Image building in the information governance discourse: Steps to economies of meaning
Beijer, P.

Citation for published version (APA):
Chapter 2 - Research Approach

‘Designing a future is fundamentally different from describing and explaining the present (van Aken & Romme, 2010, p. 2).’

‘[C]ase study has its own rigor, different to be sure, but no less strict than the rigor of quantitative models. The advantage of the case study is that it can “close in” on real-life situations and test views directly in relation to phenomena as they unfold in practice (Flyvbjerg, 2006, p. 235).’
Introduction

To develop an instrument that operationalizes an enhanced concept of image-building for information governance, I have conducted a design-oriented study. In this chapter, I will discuss the philosophical foundation of the design-oriented approach and develop the arguments why this approach fits the research objectives. To do this I will first discuss aspects of qualitative research that result in applying design-science research complemented with the case-study concept in order to develop and evaluate the instrument. Second, I will discuss design-science research and the case-study concept in the details necessary to underpin the choice for this approach. Finally, I will present the research process that I have followed in applying the concepts mentioned.

There are two key ideas this chapter presents. First, why design-science research is an approach that develops legitimate research results by appropriately addressing the classical rigor-relevance dilemma, and why design-science research better fits this inquiry than action research. Second, how the case-study method is appropriate for evaluation of a design. The actual setup of the case studies, used in this research, is beyond the scope of this chapter; the introduction to the actual evaluative case studies in chapter 6 will discuss this.

This chapter builds up as follows: First, I will discuss qualitative research, followed by a discussion on design-science research. Then, I will visit the case-study concept, after which I present the research process. A summary closes this chapter.

Qualitative research

In order to obtain scientifically valid research results, the approach and methods for the inquiry and data analysis must be in line with the assumptions determined by the philosophical foundation of the research. The interpretive research paradigm is the underlying assumption for the epistemology that guides the research. In general, interpretive studies ‘attempt to understand phenomena through the meanings that people assign to them (Myers, 1997, p. 4).’ Since I am trying to understand whether it is possible to enhance the concept of image building to practice information governance in the contemporary information society, the interpretive research paradigm seems most appropriate.

‘A research method is a strategy of inquiry which moves from the underlying philosophical assumptions to research design and data collection (ibid.).’ The strategy used for this research is design-science research (DSR) to design the instrument, complemented with the case-study method to evaluate the usefulness of the instrument (e.g. van Aken, 2004; van Aken & Romme, 2010; Baskerville, 2008; Hevner & Chatterjee, 2010; Peffers, Tuunanen, Rothenberger & Chatterjee, 2007;
Conducting a case study is relevant when ‘a “how” or “why” question is being asked about a contemporary set of events over which the investigator has little or no control (Yin, 2003, p. 9).’ The case-study criteria certainly apply to the nature of this inquiry as the central research question investigates how we can enhance image building in the discourse of information governance.

A core element of the research is the development of an instrument that operationalizes image-building enhancements in the information governance discourse. This calls for a research approach that creates valid knowledge from actual design and evaluation activities. At first thought, action research (AR) seemed promising, but a closer look at DSR shows that it better accommodates the objective of designing and evaluating an artifact – the instrument. Although some see a great deal of overlap and similarity between AR and DSR (e.g. Järvinen, 2007; Lindgren, Henfridsson & Schultze, 2004), there are distinct differences (Livari & Venable, 2009; Cole, Purao, Rossi & Sein, 2005; Baskerville, 2008; Peffers et al., 2007). First, the AR paradigm does not explicitly aim at developing valid knowledge that is transferrable to other contexts, because it is situational focused. Second, AR emphasizes on change, assuming that observing the effects of intervening in complex processes produces knowledge; a two-step process that starts with a collaborative analysis followed by collaborative change (Baskerville & Myers, 2004; Baskerville, 2001). DSR, on the other hand, aims at creating valid knowledge more from the development process itself than from interventions as with AR. Peffers et al. (2007) have argued that AR and DSR have different conceptual origins. DSR ‘comes from a history of design as a component of engineering and computer science research, while AR originates from the concept of the researcher as an “active participant” in solving practical problems in the course of studying them in organizational contexts (ibid., p. 72)’. With the DSR paradigm, the development activities of my pursued instrument, become an intrinsic part of the research and should produce valuable knowledge.

Following van Aken (2004), the research classifies as social-system research, because it develops an instrument to understand and influence the discourse in information governance – write, speak, or think about informational issues in the semiotic order. From the DSR perspective, the instrument is the design proposition, and I will use this instrument in a series of small case studies to evaluate the proposition. The evaluation of the proposition concerns how – not what – governing actors discuss their governing images, which build up in the contemporary

---

8 ‘Design science research is a research paradigm in which a designer answers questions relevant to human problems via the creation of innovative artifacts, thereby contributing new knowledge to the body of scientific evidence. The designed artifacts are both useful and fundamental in understanding the problem (Hevner & Chatterjee, 2010).’ Writers on design-science research have used different terms such as design research, design science, or design-science research (Cole et al, 2005). I will reflect on this in more detail in the discussion of design-science research, the next section of this chapter.

9 With the term artifact, I mean something that is artificial, not found in nature, constructed by humans (Simon, 1996).
information society. Analyzing and synthesizing results should lead to more generalized knowledge for practical information governance fieldwork and further theory building.

Before I will discuss the research process in more details, it is necessary to elaborate on the two concepts that are constituent in executing the research: design-research and the case-study method. In what follows, I will first explain how the ideas of the design-oriented approach fit the research objectives.

**Design–oriented research**

The design-science research paradigm builds on the premise that ‘[d]esigning a future is fundamentally different from describing and explaining the present (van Aken & Romme, 2010, p. 2).’ There is consensus in DSR literature that it goes back to Nobel laureate Herbert Simon (1996) with *The Sciences of the Artificial* in which he has shown the profound differences in the activities involved in describing and explaining a situation as is, and activities that develop – designing and evaluating – a possible future state. ‘As design plays a central role in the creation of preferred futures, one may call disciplines where design is central design sciences, as opposed to explanatory sciences [emphasis in original] (van Aken & Romme, 2010, p. 2).’ The search for potential solutions that fit real-world problems is driving design sciences. This makes research according to design science inherently a problem-solving approach (Hevner, March, Park, & Ram, 2004; Livari & Venable, 2009).

Design-science research addresses the dichotomy where a research setting involves the design process as well as the design product. It does not assume away either one of them, and it allows the researcher to continuously changing perspectives between product and process. The development process typically involves building and evaluation activities in a number of iterations, a creative process in which the researcher evolves the design process as well as the design product. ‘Building is the process of constructing an artifact for a specific purpose; evaluation is the process of determining how well the artifact performs (March & Smith, 1995, p. 254).’ In contrast to research in behavioral sciences, which tries to explain and predict phenomena by developing and justifying theories, DSR tries to meet an identified business need – solve an identified problem – through the building and evaluation of artifacts; research in behavioral science searches for truth, the objective of DSR is utility (Hevner et al., 2004).

Before discussing more details on how DSR fits my research, a clear delineation of my usage of design-science research is necessary. As said, research according to the DSR paradigm tries to solve an identified problem *through the building and* 

---

10 ‘Theories posed in behavioral science are principled explanations of phenomena. [...] Such theories are approximations and are subject to numerous assumptions and conditions. However, they are evaluated against the norms of truth or explanatory power and are valued only as the claims they make are borne out in reality (Hevner et al, 2004).’
evaluation of artifacts. The conventional literature on DSR is not very clear concerning the object of inquiry. Is it the process involved in designing and evaluating the artifact? Is it the artifact itself? Some exceptions on this to my knowledge are Gericke and Winter (2008), Winter (2008), and Cole et al. (2005). Cole et al. (2005) commented on the different terminology that one is using, however, they have not given any clear definitions themselves. Gericke and Winter (2008) proposed an analysis framework for IS design-science research that clearly delineates the research areas and artifacts involved. With the framework, Gericke and Winter (ibid.) ‘[separated] design science (i.e., reflection and guidance of artefact construction and evaluation processes) from IS design research (i.e., construction and evaluation of specific artefacts) (Winter, 2008).’ My research focuses on the design-research part. Put it another way, through designing and evaluating an artifact, I pursue knowledge.

The idea of separating design science from design research raises two important questions. How does design research addresses the classical rigor-relevance dilemma, and how can design research differentiate itself from routine design (Hevner et al., 2004)?

As mentioned earlier, design-oriented research is inherently a problem-solving process (Hevner et al., 2004; Livari & Venable, 2009). This justifies the relevance part of the rigor-relevance dilemma, but rigor seems a challenge. Design research executes rigorously when it appropriately uses existing foundations and methodologies. This often involves ‘computational and mathematical methods [...] to evaluate the quality of and effectiveness of artifacts, however, empirical techniques can also be employed [emphasis added] (Hevner et al., 2004, p. 81).’ I will revisit the rigor issue in more detail later.

Hevner et al. (2004) discussed the issue how to differentiate design-oriented research from routine design, the application of existing knowledge to organizational problems. Their argument was that the premises of design-oriented research are its innovative problem-solving approach with its simultaneously clear contribution to the existing knowledge base as the key differentiator. Design is a creative, heuristic process where design-oriented research in particular often uses nonexistent knowledge; ‘reliance on creativity and trial-and-error search are characteristic of such research efforts (ibid., p. 81).’ Since design-oriented research uses existing knowledge without Constru8ng it to discover new knowledge in a rigorous build-evaluate approach, makes it a problem-solving instrument par excellence (Hevner et al., 2004).

Design-oriented research ‘creates and evaluates IT artifacts intended to solve identified organizational problems (Hevner et al., 2004, p. 77).’ Within the interpretation from Hevner et al. (2004), IT artifacts can include more than just instances of the representations of ideas. ‘Constructs (vocabulary and symbols), models (abstractations and representations), methods (algorithms and practices), and instantiations (implemented and prototype systems) (ibid., p. 77),’ they all fall into
their interpretation of IT artifacts. Constructs and models are an essential aid in understanding and solving problems. They provide the vocabulary that is necessary in creating a common understanding for those involved in solving a problem. If we have useful constructs and models, we can write, speak, or think about problems and solutions; they can change our perception of problems and significantly affect the way to deal with them (Schön, 2000). Purposeful constructs enable us to create models that are able to represent the problem and its solutions space. Developing constructs leans toward constructing ‘vocabulary and symbols used to define problems and solutions (Hevner et al., 2004, p. 83).’

Since my research effort is the design and evaluation of an instrument, a logical question at this point is, and thereby revisiting the rigor-relevance dilemma, whether the research can produce rigorous results. To be more specific, can we produce useful and legitimate results when developing an instrument?

First, much research on IT artifacts is about organizational effects; research, that aims to find theories that help to understand phenomena in relation to the artifacts usefulness, its usage (or misusage) and how it affects individuals. Although Hevner et al. (2004) acknowledged the necessary organizational fit when designing IT artifacts, in their interpretation of artifacts, they have deliberately excluded people and elements of the organization perspective. Their argument was that ‘the capabilities of the constructs, models, methods, and instantiations are equally crucial and that design-science research efforts are necessary for their creation [emphasis added] (Hevner et al., 2004, p. 83).’ In addition, although the artifacts – constructs, models, methods – developed, are rarely full-grown solutions that are readily implementable in practice, the activities that constitute design-oriented research efforts do advance on ideas, practices, and technical capabilities, which makes it a meaningful endeavor that can produce knowledge (ibid.).

Second, there is the issue whether the focus on developing artifacts can produce results that span a wider context. Put differently, can it produce other knowledge that helps us to understand phenomena in a wider context? From a governance perspective, do we gain an understanding of the governance issues, as described in the previous chapter, when we ‘just’ develop an instrument? The average researcher would prefer to do field studies to understand phenomena-in-context, because they do not much appreciate developmental research (ibid.). Nevertheless, the construction and evaluation exercise involved will make use of a firm knowledge base that relates to the governance issues discussed, while the case studies in evaluating the instrument can bring in additional knowledge about phenomena. Developing the instrument should give an understanding of problems that the instrument tries to address and should give insight in its usefulness, in fieldwork (Nunamaker, Chen & Purdin, 1991).

I conclude that the design-oriented research approach seems appropriate in developing an instrument in the research context presented here. However, I cannot ignore that this approach does have its challenge. Research in designing useful
artifacts introduces ‘the need for creative advances in domain areas in which existing theory is often insufficient (Hevner et al., 2004, p. 76).’ This leads to an important question that concerns the research process. How to realize the design and evaluation of the instrument in the context described here? Before I will elaborate on the research process, it is necessary to discuss some aspects of the concept of case study, the second constitutive part of the research.

Case study

The case study is a common research method in social sciences to create intimate knowledge of phenomena that concern individuals, groups, or events. Typically, case studies involve in-depth investigation of a single instance or event, as well as, multiple instances. Case studies can have a descriptive, interpretive, and evaluative purpose and may involve longitudinal examination of a single event or a series of shorter case studies that involve multiple events (Merriam, 1997; Yin, 2003). Descriptive case studies collect data and restrict to describing the events. Interpretive case studies try to categorize and conceptualize with the data from the events. Evaluative case studies use the latter to judge the phenomena represented by the data.

According to Flyvbjerg (2006), the conventional wisdom on case-study research has questioned its validity and has sometimes labeled it as ‘nothing more than a method of producing anecdotes (Flyvbjerg, ibid.).’ Flyvbjerg (ibid.) has identified a number of common misunderstandings on case-study research regarding theory development, validity, and reliability. The misunderstandings concern that 1) practical knowledge is not valuable; 2) generalization seems not possible, making case-study research of no value to scientific development; 3) one cannot use case studies to test hypotheses; 4) the case study has an increased bias of the researcher; 5) specific case studies are difficult for summarizing and developing general propositions and theories. Flyvbjerg (ibid.) concluded that ‘by large the conventional wisdom is wrong or misleading (ibid., p. 241).’ He has developed countering arguments, to correct these misunderstandings, which positively influenced the conventional wisdom on case-study research (e.g. Runeson & Höst, 2009; Ruddin, 2006; Stake, 2010).

The role of the case study in this research is to evaluate whether the instrument is useful for the discourse on informational issues that characterize the semiotic order. The evaluation concerns how governing actors discuss the governing images they build up in the contemporary information society. The case study seems an appropriate way to evaluate artifacts on utility, because it generates context-dependent knowledge. Following my arguments in the previous section on design-oriented research, the design phase of the research generates theoretical knowledge, since it visits theories that are relevant to the research question. In order to develop an intimate knowledge, besides theoretical knowledge, context-
dependent knowledge through experiences with the instrument is necessary. ‘Context-dependent knowledge and experience are at the very heart of expert activity. Such knowledge and expertise also lie at the center of the case study as a research [...] method (Flyvbjerg, 2006, p. 222).’

The process of forming governing images, as I have argued in chapter 1, is of a phenomenological nature. This requires the evaluation of the instrument to be in accordance with phenomenological research paradigms. Lester (1999) explained that pure phenomenological research rather describes than explains, and that, following Husserl such a research should be free from preconceptions or hypotheses. However, Lester has also noted that there is a general acknowledgement that this is difficult in practice, if not impossible. ‘Interpretations and meanings [are] placed on findings, [and] the researcher [is] visible in the “frame” of research as an interested and subjective actor rather than a detached and impartial observer (Lester, 1999, p. 1).’ Flyvbjerg (2006) has referred to this as a subjective bias toward verification, which he saw as a general issue, that is even subjective to quantitative research.\footnote{Allegedly, quantitative research has the name of a rigorous research paradigm that inherently is non-subjective because it applies sound mathematical models and theories that seemingly eliminate the influence of the researcher on the results.} He has argued that although one sees case-study research often as less rigorous, it has its own rigor and ‘can “close in” on real-life situations and test view directly in relation to phenomena as they unfold in practice (Flyvbjerg, 2006, p. 235).’ Not verification, but falsification is what characterizes the case-study research (ibid.).

Using a case-study method to complement the design activities in evaluating the instrument can certainly be of value in scientific innovation. ‘In IS research, no one research methodology should be regarded as the preeminent research paradigm, because no one research methodology is sufficient by itself. In general where multiple methodologies are applicable, they appear to be complementary, providing valuable feedback to one another (Nunamaker et al., 1991, p. 95).’

Research process

The research process following the design-oriented approach divides into two main phases: the design and evaluation of the instrument. However, a more detailed division in process steps is possible (e.g. Peffers et al., 2007; McNaughton, Ray & Lewis, 2010; Barclay & Osei-Bryson, 2010). Table 4 shows the steps involved in the research process, which I will explain in what follows.
In the first chapter of this research, I have described the problem awareness with its necessary theoretical underpinning. The next steps are necessary to get deeper understandings of the concepts involved and delineating the instrument I want to develop. That will provide input to the design criteria for the instrument, in order to make it purposeful and useful for information governance practices. The third step involves the actual design of the instrument. This step is creative in a sense that it involves brainstorming within the boundaries of the design criteria in order to develop taxonomy that captures meaning.

The evaluation phase is where the case-study method dominates. I will evaluate the instrument by means of a number of small workshops, what typifies as a special form of case study: the evaluative case study (e.g. Kabakci Yurdakul, 2011; Shen, Shen & Shun, 2011; Kicken, Brand-Gruwel, van Merriënboer & Slot, 2009). The actual design of the evaluative case study – the workshops – involves the techniques required to evaluate the quality and effectiveness of the instrument. That is beyond the scope of this chapter. The first part of the chapter on the actual evaluative case studies (chapter 6) will cover that at large. To ensure rigor in the evaluative case studies, I will systematically capture the results of the workshops. The evaluation phase finishes with a synthesis of the output from the case studies into a practical approach to use the instrument in information governance fieldwork.

### Summary

In this chapter, I have discussed the research approach that this research uses to develop an instrument. It has started with aspects on qualitative research, explaining that an interpretative research paradigm is most appropriate because the research attempts to understand how governing actors assign meaning to informational developments. Because the inquiry attempts to solve a problem through the design and evaluation of an instrument, a design-oriented approach is preferred. In contrast to action research, which emphasizes on creating knowledge from interventions, design-science research makes it possible to generate valid knowledge from the design process as well as the evaluation of the instrument. The research uses the complementary evaluative case-study method to evaluate the instrument on its usefulness. The design of the instrument will generate theoretical
knowledge; the evaluation will generate context-dependent knowledge. The chapter ends by explaining how the research process breaks down into five sequential steps that concern 1) problem awareness, 2) existing theory, 3) design, 4) evaluation, and 5) synthesis and conclusion.