On the one hand, such widely recognized issues as conflicting priorities and susceptibility to urgent needs are actually relevant only to strategic engagement, but irrelevant to initiative-based engagement. On the other hand, such issues as poor change management and tardiness of architects are relevant only to initiative-based engagement. Hence, this study demonstrates a significant theoretical difference between strategic and initiative-based types of engagement and establishes the importance of this difference for an in-depth understanding of EA practice, its activities and challenges.

From the practical perspective, the developed model essentially represents a "checklist" of potential engagement problems for practitioners to watch for. This list can be used as the basis for diagnosing troubled EA practices and developing appropriate organizational corrective measures. Moreover, the presence of such factors as insufficient decisiveness and tardiness of architects among the engagement inhibitors indicates potential improvement areas and provides clear suggestions for individual architects regarding the aspects of their work to focus on.

6.2. Limitations of this study

This study has several limitations. First, it is exploratory in nature and focuses on an in-depth analysis of a single organization only. Findings from single cases cannot be considered as full-fledged theories or generalized beyond these cases to other organizations, but can be viewed only as theoretical propositions [40, 167]. However, most of the identified inhibitors of engagement seem to be generic, rather than organization-specific (see Fig. 2) and can be potentially relevant to other organizations [136]. For this reason, the resulting theoretical model, for the most part, can be valid beyond the studied organization, but still represents only an early attempt to conceptualize the engagement problem, or only the first step towards a better understanding of engagement and its practical challenges.

Second, this study leveraged grounded theory and, thus, has some limitations inherent to this analysis method. Most importantly, the grounded theory approach is inevitably associated with a certain degree of subjectivity. For instance, Strauss and Corbin [[144], p. 43] argue that "a state of complete objectivity is impossible and that in every piece of research [...] there is an element of subjectivity" (p. 43). "We emphasize that it is not possible to be completely free of bias" ([144], p. 97). Although some measures described earlier have been undertaken to reduce subjective bias (involvement of two authors in data analysis and results validation with one of the interviewees), potential subjectivity definitely represents another limitation of this study.

Furthermore, the studied case itself can be considered as a somewhat peculiar case of EA practice due to the specifics of governmental organizations, though at the current stage of EA research this proposition is purely intuitive since no studies clearly explain the differences between EA practices in different industries [76]. For example, some of the identified engagement inhibitors (e.g. the lack of a clearly defined enterprise, frequent rotation of leadership and shifting annual budget) seem to be more prominent specifically in governmental organizations. However, most other factors (e.g. IT governance mismatch, susceptibility to urgent needs, tardiness of architects and poor change management) arguably cannot be considered government-specific (see Fig. 2). Therefore, the developed theoretical model naturally has some government "flavor" and may not be perfectly valid for organizations from other industry sectors. Additionally, since the strategic planning process in the case organization was less mature than its initiative delivery process, as it is commonly observed in the industry [77, 130], it should not be surprising that the majority of the identified engagement problems relate to strategic planning. This "maturity bias" can also be viewed as a limitation of this study.

6.3. Directions for future research

Due to the limitations described above, the resulting theoretical model of engagement-related problems cannot be considered as the "ultimate" model, but rather only as an initial model that needs to be enriched, refined and generalized with observations from other organizations and industries, more research is required. In line with Seddon and Scheepers [136], all knowledge claims including the theoretical model of stakeholder engagement inhibitors developed in this study need to be tested and are subject to revision in future studies involving different contexts. In particular, future studies of organizations with different contextual factors would be helpful in testing the boundary conditions of our proposed model of the engagement problem in EA practice. Such studies would be useful in refining the boundary conditions of our knowledge claims.

Hence, we call for further empirical research in this direction. As the first step, other organizations of various sizes and operating in different industry sectors should be studied qualitatively to validate, extend and strengthen the conceptual model. These studies are likely to add new factors to the model, generalize the existing factors or remove some of them as irrelevant and refine respective theoretical constructs. Next, more advanced quantitative survey-based studies could be attempted. These studies might corroborate or refute statistically the theoretical propositions ensuing from the model on the influence of various factors on the quality of engagement as well as their mutual interrelationship.

Finally, this study identifies the problems undermining effective engagement between architects and EA stakeholders, but it does not offer any specific solutions to these problems, while the existing EA literature provides only rather general suggestions for facilitating engagement [4, 98, 154]. For this reason, we also call for future research on effective coping strategies for typical engagement problems. Longitudinal case studies of organizations that previously experienced such problems, but then found solutions and overcame them might be especially valuable for this purpose.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

Appendix

Detailed description of the identified factors

This appendix provides a detailed description of all the 28 identified factors affecting engagement between architects and other EA stakeholders in GovDept with illustrative quotes of the interviewees.

Inhibitors of strategic engagement

The 16 identified inhibitors of strategic engagement had been summarized earlier in Table 5 and are described in great detail below according to their five higher-level categories: structural factors, stakeholder factors, priority factors, financing factors and behavioral factors.

Structural factors. Structural factors represent a group of related factors undermining strategic engagement that can be attributed specifically to the organizational structure of GovDept. These factors include the lack of a clearly defined enterprise, dynamic organizational structure and IT governance mismatch.

First, the lack of a clearly defined enterprise complicates strategic engagement due to the constant debates among stakeholders regarding what the

structure of the organization is and where the organization actually starts and ends. In the case of GovDept, the very concept of enterprise is rather ill-defined. The organization consists of multiple dispersed units eventually controlled and directed by ministers of the State Government, however, without having a traditional corporate head office with C-level executives, e.g. CEO, COO and CFO.

"The concept of enterprise [here] is very ill-defined. When you say "enterprise architecture", what enterprise are you seeking to architect? And then you would have a major debate even to get to any clarity of definition of what our enterprise is [...]. If you cannot define the enterprise at the beginning, then it is futile trying to architect it in anything other than a serendipitous way" (CIO)

Second, a dynamic structure of GovDept complicates strategic engagement because the entire organization is being in a continuous state of flux. Historically, GovDept has been a subject of periodic splits, mergers and other structural manipulations initiated spontaneously from the outside. As a result, various organizational entities have been added, moved, removed and then returned back to the organizational structure in an unpredictable manner. These structural changes sometimes discourage the stakeholders from developing any clearly defined future visions or long-term architectural plans.

"It is hard to architect an enterprise when its structure, its boundaries and its purpose are continually churning" (CIO)

Third, an IT governance mismatch also complicates strategic engagement due to an evident conflict between the centralized structure of IT and the decentralized structure of the business. On the one hand, the business of GovDept traditionally was highly decentralized and included multiple loosely related functions having significant local decision-making autonomy. On the other hand, its IT department has been centralized with an intention to leverage associated economies of scale. The resulting tension between decentralized business governance and centralized IT governance, including architecture governance, undermines the quality of engagement between respective business and IT leaders.

"I think one of the challenges with enterprise architecture here is that we have a number of silo-based businesses which want to be in control of how they spend their budgets. They do not necessarily want to have a [global] enterprise architectural view that dictates to them" (Architecture team manager)

Stakeholder factors. Stakeholder factors represent a group of related factors undermining strategic engagement that can be attributed specifically to the peculiarities of EA stakeholders within GovDept. These factors include a multitude of stakeholders, frequent rotation of leadership and the presence of external stakeholders.

First, a multitude of potential EA stakeholders complicates strategic engagement due to the necessity for architects to identify, involve and build trusting relationships with all these stakeholders. Most long-term planning decisions in GovDept do not have narrow, clearly defined groups of stakeholders, but rather should be agreed upon among broader circles of decision-makers, including various working committees, compliance officers and financial overseers. The multi-stakeholder environment of GovDept makes reaching agreements on some architecturally significant questions very tough.

"There are so many stakeholders involved [in decision-making]. While it looks to be inclusive, it can actually become suffocating in getting decisions approved because there are so many parties that need to have some sort of appeasement in the process" (Architecture team manager)

Second, a frequent rotation of political leadership in GovDept undermines strategic engagement because of the need for architects to periodically establish the relationships with respective EA stakeholders anew. Moreover, original sponsors of specific planning decisions sometimes get replaced and the corresponding decisions need to be renegotiated with their new stakeholders. As a result, previously agreed and approved initiatives may be stopped, delayed or even canceled by the new leadership. Generally, an ever-changing political course complicates strategic planning in GovDept on a time horizon longer than the mandate of a current ruling party and makes a commitment to any concrete direction very hard to sustain.

"There is no way that a robust [multiyear] commitment is feasible in the public sector because you will just get two-thirds of the way through it and then the entire program will be scrapped because of a change of government or a change of leadership" (CIO)

"We had a change of government [not so long ago] and we lost our three ministers, our secretary and our deputy secretary, who were all key sponsors for one of the major transformation programs that I was involved in. So, it was just stopped for five months and it never recovered. And a number of other things did the same – they just stopped. There were projects in our budget that were the most important things [two years ago] because they were ministerial directives and we have never resumed them" (Architect)

"It is difficult to be strategic in government much further than the government of the day" (Architecture Team Manager)

"Any strategy is really for the next three years. With the new government, a lot of the stuff that we were doing before will be just stopped, all get thrown out. I am not saying we cannot do some enterprise architectural

work, but it is challenging. We do not have that longer-term view" (Architecture team manager)

Third, the presence of external stakeholders complicates strategic engagement since many internal decision-making processes in GovDept are also influenced by outsiders essentially inaccessible to architects. Various external actors, starting from ministers and ending with government auditors and members of parliament commissions, do not belong to the organization formally, but still contribute to its strategic direction. These stakeholders can hardly be involved in regular engagement processes in a way similar to internal stakeholders.

"Everyone is sniping in from the outside: the auditor general with audits of various sorts, parliamentary inquiries and royal commissions all have a different view about what should be done and what the most important problem is. And then ministers have their own independent views based on their understanding of what the community wants" (CIO)

Priority factors. Priority factors represent a group of related factors undermining strategic engagement that can be attributed specifically to

shifting priorities within GovDept. These factors include overall environmental volatility, conflicting priorities of stakeholders and susceptibility to urgent needs.

First, overall environmental volatility complicates strategic engagement in GovDept due to considerable uncertainty of the future inherent for governmental organizations controlled wholly by external forces, which are not always rational, e.g. parliamentary elections, public opinion and other political motives. A rather unstable, somewhat whimsical, nature of the governmental environment reduces the value of sound reasoning, judicious thinking and systematic planning exercises, thereby preventing stakeholders from developing meaningful long-range architectural visions.

"[Environmental volatility] is just a part of the government conditions, particularly in [our state]. But it is not dissimilar to other jurisdictions. They have periods of stability and periods of churning that are driven by planetary motions" (CIO)

Second, conflicting priorities of stakeholders in GovDept complicate strategic engagement due to the disputes regarding the most critical objectives for the whole organization. Different subunits of GovDept focused on providing different services have their own understanding of the most important problems and priorities. As a result, priorities of different units get easily consolidated only in a state of crisis. The absence of a truly shared view of the organization-wide future provokes tension between different stakeholder groups, complicates reaching agreement on strategically important questions and discourages stakeholders from creating common global far-reaching plans.

"It is just a very large, complex organization which is driven by the fact that there is a large number of professional practice groups who have their own independent views about what should be done, how it should be done and what the priorities are. It is hard in this environment to manufacture an overriding priority for everyone to focus on" (CIO)

Third, susceptibility to urgent needs also undermines strategic engagement in GovDept by devaluing any long-term planning efforts. The directives and decisions of government ministers can be driven by current discussions in media and, in some cases, may represent spontaneous reactions to the critical articles in today's morning newspapers. As a result, some unexpected needs having dubious intrinsic value can suddenly become the topmost priority for the organization. Such a focus on critical urgent needs demotivates stakeholders from initiating thoughtful conversations regarding the desired long-term future, cultivates a short-sighted mentality and questions the benefits of systematic long-range planning.

"The ministers are a little bit like children and that is not being deroga- tory, but they are very much driven by public perception. What is in the media at this point, that is what they need to adjust to" (Architecture team manager)

Financing factors. Financing factors represent a group of related factors undermining strategic engagement that can be attributed specifically to the financing processes in GovDept. These factors include a shifting annual budget and non-transparent investment funding procedures.

First, a shifting annual budget complicates strategic engagement in GovDept since the overall prospects regarding the volume of future IT in- vestments may be unclear. GovDept's annual budget is allocated from the outside by the government and might be a subject of unexpected cuts or increases due to political motives or budget crises. In some cases, these increments or decrements may be rather considerable and have direct im- plications for the IT budget. The resulting lack of a sound budgetary forecast discourages stakeholders from discussing investment programs, prevents strategic decision-makers from reaching a shared understanding of required future expenditures and questions the possibility of developing long-range plans for IT investments.

"[Minister might say:] "Do all that and then, by the way, we need you to cut the budget by 20% this year as well", for no apparent reason. That is the reality of the situation" (CIO)

"Every financial year the government says: "Here you go department, you have four billion dollars, go and deliver it with these resources". Next financial year they might say: "Well, by the way, you have three billion now". Or, they might say: "Well, these [units] are now hived off, so I need you to go and reduce your budget"" (Architecture team manager)

"I know how much money I have this financial year, but I do not know how much money the government is going to give me the next financial year. I am not in a retail or some other organization where we have a rough idea of what we are going to get" (CFO cited by architecture team manager)

Second, non-transparent investment funding procedures also complicate strategic engagement since it cannot always be anticipated in advance which IT investments might be approved and why. Even though GovDept has rather systematic investment evaluation processes and consistent approval criteria, the perceived importance of IT investments is sometimes based only on the subjective beliefs of the leaders proposing them. As a result, the approval of some IT investments still depends largely on how effectively they are pushed and "sold" to the ministers by their sponsors. In other words, IT investments are sometimes justified only by means of personal persuasion. Moreover, in some cases IT investments might be also initiated simply because some extra money is available in the budget regardless of their actual importance for the organization. Less than perfect transparency of investment initiation and approval procedures demotivates stakeholders from having rational conversations regarding necessary IT investments and discourages business and IT leaders from developing agreed investment plans for the future.

"It is market forces or survival of the fittest. This is pretty much what happens in the department. Programs get up to the degree that individual directors and executives can push them and ministers are prepared to buy them. There is some magical alignment of the forces which gets them money" (CIO)

Behavioral factors. Behavioral factors represent a group of related factors undermining strategic engagement that can be attributed specifically to the behavioral and cultural features of people in GovDept. These factors include insufficient business acumen among architects, unwillingness to treat IT as a business partner, inability to work with EA artifacts, hierarchical stratification and crisis-driven culture.

First, insufficient business acumen among architects complicates strategic engagement in GovDept since architects are not always capable of communicating with the business in a language they can understand. Specifically, architects are sometimes unable to explain the benefits of architectural planning to the business audience and to build trusting relationships with their business stakeholders. As a result, architects cannot always easily integrate EA-related activities into regular business planning processes.

"In order to [sell the benefits architects provide], they need to understand the business because they have to be able to articulate the benefits in a way that the business will understand, not in terms of technology and in a way that we might define the IT benefits" (Project manager)

Second, the unwillingness to treat IT as a full-fledged business partner undermines strategic engagement since business leaders in GovDept are not always eager to discuss strategic questions with architects. In some situations, IT is considered more as a servant than as a trusted and equal partner to the business. In other words, in GovDept IT is somewhat inferior to business. For example, IT is not represented adequately at the board level. Moreover, some business executives view IT more as a way to reduce costs, than as a driver of innovative business approaches. This attitude towards IT reduces the quality of the strategic dialog between business and IT leaders.

"This particular organizational culture is the one where they do not see IT as an enabler. [Business leaders] tend to have a perception that technology is not an enabler, but more a mandatory requirement on occasion to store information" (Architecture team manager)

Third, the inability of business stakeholders to work with EA artifacts complicates strategic engagement because establishing a meaningful dialog between business and IT based on these artifacts in some cases becomes problematic. Not all business executives in GovDept easily understand EA artifacts, even those ones that proved effective for communicating with business in other organizations like business capability models and roadmaps, and have the necessary skills to fully leverage them in strategic conversations with IT during decision-making processes. As a result, some existing EA artifacts remain largely unused and are not always able to facilitate better decision-making, while other EA artifacts are not maintained continuously.

"The business layer part that [architects] did was theoretically correct, but nobody would have regarded it as endorsed or owned or anything other than a theoretical model of how the department might conceive of its business architecture. Because actually you would struggle to find anyone in the department who has any concept of what the business architecture of the department is" (CIO)

Fourth, hierarchical stratification between employees occupying different levels of the organizational pyramid in GovDept complicates strategic engagement because it raises additional communication barriers between architects and other EA stakeholders. These barriers deteriorate the quality of vertical information exchange across the hierarchy of decision-makers. The ensuing effects make productive dialog and collaborative decision-making as part of EA practice rather problematic.

"The government is quite stratified, so interaction is surprisingly hard. [...] It is quite difficult for me to interact with [my boss's boss], for instance. I report to [my boss], [my boss] reports to [his boss], so I do not really typically go to see [my boss's boss] unless I go with [my boss]. And I chat to him if I see him in the street or downstairs in the foyer. [...] It is not really common. [Talking directly with executives] is definitely not the culture here" (Architect)

Fifth, the crisis-driven culture prevailing in some business units of GovDept also complicates strategic engagement due to the predisposition of organizational actors to respond to emerging crises instead of preparing and following some long-term plans. This culture of "firefighting" encourages quick reactions to immediate problems, but discourages proactive thinking about the possible future in advance. Another aspect of the crisis-driven culture is the tendency to ignore established processes and procedures in the face of a crisis. In light of these cultural features, institutionalizing proactive, consistent and repeatable EA-related decision-making processes in some areas of GovDept seems to be problematic.

"[In the face of a crisis everything gets done] because what happens is they throw out processes. Even if processes were there and even if they were followed, they throw them out. They are supportive of instinct. They would reward instinct versus following the book" (Program manager)

Inhibitors of initiative-based engagement

The eight identified inhibitors of initiative-based engagement had been summarized earlier in Table 6 and are described in great detail below according to their two higher-level categories: quality factors and teamwork factors.

Quality factors. Quality factors represent a group of related factors undermining initiative-based engagement that can be attributed specifically to the quality of input provided by architects to project teams in GovDept. These factors include tardiness of architects, the lack of relevant advice from architects, insufficient decisiveness among architects, disagreements with project teams and perceived over-complication.

First, the tardiness of architects complicates initiative-based engagement in GovDept since the input provided by architects is sometimes considered by IT project teams to be unacceptably slow. For this reason, project managers might be motivated to avoid the involvement of architects in IT projects altogether to be able to deliver these projects on time. The intentional desire of some project managers to implement IT projects without

architects naturally undermines the very meaning of project-level EA-related activities.

"[We in the] application development unit have a particular way of doing things. We have our own application architects and we want to be able to deliver. We have our own methodology. We have not really got a lot of value from the architecture team to date, so as much as possible we would like to avoid them because we are going to get entangled in time-consuming activities that may not deliver the value that is needed"
(Project manager)

Second, the lack of relevant advice from architects complicates initiative-based engagement in GovDept since the input provided by architects is sometimes considered by IT project teams as unhelpful and useless. Even worse, in the most extreme cases, architects are unable to provide in a timely manner any input at all. For this reason, development teams might be motivated to rely on their own designs and solutions instead of seeking advice from the architecture team. The occasional inability of architects to provide valuable recommendations contributes to the disconnection between architects and project teams.

"When the development team needs an API middleware solution, if the architecture team does not already know what it is going to be and even better has not sourced it and got it working, then [architects] should not be surprised when the development team says: "Well, you guys are useless. I need an API gateway and I have to go and get it myself. What the hell are you doing?" [...] Architecture is a consulting service which the developer teams need and if it is lacking, then they have to do it themselves" (CIO)

Third, insufficient decisiveness among architects complicates initiative-based engagement because architects in GovDept are sometimes considered by project teams more as analysts or observers, than as real decision-makers. In other words, the architecture team in some cases tends to exhibit an overly analytical and idealistic, rather than action-oriented and down-to-earth, attitude. Instead of identifying and focusing on the most reasonable implementation option, architects are sometimes trying to analyze all possible options without actually picking or recommending any of them. Moreover, in some rare cases architects may change their mind after a certain planning decision has already been made and agreed with the project team members. Such occasional indecisiveness reduces the value of cooperating with architects for IT project teams.

"It happened many times when you are trying to work with architects and they say: "Right, we will do some options". But they never make a decision. [...] Very rarely you get a recommendation, very rarely, you have to force it. [Specific recommendations from architects] are very rare"
(Program manager)

Fourth, disagreements with project teams complicate initiative-based engagement in GovDept because members of project teams are sometimes unhappy with the solutions proposed by architects. Solution designers, software developers and infrastructure engineers in some cases find the standards, technologies and approaches advocated by architects as outdated or impractical. These and other disagreements cause tension and conflicts that may erode the quality of engagement. As a result, project teams sometimes consider architects more as a burden for their projects, than as a valuable asset.

"The solution developers are saying: "Look, we have tight deadlines and we need to do authentication [...]". The architects will say: "Look, we have some authentication mechanisms that have been established [...]". And the developers will say: "Yes, but those are out-of-date, the solutions are two years out of license support. There are better ways to do it [...]". The architects are saying: "No, no, but you cannot do that because..." [...]. They have this continual tension" (CIO)

Fifth, perceived over-complication of solutions associated with the involvement of architects also deteriorates initiative-based engagement in GovDept. Unlike other project participants, architects are well-acquainted with the mandatory requirements of numerous legislative acts regulating the use of IT in governmental organizations and specifically in GovDept. For this reason, the presence of architects in project teams creates a false impression of adding an extra layer of complexity to seemingly simple IT systems. As a result, architects are sometimes undeservingly considered as blockers of simple approaches and quick solutions by other team members. This attitude essentially renders their involvement in IT projects undesirable.

"We tend to get involved and bring to their attention privacy obligations or elements of the various acts that talk about security we need to comply with. And then they feel somewhat like we become a blocker [...]. We are often reminding them almost like a teacher saying: "Well, by the way, did you know the act requires you to do X, Y and Z?"" (Architecture team manager)

Teamwork factors. Teamwork factors represent a group of related factors undermining initiative-based engagement that can be attributed specifically to the poor teamwork within IT project teams in GovDept. These factors include poor change management, silos within the IT department and insufficient trust between architects and project teams.

First, poor change management complicates initiative-based engagement in GovDept since the changes in the IT landscape are sometimes managed separately from the corresponding changes in business processes. In other words, an introduction of a new IT system in some cases is not accompanied by respective process changes. The implications of information systems in GovDept are not always considered in their full complexity from the

multifaceted organizational perspective. Specifically, an information system is sometimes viewed only as a mix of software and hardware, while the other aspects related to the ensuing process, people and culture changes are not always taken into account and addressed appropriately. This occasional incoherence between business and IT changes undermines the teamwork at the project implementation stage.

"Something that organizational change management here does not seem to have – there does not seem to be a focus on organizational change management. It is very much the technology is the silver bullet that will solve our problems, but there is not enough focus on the people and process aspects of things. It is only in the last six months or so we started to even talk about that" (Project manager)

Second, silos within the IT department complicate initiative-based engagement since different professional groups are sometimes reluctant to form cohesive project teams. The IT department in GovDept consists largely of multiple functional silos encompassing IT staff specialized in different technologies. As a result, even when collaborating on a particular IT project, these people do not always consider each other as part of a single team unified by a common goal. This siloed mindset reduces the quality of cooperation between architects and various IT specialists within project teams.

"[The issue is] where architects get involved and how they get involved. My view of projects is that you have a team and you are working as a team. It is not that it goes to the architecture group or it goes to [some other group], you have a team. […] It is not quite like that here" (Program manager)

Third, insufficient trust between architects and other members of project teams sometimes also undermines initiative-based engagement in GovDept due to the resulting conflicts within IT projects. When different parties accuse each other of low-quality work, unfulfilled commitments, wrong decisions and missed deadlines, the very feeling of trust and partnership within project teams gets undermined. Moreover, the overall moral climate in the organization suffers as well. The atmosphere of mutual blaming naturally complicates any collaborative project delivery efforts in GovDept.

"[After delaying the project for several months,] architects then would say: "This needs to be delivered now". And they would hand something over to you. […] And then in front of people, they would say: "Why the steering committee is not organized? Why this is not done? Why that is not done? […] The occasional backstabbing, [architects] tend to do that from time to time. So, I get things in writing" (Program manager)

Indirect aggravating factors

The four identified indirect factors aggravating engagement (i.e. weariness of constant change, history of failed architecture efforts, failed consulting engagements and general skepticism towards architecture) had been summarized earlier in Table 7 and are described in great detail in the paragraphs below.

First, the weariness of constant change prevailing in some areas of GovDept exacerbates all other direct inhibitors of engagement due to its overall mild demotivating effect on employees. Achieving effective engagement, as well as establishing a successful EA practice in general, requires hard work of multiple participants. However, some people working in GovDept, and especially those people working there for a long time, feel tired of ongoing bursts of change and reorganizations initiated by one government only to be stopped halfway or even fully reversed by the next government. This fatigue is manifested in the reduced tolerance to uncertainty and risk, the lack of enthusiasm for trying innovative approaches and adopting new techniques and unwillingness to exert extra efforts to achieve some improvements in the way the organization operates. As a result, some employees are not always motivated to solve the existing problems related to poor engagement as part of EA practice described earlier.

"It seems that the cultural view of staff members who have been here for a long time is: "Oh, this is the way we have done things for such a long time". It is a sort of weariness of trying something new because they have seen governments come and go. […] They basically bang their heads against the brick wall for too long. I have come across that in individual conversations with staff members on a number of occasions" (Project manager)

Second, the history of failed architecture efforts in GovDept exacerbates all other direct inhibitors of engagement due to a very similar disappointing and demotivating influence on the participants of EA practice. For instance, the previous architecture team in GovDept also had rather similar problems with engagement and suffered from the well-known "ivory tower" syndrome. It was characterized largely by the disconnection from the rest of the organization and often considered as an obstacle, rather than as a contributor. As a result, a large part of the former EA team was purged. This less than successful track record of EA initiatives undermines the faith of participants in the possibility of building working EA practice in GovDept.

"The department has always had enterprise architecture to some degree. If you go back to about 2012, there was a dedicated EA team that consisted of 3-4 guys. […] The EA team reported directly to the CIO, but they did not engage well with the business and they were judged irrelevant. […] So, EA was a bit too ivory tower, had trouble engaging, had trouble influencing" (Architect)

Third, failed consulting engagements in GovDept also exacerbate all other direct inhibitors of engagement due to an analogous demotivating effect on the participants of EA practice. The attempt to set up full-fledged EA practice undertaken earlier via involving experienced EA consultants was frustrating for the organization. With the exception of raising the motivation, enthusiasm and encouragement around EA and providing a certain initial impulse for the EA initiative, this attempt eventually resulted mostly in wasted investments, shelved architectural documents and overall

disappointment in EA. These unsuccessful relationships with EA consultancies in GovDept also contribute to the situation of "learned helplessness" in relation to EA practice.

> *"We engaged [consultants] and they delivered a fantastic artifact around the department's enterprise architectural view. [...] They started from a business capability model, essentially mapped that down to a technology and application roadmap [...]. Now, when I took this out to bring this up here, I literally had to wipe the dust off the cover"* (Architecture team manager)

Fourth, the general skepticism towards architecture in GovDept exacerbates all other direct inhibitors of engagement via undermining the motivation of participants to cope with the existing engagement problems. On the one hand, this skepticism is partially caused by the earlier historical problems with the previous EA endeavors in GovDept described above. On the other hand, and more importantly, this skepticism is also constantly reinforced by the current inability of the organization to fully realize the value of practicing EA. Moreover, the overall skepticism in GovDept encompasses not only its business leadership, but even architects themselves.

> *"Quite frankly, I am an enterprise architecture skeptic. [You can benefit from EA when you] have some clear leadership that can make decisions, that can attract and secure funding sources and allocate those in a rational way in multiyear programs, but none of those factors exist in [our department]. We do not have a robust concept of enterprise, leadership is in a continual churn at the political level and at the executive level, the basis of getting funding is a black art which is driven by interplanetary motions and Scientology"* (CIO)

References

[1] F. Ahlemann, E. Stettiner, M. Messerschmidt, C. Legner (Eds.), Strategic Enterprise Architecture Management: Challenges, Best Practices, and Future Developments, Springer, Berlin, 2012.

[2] A.K. Ajer, D.H. Olsen, Enterprise Architecture Challenges: A Case Study of Three Norwegian Public Sectors, in: P. Bednar, U. Frank, K. Kautz (Eds.), Proceedings of the 26th European Conference on Information Systems, Association for Information Systems, Portsmouth, UK, 2018, pp. 1–17.

[3] H. Akkermans, K. van Helden, Vicious and Virtuous Cycles in ERP Implementation: A Case Study of Interrelations Between Critical Success Factors, Eur. J. Inform. Syst. 11 (2002) 35–46.

[4] H. Al-Kharusi, S. Miskon, M. Bahari, Factors Influencing the Engagement Between Enterprise Architects and Stakeholders in Enterprise Architecture Development, in: P.Y.K. Chau, S.-I. Chang (Eds.), Proceedings of the 20th Pacific Asia Conference on Information Systems, Association for Information Systems, Chiayi, Taiwan, 2016, pp. 1–11.

[5] S.W. Ambler, *Enterprise Architecture: Reality Over Rhetoric* [Online]., Dr. Dobb's Journal., 2010. Available: https://web.archive.org/web/20201020205941/http://www.drdobbs.com/architecture-and-design/enterprise-architecture-reality-over-rhe/224600174 [Accessed 28 November 2020].

[6] F.J. Armour, S.H. Kaisler, Enterprise Architecture: Agile Transition and Implementation, IT Professional 3 (2001) 30–37.

[7] C.L. Azevedo, J.P.A. Almeida, M. van Sinderen, L.F Pires, Towards Capturing Strategic Planning in EA, in: S. Halle, W. Mayer (Eds.), Proceedings of the 19th IEEE International Enterprise Distributed Object Computing Conference, IEEE, Adelaide, Australia, 2015, pp. 159–168.

[8] W.R.J Baets, Aligning Information Systems with Business Strategy, J. Strat. Inform. Syst. 1 (1992) 205–213.

[9] N. Banaeianjahromi, Where Enterprise Architecture Development Fails: A Multiple Case Study of Governmental Organizations, in: M. Bajec, H. Mouratidis, B. Le Grand (Eds.), Proceedings of the 12th International Conference on Research Challenges in Information Science, IEEE, Nantes, France, 2018, pp. 1–9.

[10] N. Banaeianjahromi, K. Smolander, Understanding Obstacles in Enterprise Architecture Development, in: M. Ozturan, M. Rossi, D. Veit (Eds.), Proceedings of the 24th European Conference on Information Systems, Association for Information Systems, Istanbul, Turkey, 2016, pp. 1–15.

[11] N. Banaeianjahromi, K. Smolander, Lack of Communication and Collaboration in Enterprise Architecture Development, Information Systems Frontiers 21 (2019) 877–908.

[12] G. Bassellier, I. Benbasat, Business Competence of Information Technology Professionals: Conceptual Development and Influence on IT-Business Partnerships, MIS Quarterly 28 (2004) 673–694.

[13] D. Basten, D. Brons, EA Frameworks, Modelling and Tools, in: F. Ahlemann, E. Stettiner, M. Messerschmidt, C. Legner (Eds.), Strategic Enterprise Architecture Management: Challenges, Best Practices, and Future Developments., Springer, Berlin, 2012.

[14] P. Beijer, T. de Klerk, IT Architecture: Essential Practice for IT Business Solutions, Lulu.com, Raleigh, NC, 2010.

[15] I. Benbasat, D.K. Goldstein, M. Mead, The Case Research Strategy in Studies of Information Systems, MIS Quarterly 11 (1987) 369–386.

[16] R.I. Benjamin, E. Levinson, A Framework for Managing IT-Enabled Change, MIT Sloan Management Review 34 (1993) 23–33.

[17] R.S. Bittler, B. Burton, How to Restart and Re-energize an Enterprise Architecture Program, Gartner, Stamford, CT, 2011.

[18] S. Blomqvist, M. Halen, M. Helenius, Connecting Enterprise Architecture with Strategic Planning Processes: Case Study of a Large Nordic Finance Organization, in: E. Kornyshova (Ed.), Proceedings of the 17th IEEE Conference on Business Informatics, IEEE, Lisbon, 2015, pp. 43–50.

[19] R. Bricknall, G. Darrell, H. Nilsson, K. Pessi, Enterprise Architecture: Critical Factors Affecting Modelling and Management, in: J. Ljungberg, M. Andersson (Eds.), Proceedings of the 14th European Conference on Information Systems, Association for Information Systems, Goteborg, Sweden, 2006, pp. 1–13.

[20] M. Broadbent, P. Weill, Management by Maxim: How Business and IT Managers Can Create IT Infrastructures, MIT Sloan Management Review 38 (1997) 77–92.

[21] M. Brosius, S. Aier, K. Haki, R. Winter, Enterprise Architecture Assimilation: An Institutional Perspective, in: R. Baskerville, R. Nickerson (Eds.), Proceedings of the 39th International Conference on Information Systems, Association for Information Systems, San Francisco, CA, 2018, pp. 1–17.

[22] S. Buckl, A.M. Ernst, J. Lankes, F. Matthes, C.M. Schweda, State of the Art in Enterprise Architecture Management, Software Engineering for Business Information Systems (SEBIS), Technical University of Munich, Munich, Germany, 2009.

[23] B. Burton, Thirteen Worst Enterprise Architecture Practices, Gartner, Stamford, CT, 2009.

[24] B. Burton, Eight Business Capability Modeling Best Practices Enhance Business and IT Collaboration, Gartner, Stamford, CT, 2012.

[25] B. Campbell, Alignment: Resolving Ambiguity within Bounded Choices, in: C.-P. Wei, B. Yen (Eds.), Proceedings of the 9th Pacific Asia Conference on Information Systems, Association for Information Systems, Bangkok, 2005, pp. 656–669.

[26] Y.E. Chan, B.H. Reich, IT Alignment: What Have We Learned? J. Inform. Tech. 22 (2007) 297–315.

[27] Y.E. Chan, R. Sabherwal, J.B. Thatcher, Antecedents and Outcomes of Strategic IS Alignment: An Empirical Investigation, IEEE Trans. Eng. Manage. 53 (2006) 27–47.

[28] C.-H. Chuang, J. van Loggerenberg, Challenges Facing Enterprise Architects: A South African Perspective, in: R.H. Sprague (Ed.), Proceedings of the 43rd Hawaii International Conference on System Sciences, IEEE, Kauai, HI, 2010, pp. 1–10.

[29] M.D. Cohen, J.G. March, J.P. Olsen, A Garbage Can Model of Organizational Choice, Adm. Sci. Q. 17 (1972) 1–25.

[30] J.M. Corbin, A. Strauss, Grounded Theory Research: Procedures, Canons, and Evaluative Criteria, Qualitative Sociology 13 (1990) 3–21.

[31] M. Dale, Enterprise Architecture Implementation Governance: Managing Meaning and Action, J. Enterpr. Arch. 9 (2013) 77–88.

[32] D.D. Dang, S. Pekkola, Root Causes of Enterprise Architecture Problems in the Public Sector, in: P.Y.K. Chau, S.-I. Chang (Eds.), Proceedings of the 20th Pacific Asia Conference on Information Systems, Association for Information Systems, Chiayi, Taiwan, 2016, pp. 1–16.

[33] P. Darke, G. Shanks, M. Broadbent, Successfully Completing Case Study Research: Combining Rigour, Relevance and Pragmatism, Inform. Syst. J. 8 (1998) 273–289.

[34] T.H. Davenport, M. Hammer, T.J. Metsisto, How Executives Can Shape Their Company's Information Systems, Harv. Bus. Rev. 67 (1989) 130–134.

[35] M. de Reuver, C. Sorensen, R.C. Basole, The Digital Platform: A Research Agenda, J. Inform. Tech. 33 (2018) 124–135.

[36] EA on a Page, Enterprise Architecture on a Page (v1.3), SK Publishing, 2018. http://eaonapage.com.

[37] EAP on a Page, Enterprise Architecture Practice on a Page (v1.0), SK Publishing, 2019. http://eaonapage.com.

[38] B. Edelman, How to Launch Your Digital Platform, Harv. Bus. Rev. 93 (2015) 90–97.

[39] K.M. Eisenhardt, Building Theories from Case Study Research, Acad. Manage. Rev. 14 (1989) 532–550.

[40] K.M. Eisenhardt, M.E. Graebner, Theory Building from Cases: Opportunities and Challenges, Acad. Manag. J. 50 (2007) 25–32.

[41] T. Fallmyr, B. Bygstad, Enterprise Architecture Practice and Organizational Agility: An Exploratory Study, in: R.H. Sprague (Ed.), Proceedings of the 47th Hawaii International Conference on System Sciences, IEEE, Big Island, HI, 2014, pp. 3788–3797.

[42] FEA, A Practical Guide to Federal Enterprise Architecture, Version 1.0, Chief Information Officer Council, Springfield, VA, 2001.

[43] FEAPO, A Common Perspective on Enterprise Architecture, The Federation of Enterprise Architecture Professional Organizations (FEAPO), University Park, PA, 2013.

[44] FEAPO 2018. The Guide to Careers in Enterprise Architecture. University Park, PA: The Federation of Enterprise Architecture Professional Organizations (FEAPO).

[45] N.O. Fonstad, Expanding the Value from Outsourcing: The Role of Engagement Mechanisms, Center for Information Systems Research (CISR), MIT Sloan School of Management, Cambridge, MA, 2006.

[46] N.O. Fonstad, D. Robertson, Realizing IT-Enabled Change: The IT Engagement Model, Center for Information Systems Research (CISR), MIT Sloan School of Management, Cambridge, MA, 2004.

[47] N.O. Fonstad, D. Robertson, Transforming a Company, Project by Project: The IT Engagement Model, MIS Quarterly Executive 5 (2006) 1–14.

[48] R. Foorthuis, F. Hofman, S. Brinkkemper, R. Bos, Compliance Assessments of Projects Adhering to Enterprise Architecture, J. Database Manage. 23 (2012) 44–71.

[49] R. Foorthuis, M. van Steenbergen, S. Brinkkemper, W.A. Bruls, A Theory Building Study of Enterprise Architecture Practices and Benefits, Information Systems Frontiers 18 (2016) 541–564.

[50] R.M. Foorthuis, S. Brinkkemper, A Framework for Project Architecture in the Context of Enterprise Architecture, in: M.M. Lankhorst, P. Johnson (Eds.), Proceedings of the 2nd Trends in Enterprise Architecture Research Workshop, Telematica Instituut, St. Gallen, Switzerland, 2007, pp. 51–60.

[51] R. Garud, A. Kumaraswamy, Vicious and Virtuous Circles in the Management of Knowledge: The Case of Infosys Technologies, MIS Quarterly 29 (2005) 9–33.

[52] J.E. Gerow, V. Grover, J. Thatcher, Alignment's Nomological Network: Theory and Evaluation, Information and Management 53 (2016) 541–553.

[53] J.E. Gerow, V. Grover, J.B. Thatcher, P.L. Roth, Looking Toward the Future of IT-Business Strategic Alignment Through the Past: A Meta-Analysis, MIS Quarterly 38 (2014) 1059–1085.

[54] B.G. Glaser, A.L. Strauss, The Discovery of Grounded Theory: Strategies for Qualitative Research, Aldine, Chicago, IL, 1967.

[55] D. Greefhorst, E. Proper, Architecture Principles: The Cornerstones of Enterprise Architecture, Springer, Berlin, 2011.

[56] L. Greenhalgh, Organizational Decline, in: S.B. Bacharach (Ed.), Research in the Sociology of Organizations: A Research Annual Volume 2, JAI Press, Greenwich, CT, 1983.

[57] K. Grindley, Information Systems Issues Facing Senior Executives: The Culture Gap, J. Strat. Inform. Syst. 1 (1992) 57–62.

[58] M.K. Haki, C. Legner, F. Ahlemann, Beyond EA Frameworks: Towards an Understanding of the Adoption of Enterprise Architecture Management, in: J. Pries-Heje, M. Chiasson, J. Wareham, X. Busquets, J. Valor, S. Seiber (Eds.), Proceedings of the 20th European Conference on Information Systems, Association for Information Systems, Barcelona, Spain, 2012, pp. 1–12.

[59] A.M. Hansen, P. Kraemmergaard, L. Mathiassen, Rapid Adaptation in Digital Transformation: A Participatory Process for Engaging IS and Business Leaders, MIS Quarterly Executive 10 (2011) 175–185.

[60] M. Hauder, S. Roth, F. Matthes, C. Schulz, An Examination of Organizational Factors Influencing Enterprise Architecture Management Challenges, in: J. van Hillegersberg, E. van Heck, R. Connolly (Eds.), Proceedings of the 21st European Conference on Information Systems, Association for Information Systems, Utrecht, The Netherlands, 2013, pp. 1–12.

[61] G. Hobbs, EAM Governance and Organisation, in: F. Ahlemann, E. Stettiner, M. Messerschmidt, C. Legner (Eds.), Strategic Enterprise Architecture Management: Challenges, Best Practices, and Future Developments, Springer, Berlin, 2012.

[62] G. Hofstede, G.V. Hofstede, M. Minkov, Cultures and Organizations: Software of the Mind, 3rd Edition, McGraw-Hill Education, London, 2010.

[63] M.S. Holst, T.W. Steensen, The Successful Enterprise Architecture Effort, J. Enterpr. Arch. 7 (2011) 16–22.

[64] A.M. Isen, R.A. Baron, Positive Affect as a Factor in Organizational Behavior, in: L.L. Cummings, B.M. Staw (Eds.), Research in Organizational Behavior: An Annual Series of Analytical Essays and Critical Reviews (Volume 13)., JAI Press, Greenwich, CT, 1991.

[65] G.A. James, Findings: Elements for Successful EA in Government Agencies, Gartner, Stamford, CT, 2008.

[66] M. Janssen, Sociopolitical Aspects of Interoperability and Enterprise Architecture in e-Government, Social Science Computer Review 30 (2012) 24–36.

[67] M.B. Jusuf, S. Kurnia, Understanding the Benefits and Success Factors of Enterprise Architecture, in: T.X. Bui (Ed.), Proceedings of the 50th Hawaii International Conference on System Sciences, Association for Information Systems, Big Island, HI, 2017, pp. 4887–4896.

[68] S.H. Kaisler, F. Armour, 15 Years of Enterprise Architecting at HICSS: Revisiting the Critical Problems, in: T.X. Bui (Ed.), Proceedings of the 50th Hawaii International Conference on System Sciences, Association for Information Systems, Big Island, HI, 2017, pp. 4807–4816.

[69] S.H. Kaisler, F. Armour, M. Valivullah, Enterprise Architecting: Critical Problems, in: R.H. Sprague (Ed.), Proceedings of the 38th Hawaii International Conference on System Sciences, IEEE, Big Island, HI, 2005, pp. 1–10.

[70] L. Kappelman, T. McGinnis, A. Pettite, A. Sidorova, Enterprise Architecture: Charting the Territory for Academic Research, in: I. Benbasat, A.R. Montazemi (Eds.), Proceedings of the 14th Americas Conference on Information Systems, Association for Information Systems, Toronto, Canada, 2008, pp. 1–10.

[71] L.A. Kappelman, The Pioneers of Enterprise Architecture: A Panel Discussion, in: L.A. Kappelman (Ed.), The SIM Guide to Enterprise Architecture, CRC Press, Boca Raton, FL, 2010.

[72] J. Karimi, Z. Walter, The Role of Dynamic Capabilities in Responding to Digital Disruption: A Factor-Based Study of the Newspaper Industry, J. Manage. Inform. Syst. 32 (2015) 39–81.

[73] P. Keen, R. Williams, Value Architectures for Digital Business: Beyond the Business Model, MIS Quarterly 37 (2013) 643–648.

[74] P. Kemp, J. McManus, Whither Enterprise Architecture? ITNOW Computing Journal 51 (2009) 20–21.

[75] S. Kotusev, Conceptual Model of Enterprise Architecture Management, Int. J. Cooperat. Inform. Syst. 26 (2017) 1–36.

[76] S. Kotusev, Enterprise Architecture: What Did We Study? Int. J. Cooperat. Inform. Syst. 26 (2017) 1–84.

[77] S. Kotusev, The Practice of Enterprise Architecture: A Modern Approach to Business and IT Alignment, SK Publishing, Melbourne, Australia, 2018.

[78] S. Kotusev, TOGAF-Based Enterprise Architecture Practice: An Exploratory Case Study, Communications of the Association for Information Systems 43 (2018) 321–359.

[79] S. Kotusev, Enterprise Architecture and Enterprise Architecture Artifacts: Questioning the Old Concept in Light of New Findings, J. Inform. Tech. 34 (2019) 102–128.

[80] S. Kotusev, *Fake and Real Tools for Enterprise Architecture: The Zachman Framework and Business Capability Model* [Online], Enterprise Architecture Professional Journal (EAPJ), 2019. Available: https://eapj.org/fake-and-real-tools-for-enterprise-architecture/ [Accessed 21 August 2019].

[81] S. Kotusev, *Enterprise Architecture: Forget Systems Thinking, Improve Communication* [Online], British Computer Society (BCS), 2020. Available: https://www.bcs.org/content-hub/enterprise-architecture-forget-systems-thinking-improve-communication/ [Accessed 13 October 2020].

[82] S. Kotusev, The Hard Side of Business and IT Alignment, IT Professional 22 (2020) 47–55.

[83] S. Kotusev, S. Kurnia, R. Dilnutt, Roles of Different Artifacts in Enterprise Architecture Practice: An Exploratory Study, in: E. Karahanna, G. Oestreicher-Singer, S. Sarker (Eds.), Proceedings of the 41st International Conference on Information Systems, Association for Information Systems, Hyderabad, India, 2020, pp. 1–17.

[84] S. Kotusev, S. Kurnia, R. Dilnutt, P. Taylor, Can Enterprise Architecture Be Based on the Business Strategy? in: T.X. Bui (Ed.), Proceedings of the 53rd Hawaii International Conference on System Sciences University of Hawaii at Manoa, Maui, HI, 2020, pp. 5613–5622.

[85] S. Kotusev, M. Singh, I. Storey, Consolidating Enterprise Architecture Management Research, in: T.X. Bui, R.H. Sprague (Eds.), Proceedings of the 48th Hawaii International Conference on System Sciences, IEEE, Kauai, HI, 2015, pp. 4069–4078.

[86] S. Kotusev, M. Singh, I. Storey, Investigating the Usage of Enterprise Architecture Artifacts, in: J. Becker, J. vom Brocke, M. de Marco (Eds.), Proceedings of the 23rd European Conference on Information Systems, Association for Information Systems, Munster, Germany, 2015, pp. 1–12.

[87] S. Kotusev, M. Singh, I. Storey, Enterprise Architecture Practice in Retail: Problems and Solutions, J. Enterpr. Arch. 12 (2016) 28–39.

[88] S. Kurnia, S. Kotusev, R. Dilnutt, P. Taylor, G. Shanks, S.Artifacts Milton, Activities, Benefits and Blockers: Exploring Enterprise Architecture Practice in Depth, in: T.X. Bui (Ed.), Proceedings of the 53rd Hawaii International Conference on System Sciences, University of Hawaii at Manoa, Maui, HI, 2020, pp. 5583–5592.

[89] M. Lange, J. Mendling, J. Recker, An Empirical Analysis of the Factors and Measures of Enterprise Architecture Management Success, Eur. J. Inform. Syst. 25 (2016) 411–431.

[90] M.M. Lankhorst, D.A. Quartel, M.W. Steen, Architecture-Based IT Portfolio Valuation, in: F. Harmsen, E. Proper, F. Schalkwijk, J. Barjis, S. Overbeek (Eds.), Proceedings of the 2nd Working Conference on Practice-Driven Research on Enterprise Transformation, Springer, Delft, The Netherlands, 2010, pp. 78–106.

[91] J. Lapalme, Three Schools of Thought on Enterprise Architecture, IT Professional 14 (2012) 37–43.

[92] A. Lapkin, P. Allega, Ten Criteria for Choosing an External Service Provider for Your EA Effort, Gartner, Stamford, CT, 2010.

[93] A. Lapkin, P. Allega, B. Burke, B. Burton, R.S. Bittler, R.A. Handler, G.A. James, B. Robertson, D. Newman, D. Weiss, R. Buchanan, N. Gall, Gartner Clarifies the Definition of the Term 'Enterprise Architecture, Gartner, Stamford, CT, 2008.

[94] K.C. Laudon, J.P. Laudon, Management Information Systems: Managing the Digital Firm, 13th Edition, Pearson Education Limited, Boston, MA, 2013.

[95] A.L. Lederer, A.L. Mendelow, Coordination of Information Systems Plans with Business Plans, J. Manage. Inform. Syst. 6 (1989) 5–19.

[96] A.S. Lee, A Scientific Methodology for MIS Case Studies, MIS Quarterly 13 (1989) 33–50.

[97] A.S. Lee, R.L. Baskerville, Generalizing Generalizability in Information Systems Research, Inf. Syst. Res. 14 (2003) 221–243.

[98] M. Levy, Shelfware' or Strategic Alignment? An Enquiry into the Design of Enterprise Architecture Programs, in: E. McLean, R. Watson, T. Case (Eds.), Proceedings of the 20th Americas Conference on Information Systems, Association for Information Systems, Savannah, GA, 2014, pp. 1–12.

[99] W. Li, K. Liu, M. Belitski, A. Ghobadian, N. O'Regan, e-Leadership Through Strategic Alignment: An Empirical Study of Small- and Medium-Sized Enterprises in the Digital Age, J. Inform. Tech. 31 (2016) 185–206.

[100] J. Lohe, C. Legner, J. Pries-Heje, M. Chiasson, J. Wareham, X. Busquets, From Enterprise Modelling to Architecture-Driven IT Management? A Design Theory, in: J. Valor, S. Seiber (Eds.), Proceedings of the 20th European Conference on Information Systems, Association for Information Systems, Barcelona, Spain, 2012, pp. 1–13.

[101] J. Lohe, C. Legner, Overcoming Implementation Challenges in Enterprise Architecture Management: A Design Theory for Architecture-Driven IT Management (ADRIMA), Information Systems and e-Business Management 12 (2014) 101–137.

[102] C. Lucke, S. Krell, U. Lechner, Critical Issues in Enterprise Architecting - A Literature Review, in: M. Santana, J.N. Luftman, A.S. Vinze (Eds.), Proceedings of the 16th Americas Conference on Information Systems, Association for Information Systems, Lima, 2010, pp. 1–11.

[103] J. Luftman, T. Brier, Achieving and Sustaining Business-IT Alignment, Calif. Manage. Rev. 42 (1999) 109–122.

[104] J. Luftman, R. Kempaiah, E. Nash, Key Issues for IT Executives 2005, MIS Quarterly Executive 5 (2006) 81–99.

[105] J. Luftman, K. Lyytinen, T. Ben-Zvi, Enhancing the Measurement of Information Technology (IT) Business Alignment and Its Influence on Company Performance, J. Inform. Tech. 32 (2017) 26–46.

[106] J. Luftman, E. McLean, Key Issues for IT Executives, MIS Quarterly Executive 3 (2004) 89–104.

[107] J. Luftman, R. Papp, T. Brier, Enablers and Inhibitors of Business-IT Alignment, Communications of the Association for Information Systems 1 (1999) 1–33.

[108] J. Lux, F. Ahlemann, Embedding EAM into the Project Life Cycle, in: F. Ahlemann, E. Stettiner, M. Messerschmidt, C. Legner (Eds.), Strategic Enterprise Architecture Management: Challenges, Best Practices, and Future Developments, Springer, Berlin, 2012.

[109] G. Makiya, Integrating Enterprise Architecture and IT Portfolio Management Processes, J. Enterpr. Arch. 4 (2008) 27–40.

[110] J.G. March, R.I. Sutton, Organizational Performance as a Dependent Variable, Organization Science 8 (1997) 698–706.

[111] M. Masuch, Vicious Circles in Organizations, Adm. Sci. Q. 30 (1985) 14–33.

[112] W.A. Molnar, H.A. Proper, Engineering an Enterprise: Practical Issues of Two Case Studies from the Luxembourgish Beverage and Tobacco Industry, in: F. Harmsen, H.A. Proper (Eds.), Proceedings of the 6th Working Conference on Practice-Driven Research on Enterprise Transformation, Springer, Utrecht, The Netherlands, 2013, pp. 76–91.

[113] A. Mondorf, M. Wimmer, Contextual Components of an Enterprise Architecture Framework for Pan-European e-Government Services, in: T.X. Bui (Ed.), Proceedings of the 50th Hawaii International Conference on System Sciences, Association for Information Systems, Big Island, HI, 2017, pp. 2933–2942.

[114] S. Murer, B. Bonati, F.J. Furrer, Managed Evolution: A Strategy for Very Large Information Systems, Springer, Berlin, 2011.

[115] R. Nath, Aligning MIS with the Business Goals, Information and Management 16 (1989) 71–79.

[116] E. Niemi, Enterprise Architecture Stakeholders - A Holistic View, in: J. A. Hoxmeier, S. Hayne (Eds.), Proceedings of the 13th Americas Conference on Information Systems, Association for Information Systems, Keystone, CO, 2007, pp. 3669–3676.

[117] E. Niemi, S. Pekkola, Using Enterprise Architecture Artefacts in an Organisation, Enterprise Information Systems 11 (2017) 313–338.

[118] T. Parker, T. Brooks, Which Comes First, Strategy or Architecture? J. Enterpr. Arch. 4 (2008) 46–57.

[119] D.S. Preston, E. Karahanna, Antecedents of IS Strategic Alignment: A Nomological Network, Inf. Syst. Res. 20 (2009) 159–179.

[120] D. Quartel, M.W. Steen, M.M. Lankhorst, Application and Project Portfolio Valuation Using Enterprise Architecture and Business Requirements Modelling, Enterprise Information Systems 6 (2012) 189–213.

[121] F. Radeke, Awaiting Explanation in the Field of Enterprise Architecture Management, in: M. Santana, J.N. Luftman, A.S. Vinze (Eds.), Proceedings of the 16th Americas Conference on Information Systems, Association for Information Systems, Lima, 2010, pp. 1–10.

[122] F. Radeke, C. Legner, Embedding EAM into Strategic Planning, in: F. Ahlemann, E. Stettiner, M. Messerschmidt, C. Legner (Eds.), Strategic Enterprise Architecture Management: Challenges, Best Practices, and Future Developments, Springer, Berlin, 2012.

[123] F. Rahimi, J. Gotze, C. Moller, Enterprise Architecture Management: Toward a Taxonomy of Applications, Communications of the Association for Information Systems 40 (2017) 120–166.

[124] B.H. Reich, I. Benbasat, Factors that Influence the Social Dimension of Alignment Between Business and Information Technology Objectives, MIS Quarterly 24 (2000) 81–113.

[125] G. Riempp, S. Gieffers-Ankel, Application Portfolio Management: A Decision-Oriented View of Enterprise Architecture, Information Systems and e-Business Management 5 (2007) 359–378.

[126] J.W. Ross, Enterprise Architecture: Depicting a Vision of the Firm, Center for Information Systems Research (CISR), MIT Sloan School of Management, Cambridge, MA, 2004.

[127] J.W. Ross, C.M. Beath, M. Mocker, Designed for Digital: How to Architect Your Business for Sustained Success, MIT Press, Cambridge, MA, 2019.

[128] J.W. Ross, M. Mocker, I. Sebastian, Architect Your Business - Not Just IT!, Center for Information Systems Research (CISR), MIT Sloan School of Management, Cambridge, MA, 2014.

[129] J.W. Ross, I.M. Sebastian, C. Beath, M. Mocker, N.O. Fonstad, K.G. Moloney, Designing and Executing Digital Strategies, in: B. Fitzgerald, J. Mooney (Eds.), Proceedings of the 37th International Conference on Information Systems, Association for Information Systems, Dublin, 2016, pp. 1–17.

[130] J.W. Ross, P. Weill, D.C. Robertson, Enterprise Architecture as Strategy: Creating a Foundation for Business Execution, Harvard Business School Press, Boston, MA, 2006.

[131] P. Saint-Louis, M.C. Morency, J. Lapalme, Examination of Explicit Definitions of Enterprise Architecture, International Journal of Engineering Business Management 11 (2019) 1–18.

[132] E.H. Schein, Three Cultures of Management: The Key to Organizational Learning, MIT Sloan Management Review 38 (1996) 9–20.

[133] C. Schmidt, P. Buxmann, Outcomes and Success Factors of Enterprise IT Architecture Management: Empirical Insight from the International Financial Services Industry, Eur. J. Inform. Syst. 20 (2011) 168–185.

[134] M. Schoenherr, Towards a Common Terminology in the Discipline of Enterprise Architecture, in: G. Feuerlicht, W. Lamersdorf (Eds.), Proceedings of the 3rd Trends in Enterprise Architecture Research Workshop, Springer, Sydney, Australia, 2008, pp. 400–413.

[135] J. Scott, Business Capability Maps: The Missing Link Between Business Strategy and IT Action, Architecture and Governance Magazine 5 (2009) 1–4.

[136] P.B. Seddon, R. Scheepers, Towards the Improved Treatment of Generalization of Knowledge Claims in IS Research: Drawing General Conclusions from Samples, Eur. J. Inform. Syst. 21 (2012) 6–21.

[137] V. Seppanen, J. Heikkila, K. Liimatainen, Key Issues in EA-Implementation: Case Study of Two Finnish Government Agencies, in: B. Hofreiter, H. Werthner (Eds.), Proceedings of the 11th IEEE Conference on Commerce and Enterprise Computing, IEEE, Vienna, 2009, pp. 114–120.

[138] S.K. Sia, C. Soh, P. Weill, How DBS Bank Pursued a Digital Business Strategy, MIS Quarterly Executive 15 (2016) 105–121.

[139] J.A.A. Sillince, C.E.B Frost, Operational, Environmental and Managerial Factors in Non-Alignment of Business Strategies and IS Strategies for the Police Service in England and Wales, Eur. J. Inform. Syst. 4 (1995) 103–115.

[140] D. Simon, K. Fischbach, D. Schoder, An Exploration of Enterprise Architecture Research, Communications of the Association for Information Systems 32 (2013) 1–72.

[141] D. Simon, K. Fischbach, D. Schoder, Enterprise Architecture Management and Its Role in Corporate Strategic Management, Information Systems and e-Business Management 12 (2014) 5–42.

[142] H.A. Smith, R.T. Watson, P. Sullivan, Delivering an Effective Enterprise Architecture at Chubb Insurance, MIS Quarterly Executive 11 (2012) 75–85.

[143] S.H. Spewak, S.C. Hill, Enterprise Architecture Planning: Developing a Blueprint for Data, Applications and Technology, Wiley, New York, NY, 1992.

[144] A.L. Strauss, J.M. Corbin, Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory, 2nd Edition, Sage, Thousand Oaks, CA, 1998.

[145] R.I. Sutton, A.L. Callahan, The Stigma of Bankruptcy: Spoiled Organizational Image and Its Management, Acad. Manag. J. 30 (1987) 405–436.

[146] P.P. Tallon, A. Pinsonneault, Competing Perspectives on the Link Between Strategic Information Technology Alignment and Organizational Agility: Insights from a Mediation Model, MIS Quarterly 35 (2011) 463–486.

[147] T. Tamm, P.B. Seddon, G. Shanks, P. Reynolds, K.M. Frampton, How an Australian Retailer Enabled Business Transformation Through Enterprise Architecture, MIS Quarterly Executive 14 (2015) 181–193.

[148] M. Tarafdar, S. Qrunfleh, IT-Business Alignment: A Two-Level Analysis, Information Systems Management 26 (2009) 338–349.

[149] T.S. Teo, J.S. Ang, Critical Success Factors in the Alignment of IS Plans with Business Plans, Int. J. Inf. Manage. 19 (1999) 173–185.

[150] S. Thornton, Understanding and Communicating with Enterprise Architecture Users, in: P. Saha (Ed.), Handbook of Enterprise Systems Architecture in Practice, Information Science Reference, Hershey, PA, 2007.

[151] B. van der Raadt, M. Bonnet, S. Schouten, H. van Vliet, The Relation Between EA Effectiveness and Stakeholder Satisfaction, Journal of Systems and Software 83 (2010) 1954–1969.

[152] B. van der Raadt, S. Schouten, H. van Vliet, Stakeholder Perception of Enterprise Architecture, in: R. Morrison, D. Balasubramaniam, K. Falkner (Eds.), Proceedings of the 2nd European Conference on Software Architecture, Springer, Paphos, Cyprus, 2008, pp. 19–34.

[153] B. van der Raadt, H. van Vliet, Designing the Enterprise Architecture Function, in: S. Becker, F. Plasil, R. Reussner (Eds.), Quality of Software Architectures. Models and Architectures, Springer, Berlin, 2008.

[154] G.L. Verley, Improving Stakeholder Communications and IT Engagement: A Case Study Perspective, in: P. Saha (Ed.), Handbook of Enterprise Systems Architecture in Practice, Information Science Reference, Hershey, PA, 2007.

[155] M.R. Vitale, B. Ives, C.M. Beath, Linking Information Technology and Corporate Strategy: An Organizational View, in: L. Maggi, R.W. Zmud, J.C. Wetherbe (Eds.), Proceedings of the 7th International Conference on Information Systems, Association for Information Systems, San Diego, CA, 1986, pp. 265–276.

[156] R. Wagter, M. van den Berg, J. Luijpers, M. van Steenbergen, Dynamic Enterprise Architecture: How to Make It Work, Wiley, Hoboken, NJ, 2005.

[157] J. Ward, J. Peppard, Reconciling the IT/Business Relationship: A Troubled Marriage in Need of Guidance, J. Strat. Inform. Syst. 5 (1996) 37–65.

[158] P. Weill, J.W. Ross, A. Quaadgras, Achieving Superior Value from Digitization: The MIT CISR Value Framework, Center for Information Systems Research (CISR), MIT Sloan School of Management, Cambridge, MA, 2010.

[159] P. Weill, S.L. Woerner, Managing Total Digitization: The Next Frontier, Center for Information Systems Research (CISR), MIT Sloan School of Management, Cambridge, MA, 2013.

[160] P. Weill, S.L. Woerner, Optimizing Your Digital Business Model, MIT Sloan Management Review 54 (2013) 71–78.

[161] P. Weill, S.L. Woerner, Is Your Company Ready for a Digital Future? MIT Sloan Management Review 59 (2018) 21–25.

[162] P. Weill, S.L. Woerner, What's Your Digital Business Model?. Six Questions to Help You Build the Next-Generation Enterprise Harvard Business School Press, Boston, MA, 2018.

[163] G. Westerman, D. Bonnet, Revamping Your Business Through Digital Transformation, MIT Sloan Management Review 56 (2015) 10–13.

[164] G. Westerman, D. Bonnet, A. McAfee, Leading Digital: Turning Technology into Business Transformation, Harvard Business School Press, Boston, MA, 2014.

[165] A.A. Yayla, Q. Hu, The Impact of IT-Business Strategic Alignment on Firm Performance in a Developing Country Setting: Exploring Moderating Roles of Environmental Uncertainty and Strategic Orientation, Eur. J. Inform. Syst. 21 (2012) 373–387.

[166] A. Yeow, C. Soh, R. Hansen, Aligning with New Digital Strategy: A Dynamic Capabilities Approach, J. Strat. Inform. Syst. 27 (2018) 43–58.

[167] R.K. Yin, Case Study Research: Design and Methods, 3rd Edition, Sage, Thousand Oaks, CA, 2003.

[168] R.K. Yin, Case Study Research and Applications: Design and Methods, 6th Edition, Sage, Los Angeles, CA, 2017.

[169] T. Ylimaki, Potential Critical Success Factors for Enterprise Architecture, J. Enterpr. Arch. 2 (2006) 29–40.

[170] J.A. Zachman, Enterprise Architecture: The Issue of the Century, Database Programming and Design 10 (1997) 44–53.