Multichannel pension communication
An integrated perspective on policies, practices, and literacy demands

Louise Nell

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Multimodale pensioencommunicatie
Een geïntegreerd perspectief op beleid, praktijk en geletterdheidseisen

(met een samenvatting in het Nederlands)

PROEFSCHRIFT
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Maria Louise Nell
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CHAPTER 1

INTRODUCTION

People in the Netherlands are hardly aware of their pension situation (MoneyWise, 2012; 2014; 2016; Prast & van Soest, 2014) and tend to have poor financial planning skills when it comes to their retirement (Prast & van Soest, 2016; van Rooij, Lusardi, & Alessie, 2011a). These are matters of great concern, since pension unawareness is associated with overly high financial expectations and serious future income gaps (Alessie, van Rooij, & Lusardi, 2011; The Netherlands Authority for the Financial Markets [AFM], 2010; The Social and Economic Council of the Netherlands [SER], 2008). One of the reasons that people fail to act on their pension situation is that they lack motivation to study the information they receive from their pension organizations (Heuts & Klaver, 2011; Visser, Oosterveld, & Kloosterboer, 2012). This disinterest has several potential causes: little confidence in the pension sector, a missing sense of urgency, a lack of knowledge, and feelings of low self-efficacy (Visser et al. 2012). But even if people *do* decide to study the provided documents, the required information is often unfindable (Lentz & Pander Maat, 2013) or difficult to comprehend: 43% of the working population indicates having trouble understanding pension information (Visser et al., 2012). The last obstacle is that even *if* pension communication is studied and the relevant information is found and understood, this does not lead to the necessary actions to improve the pension situation (AFM, 2012). Adding to this informational complexity is the constraint that pension communication is subject to regulations issued by the Dutch government, which limits the freedom of pension organizations when designing pension communication.

In this dissertation we will investigate how the design of pension communication is currently realized and how pension communication could be more effective in informing pension consumers. In this research we take into account that effective pension communication does not only mean that people understand the product in itself – they especially have to understand whether they need to adjust their pension situation and how they are able to do that, now and in the future. In the remainder of this introduction chapter, the current pension (communication) situation in the Netherlands will be laid out shortly. This section is followed by a discussion of the research traditions this research is embedded in. The chapter concludes with the aim of this dissertation, an outline of the six remaining chapters, and a final remark.

1. PENSION COMMUNICATION IN THE NETHERLANDS

1.1 The Dutch pension system

The Dutch pension system consists of three types of pension: the government pension, the employers' pension, and individual pension arrangements. The research conducted in this dissertation will focus on the communication activities of pension organizations concerning the employers' pension, since this is considered the most complex pension

product. Because in many instances, the employers' pension cannot be viewed separately from the government pension and the individual pension arrangements, all three forms will be described briefly.

Every Dutch citizen receives a monthly pension from the government ('AOW') as soon as they reach their pension age. This government pension is funded by the return on the investments of the contributions that are paid to the government by people younger than the pension age, the so-called pay-as-you-go system (Ministry of Social Affairs and Employment [SZW], 2008; Reichert, 2010). These contributions are invested to be able to pay the pensions. The pension age is currently set at 65, but will gradually increase over the next few years due to the growth of the pensionable population and the increased life expectancy. The government pension provides a basic income: depending on their marital status, pensioners receive 50% to 70% of the minimum wage (Reichert, 2010). The government pension is known as the first pillar of the Dutch pension system.

As a supplement to the government pension, the vast majority of employees also accrues pension within a collective pension arrangement via their employer. When an employer offers a pension arrangement, employees are almost always required to participate. They generally share this arrangement with their co-workers from their company, occupation, or industry. These pensions are administered by a pension fund or a pension insurance company, organizations which are legally and financially independent from the employers. From now on, all pension funds and pension insurance companies are referred to as 'pension organizations'. The employers' pensions are financed from the contributions that members of the arrangement as well as their employers have paid in the past and from the return on the investments of these contributions (Reichert, 2010). The employees that participate in these collective pension arrangements are called the pension plan members. They pay an equal fixed percentage of their salary for their future pension rights. This way, they accrue pension rights for each year of service, mostly amounting to 2% of their salary (SZW, 2008). The employers' pension is called the second pillar of the Dutch pension system.

Finally, employees can opt to supplement their pension with an individual pension arrangement in order to meet their financial requirements, either through annuity insurance or endowment insurance (SZW, 2008). This option is also used by the self-employed and employees in sectors without an employers' pension arrangement (Reichert, 2010). The individual pension arrangements together form the third pillar of the Dutch pension system.

1.2 Pension communication legislation

Pension communication in the second pillar is subject to regulations that aim to enable pension consumers to make a financial planning based on correct information

(Heuts & Klaver, 2011). Pension organizations must comply with these regulations. The Netherlands Authority for the Financial Markets (AFM) is responsible for supervising this compliance. If AFM identifies any breaches, it can impose sanctions, such as issue instructions or public warnings, place institutions under undisclosed custody, withdraw licenses, et cetera. AFM is also authorized to impose fines and orders for periodic penalty payments.

In 2007, the Dutch Pension Act came into effect, replacing the Pension and Savings Act of 1952. The rules on pension communication in particular were significantly tightened. First of all, the legislator provided key principles ('open standards') that pension organizations had to comply to 'properly, fairly, and reasonably'. These open standards required that all pension information should be understandable and clear to consumers and that it had to be provided in due time. One of the specific obligations imposed by the Pension Act of 2007 was that pension organizations had to send an *introduction letter* to new pension plan members when they started accruing a pension. The contents of this letter were required by law and had to be at least a 'comprehensible translation' of the pension arrangement. The form of the *introduction letter* was not prescribed and could for example consist of a letter and a brochure. Also, pension organizations were required to send their pension plan members an *Annual pension statement*, in which the accrued and expected pension rights were described. Each type of pension arrangement had – and still has – its own model. The implementation and management of these models is in the hands of the representative bodies of pension funds and pension insurance companies: the Federation of the Dutch Pension Funds (for pension funds) and the Association of Insurance Companies (for pension insurance companies) respectively. They are jointly responsible for the development, content, and maintenance of the *Annual pension statement* models. All pension organizations are required to use these. Finally, under the 2007 Pension Act, the website *My pension overview* was launched by the Dutch pension sector to comply with its legal obligation to provide all citizens a complete overview of their pension rights. *My pension overview* is an online platform that enables users to see how much pension they have accrued, what their monthly pension will be when they retire, and what will happen to this amount if users, for example, divorce or lose their jobs. Both the government and pension organizations transfer their data on individual pensions to *My pension overview*, where the information is aggregated.

For the large part, the research described in this dissertation was conducted within the context of the 2007 Pension Act. But substantial changes in the Pension Act were implemented in 2015. This change in legislation aimed to put more emphasis on showing pension plan members their options and how they can actively play a role in their own pension planning (Gielink, 2015). To be able to do this, pension plan members should know how much pension they can expect, assess whether this amount is adequate, and need to be aware of pension risks (AFM, 2012). Finally, the open standards for pension

information are adjusted to 'correct', 'balanced', and 'in a timely manner'. This resulted in the following legislative changes (Gielink, 2015):

- *More opportunities for digital information provision*. The 2007 Pension Act required that pension organizations should provide most pension information in print. From 2015 on, digital provision is allowed, although pension plan members can still demand pension information in print. In case of digital information, it is not sufficient for pension organizations to refer only to the website; the information should be brought to the personal environment of the pension plan members, for example by sending an email.
- *Providing pension information 'in layers'*. One of the recommendations of the pension sector (SZW, 2012) was to provide a 'layered' information structure to pension plan members designed to provide readers with quick and intuitive routes to the information they need. On the pages at the top of the hierarchy, the first 'layer', the basic information is presented in summary. The second and third layer give more detailed information. The idea behind this design is that readers who have to be informed about their pension are not immediately overloaded with information, but are provided only with the basics – making the information easier to process. If readers want or need to know more, they can access the second layer. And if this information is still insufficient, details can be found in the third layer. This idea was adopted by the legislator: pension organizations are now required to present (at least part of) their information in layers. The communication instrument that is developed to present these layers is known as *Pension 1-2-3*.
- *Cancellation of the introduction letter*. Because it was observed that the *introduction letter* was too long and not sufficiently engaging, this document was cancelled. Since 2015, the *introduction letter* has been replaced by a shorter and more concise document, which contains the first layer of *Pension 1-2-3*. This document additionally directs readers to the website of the pension organization, where they can find the second and third layer.
- *Extending the digital pension platform My pension overview*. To support pension plan members in gaining insight into their pension situation, the existing pension platform is extended with a number of functionalities. The goal is to evolve *My pension overview* into an interactive and complete overview of pension options.

Although this legislation was not yet in effect during the most part of this research, the direction of the upcoming changes became increasingly evident over the years. This situation has had the consequence that the data in Chapters 2 and 3 have been collected and analyzed within the context of the 2007 Pension Act, whereas in Chapters 4, 5, and 6 the forthcoming transition to the 2015 Pension Act was taken into account.

1.3 Communication environments of pension organizations

In this dissertation, we will refer to the collections of written, verbal, and digital media that pension organizations within the second pillar use to inform their pension plan members as *multichannel communication environments*. Within these environments, all communication activities of these organizations take place. A multichannel pension communication environment usually has three kinds of ingredients:

- Documents, both in print and digital (e.g. webpages, pdf documents). Some of these documents contain general information (e.g. a brochure on the pension consequences of a divorce), some of these contain personalized information (e.g. the periodical statements providing the current pension prognoses);
- Digital tools and platforms, that increasingly enable pension consumers to analyze their pension situation and their preferences for financial arrangements;
- Telephone (and sometimes face-to-face) conversations with pension experts.

The communication environments of pension organizations consist of legally required media (see Table 1.1), usually supplemented with 'additional media' such as brochures, websites, and magazines. These additional media are not included in the legal standard and therefore not supervised by AFM, although the 2015 Pension Act states that the new open standards apply to both the legally required media and the non-required media (Gielink, 2015).

Table 1.1 *Overview of legally required media within the 2007 and the 2015 Pension Acts.*

Pension Act 2007	Pension Act 2015
• *Introduction letter*	• Basic pension information at the start of the pension accrual (less extensive)
• *Annual pension statement*	• *Annual pension statement* (less extensive)
• *My pension overview*	• *My pension overview* (extended)

2. RESEARCH PERSPECTIVES

The studies in this dissertation bring together three research perspectives in a multidisciplinary approach. First of all, pension communication is facing several complicating factors that have to be taken into account when studying its effectiveness. Also, this research should be viewed from the context of multichannel communication, since pension organizations are required to use – and opt to use – multiple media to inform their clients. Finally, the role of user characteristics and financial literacy in document and digital platform performance is studied in order to contribute to the ongoing discussion on the involvement of financial literacy in the effectiveness of pension information. In this section, these perspectives are laid out.

2.1 Complexity of pension communication

Financial communication, and especially pension communication, is a challenging form of communication. Financial communication problems are a major topic in the exploratory study of Hoeken et al. (2011). Hoeken et al. address two issues of complexity:

- In the digital era, clients are confronted with more and more information on financial products, presented in different communicative modalities;
- Understanding the legal and financial intricacies of these products requires a level of literacy and reading motivation that few clients possess.

The multimodality of financial information offers both a threat and a challenge: it may lead to disorientation, but a well-designed multichannel information environment may help clients to find personalized information at moments when they need it.

For pension communication specifically, some additional problems occur that cause people to barely study pension information and lead to suboptimal choices. Due to serious pension cuts and an increase in retirement age, the public image of pension organizations has suffered considerably (Prast, Teppa, & Smits, 2012). Also, people need to assume more responsibility for their pension situation than they used to (Prast & van Soest, 2016). But still, many people do not feel involved in their pension and are missing a sense of urgency (Prast & van Soest, 2016; Visser et al., 2012). In trying to solve these problems, pension communication legislation has lead to an information overload for pension consumers, which did not benefit comprehensibility (Heuts & Klaver, 2011) and optimal decision-making (Prast & van Soest, 2016).

Pension organizations have to navigate through these complex circumstances, which is not an easy task. This research is therefore conducted within the context of these numerous challenges that Dutch pension organizations face, while taking into account the practical aspects of communicating with clients.

2.2 Multichannel communication environments

When organizations use more than one distribution channel to get their product to the market, they are considered to use a multichannel strategy (Coelho & Easingwood, 2004). Multichannel communication environments allow consumers to get their information from their preferred medium (Coelho & Easingwood, 2005; Sharma & Mehrotra, 2007; Stone, Hobbs, & Khaleeli, 2002).[1] On the other hand, research has shown that many financial consumers do not have one favorite medium, but use a combination of media (Sathye, 1999; Stone et al., 2002). They are increasingly expecting these media to be tailored to their specific needs (Wakolbinger & Stummer, 2013). Besides allowing clients to

1 Within the context of banking, the use of offline media is positively associated with the length of customer-bank relationship and age, whereas the use of online media is positively associated with monthly salary (Bouwmeester, 2016).

choose a preferred medium, advantages of multichannel communication environments are assumed to be cost reduction, improving customer satisfaction, and more and better information (Coelho & Easingwood, 2004). There are also potential negative effects of multichannel communication environments: multiple media can create conflict and confusion (Coelho & Easingwood, 2004; Sharma & Mehrotra, 2007), for example in the sense that different media provide contradictory information. These findings implicate that it is of the utmost importance for organizations to realize a coherent and consistent multichannel structure (Reis, Amorim, & Melão, 2015).

Analyzing multichannel communication environments requires a view on the strengths and limitations of the various media that occur within these environments. Within the media synchronicity theory (MST; see Dennis, Fuller, & Valacich, 2008) two primary communication processes are distinguished: *conveyance of information* and *convergence on meaning*. Conveyance is the distribution process of new, diverse, and potentially large amounts of information. Convergence is about creating shared interpretations of information. MST suggests that both processes benefit from different kinds of media. The concept that is introduced within this context is *synchronicity*. Synchronous media can be used to communicate at the same time (e.g., face-to-face communication, video conference, telephone conference). This provides the option for communicators to immediately respond to each other's contributions. Asynchronous media, on the other hand, are typically used to communicate in turns (e.g., a website, voice mail). Such asynchronous channels enable pension plan members to selectively process messages and to process them at their own pace. The assumption is that convergence processes require more synchronous channels, while conveyance processes are better handled by less synchronous channels.

Whereas most previous research focuses on using multichannel communication environments to sell products, pension organizations mainly use their media to *inform* their clients. This creates a new perspective on multichannel communication environments, which we will take on in the research reported in this dissertation. A research tradition that is linked to this perspective is multiple document use (Anmarkrud, McCrudden, Bråten, & Strømsø, 2013; Bråten, Ferguson, Anmarkrud, & Strømsø, 2013; Cromley & Azevedo, 2009; Rouet, Favart, Britt, & Perfetti, 1997; Stadtler & Bromme, 2007). As is the case with pension communication environments, using several (digital or printed) documents at once plays a role in these studies. Results show that multiple document use is generally considered a complex task, in which users are not particularly successful. In order to succeed, users should be able to mentally represent the content of the documents, their relationship with each other, and the sources from which they are derived (Stadtler & Bromme, 2007). Anmarkrud et al. (2013) found that although readers were not very successful in finding, evaluating, and understanding information in multiple documents at once, readers could very well determine what information

was and was not relevant for fulfilling their task. They turned out to be quite capable to actively relate relevant passages from various texts during the reading process, and to ignore non-relevant passages.

The research reported on in this dissertation will build on this earlier work on multichannel communication environments, media synchronicity, and multiple document use.

2.3 The role of financial literacy in pension communication

When investigating the effectiveness of media, the role of user characteristics and competences are usually taken into account. Successful (offline and online) document performance has often been associated with prior knowledge (Byrnes & Guthrie, 1992; Coiro, 2011; Gilabert, Martínez, & Vidal-Abarca, 2005; Tarchi, 2010, among others): higher levels of prior knowledge lead to better finding and comprehension scores. Most of these studies took place in educational contexts, in which learning the information was the main objective. Within the context of *using* documents, which merely involves looking up and reading information in order to accomplish a task, the role of prior knowledge is much less evident. Coiro (2011) found that adolescents that perform online locating tasks might benefit more from high levels of online reading comprehension skill than from prior knowledge. Lentz and Pander Maat (2013) studied the role of competences within using an (offline) pension document, and found that pension knowledge did not contribute to document performance, but vocabulary did. These findings indicate that prior knowledge in using documents might be less important than generally assumed.

The term *financial literacy* is often used to describe the set of competences and knowledge related to financial intentions and behavior. Results on its effects vary widely: some studies find no effect of financial education, other studies find a positive effect on intention, but not on behavior, and then there are studies that find a counterproductive effect (see Prast, Teppa, & Smits, 2012, p. 9 for an overview of recent studies on this topic). An additional obstacle is that people will only decide to invest in increasing their financial literacy and pension knowledge if they have something to gain; in other words: if they have the money to save or invest (Prast & van Soest, 2016). This further increases wealth inequality. We should also note here that the concept of financial literacy has been measured in various ways (Huston, 2010; Remund, 2010). In this research we will use the – relatively narrow – definition of Huston, who states that financial literacy could be defined as measuring how well an individual can understand and use personal finance-related information. This means we leave concepts such as aptitude and confidence out of consideration (Remund, 2010). Within our notion of financial literacy, we will distinguish prior knowledge and language skill. The research reported in this dissertation will further investigate the role of financial literacy on both document and digital platform performance.

3. AIM OF THIS DISSERTATION

Our research aims to provide new insights into the realization and efficacy of multichannel communication environments of pension organizations. This dissertation will contribute to a theory of multichannel financial communication by analyzing the interplay of different pension media in a complex decision making process. The main research question of this dissertation is: in what ways can pension communication environments be more effective? To answer this question, we will investigate how regulations affect communication quality, how the various media that are part of the pension communication environments are interrelated, and to what extent the financial literacy of pension consumers plays a role when using these media. This eventually leads to a proposal for an improved pension communication model.

4. CHAPTER OVERVIEW

Chapters 2 to 6 will present five studies on (components of) the communication environments of pension organizations. Chapters 2, 3, and 6 deal with the relation between the various media that pension organizations provide their clients with, both from a strategic and a practical point of view. Chapters 4 and 5 discuss the efficacy of media and the role of user characteristics herein.

The pension sector continuously seeks a compromise between complying with regulations and keeping the information understandable. Chapter 2 describes how pension organizations deal with communication regulations when designing their communication environments. We have focused on identifying the bottlenecks within these design processes, basing ourselves on semi-structured interviews with communication professionals at 25 different pension organizations and the regulatory authority.

Chapter 3 contains a study on telephone calls to the helpdesk of a pension organization. The study focuses on the role of the helpdesk consultations in relation to other channels that pension organizations use to communicate with their clients. The reasons for clients to call the helpdesk are analyzed to provide insight into the topics that pension consumers are concerned with and why this might be. We have also examined how the information provided by the helpdesk calls could be used to improve pension communication environments.

In Chapter 4 we focus on one specific component of the pension communication environment by conducting a user evaluation of a 'layered' information structure. Through observation studies of participants working with scenario questions, we compared a linear document and a hierarchically structured ('layered') online pension document. Furthermore, we have established to what extent financial literacy (prior knowledge and language skill) plays a role in performance success when reading these documents, and how these abilities are related.

Chapter 5 focuses on another component of the pension communication environment. It examines whether user demographics and financial literacy are of importance when using two versions of a digital pension platform. This chapter describes in which platform the performance of users is most dependent on their levels of prior knowledge and language skill and how this could be explained.

Chapter 6 reviews the communication activities of pension organizations in a changed regulatory environment. Through functional analysis, this study establishes the functions of pension communication required by the Dutch government, and the functions actually addressed in pension communication practice. Also, we discuss to what extent these functions are addressed in an adequate way. The chapter is concluded with recommendations for an improved pension communication model.

Chapter 7 summarizes and discusses the results, as well as the implications of these findings for future research and pension communication practice.

5. FINAL REMARK

As the various chapters are set up as separate journal articles, some overlap in the theoretical frameworks and method sections is inevitable. This especially applies to the method of the two studies discussed in Chapters 4 and 5. The advantage for the reader is that each chapter can be read on its own.

A previous version of Chapter 2 was published in Dutch as a *Netspar NEA Paper*. The data discussed in this chapter was also used in publications in *Information Polity* and *Weekblad voor Privaatrecht, Notariaat en Registratie*. A slightly adapted version of Chapter 3 was published in *Studies in Communication Science*. Part of Chapter 4 is published in Dutch as a *Netspar Design Paper*. Another version of Chapter 4 as well as Chapter 5 and Chapter 6 are currently under review for publication.

CHAPTER 2

HOW PENSION ORGANIZATIONS DEAL WITH COMMUNICATION REGULATIONS: EXPLORATIVE RESEARCH INTO MANDATORY INFORMATION

ABSTRACT[2]

The Dutch government is trying to make citizens more responsible for their financial planning. This makes effective communication about pensions essential. Through regulations, the government places demands on the pension communication of pension funds and insurance companies. In this study, we will answer the question how pension organizations deal with these communication regulations when designing their communication environments. In order to do that, communication professionals at 25 pension organizations and the conduct supervisor The Netherlands Authority for the Financial Markets (AFM) were interviewed. These interviews show that communication legislation concerning pension communication affects both the attitude and behavior of communications professionals in pension organizations. These professionals generally are not in favor of the legislation, and notice a misalignment between their own views on pension communication and the law. This results in conservative choices in the design of pension communication environments, although innovation in communication is involved on a limited scale. Three strategies arose in the design process of the mandatory genre. The first strategy was that pension organizations complied with legislation without any additional actions; the second strategy was that pension organizations focused on optimizing the legally required media; the third strategy was that pension organizations focused on optimizing the additional media. Also, pension organizations in some cases seemed to experience the restrictions of legislation as more restrictive than actually intended. Only a small portion of the organizations appeared capable to exploit the potential of the law when it came to the mandatory media.

1. INTRODUCTION

1.1 Legislation on pension communication

Many pension plan members have trouble understanding their pension situation and are suspicious towards pension organizations (Visser, Oosterveld, & Kloosterboer, 2012). Also, they often have overly high expectations about what pension amount they can expect when they retire (Heuts & Klaver, 2011; Visser et al., 2012). To improve both general and member-specific knowledge about pensions, pension organizations '[under the Pension Act] are obliged to properly inform the people for whom they manage the pension or to whom they pay the pension benefits about their pension rights' (Reichert, 2010, p.16). The Pension Act, that came into effect in 2007, states that pension organizations have to send their new pension plan members an *introduction letter* when they start accruing a pension. The content of this letter is required by law. Also, pension funds and insurance companies are required to provide their pension plan members

2 This chapter is based on Nell, M.L. & Lentz, L.R. (2013). *Pensioenorganisaties en communicatiewetgeving. Exploratief onderzoek naar keuzes en verplichtingen* [Pension organizations and communication legislation. Exploratory research into choices and commitments]. (Netspar NEA Paper No. 49) Tilburg, the Netherlands: Netspar, Meijer, A. J., Grimmelikhuijsen, S. G., Nell, M. L., & Lentz, L. R. (2014). Organizational arrangements for targeted transparency. *Information Polity, 19*(1, 2), 115-127, and Rijnhout, R., Giesen, I., Nell, M. L., & Lentz, L. R. (2014). Verplichte communicatie en zorgplichten: De wisselwerking tussen wetgever en pensioenpraktijk. [Mandatory communication and duties of care: the interaction between legislator and pension practice]. *Weekblad voor Privaatrecht, Notariaat en Registratie, 145*(7025), 626-638.

with an *Annual pension statement*, in which the accrued and expected pension rights are explained. Finally, pension legislation contains the open standards timely, clear, and understandable: all legally required information must comply with these standards.

The Explanatory Memorandum to the 2007 Pension Act (2005/2006, 30413, nr. 3, p. 110) outlines creating a financial planning as the highest purpose of informing pension plan members [italics added by authors]:

> *"The government considers it highly important that pension organizations inform pension plan members, former members, pensioners, and former partners directly about the execution of the pension arrangement. It is only on the basis of good information that these beneficiaries can make a financial plan regarding income in old age, disability and/or income for surviving relatives in case of death. It is the responsibility of citizens themselves to assess whether the total benefits to which they are entitled – based on legislation and complementary pension arrangements – together with any own resources, is sufficient or needs to be complemented by a voluntary pension arrangement or an annuity. The provision of information should be such that a citizen can live up to this responsibility."*

In other words, pension plan members are responsible for gathering information themselves, but receive help from the legislator, who requires pension organizations to provide certain information. This information must then be drafted in a clear and comprehensible way, and should also be provided in timely manner (art. 48 of the Pension Act). The pension organization is responsible for this.

One of the points of particular interest of the 2007 Pension Act is 'transparency'. The thought behind this term is that the government considers it essential 'that pension plan members are well informed about different aspects of the execution of the pension arrangement', because it is important that pension plan members start thinking about their pension at an early stage (Kamerstukken II 2005/06, 30413, nr. 3, p. 5 en p. 39). It is essential for the decision process to receive comprehensible information (which pension organizations are therefore required to provide). Also important is the following quotation from a Memorandum of Reply (Kamerstukken I 2006/07, 30413, C, p. 22) [italics added by authors]:

> *"Q. The members of the CDA fraction wonder how the pension organization can prove that the information is presented in clear and understandable language, as required by Article 45 of the Pension Act?*
>
> *A. (...) The duty to inform in clear and understandable language is drawn from the bill on the Financial Supervision Act. There, too, no further interpretation is given to these concepts. It is explained that an average consumer is to be presumed. Regarding pensions, this means that an average pension plan member is to be presumed. But it is the pension organizations itself that initially determines how the requirement of clear and understandable language is met. Whether an understandability check is operated, is up to the pension organization itself. The government is not in favor of setting further rules.*

Q. The members of the D66 and OSF fractions ask whether the Netherlands Authority for the Financial Markets (AFM) monitors that information should be written in clear and understandable language?

A. The government can answer this in the affirmative. It involves behavioral control, so it is the AFM that supervises."

So, in the Pension Act, the legislator requires pension organizations to communicate clearly and understandably. The ultimate objective is that pension plan members have the capacity to make their own, independent decisions about their retirement. The pension organization decides how this requirement is met, while The Netherlands Authority for the Financial Markets (AFM) monitors this obligation.

1.2 Consequences of pension communication legislation

Research into communication legislation in the financial and the medical domains, for example in the form of mortgage letters and patient information leaflets, shows that legislation often acts as a disturbing factor in effective communication (Lentz, 2011). In formulating laws that require comprehension of texts, the way people process information and react to it often seems to be ignored (Dalley, 2007). Ben-shahar and Schneider (2011) argue that legal obligations concerning information leaflets, which are used in for example the medical and financial domain, often miss their point. The result is that readers frequently are not optimally informed. Legal obligations could even damage the processing of information. Ben-shahar and Schneider show that in establishing laws and regulations in communication it is often assumed that consumers want to gather all possible information. By setting many demands on communication, documents become very extensive, with the result that potential readers are not motivated to read such documents. In addition, especially low-skilled readers have trouble understanding and processing them, whereas they are usually the ones who need the information most.

Stark and Choplin (2010) confirm these findings by describing fourteen cognitive and social psychological factors that prevent mandatory information leaflets – in this case containing mortgage information – from being effective. Among other things, they assess many mortgage documents as being user-unfriendly, for example because of the often small fonts. In addition, they argue that consumers often use the information leaflets to look for information that confirms their existing beliefs and that contrary evidence is usually ignored. Also, consumers seem to look for justifications to choose a particular option, instead of weighing the advantages and disadvantages of various possibilities. Lentz (2011) too claims that the legal obligation of understandability of information leaflets does not have the desired effect. According to Lentz, there is no general answer to the question of what it is that makes a text understandable, whereas with the pension communication regulations that impression certainly is given.

Heuts and Klaver (2011) reviewed the Dutch pension communication legislation, and concluded that comments from the pension organizations mainly focus on the lack of space for customization (p. 72). The organizations want to be able to focus the mandatory information more on characteristics of their own pension plan members and pension arrangements. The AFM too supports more open standards and less prescribed media and texts and argues that this could contribute to more effective enforcement (The Netherlands Authority for the Financial Markets [AFM], 2010). More room for customization could also benefit the clarity and understandability of the provided information. Heuts and Klaver additionally show that pension organizations always have to make two quality assessments when designing pension communication. The first assessment is the balance between the uniformity of the information and its clarity and understandability. For some of the media, legally required wording applies. The researchers conclude: "On the one hand, pension organizations appreciate the uniform nature of the standard media, on the other hand, because of this uniform character, they can concentrate their communication to a lesser extent on the characteristics (age, education) of their own pension plan member population. This may have negative consequences for the perceived clarity and understandability of the information" (p. 72). The second assessment is one between complete information and clear and understandable information. "The provision of complete information can (…) have the effect that pension plan members are overloaded with information (…). This has an adverse effect on the clarity and understandability" (p.72). Lentz (2011, p. 29) also underlines this paradox: "The combination [of complete information and understandable information] is corrupting the requirement of understandability. An understandable document is usually not complete in the eye of the law. Upon review by the regulatory authority, completeness will by default win from understandability."

Taking all these obstacles raised by pension communication legislation into consideration, the question arises whether the standard of understandability in law reaches its goal to make pension communication understandable, but also what realistically may be expected from legislation surrounding pension communication and its impact in practice. To provide insight into this matter, we have formulated the following research question:

RQ. How do pension organizations deal with pension communication regulations when designing their communication environments?

This chapter starts with a specification of the methodology used to answer this question. This section is followed by a description of the results. Finally, we examine the consequences of the obligations of pension organizations for the quality of pension communication and formulate recommendations.

2. METHOD

2.1 Respondents

To understand the choices that pension organizations make in communicating with their pension plan members and the impact that legal requirements have on this, various pension organizations have been approached to participate in face-to-face interviews. The contacts were established through the networks of research partners Netspar, Zwitserleven, and Syntrus Achmea and through social media (Twitter, LinkedIn). We first aimed at achieving a distribution of respondents that was similar to the distribution of Dutch pension organizations. At the time the respondents were recruited (November and December 2011), approximately 150 company pension funds, 60 industry pension funds, 11 occupational pension funds, and 25 pension insurance companies were active in the Netherlands.[3] Nevertheless, it was soon determined that this distribution would not be useful for this study, since the majority of pension funds in all categories outsource their communication activities to pension administrators. It was then decided to focus attention on recruiting respondents at some of the larger pension funds in all categories – as they more often manage their own communication activities – and on the large pension administrators – because they serve a lot of different, both large and small, pension funds.

In total, 37 different organizations were approached, of which 25 pension organizations as well as the AFM agreed to take part in the interviews. Forty respondents were interviewed, divided over eight industry pension funds, six company pension funds, one occupational pension fund, five pension insurance companies, five pension administrators and one regulatory authority. The distribution of the pension plan members over the pension organizations as well as their generic function titles can be found in Appendix A (p. 198). In most cases, the respondents were communication professionals working on mid-level or senior-level, with understanding of the non-individual information provision to active pension plan members, which means they are experts on this terrain and a reliable source of data on this topic. Because not all pension organizations employ communication advisors, we have in some instances interviewed policy managers, pension fund managers, and product managers, for whom communication was part of their responsibilities. The interviews took place from December 2011 until March 2012.

2.2 Interviews

The data were collected using semi-structured interviews. Barriball and While (1994) bring forward two reasons for this method: "First, semi-structured interviews are well

3 These estimates are based on the amount of pension organizations affiliated with the Dutch Pension Federation as determined at November 14, 2011.

suited for the exploration of the perceptions and opinions of respondents regarding complex and sometimes sensitive issues and enable probing for more information and clarification of answers. Second, the varied professional, educational and personal histories of the sample group precludes the use of a standardized interview schedule" (p. 330). In other words, semi-structured interviews offer the possibility of streamlining the conversations, without limiting them to certain topics.

Prior to the interviews, eight interview topics were determined that were to be discussed in every interview, although not necessarily in a set order (see Appendix B, p. 200). These themes were (1) the design of the *introduction letter*, (2) experience with and opinion on laws and regulations on pension communication, (3) determination and realization of communication goals, (4) the vision on pension communication, (5) distinguishing and reaching target audiences, (6) the use of media in addition to the *introduction letter* and *Annual pension statement*, (7) media and audience research among pension plan members, and (8) expectations for the future of pension communication within the organization and the pension sector in general. For every topic, a number of sub-questions was formulated beforehand. For example, on the design of the *introduction letter* it was asked who were involved in the realization of the i*ntroduction letter*, what the design process looked like, and what dilemmas were encountered by the parties involved. The semi-structured nature of the interviews offered the respondents the possibility to present additional topics that were not raised by the interviewer. This way, a full picture of choices made in communication to pension plan members could be formed.

The interview with the regulatory authority took place at the end of the interview series. The topics dealt with in this interview were determined based on the results of the interviews with pension organizations. Discussed topics included the working method of the regulatory authority, reactions to criticism from the pension sector, and anticipated changes in laws and regulations.

All interviews were conducted by the same interviewer, who had appropriate background knowledge on the topic of pension communication and on the design processes of communication environments. The use of only one interviewer prevented differences in interviewing techniques between interviewers and therefore helped securing the validity and reliability of the data.

2.3 Analysis

All interviews were audio-recorded and transcribed. The transcription of the interviews formed the basis for the analysis. These transcripts were transferred to an Excel database with precoded fields based on the eight above-mentioned topics and – if applicable – sub-topics. Passages in the transcripts that could be related to one or more of those topics were arranged as such. Based on the topics and the views that were brought

forward in the interviews, we formulated three analytical categories to give direction to the analysis (Schmidt, 2004):

1. Attitude towards laws and regulations in pension communication;
2. Requirements for effective pension communication;
3. Choices and considerations in designing pension communication environments.

Subsequently, particular fragments of the transcript were related to these categories (Schmidt, 2004). Per category and per respondent it was then determined which overall images the interviews revealed and to what extent those images corresponded with or differed from other respondents. If possible, further categorizations were made. To ensure their anonymity, all organizations are provided with a code, ranging from R1 tot R26. Respondents from the same organizations are distinguished by adding a's and b's to their code. The results are described below.

3. RESULTS

This section starts with a description of the attitude of respondents towards the laws and regulations concerning pension communication. This is followed by an overview of the respondents' views on the requirements for effective pension communication. Then, the considerations of pension organizations in the design of their communication environments as a result of their views and attitude are discussed. Each of these sections starts with an impression of the views and opinions that were expressed during the interviews. If applicable, the material is then categorized further into the different subcategories of those views and opinions, and discussed.

3.1 Attitude towards laws and regulations in pension communication

Respondents especially find the legislation concerning the *introduction letter* and the *Annual pension statement* to be obstructive. The most common reasons for this are the requirement for completeness and the lack of space for customization. According to respondents, the legislation also ignores the differences between pension funds mutually and between pension funds and insurance companies, and they believe the language level of legally required passages is too high. Some respondents even experience the mandatory communication as a burden. A respondent from a pension administrator said: "It is too bad what is happening to the *introduction letter*, which rather takes a lot of effort to put together. We only see it as a legal medium that is simply required, whereas we know that it could be far more effective." In addition, various organizations find the costs of the *introduction letter* and the *Annual pension statement* too high. They say this leaves them little money to spend on additional media, although they believe that these additional media have a much greater chance of actually reaching pension plan members.

Apart from substantive objections to individual regulations, some pension organizations also express their displeasure about pension communication legislation in general. Two industry pension funds indicate that setting legal requirements for communication to advance understanding is contradictory, since such requirements would complicate the communication by definition. In addition, some respondents note that the current legislation determines how pension organizations should communicate, whereas these rules should focus on the effect of pension communication. Existing legislation makes communication 'media-oriented' and 'confusing to pension plan members'.

A number of respondents also sees advantages, since pension funds and insurance companies that used to communicate little or nothing are now required to do so. Respondents from the regulatory authority confirm that mandating pension communication is indeed still necessary for a number of pension organizations, because without legislation these parties would take limited action to inform their pension plan members. Finally, a small part of the respondents mentions the comparability and recognizability of the *Annual pension statement* as a benefit. We also found that respondents have relatively mild attitudes towards AFM and that only seven organizations express negative sentiments, mainly because AFM is 'too narrowly focused on rule compliance'. Ten organizations are more positive ('[AFM is] sufficiently competent'), and seven organizations have no specific opinion towards AFM.

The respondents' views and opinions are dividable into five categories, in which the attitude towards laws and regulations concerning pension communication are connected to behavior in the design process of the communication environmens. Between brackets, the pension organizations that belong to each category are specified. The AFM is excluded from this analysis.

1. *Neutral to satisfied, and conforming to legislation* (R7, R8, R14, R16, R17, R18, R19). Seven organizations have neutral to satisfied views toward the current legislation and say it generally suits them well.
2. *Dissatisfied, but conforming to legislation* (R9, R11, R12, R23, R25). A second group, consisting of five pension organizations, is not pleased with the current legislation, but conforms to it because there is no possibility to make the desired adjustments.
3. *Dissatisfied, and innovating in additional media* (R1, R2, R3, R4, R6, R15, R22, R24). This group, consisting of eight organizations, says to be dissatisfied with current laws and regulations and as a result innovates in additional media to reach their pension plan members. The legally required media in these organizations are usually paid relatively little attention.
4. *Dissatisfied, and preparing for future changes in legislation* (R21, R20). Two organizations are dissatisfied, but are currently working on adapting their media to (expected) future legislation, for example through the digitization of the *Annual pension statement*.

5. *Dissatisfied, and innovating in legally required media* (R5, R10, R14). The last three pension organizations are also unhappy about the current legislation, but nevertheless try to optimize communication within the limits of the legally permitted.

We gather from this that as a result of pension communication legislation, three main strategies in the design of the legally required genre arise. The first strategy is that some pension organizations choose conform to legislation, and leave it at that. The second strategy is that pension organizations focus on optimizing the *introduction letter* and the *Annual pension statement*, even though the law does not give a lot of opportunity for this. The third strategy is that pension organizations focus on optimizing the additional media.

The question then arises what communication professionals *do* want when it comes to pension communication. The next section provides an overview of the conditions that communications professionals set on pension communication.

3.2 Requirements for effective pension communication

Many respondents have strong ideas about effective communication approaches. The interviews bring forward five overarching and closely related requirements that are essential for pension communication to be effective. These requirements are discussed below. Between brackets, the pension organizations that mention each requirement are specified.

1. *Transparent communication* (R1, R3, R6, R7, R9, R13, R14, R16, R20, R21, R25). According to the respondents, transparent communication involves both honest and clear communication. On the one hand, transparent communication means that pension funds and insurance companies should create realistic expectations and be honest about the economic situation of the pension plan member and the pension organization, and about financial risks. Additionally, transparent communication means: keep the information concise and as simple as possible. This is not only a matter of communication: one of the respondents from a pension insurance company states that the development of simpler pension arrangements is bound to come.
2. *Relevant communication* (R1, R3, R4, R7, R9, R11, R15, R17, R21). Relevant communication means that pension plan members are only provided with information they actually want to know. A common strategy is for example to connect to so-called life events: important moments in the lives of pension plan members that may affect their pension. Examples include start living together, divorcing, and becoming disabled. To the respondents, communicating relevantly also means: not communicating too much (at once). Overloading pension plan members with information that is not useful rather leads to reading nothing than to being fully informed.
3. *Getting to know the pension plan members* (R1, R6, R13, R21, R14). For some of the pension organizations, getting to know their pension plan members is a prerequi-

site for effective communication about pensions. Because, as a respondent of an industry pension fund says: "Average persons do not exist." Respondents say that communication is only effective if pension organizations very well know who their target audience is in terms of age, gender, and level of education as well as in personality. In addition, according to them it is important to find out how the target audience experiences retirement, how pension aware members are, through what channels they want to receive their information, and what they want to know about their pension. This condition is therefore closely related to the condition of relevant communication.

4. *Being accessible and visible* (R5, R6, R13, R18, R22). Accessibility and visibility of the pension fund or pension insurance company contributes to effective pension communication, according to five pension organizations. This means, for example, a helpdesk with long opening hours and a website that is always accessible for everyone. It also means the use of multiple parallel media and channels. Pension plan members who prefer to get their information from a website should be able to do so, as well as members who prefer to receive a letter or pick up the phone. Finally, it is relevant that, according to some of the respondents, pension funds and insurance companies need to be constantly visible to their pension plan members. This means that it is not sufficient to make the information available for the pension plan members to 'pull'. Some of it has to be 'pushed' in order to receive attention. What information should be pushed and what information should be pulled, can be found out by research among target audiences.
5. *Personal communication* (R2, R5, R6, R15). Four pension organizations believe personal communication is essential in effective pension communication. That may literally mean talking with pension plan members, for example through information stands at employers, individual face-to-face conversations, or helpdesk calls. But it also means customizing the message to the individual, while taking into account their personal financial situation, their wishes concerning media, and their language level, according to respondents. This condition is closely linked to the condition of relevant communication as well.

3.3 Choices and considerations in designing pension communication environments

The interviews show that the choices and considerations in designing pension communication environments concern (1) the design process of the *introduction letter*, (2) the research into and approach of target audiences, (3) the determination and realization of communication goals, (4) the deployment of additional media, and (5) the innovation and development in pension communication. In the next section we will take a closer

look at how the choices and considerations within these domains relate to the views and attitudes of respondents concerning pension communication.

3.3.1 Design process of the introduction letter

After the *introduction letter* became mandatory in 2007, pension funds and insurance companies had to revise their existing letters or even design a completely new document. In many cases this was a mutual endeavor of several departments, such as the communication department, the legal department, the policy department, or the product management department. In nine organizations, legal professionals manage this design process, in four organizations communication professionals are in charge, and in twelve organizations the responsibility for the design process is shared.

The involvement of various departments in the design process of an *introduction letter* is usually accompanied by discussions about both content and form. A major point of discussion mentioned by four industry pension funds (R1, R3, R4, R8) and two pension administrators (R21, R24) is that legal experts want the *introduction letter* to be as complete as possible. According to the respondents, this harms its understandability. The use of legal terms and jargon is also subject to recurrent discussions. One respondent from a pension administrator says: "Legal experts believe the best thing to do is to copy exactly what the pension arrangement states." The power of legal experts leads to 'concession products' in almost all pension organizations. "I am the least satisfied with our legally required media because the legal department has such a great influence here," one respondent at an industry pension fund states. Nevertheless, several respondents say that the cooperation with legal experts has gotten better over the recent years (R1, R9, R6, R17, R18, R23). One respondent says to be 'growing into a new language level' with the legal department. Legal experts seem to increasingly understand the importance of understandable communication about pensions, while communication departments become more aware that the input of legal experts is necessary as well.

3.3.2 Research on and approach of target audiences

All respondents state that their pension organizations are carrying out some form of research among their pension plan members. For two of them, the execution and/or coordination of target audience research is not part of their job description because the pension organization has a separate research department, or the responsibility for the research is almost entirely outsourced to a pension administrator or research agency. The answers of those respondents are excluded from this part of the report.

The twenty-three respondents who *are* responsible for or participate in research among the target audiences of their pension organizations, say this mainly happens through online or telephone surveys and offline and online focus groups. Organizations conduct user research to improve their communication environment. The domains

that are addressed in this research can be divided into two categories. First, pension organizations investigate the characteristics of their target audience in terms of demographics, knowledge, and personality. They for example investigate pension awareness and pension perception, risk appetite, and composition of the audience. Second, pension organizations investigate the quality of media as assessed by their pension plan members. This includes research in the field of user satisfaction, needs and desires of pension plan members, and the understandability of the media. And although research on the quality of communication is carried out by all pension organizations, only five of these investigated the *introduction letter* and/or the *Annual pension statement*. The other investigations focused on the additional media.

Twenty-two out of twenty-five pension organizations state that they currently use a generic approach in the *introduction letter* and *Annual pension statement*, without taking demographics such as age and education level or the life phase of the pension plan members into account. Nine organizations do see value in segmentation, for example because they experience major differences within the pension plan member population, but assume that legislation is an obstacle for this (R1, R2, R3, R9, R10, R12, R18, R21, R22). The respondents who believe that segmentation has added value therefore mainly segment in the additional media (R1, R4, R24). Here, they prefer a target audience approach based on life phase of the pension plan members. With this approach, the information is grouped into topics that are currently important in the lives of pension plan members. Young pension plan members could for example be faced with life events such as a new job, getting married, and having children. In a later stage, pension plan members could encounter life events such as discharge and divorce. By organizing pension information based on relevance to the pension plan member, they only receive information they need, which should make processing less difficult. Respondents see little value in adapting the language levels for different target audiences.

Three pension organizations do segment in their *introduction letter* or *Annual pension statement*, all based on the age categories of the pension plan members. One industry pension fund in their *introduction letter* addresses younger members with more informal language than older members (R5). Another industry pension fund alerts their pension plan members in the letter accompanying the *Annual pension statement* to information that is – considering their age – most important to them (R8). A company pension fund segments by financial situation: pension plan members who, according to the administration of the pension fund, possibly face a pension deficiency are alerted to this in the letter accompanying the *Annual pension statement* (R14). This pension fund has also formulated specific communication goals per age group as well as the way these goals could be achieved.

3.3.3 Determination and realization of communication goals

Most respondents state that laws and regulations do not allow for the explicit formulation of communication goals. Seven pension organizations argue that when it comes to the *introduction letter*, complying with laws and regulations is their main objective (R6, R9, R12, R16, R17, R23, R25). Nevertheless, communication goals often implicitly exist for both the *introduction letter* and the additional media, although they are usually not written down nor regulated. These goals usually aim to trigger a thought or behavior change of the pension plan members.

Pension plan members should:

1. …make independent decisions, make choices, and take action (R1, R3, R5, R6, R8, R9, R10, R11, R12, R15, R19, R21, R23);
2. …know and understand their pension arrangement (R3, R6, R7, R9, R10, R12, R13, R14, R18, R20, R21, R25);
3. …have trust in or have a positive image of their pension organization (R4, R6, R7, R8, R10, R11, R16, R19, R21, R24);
4. …know, understand, and have control over their pension situation and/or are pension aware (R1, R2, R3, R4, R10, R11, R19, R18, R20, R23);
5. …know that certain life events may affect their pension (R7, R9, R14, R18, R19, R22, R23, R24, R25);
6. …know who their pension fund or insurance company is and where they can ask questions and get information (R1, R3, R5, R6, R7, R11, R24, R25);
7. …be aware of the risks that their pension arrangement entails (R6, R9, R13, R14, R25);
8. …be able to make a financial planning (R3, R8, R25).

Twelve out of twenty-five pension organizations say they suspect that these goals are not actually achieved.[4] In most cases, this involves a presumption, since the realization of goals is investigated only sporadically. Reasons given for not achieving goals, according the respondents, are:

1. Pension plan members are not interested in their pension or they have other priorities (R1, R11, R13, R15, R16, R18, R20, R21, R24);
2. Pension arrangements are too difficult (R1, R22, R24);
3. Pension plan members have no basic knowledge of pensions (R5, R16);
4. Pension plan members are overloaded with information (R22).

Regulatory authority AFM states in the interview that they also have doubts about the extent to which the *introduction letter* and the *Annual pension statement* achieve the goal that pension plan members know what pension they are entitled to, know whether that's enough and what they can do if it isn't - the goals of pension communication

4 Chapter 6 of this dissertation will address to what extent some of these goals are indeed achieved in pension communication.

as formulated by AFM[5] - let alone that they are able to make a financial planning. The respondents argue that they would like to see that the *Annual pension statement* model, which is designed by delegates from the pension sector, would have more open standards. For the *introduction letter*, they indicate that they would also like to see the laws changed from *rule-based* to *principle-based*, because they believe that this is in the interest of the pension plan members. This corresponds with the wishes of the pension sector, which is of opinion that the supervision relies too heavily on the execution of the rules instead of on the quality of the communication. Yet the respondents at AFM argue that a lot of progress has been made in the improvement of pension communication, especially considering the short period of time that has passed since the *introduction letter* and the *Annual pension statement* were introduced (five years at the time of the interviews). For example, pension communication has become more uniform and much pension information has become available via the website *My pension overview*.

3.3.4 Deployment of additional media

All respondents state that their pension organizations use media in addition to the legally required media. Three different reasons are mentioned:

1. Pension organizations often want to provide their pension plan members with information that does not fit or is not allowed in the legally required setting. The digital newsletter, for example, has been mentioned to contain information about 'current developments in the pension world', whereas the magazine is used for 'human interest-like articles'.
2. Pension organizations suspect or have proof that the information from the legally required media are insufficiently read or understood. A respondent at an industry pension fund says: "We always attach a magazine [to the *Annual pension statement*] (…). What we really aim for is some kind of reading guide. Because we believe the *Annual pension statement* is very technical and juridical. What lacks is what [the reader] should do with such an *Annual pension statement*. We try to do that in the magazine."
3. Legally required media do not provide the opportunity to inform the pension plan members by using the language level or writing style the pension organizations want. According to a respondent at a pension insurance company, the language level of the *Annual pension statement* is 'just too hard'.

An overview of the range of additional media that pension organizations use is given in Table 2.1.

5 These goals are later included in the Explanatory Memorandum to the 2015 Pension Act (2013/2014, 34008, nr. 3, p.1).

Table 2.1 *Additional media used by pension organizations.*

Written	Digital	Oral
• Brochures • Magazine • Newsletter • (Comic) book • Letters • Annual report • Articles for staff magazine • Flyers/event cards • Postcards	• Website • Personal digital environment • Pension planner • Digital newsletter • Digital/public annual report • Video • Smartphone app • Quiz or game • Intranet articles • Social media (Twitter, LinkedIn, Facebook)	• Face-to-face conversations • Informational meetings (at employers) • Information stands (conferences, conventions, and the workplace) • Telephone helpdesk • Webinars

In written communication, brochures, magazines, letters, and annual reports are the most common. In digital communication the website, pension planner, personal digital environment, and newsletter are used regularly. The deployment of social media is on the rise, but pension organizations say to be in an exploratory phase. For oral communication, informational meetings at employers and telephone helpdesks are most used by pension organizations.

3.3.5 Innovations and developments in pension communication

The expected innovations and developments in pension communication mainly focus on the evolvement of digital communication, including the expansion of *My pension overview* and the evolvement of digital pension planners. A number of pension organizations also hopes to establish a dialogue with pension plan members via the digital channel.

Social networks such as Facebook, LinkedIn, and Twitter are rarely used by pension funds. Many insurance companies are using social media already, but not specifically in the pension domain. The pension organizations that use social media state they are mainly sending information. The organizations that do not use social media do not see the added value or are waiting for success stories from other pension organizations.

Although digital communication is an important development, two respondents point out that 'transfer moments' – the active transferring of information to pension plan members – should remain. Information transfer is necessary to activate the pension plan members to use the digital media, but also to make sure that they actually get to see the important information. In addition, three pension organizations mention the rise of marketing techniques in pension communication as an important development. Here, thorough knowledge of the target audience also plays a role. Two respondents say that it is becoming easier to collect information about pension plan members without violating their privacy. This provides the opportunity to personalize communication without higher costs.

4. CONCLUSION

In this study, we have aimed to provide an answer to the following research question:

RQ. How do pension organizations deal with communication regulations when designing their communication environments?

The interviews show that pension communication professionals have a predominantly negative attitude towards legislation concerning pension communication. Many of the respondents consider the *introduction letter* and the *Annual pension statement* to be a burden. The general opinion in the interviews is that the legally required media cost too much time and money in relation to the effect that can be achieved. Also, they do not meet the requirements concerning pension communication of the respondents themselves. This attitude has led to three main design strategies:

1. Some pension organizations accept the situation as it is and just comply with the legislation, without any additional actions;
2. Other pension organizations focus on optimizing the *introduction letter* and the *Annual pension statement*;
3. The last group of pension organizations focuses on optimizing the additional media, such as the website, magazines, brochures, and videos, in order to reach the pension plan members in the manner desired by the organizations.

We found that many pension organizations make an explicit distinction between their legally required media and their additional media. The legally required media are merely created and provided to comply with regulations so the pension organization is not reprimanded by the regulatory authority, whereas additional media are often analyzed and optimized. It could therefore be concluded that the negative attitude towards legislation leads to conservative choices surrounding communication processes that are evident in other domains, such as not conducting target audience research. A substantial part of the pension organizations does not believe that trying to optimize the *introduction letter* and the *Annual pension statement* is actually possible or could be helpful, which causes the legally required media to not always getting the attention they deserve.

But although legislation clearly sets limits to the possibilities of the *introduction letter* and the *Annual pension statement*, we must note that respondents may perceive these restrictions as greater than they are actually intended. They believe that the requirements make initiatives impossible, but this might not actually be the case. Practice shows that – in addition to the examples mentioned in paragraph 3.3.2, a company pension fund has designed the *introduction letter* as an action plan that encourages the pension plan members to take action on, for example, registering their partner to the pension fund. Additionally, an industry pension fund has attempted to make the *Annual pension statement* model user-friendlier by adding text boxes with explanations.

Although research should determine whether these adjustments indeed make the documents more understandable and effective, it shows that the laws and regulations do offer flexibility. However, from the interviews we can conclude that this space is barely used by pension organizations.

5. RECOMMENDATIONS

The results of this study lead to recommendations for both pension organizations and legislator.

5.1 Pension organizations

- Most of the pension organizations turn out to generally focus more on the proper implementation of rules than on the intentions of those rules, and therefore exhibit a tendency to set their ambitions surrounding legally required pension communication aside in favor of pension legislation. The recommendation for these organizations is to not turn into 'implementation mode' too quickly, but to live up to own visions and ambitions *besides* complying with legislation.
- In many pension organizations, a clear and strategic coherence between legally required and additional media is lacking. We advise these pension organizations to formulate one communication strategy for both the legally required and the additional media. This way, the usefulness of both types of media is increased and they can be considered as interconnected components of a communication environment.[6]
- Often, legal and communications departments appear to collaborate badly, at a late stage, or not at all when designing legally required media. Our recommendation, however, is to merge legal and communication processes from the very beginning so that both departments are aware of each other's perspective and both parties are satisfied with the end result.

5.2 Legislator

- Previous research shows that pension organizations to some extent always have to choose between meeting the legal obligations of complete communication on the one hand and creating clear and understandable communication on the other hand (Heuts & Klaver, 2011). The recommendation here is that the legislator chooses a clear position on this balance.
- Additionally, more principle-based regulation could be formulated, which focuses on the results of pension communication instead of (external) features of products.

6 Chapter 6 of this dissertation will further address the specifications for such a communication strategy.

- By mandating the *introduction letter* and the *Annual pension statement*, as well as their understandability, clarity, and completeness, the legislator seems to assume that the quality of pension communication is 'set'. However, the large amount of additional media that also affects the pension understanding and awareness of pension plan members is ignored. These media are not supervised. In other words, even if the quality of the legally required media was perfect, then the additional media could exert great influence on their impact. We recommend to investigate whether communication environments may legally be considered as entirely interconnected, instead of just focusing on one part of it, and to consider what implications this might have for legislation.

5.3 Epilogue (December 2016)

After we completed the study reported in this chapter in 2013, a new Pension Act came into effect in 2015. We will now – anno 2016 – take a moment to look back on the recommendations we made at the time and to what extent these recommendations have been reflected in the new Pension Act.

First of all, we recommended that the legislator should choose a clear position on the paradox of meeting the legal obligations of complete communication on the one hand and creating clear and understandable communication on the other hand. The 2015 Pension Act still demands that pension plan members have to be informed about many subjects, but the list of required topics and the way this information should be presented have changed. By requiring that information about the pension arrangement should be presented in dosed quantities (*Pension 1-2*-3; see Chapter 4), the legislator has aimed to deal with the amount of information. But in practice, this has not changed the excessive amount of information that is provided to pension plan members (see Chapter 6).

Our second recommendation was that more principle-based regulation should be formulated, which focuses on the results of pension communication instead of on product features. This has not happened: although pension organizations have more freedom to provide information digitally and to use their own wording within *Pension 1-2-3* (except for layer 1), legislation is still not based on goals or principles, but continues to focus on media. The *Annual pension statement* has barely changed. For *Pension 1-2-3*, which replaced the *introduction letter*, the product features are now prescribed even more stringent by mandating icons and titles, although we should note that this has happened in consultation with the pension sector.

Finally, we recommended that communication environments should be considered as interconnected, instead of distinguishing between the legally required media and the additional media when supervising pension communication. The Explanatory Memorandum to the 2015 Pension Act (2013/2014, 34008, nr. 3, p. 5) states that the open standards now apply to all information provided or made available, including non-required

information. This is an improvement in relation to the former Pension Act. Nevertheless, the new Pension Act still provides no clear perspective on how the three legally required media (*Pension 1-2-3*, the *Annual pension statement*, and *My pension overview*) are interrelated (see Chapter 6) and what their respective roles are. In any case, no attempt seems to have been made to reduce the total amount of information in the communication environment. For example, both the *Annual pension statement* and *Pension 1-2-3* must report how sure the pension is.

We can conclude that the new Pension Act has not managed to overcome many of the objections that were raised while the 2007 Pension Act was in effect. In the remainder of this dissertation, we will continue to take a critical look at how legislation affects pension communication and how the relationship between media could be improved.

CHAPTER 3

PENSION HELPDESK CALLS: A REPAIR MECHANISM IN THE CLIENT COMMUNICATION OF FINANCIAL INSTITUTIONS

ABSTRACT[7]

This chapter analyzes the role of helpdesk calls in the communication environment of pension organizations. Our audio corpus of 77 helpdesk calls contained 104 client questions. These questions were mostly triggered by communication events or life events. Clients seem to call the helpdesk in order to make a repair: to solve a comprehension problem, to find specific information they missed, to repair incorrect information, or to solve an administrative failure. In terms of media synchronicity theory, helpdesk calls were most often used to repair unsuccessful conveyance processes, and to a lesser extent to provide micro-convergence on preprocessed information. The helpdesk agents' awareness of the existence of other media provided by the pension organizations, which is needed to play these roles, seems to be an area for improvement. Logging the communication-related problems in helpdesk calls could help upgrading the communication environment and freeing the helpdesk resources for micro-convergence.

1. INTRODUCTION

Complex financial products, such as pensions, require careful communication with clients. Pensions present major challenges when it comes to enabling clients to make informed choices. Although many organizations use a combination of media to communicate with their clients, very little is known about the way these *multichannel communication environments* work, let alone how they could be optimized. Most of the existing research focuses on calls, documents, or digital information separately, and not on the combination of these media. In this study, we focus on the role of financial helpdesk consultations in relation to other channels that pension organizations use to communicate with their clients. As we were unaware of earlier studies into pension helpdesk communication, this study addresses four explorative research questions:

RQ1. For what reasons do clients call the helpdesk?
RQ2. To what extent do the calls contain references to other components in the multichannel communication environment and what is the function of these references?
RQ3. Which roles do helpdesk calls take on in the multichannel communication environment?
RQ4. How can a study of the telephone helpdesk be used to improve the quality of the communication environment?

We will first discuss the possible roles of helpdesk communication in the multichannel pension communication environment. Next, we describe our data and our analytical approach. We then present our results. We end with recommendations to pension organizations and conclusions.

7 An earlier version of this chapter has been published as Nell, M. L., Lentz, L. R., Pander Maat, H. L. W., & Koole, T. (2015). Pension helpdesk calls: A repair mechanism in the client communication of financial institutions. *Studies in Communication Sciences*, *15*(1), 103-110. doi:10.1016/j.scoms.2015.02.002.

2. THEORY: ROLES OF HELPDESK CALLS IN A MULTICHANNEL COMMUNICATION ENVIRONMENT

2.1 The use of telephone helpdesks

Helpdesks are a widely used way of communicating with institutions such as power companies, governments, and financial organizations. In the past few decades, more and more helpdesks have emerged in financial as well as other domains (Firth, Emmison, & Baker, 2005), in spite of the increased use of the Internet as a source for help and information, and even though setting up and running a helpdesk office is costly. Although studies show that clients are often dissatisfied with helpdesk support (Govindarajulu, 2002), there are several reasons that may explain the expansion of helpdesk use. According to Firth et al., helpdesk calls have a personal as well as a professional nature; personal in the way that clients can interact with an actual person instead of a computer, and professional in the way that the callers can interact with a domain expert from the institution. Some clients may even categorically prefer the helpdesk over less personal forms of communication. In addition, many clients seem to consider helpdesks – the option of directly solving a problem in personal contact – as their economic right as a paying customer (van Velsen, Steehouder, & De Jong, 2007).

Helpdesk calls are an important source of information on client needs. In other sectors, studies of the helpdesk are proposed as a way to improve client communication design, product design, and work processes in the agent organization (Link, 2002; Marcella & Middleton, 1996). In this chapter, we will explore the helpdesk as a source for diagnostic information on the pension communication environments offered to clients.

2.2 Media synchronicity theory

The analysis of multichannel communication environments requires a perspective on the strengths and limitations of the various channels concerned. Media synchronicity theory (MST; see Dennis, Fuller, & Valacich, 2008) offers some helpful distinctions regarding communication processes and media capabilities. First, MST posits two primary communication processes: conveyance and convergence. *Conveyance* consists of distributing new, diverse, and potentially large bodies of information. *Convergence* is about creating shared interpretations of preprocessed information. We make a distinction between two types of convergence. First, when individuals largely agree on the interpretation of the situation, convergence does not require extensive information processing, but focuses on those elements that still need adjustment; we will call this 'micro-convergence' for fine-tuning processes. Second, when two individuals contribute very different interpretations or backgrounds for interpretation, we will call this 'macro-convergence'.

Many communication tasks require a combination of both conveyance and convergence, but generally one of them is more prominent. In the pension context, a typical conveyance task would be to explain what it means when pensions are 'indexed' (receive an annual inflation correction), or what pension commutation is and who is eligible for it. As an example of a task that is primarily about micro-convergence, imagine a client wanting to check whether or not he is eligible for a particular pension option; convergence at the macro-level is the concern when a client has studied information on various kinds of pension repair plans and wants to talk with somebody to find out which plans are most advisable given her personal situation. In such an interaction, the interlocuters contribute very different interpretational backgrounds.

The second key concept in MST is *synchronicity*. Synchronous channels, such as face-to-face conversations or telephone calls, provide the option for the communicators to immediately respond to each other's contributions. Asynchronous channels, such as written and digital text, do not enable pension plan members to create immediate responses, but they have other affordances: they enable pension plan members to selectively process messages and to process them at their own pace. Crucially, MST assumes that convergence processes require more synchronous channels, while conveyance processes are better handled by less synchronous channels. That is, some questions can best be solved in interactive channels, while others can best be studied on the pension fund's website.

In terms of MST, the synchronous helpdesk channel is the optimal choice for convergence tasks. We may expect both micro-convergence (fine-tuning interpretations) and macro-convergence (advice) tasks to be taken on in such calls. Of course, helpdesks are only one of the many media that are used by pension organizations: their clients are provided with letters, brochures, and websites, as was shown in Chapter 2. According to MST, such media are preferably used for conveying information. For clients using this documentation, the helpdesk is a natural second option when the need for micro-convergence arises. But there may also be a need for macro-convergence support. That is: help with applying the conveyed information to the caller's pension situation. Finally, helpdesks may also concern information that is found to be lacking in earlier media. From work on IT helpdesks, we know that helpdesk callers often say that documents are hard to find, or do not contain the required information (Steehouder & Hartman, 2003; Steehouder, 2007). In such cases, helpdesks are used as a back-up conveyance channel.

In this section, three potential roles for pension helpdesk calls were suggested. The calls may provide convergence on preprocessed information, either on a macro-level or a micro-level, or they may convey information that clients do not find or do not understand in other channels. This chapter will address which of these roles the pension helpdesk currently takes.

3. CORPUS AND METHODOLOGY

3.1 Corpus

This study was carried out on an audio corpus collected at the client contact center of a Dutch pension administrator that services several pension funds. Because smaller pension funds often only consist of a management board, many outsource their activities – such as managing pension assets, the pension administration, and the client communication – to an administrator. Usually, the helpdesk is also outsourced. The helpdesk where our data were collected processes phone calls of the clients of about thirty different pension funds.

Clients can contact the helpdesk with all sorts of questions about their pension and related matters. On a weekly basis, the investigated helpdesk receives approximately 5000 telephone calls. This number is usually higher during periods in which important letters or mailings, such as the *Annual pension statement*, are sent to clients. Every day, 30-35 helpdesk agents are present to answer the phone as well as emails and letters. In total, the client contact center employs approximately 65 full-time and part-time helpdesk agents. For this study, 77 phone calls were recorded, in which five helpdesk agents and 77 different callers were involved. The duration of the recordings varies from 27 seconds to 13.30 minutes, with an average duration of 3.45 minutes. The calls were recorded in November 2012.

3.2 Methodology

The recorded material was transcribed and made anonymous. Two analysts subsequently analyzed all calls for client questions. A question was considered a client question if it addressed a new topic. Follow-up questions on the same topic prompted by the conversation were left out of consideration. The analysts found 97 questions in the first round. They then sat together in order to agree on the remaining questions. This resulted in a total of 104 client questions. Thus, some clients call the helpdesk for more than one question.

In order to be able to answer the first research question ('For what reasons do clients call the helpdesk?'), the questions were categorized for *trigger events* and *topics*. Trigger events are the events that immediately trigger the client to make the call, such as a letter recently sent by the pension organization. Clients often open their call with a reference to this event as a reason for calling. A first analysis of all trigger events resulted in a list of three trigger event categories and a zero-category:

- media provided by the pension fund, such as letters and magazines;
- life events such as a divorce, a discharge, or a casualty;
- press publications about pension issues;
- no reference to any event.

In the next stage, the type of trigger event was scored for every call, based on statements of the callers. Some of these statements were unambiguous (e.g. 'I received this letter but I don't understand…'), others were more difficult to categorize (e.g. 'I've had an overdue pension of six years (…) And then I wanted to know if I also have to pay tax?'). In the last case, the caller will likely have received a message from the pension fund to notify him of this overdue pension, which made us categorize this question as a communication event.

The calls were also scored for question topic. A first analysis resulted in a list of nine topics plus an 'other' category:

- Pension commutation
- Old-age pension
- Status of registration and/or participation at pension fund
- Partner pension
- Income tax
- Personal details
- Disability pension
- Pre-pension
- Transfer of pension benefits
- Other

Every call was scored into one of these categories. Furthermore, the callers' questions could focus on *financial* issues, such as the question from a client how much she will receive after retirement, or focus on *administrative* issues, such as a new form that has to be filled out, or the date of divorce that has to be registered. For every call the type of focus of the topic was scored.

4. RESULTS

4.1 Reasons for calling: trigger events and topics

4.1.1 Trigger events

In paragraph 3.2 we have distinguished three types of trigger events for clients to pick up the phone: communication events, life events, and press events. Table 3.1 shows that communication events are involved in the majority of the questions (54%). These events directly point to potential problems in the multichannel communication environment: messages provided by the pension fund (such as a letter, an *Annual pension statement*, the website, or a form) have triggered the caller to call the helpdesk. This generally means that this communication activity has not been entirely successful, causing the caller to ask for clarification (micro-convergence) or extra conveyance of missing information.

Table 3.1 *Trigger events and topic focus in the helpdesk calls.*

Focus	Financial focus	Administrative focus	Total
Trigger event			
Communication event	30	26	56
Life event	8	11	19
Press event	-	1	1
No event reference	9	19	28
Total	47	57	104

Life events triggered 18% of the questions, such as a discharge, relocation, or a casualty. Because life events usually lead to changes in clients' pension situations, pension organizations encourage their clients to check their financial situation when something changes in their life and to take action if necessary. There was only one call triggered by a press publication that has brought the clients' pension situation to his or her attention. In the remaining 27% of the questions, there was no explicit reference to a trigger event. Callers about life events and callers that did not refer to trigger events at all appeared to select the helpdesk as their primary client communication channel, which we base on the fact that they do not seem to bring any preprocessed information to the conversation.

4.1.2 Financial and administrative issues

Calls may address both financial and administrative issues. Questions with a financial focus are questions about premiums, benefits, and financial choices and changes. Questions with an administrative focus include requests, checks and adjustments on personal information, inquiries for dates of payment, contact data, and documents. Callers asking an administrative question usually just want to complete an administrative task. Table 3.1 shows that both financial and administrative issues are found in calls triggered by communication events, life events, and in calls without event references.

Fragment 1 is a typical call triggered by a communication event – the letter mentioned in lines 6 and 7 – which raises a financial question.

Fragment 1 (TG005)

2 C Yes good morning this is Mrs. Wijnen[8]
Ja goedemorgen met mevrouw Wijnen
3 Eh I had received forms from you eh eh because I eh will
Eh ik had formulieren van jullie gekregen eh eh omdat ik

8 The callers, helpdesk agents, pension funds, and employers are made anonymous by using fictive names.

4		eh retire early January
		eh begin januari met pensioen ga
5	HA	Yes
		Ja
6	C	Eh and I have a letter- eventually I have filled in all these forms
		Eh en heb ik een brief- uiteindelijk ik heb die formulieren allemaal ingevuld
7		I have received a confirmation letter and in which it is confirmed what I
		Heb ik een bevestigingsbrief ontvangen en daar wordt in bevestigd wat ik
8		filled in
		ingevuld heb
9	HA	Hmhm
		Hmhm
10	C	But no pension amount is mentioned in it
		Maar d'r wordt geen pensioenbedrag genoemd
11	HA	No you will receive receive a eh final allotment in the month itself
		Nee daar krijgt u in de maand zelf krijgt u daar een eh definitieve toekenning van
12	C	Yes because that formulation of that line that was that is why I'm calling
		Ja want die formulering van die regel die was dat was is waarom ik bel
13		It doesn't say that there eh it says "in the month of your payment that your
		Er staat niet bij dat daar eh er staat "in de maand van uw uitkering dat uw
14		payment starts we inform you about the final allotment."
		uitkering ingaat informeren wij u over de definitieve toekenning."
15		I think it should have said 'about the final amount'
		Ik denk daar had moeten staan 'over het definitieve bedrag'
16	HA	Yes
		Ja
17	C	Because I already have that allotment of course
		Want die toekenning die heb ik natuurlijk al
18	HA	Yes but this really is about the choices made but sometimes it is, say, that someone
		Ja dit gaat echt over de gemaakte keuzes maar soms is het zeg maar dat iemand
19		is still employed or that we don't have the right details of the employer yet
		nu nog werkzaam is of dat we niet de goeie gegevens van de werkgever nog hebben
20	C	Oh hence that
		Oh vandaar die
21	HA	And then
		En dan
22	C	sentence eh formulation
		zins eh formulering

In this fragment, the caller contacts the helpdesk because she feels the letter has given her incomplete – or as she assumes even wrong – information. She relies on the helpdesk to repair this situation. The helpdesk agent states in line 11 that the caller will receive an allotment later. Then it turns out that the caller believes that a mistake has been made by the pension fund (line 15): she believes that she has already received the allotment and that the only information missing is the pension amount. She assumes that the 'allotment' (Dutch: *toekenning*) is the decision whether or not she will receive pension payment, but it actually refers to the amount she will receive. By mentioning in line 15 that the letter should have said 'the final amount', the caller even proposes a revision for the letter. In lines 18 and 19 the helpdesk agent implicates that the caller's reading is incorrect, although she does not show that she understands why the caller is confused. In lines 20 and 22, the caller accepts the answer. As a result, the caller claims to understand the information stated in the letter.

The caller's misunderstanding of this document is an example of a difference in interpretation of pension jargon between a layperson and a professional. The institutional jargon used in the letter, and again by the helpdesk agent in line 11 ('allotment'), receives an incorrect interpretation by the caller. The helpdesk agent does not explicitly recognize the interpretation difference, but her answer seems to lead to a correction in the caller's interpretation. In MST terms, the conveyance process initiated by the letter was unsuccessful, and the helpdesk call is needed to provide micro-convergence that eventually results in a shared interpretation.

Fragment 2 is a call triggered by a life event that raises a financial question. The callers' wife is planning to quit her job before her actual pension date, and he therefore wants to know what the consequences for her pension would be (lines 25-32).

Fragment 2 (TG071)

2	C	Good morning sir this is eh Hoekstra from Eindhoven
		Goeiemorgen meneer u spreekt met eh Hoekstra uit Eindhoven
3		Eh I have a question on behalf of my eh my my wife she works eh
		Eh ik heb een vraagje dus namens mijn eh mijn mijn vrouw die werkt eh
4		a- almost thirty-five years at B- at BTV and she is with your pension
		b- bijna vijfendertig jaar bij B- bij BTV en die is bij uw pensioen
5		eh eh fund
		eh eh fonds

……..(10 lines omitted) ……..

16	HA	And what do you want to ask about it?
		En wat wilt u erover vragen?
17	C	Eh well so she now is eh almost eh s- sixty-three [coughs]
		Eh nou ze is dus nu eh bijna eh d- drieënzestig [kucht]

18		And she plans to eh in consultation with eh with her eh with her
		En ze is van plan in eh samenspraak met eh met haar met haar eh met haar
19		employer to quit at the end of next year
		werkgever om eind volgend jaar d'rmee te stoppen
20	HA	Yes and [of course you want to know what that means for the pension
		Ja en u wilt [natuurlijk weten wat dat voor het pensioen betekent
21	C	[and
		[en
22		Yes I wanted to k- k- k- know she wanted to know what that means for her
		Ja dat wou ik dus w- w- w- wou ze eens weten wat dat voor haar betekent
23		That what is currently the case I am a couple of years older than my wife I'm already retired
		Dat wat is nou het geval ik ben dus paar jaar ouder als mijn vrouw ik ben al met pensioen
24	HA	Hmhm
		Hmhm
25	C	And if she eh my question is at a certain point what eh what does it mean for her
		En als zij dus eh mijn vraag is op een gegeven moment van wat eh wat betekent dat voor haar
26		pension, imagine ehm if she retires next year eh so eh January
		pensioen, stel nou ehm als ze met pensioen gaat volgend jaar eh dus eh januari
27		two thousand fourteen
		tweeduizendveertien
28	HA	Hmhm
		Hmhm
29	C	Then eh and so she lets eh eh then she has some kind of prepension
		Dan eh en ze laat dus eh eh dan heeft ze dus een soort prepensioen
30	HA	Yes
		Ja
31	C	But she won't let it be paid out she only lets it be paid out when eh she won't let it be paid out
		Maar dat laat ze dus niet uitbetalen dat laat ze pas uitbetalen eh dus helemaal niet uit laten
32		at all
		betalen

……..(5 lines omitted) ……..

38	HA	Well before you proceed ehm a client advisor is able to exactly r- calculate the effects
		Nou voordat u verder gaat ehm een cliëntadviseur die kan precies de eh gevolgen r- berekenen

39		for the pension they also do more advising than I do myself so I actually want to
		voor het pensioen die doen ook meer advisering dan dan ik zelf doe dus ik wil u eigenlijk
40		put you through with one of them
		doorverbinden met een van hun
41	C	Yes okay
		Ja goed

In this example, the caller contacts the helpdesk to find out what effect a certain life event – retiring early – will have on his wife's pension. Retiring early is a decision that may be evaluated in terms of its financial consequences. The agent seems to read the caller's question in this light, and he treats it as a request for financial advice: would it be a financially wise decision to retire early? Since Dutch pension helpdesks are legally not allowed to give financial advice, the helpdesk agent proposes to contact a financial advisor to help the caller. This conversation is one of the five examples in our corpus where the helpdesk serves as a gateway to financial advice, with the helpdesk agents as gatekeeper: he or she decides whether referring to an advisor is necessary or not. From an MST perspective, the conversation initiated by the caller is an example of a request for macro-level convergence support.

4.1.3 Topics

Besides trigger events, the topics of the questions are analyzed. Table 3.2 lists the topics that are addressed four times or more in our data, as well as the focus of these questions.

First, we can conclude that old-age pension is the most frequent question topic, with a total of eight questions with a financial focus, and eighteen with an administrative focus. Other often-addressed question topics are pension commutation and the status of registration and/or participation with the pension fund. Question topics that occurred less than four times are brought together in the 'other' category.

Some of the topics come up only with a financial focus, such as pre-pension and income tax, or only with an administrative focus, such as personal details. Other topics, such as pension commutation, occur with both a financial and an administrative focus. The difference is shown in two fragments below. In Fragment 3, in which a financial question on pension commutation is asked, the caller wants to know more about what pension commutation is and how it works (line 51).

Table 3.2 *Topics raised in helpdesk calls.*

Focus	Financial focus	Administrative focus	Total
Topic			
Old-age pension	8	18	26
Pension commutation	12	7	19
Status of registration and/or participation at pension fund	0	11	11
Partner pension	5	1	6
Income tax	5	0	5
Personal details	0	5	5
Disability pension	2	2	4
Pre-pension	4	0	4
Transfer of pension benefits	3	1	4
Other	8	12	20
Total	47	57	104

Fragment 3 (TG002)

49 C And uh such as the commutation arrangement what uh
En eh zoals de afkoopregeling wat eh

50 HA Yes
Ja

51 C what kind of uh how is that calculated?
wat is dat dan voor eh hoe wordt dat berekend?

52 HA Yes that is only possible when someone has accumulated less than four hundred euro
Ja dat is alleen mogelijk als iemand minder dan vierhonderdachtendertig euro

53 forty four uh of old age pension in total
vierenveertig heeft opgebouwd eh aan ouderdomspensioen in totaal

54 C Yes
Ja

55 HA But you are above that anyway so that does not apply to you
Maar u zit daar sowieso boven dus dat is niet voor u van toepassing

56 C Oh I am indeed? I thought well that amount of mine is so small
Oh toch wel? Ik denk nou dat bedrag van mij is zo weinig

In this fragment, the trigger event is a life event: the caller will retire next year. In this encounter, the caller does not seem to realize that commutation is only possible below a certain pension amount. Hence her financial question about the calculation seems to be unnecessary. The caller does not refer to any preprocessed information here, which gives this helpdesk call a pure conveyance character.

When clients do not consult any other channels provided by the pension fund before contacting the helpdesk, they seem to use the helpdesk as their primary client communication channel. In those cases where callers could have found answers to their question in other components of the communication environment, but were unfamiliar with the media, or lacked the motivation to use them, we might consider this a problem.

The next fragment is about pension commutation as well, but it is not about commutation as a concept. The caller just wants to know when she will receive a certain amount of money (line 15), which makes the question an administrative one.

Fragment 4 (TG054)

2	C	Yes good afternoon uh sir this is Mrs. Verhulst speaking and I call about the a uh
		Ja goedemiddag eh meneer u spreekt met mevrouw Verhulst en ik bel over de een eh
3		commutation of old-age pension
		afkoop van ouderdomspensioen
……..(6 lines omitted) ……..		
10	HA	The commutation what do you want to ask about that?
		De afkoop wat wilt u daarover vragen?
11	C	Uh I received a letter from you on October uh fourteenth
		Eh ik heb een brief van u gekregen op veertien eh oktober
12	HA	Hmhm
		Hmhm
13	C	And that says that uh that commutation sum will soon uh be paid on my bank account
		En die zegt dat eh dat afkoopsom eh zal binnenkort eh op mijn rekening eh worden betaald
14	HA	Hmhm
		Hmhm
15	C	And I would like to know you know when that uh will happen or has it happened or uh I
		En ik zou graag willen weten weet je wanneer dat eh zal gebeuren of is het gebeurd of eh ik
16		haven't uh received anything yet
		heb eh niets ontvangen nog
17	HA	Okay I'm going to check
		Oké ik ga het even controleren
18		(22 seconds pause)
19	C	Yes
		Ja

20	HA	Well it hasn't been paid yet that will happen between the twentieth and the twenty fifth of *Nou het is nog niet uitgekeerd dat zal gebeuren tussen de twintigste en de vijfentwintigste van*
21		November *november*
22	C	Okay thanks *Oké bedankt*

This fragment refers to earlier communication that does not meet the information needs of the client. The caller knows she will receive an amount, but does not know when. Although this administrative information is known to the pension fund (line 20), it is not given. This incomplete conveyance prompts a phone call for completion.

We have seen that callers contact the helpdesk because of a communication event, a life event, a press event, or without referring to any trigger event. Questions triggered by these events lead to extra conveyance as well as micro-convergence. That is, the helpdesk mainly provides rather simple pieces of missing information, or clarify earlier documents. We also found some instances where the caller has a need for financial advice, for which preprocessed pension information has to be combined with client information (macro-convergence). We have additionally seen that many questions are not financial, but administrative: they concern administrative transactions going on between clients and financial institutions. The pension topics that clients call about vary considerably, but in our data pension commutation and old age pension are the most frequent. These may happen to be the concerns that were at stake in the trigger events taking place during our data collection period.

4.2 References to other media provided by the pension funds

Chapter 2 of this dissertation has provided an overview of the communication environment of pension organizations. In this study, we investigated if and how often the components of this environment are referred to in helpdesk calls (see Table 3.3). Every mention of a medium is considered a reference. Callers refer to other media more often than helpdesk agents, especially when it comes to letters. This matches the results we found on the trigger events, where communication events were the most common motive for clients to pick up the phone. The only two 'media' that helpdesk agents refer to more often than callers are the website and the pension consultant.

Table 3.3 *References to other media in the helpdesk calls.*

	Brought up by helpdesk agent		Brought up by caller		Total*
	Financial focus	Administrative focus	Financial focus	Administrative focus	
Letters	2	2	18	12	34
Forms	0	11	4	10	25
Annual pension statement	4	3	3	8	18
Website	1	7	1	3	12
Phone call	0	2	0	3	5
Pension consultant	4	0	0	0	4
Introduction letter	0	1	0	2	3
Brochure	0	0	1	1	2
Total**	11	26	27	39	
Total***	37		66		103

** Total amount of references per medium*
*** Total amount of references for helpdesk agents and callers (split into financial/administrative)*
**** Total amount of references for helpdesk agents and callers*

In our data, both helpdesk agents and callers refer mainly to other media from an administrative perspective. Helpdesk agents do not often refer to other components within the communication environment from a financial perspective (11 out of 37 times). The majority of financially focused media references by agents are to the *Annual pension statement* and to pension consultants that may be able to provide more information. Callers do so more often: 27 out of 57 times, mostly to letters. In the financial calls, other media are more often prompting questions than providing answers.

We should note that pension funds provide more media than are mentioned in Table 3.1, such as magazines, (digital) newsletters, books, (digital) annual reports, postcards, client portals, online pension planners, videos, smartphone applications, social media, face-to-face consultations, information meetings, and webinars (see Chapter 2). No references to these channels were found in the data, neither by callers nor by agents. This absence may have various explanations. Perhaps these media are not actually used by clients, perhaps they are used satisfactorily. In either case, they do not seem to give rise to questions.

We will now explore the functions of references to other media in helpdesk calls. Our data suggest that callers may make such references when they need the pension organization:

- to solve a comprehension problem;
- to solve a problem of missing information or findability;
- to solve a problem of incorrect or inconsistent information;

- to solve an administrative failure.

First, let us take a look at the fragments we have seen so far. In Fragment 1 above, the caller needs help to solve a comprehension problem. In line 12, it appears that the caller is confused by a sentence that can be interpreted in two different ways. As a result, she is puzzled about whether she can be sure she will receive pension payment. In Fragment 4 we encounter a missing information problem. The caller wants to know (in line 15) when her commutation sum will be paid. This information seems to be lacking in the letter, as the caller reads the sentence in which the information could have been inserted (line 13). But of course, in other cases the information may have been present but was not found in the document.

So far, this exploration reaffirms the analysis in the preceding section. But we also encountered two new functions of media references by callers. One of these functions is seeking a repair of inconsistent information, as illustrated in Fragment 5. Here, the reference is made in line 19. The caller has read a brochure stating that in case of a passed spouse certain arrangements will be made by the pension fund automatically. In this case, these arrangements have not been made. The reason for this is that the caller had a cohabitation arrangement (line 22) with his spouse, whereas the automatic arrangements are only made in case of a marriage or a registered partnership (line 39-40). The caller does not seem to realize that there is a difference between his cohabitation arrangement and a registered partnership, resulting in confusion about the lack of action from the pension fund. When calling about this, the misunderstanding – with an administrative focus – is not cleared up: the helpdesk agent simply states the assumption of the caller is incorrect. She does not really try to understand why a misunderstanding has occurred: she does not explicitly acknowledge the callers' mentioning of the brochure (line 19), nor does she pick up on the incorrect conclusion the caller draws from the text he reads there (line 39-41). She just reports the rules that are known to her.

Fragment 5 (TG003)

14	HA	What is your question about?
		Waar heeft u een vraag over?
15	C	My partner died on September tenth
		Mijn partner is op tien september overleden
16	HA	Sorry for the loss
		Gecondoleerd met het verlies
17	C	Thank you
		Dankuwel
18		but I haven't heard anything further from you yet and it does say in
		maar ik heb verder nog niets van jullie vernomen en er staat wel in

19		the in the brochure that it is known and that it will be taken care of but
		de in de brochure dat het bekend is en dat het geregeld wordt maar
20		(2 seconds pause)
21	HA	Because you had a uh marriage or a cohabitation arrangement?
		Want u had een eh huwelijk of een samenlevingsovereenkomst?
22	C	I had a cohabitation arrangement with a duty of care
		Ik had een samenlevingsovereenkomst met een zorgplicht
23	HA	Okay yes because I see that we that uh that we have not registered that yet so what you
		Oké ja want ik zie dat er dat eh dat nog niet geregistreerd hebben dus wat u
24		could do is send a copy of your cohabitation arrangement to us
		kunt doen is een kopie van uw samenlevingsovereenkomst aan ons toesturen
25	C	Yes
		Ja
26	HA	And yes that you then also request uh the application forms for the
		En ja dat u daarbij dan ook eh de aanvraagformulieren voor het
27		dependants' pension
		nabestaandenpensioen opvraagt
28	C	Hmhm
		Hmhm
29	HA	And then we can send it to you
		En dan kunnen we dat aan u toe sturen.
30	C	Yes could you already do that for me then those uh forms?
		Ja kunt u dat voor mij alvast doen dan die eh formulieren?
31	HA	Yes you should first- get the cohabitation arrangement because I
		Ja moet u eerst- het samenlevingsovereenkomst binnenkrijgen want ik
32		see that we haven't received that yet
		zie dat we die nu nog niet hebben ontvangen
33	C	No because that that so it says that- that in the brochure I get the impression that it
		Nee omdat dat- dat dus er staat dat dat in de brochure krijg ik de indruk dat het
34		is all- all arranged actually
		allemaal- allemaal geregeld is eigenlijk
35	HA	Okay no a marriage is taken care of by us but a
		Oké nee een huwelijk wordt wel bij ons geregeld maar een
36		cohabitation arrangement should really uh yes should really
		samenlevingsovereenkomst moet echt eh ja moet echt
37	C	Oh but it says here
		Oh maar er staat hier
38	HA	be sent to us.

		naar ons toegestuurd worden.
39	C	'You should sign up your partner (.) If you are married or have a registered
		'U moet uw partner aanmelden (.) Als u getrouwd bent of een geregistreerd
40		partnership the partner is automatically known to us'
		partnerschap heeft is de partner automatisch bij ons bekend'
41		But okay that appears not to be the case then
		Maar goed dat blijkt dan niet het geval te zijn
42		I will make a cop- copy of it and I will send it to you
		Ik maak er wel een kop- kopie van en dan stuur ik dat wel op

In this fragment, it becomes clear that the information in the two channels that the client encountered – the brochure and the phone call – does not seem to match, which confuses the caller. The helpdesk agent fails to empathize with the caller and does not try to understand how the misunderstanding has happened. At the end of the call, the problem is solved, but not to the complete satisfaction of the caller: he sounds annoyed as he hangs up the phone. From an MST perspective, the call requires a micro-convergence process. In this particular case, more involvement of the helpdesk agent could have ultimately led to an improvement of the brochure, in which the difference between a cohabitation arrangement and a registered partnership is more explicitly. This incident indicates that phone calls are not considered a part of the communication environment: an integrated approach is lacking. The helpdesk agent seems mainly interested in completing the call, and not in the satisfaction of the caller or the quality of the brochure. In this example, we find a new role of helpdesk calls in relation to other channels: that of correction. Needless to say, such a role needs to be minimized, as it may lead to frustrations for callers.

The final context of media references in helpdesk calls is the occurrence of an administrative failure. This automatically implies that this question is an administrative one. In Fragment 6, the caller contacts the helpdesk because of a proof of life form – a written statement that a particular citizen is alive – that the pension fund has failed to send to her. After the caller has described her situation and the form she needs (lines 2-10), the helpdesk agent states that she can find the document online (line 12).

Fragment 6 (TG013)

2	C	Hello this is Mrs. Govers speaking I called just now as well
		Daag u spreekt met mevrouw Govers ik heb straks ook al gebeld
3		About ehm I live in Spain
		Over ehm ik woon in Spanje
4	HA	Yes
		Ja

5	C	and uhm about documents I have to send over but now I went over to
		en ehm over stukken die ik op moet sturen maar nou ben ik vanmorgen bij
6		the office this morning for a proof of life, attestation de vita
		kantoor geweest voor een bewijs van leven, attestatie de vita
7	HA	Yes
		Ja
8	C	But you should have a form for that that I that I uh have to
		Maar daar moeten jullie een formulier voor hebben wat ik wat ik eh daar moet
9		get signed there
		laten tekenen
10		She says every pension fund in the Netherlands has such a form
		Ze zegt ieder pensioenfonds in Nederland heeft zo'n formulier
11	HA	Because do you have Internet?
		Want heeft u internet?
12		Because that is indeed on our website
		Want dat staat inderdaad op de website van ons
13	C	Yes but I do not have a printer
		Ja maar ik heb geen printer
……..(28 lines omitted) ……..		
41	C	Yes well why don't you enclose it?
		Ja waarom doen jullie dat er niet bij?
42		That's a lot easier isn't it
		Dat is toch een stuk makkelijker
43	HA	Eh normally it is enclosed I believe but
		Eh normaal gesproken zit -ie er wel bij volgens mij maar
44	C	Yes well not this
		Ja nou dit niet.

The reason that this client contacts the helpdesk is that she needs a form. Later on in the call (line 43) it turns out that the pension fund probably should have provided this form, but apparently failed to do so. In other words, it is not a communication failure but an administrative failure: the problem that has to be repaired lies in the administrative process of the pension organization. Here, the helpdesk does not repair other communication processes but non-communicative procedures.

Not only callers, also helpdesk agents refer to other channels. The data suggest that they do this when the medium referred to can solve the caller's problem, as can be seen in Fragment 6. Here, the helpdesk agent refers to the pension fund's website, because a form can be downloaded from there (line 12). Obtaining this form would solve the caller's problem.

This section has shown that in our data, references to other media in helpdesk calls are more often done by clients, and are often focused on administrative matters. Clients generally refer to letters, forms, and the *Annual pension statement*. They seem to do this when they need the pension organization to repair a problem: a comprehension problem, a missing information problem, a problem of incorrect information, or an administrative failure. Helpdesk agents seem to refer to other channels when this can help callers to answer their questions. What is conspicuously lacking in the data is helpdesk agents referring to other media to answer questions for financial information. That is, agents seem to be operating 'on their own' when it comes to informing the client. This is another indication that an integrated approach to the client communication process is lacking.

4.3 Improving the multichannel communication environment of pension organizations

We have seen that helpdesk calls are being used as a repair mechanism: clients that face a comprehension problem, missing information, a problem of incorrect information, or a problem of administrative failure, use the phone to ask their question. In their study of IT helpdesks, Marcella and Middleton (1996, p.10) describe the traditional helpdesk as "a bucket underneath a leak". In our data the leaks are often communicative in nature. According to Marcella and Middleton, helpdesks should "be fixing the leak, and looking out for more bad weather: problems are not solved by the bucket, they are solved by preventing the need for one" (1996, p.10). In our case, this would mean using the helpdesk calls as an information source to improve the media provided by the pension organization. We propose three ways to do this.

4.3.1 Logging reasons for calling

Logging information on trigger events and question topics will help to understand the reasons for calling. At a minimum, this provides insight into the topics that are important for clients, especially those who prefer to use the helpdesk as their primary information channel. Monitoring these trigger events and topics may lead the communication department to use other channels, like social media and websites, in order to prevent a further rise of helpdesk calls.

4.3.2 Linking information on client questions to demographic user information

The helpdesk could also be used to log demographic user information, such as gender and age. Most of the callers need to provide their social security number, which enables the helpdesk agent to access their personal pension information. Linking this information to the question topics and possible other information on client questions, provides insight into wishes and needs of different demographic groups and helps providing tai-

lored communication in the sense of Hawkins, Kreuter, Rescinow, Fishbein, and Dijkstra (2008): creating media in which information about clients is used to provide specific content for specific clients.

4.3.3 Using caller problem information to improve other media

The problems revealed in calls triggered by communication events can be used to improve existing media: unclear, incorrect, incomplete, and inconsistent information can be re-designed. Most of the problems in our example fragments were 'local': they concerned specific pieces of information in specific documents, thus allowing targeted improvements. These improvements should eventually lead to fewer telephone inquiries on information problems, so that the helpdesk will have more room for calls about individual client topics. In principle, telephone calls are optimally fitted for such topics, given their potential for a personal approach. That is, the helpdesk will be less occupied by conveyance, and could be used more for micro-convergence and accurate 'gatekeeping' by transferring callers to financial advisors.

We should note that the helpdesk calls do not offer complete information on the quality of other communication components. If a pension topic does not raise any helpdesk questions, this does not mean that the corresponding information provided is satisfactory. On the contrary, improving this information may lead to an increase in phone calls when clients who did not access the information before start to use it now, and this leads to new questions. Therefore, improving the communication environment of pension organizations is a continuing and never-ending process. Another caveat is that we should not consider all communication problems as solvable. As was discussed in Chapter 2, financial communication is often subject to government regulations – such as the obligation to add extensive disclosures – that may conflict with the goal of usable and comprehensible pension communication.

5. CONCLUSION

In this study, we categorized the reasons for calling to a pension helpdesk, and illustrated a number of typical problems and the ways they are addressed by callers and agents. In our data, the helpdesk is approached by two kinds of callers. The first group seems to use the desk as their primary channel of client communication. The second group of callers wants to solve problems with other media. Thus, pension helpdesk calls often take on the role of a repair mechanism: they convey extra information, clarify preprocessed information, and even disclose incorrect information and administrative failures. To play these roles, helpdesk agents need to be sufficiently aware of the existence and content of the other media provided by the pension funds. In the phone calls we studied, this

seems to be an area for improvement. A lack of such helpdesk agent awareness may cause confusion and sometimes even annoyance with the callers.

The helpdesk will always remain the preferred channel for a certain group of clients; its remediating role however is sensitive to the design of the multichannel communication environment. Logging the communication-related problems in helpdesk calls will allow measures to be taken that could reduce the number of calls on specific information problems. That is, the organization could reduce the 'extra conveyance' role of its helpdesk by improving its communication environment, especially by making it more coherent. Another benefit of such a policy could be that it may free helpdesk resources for micro-convergence as well as optimizing the helpdesk agents' role as gatekeeper, which would benefit the quality of macro-convergence: personal advice to clients wanting to use information in making pension decisions. This will 'upgrade' the helpdesk facility, and hence extend the communication support for pension clients.

CHAPTER 4

THE ROLE OF PRIOR KNOWLEDGE, LANGUAGE SKILL, AND TEXT PRESENTATION IN FINDING INFORMATION IN PENSION DOCUMENTS

ABSTRACT[9]

This study examined the effects of (a) text presentation and (b) prior knowledge and language skill on finding information in financial documents. First, the participants filled out tests that measured their levels of vocabulary, reading skill, domain knowledge, and topic knowledge. Subsequently, they read an on-screen text on pension information in either a linear structure ('non-layered') or a hierarchical hypertext structure ('layered'). Reading performance was measured by verbal scenario questions. No difference was found for text presentation. Language skill and domain knowledge were both important predictors for finding, whereas topic knowledge was not associated with reading performance at all. When differentiating between text presentation conditions, we found that domain knowledge only plays a role in the non-layered condition, not in the layered condition. These results indicate that the set of skills needed to successfully read a document varies with type of reading (Internet versus print materials), confirming prior research.

1. INTRODUCTION

Adults spend a significant amount of their daily reading-related time using informational prose (Smith, 2000; White, Chen, & Forsyth, 2010). They usually do not need to understand these texts as a whole, and therefore only read them selectively to extract specific content that helps fulfilling their task, e.g. answer a question or take action. As a result, only parts of the text are relevant to them, depending on the tasks and goals they have (Duggan & Payne, 2009; McCrudden & Schraw, 2006). Sticht (1977) identifies this type of reading task as *reading-to-do* (as opposed to *reading-to-learn*): it involves looking up and reading information to accomplish a task, and can then be forgotten.

Financial texts are often read to extract specific content in order to accomplish a task. This genre, which typically contains information about products such as mortgages, savings accounts, or investments, is generally considered difficult to understand and is known to meet with resistance from readers. In the Netherlands, for example, this problem is experienced with pension documents. An important reason for the current deficiency of financial documents is that readers are often provided with more information than they can handle (Visser, Oosterveld, & Kloosterboer, 2012; also see Chapter 2). This is happening to a significant extent because of legal obligations that financial organizations have when it comes to informing consumers (Ben-shahar & Schneider, 2011; Stark & Choplin, 2010) but also because these organizations incorrectly assume that clients actually need all this information to be able to make thought-out decisions (Ben-shahar & Schneider, 2011). As a result, readers receive too much information and experience trouble identifying the information that is relevant to them (Eppler & Mengis, 2004). Because of this, they may become demotivated (Eppler & Mengis), ignore parts

9 This chapter is based on Nell, M.L., Lentz, L.R., & Pander Maat, H.L.W. (Submitted). The role of prior knowledge, language skill, and text presentation in finding information in financial documents, and Nell, M.L., Lentz, L.R., & Pander Maat, H.L.W. (2016). *Effecten van gelaagdheid in pensioendocumenten: een gebruikersstudie*. [Effects of layering in pension documents: A user study]. (Netspar Design Paper No. 53) Tilburg, the Netherlands: Netspar.

of the information (Monti, Martignon, Gigerenzer, & Berg, 2009), and make suboptimal decisions (Chewning & Harrell, 1990; Hwang & Lin, 1999; Monti et al., 2009).

A solution that has been proposed[10] to prevent such an information overload for clients of financial organizations and to improve finding and understanding information in these documents is the concept of layering, a hierarchical hypertext structure that is designed to provide readers quick and intuitive routes to the information they need. On the pages at the top of the hierarchy, the first 'layer', the most important information is presented in summary. The second layer elaborates on all the information in the first layer and the third layer contains information at the greatest level of detail, including legal documents. The idea behind this design is that readers who have to be informed about a financial product are not immediately overloaded with information, but are provided only with the basics – making the information easier to process. If readers want or need to know more to feel that they are thoroughly informed, they can access the second layer. And if this information is still insufficient, details can be found in the third layer.

Müller-Kalthoff and Möller (2006; also see Shin, Schallert, & Savenye, 1994) previously tested a variation on the idea of layering. The authors designed one free and one reduced browsing condition of a hierarchically structured two-part hypertext. The participants were tested for prior knowledge. One group of participants was given access to both parts of the hypertext at once (free browsing condition), another group initially had access to only one part and was being directed to the other part after one-half of the allocated time had elapsed (reduced browsing condition). From that moment on they could navigate between the two parts of the hypertext. The group of participants assigned to the reduced browsing version experienced significantly less feelings of disorientation. The browsing condition was not a significant predictor for factual knowledge, but it was for deeper-level comprehension: participants with low prior knowledge who were assigned to the reduced browsing condition scored higher on the structural comprehension test than participants with low prior knowledge assigned to the free browsing condition. In this study, we investigate the effect of a layered online document by comparing it to a linear online document on finding and understanding information. The topic of this document concerns the specifics of the pension arrangement for new pension plan members, which is one of the two main topics that pension plan members are informed about (see Chapter 6). In Chapter 5, the second topic – the financial specifics – is addressed.

10 This way of layering information is proposed by The Federation of the Dutch Pension Funds and the Dutch Association of Insurers in their joint position paper 'Recommendations pension communication [Aanbevelingen pensioencommunicatie]' published on June 27, 2012.

Finding and understanding of information in documents also depends on readers' abilities to deal with this information (O'Donnell, 1993). Within the readers' abilities, two determinants have been distinguished: prior knowledge and language skill (Lentz & Pander Maat, 2013; O'Donnell, 1993; Ozuru, Dempsey, & McNamara, 2009; Stahl, Hare, Sinatra, & Gregory, 1991). In this study, we consider both factors as components of *financial literacy* (Huston, 2010). Prior knowledge and language skill have both proven to play a role in successfully finding and understanding information in texts, although there has not been full agreement on how they relate to each other. For instance, Ozuru et al. designated prior knowledge as the strongest predictor in understanding scientific biology texts, whereas Lentz and Pander Maat found that for reading performance in financial documents language skill was a more powerful predictor. Our main assumption is that the type of reading task plays an important role here. In Ozuru et al. the comprehension questions that measured understanding were answered by the participants based on their memory. We therefore consider their reading task a *reading-to-learn* task (Sticht, 1977): the information that was read had to be stored for later use. In Lentz and Pander Maat the text was actually used during the process of answering questions, which classified this task as a *reading-to-do* task. We expect that searching for information and using it to accomplish a goal requires fewer inferences and therefore less prior knowledge than learning information, which could explain why prior knowledge plays a lesser role in Lentz and Pander Maat than in Ozuru et al. In this study, participants will perform a *reading-to-do* task using an online – either linear or layered – text. Therefore we expect, as was the case in Lentz and Pander Maat, that the role of prior knowledge will not overrule the role of language skill. Additionally, previous research provides evidence that reading in online settings might require a different set of skills than reading in offline settings: prior knowledge of the topic seems to be less important when reading on the Internet than when reading print materials (Afflerbach & Cho, 2008; Coiro, 2011) and even less important when browsing a reduced hypertext than when browsing a free hypertext (Müller-Kalthoff & Möller, 2006). Also, the ability to search for information in online, nonlinear systems appears to be a more important predictor of performance success than both prior knowledge and reading ability (Bilal, 2001). Although the materials used in our study are all read from a computer screen by the participants, there are explicit differences in linearity between the layered and the linear version of the text, as has been described above. We therefore expect that prior knowledge and language skill will be better predictors for performance in the linear condition than in the layered condition.

We will address the following research questions in this chapter:

RQ1. To what extent does layering have an effect on finding and understanding information in financial documents?

RQ2. To what extent do prior knowledge and language skill predict finding and understanding performance in financial documents?
RQ3. Does the role of prior knowledge and language skill in finding and understanding information vary with layering?

2. LITERATURE REVIEW

2.1 Using online documents

In research on the notion of *reading-to-do*, concepts such as findability and applicability of information play an important role. Lentz and Pander Maat (2013) showed that finding the correct information in an *Annual pension statement* is associated with serious complications. This poses a major problem, as the ability to find information is a precondition of actually understanding it (Rouet & Coutelet, 2008). One must note that both concepts cannot be viewed separately: already when searching for correct information, understanding the text is of importance. During the search, the reader interprets certain aspects of the document. For example, the misinterpretation of titles may lead to the reader having incorrect expectations on the contents of the passage, which in turn will lead to ineffective searching.

The notion that finding information is often difficult is due to the fact that the search process consists of an array of smaller tasks. Simultaneously, readers must read part of the text, remember what they are actually looking for, understand information, and determine whether said information is actually relevant to them (Rouet & Coutelet, 2008). The effectiveness of this process is dependent on three separate factors: the characteristics of the document, the type of information that needs to be found, and the characteristics of the searcher (O'Donnell, 1993). Concerning the characteristics of the document, Pander Maat, Lentz, and Raynor (2015) have identified four levels of text structure that are relevant in the design of texts, and which might have an impact on the findability of information. These four levels are:

- *Grouping:* which subjects are placed together in a section?
- *Ordering:* in which sequence are the sections presented?
- *Granularity*: to what extent are subheadings attributed to subtopics?
- *Wording*: how are headings and subheadings phrased?

Pirolli and Card (1999) have developed a theory on finding, collecting, and processing information online: the *information foraging theory*. This theory assumes that while navigating the web, individuals will alter their search strategies continuously in order to gather valuable information. While navigating, they are led by their own need of information (Chi, Pirolli, Chen, & Pitkow, 2001; Chi, Pirolli, & Pitkow, 2000). Based on this theory, Chi et al. (2000) introduced the concept of *information scent* (based on the

scent tracked by hounds during hunts). While searching for information, people tend to follow certain – self-determined – directions. The route taken differs per question and per individual. According to the *information foraging theory*, readers base their course on the information obtained along the way: headings, text, pictures, links et cetera, known as *cues*. If the information gains in relevance as the course continues, the readers are confident they are on the right track. If not, the route will be adjusted. A hyperlink closely reassembling the readers need for information is considered to have a 'strong scent'. Accordingly, 'weaker scented' hyperlinks will have a diminishing chance readers will actually be tempted to click. A literature review by Spyridakis, Mobrand, Cuddihy, and Wei (2007) additionally shows that as hyperlinks become more explicit, readers can determine more adequately what to expect and decide whether the hyperlink is of relevance to them. As such, the quality of structure *cues* provided to the reader plays a crucial role in determining the effectiveness of the search process.

2.2 Effects of hypertext presentation

Since document layering has not been subject of research before, we will concentrate on studies that deal with slightly different forms of hypertext. In studies on performance differences between hypertext and linear text, hypertext has been associated with the construction of better mental models, although results have not been entirely consistent (Salmerón, Kintsch, & Cañas, 2006). Alexander, Kulikowich, and Jetton (1994) concluded from their literature review on the processing of linear and non-linear texts that when readers navigated through hypertexts, they combined fragments in a way that suited their individual needs. In addition, Piolat, Roussey, and Thunin (1997) found that readers showed a more active way of reading when they read a text in a page-by-page display – and were able to flip through the pages – rather than when it was presented to them as one page through which they had to scroll. As a result, readers formed a better mental representation of the information when reading the page-by-page display. These findings contradict those of Foltz (1996), who stated that readers used similar reading strategies for both hypertext and linear texts: most hypertext readers went through their text in the same coherent manner as linear text readers went through theirs. As a result, hypertexts were not understood better than linear texts, nor did hypertext help readers find information better than linear texts.

In many other studies on reading performances on hypertext, prior knowledge is brought into the mix. As was already discussed in the introduction of this chapter, Müller-Kalthoff and Möller (2006) compared two forms of hypertext browsing conditions in a *reading-to-learn* setting. They tested their participants for prior knowledge in advance, and found an interaction effect for prior knowledge and hypertext browsing condition: participants with low prior knowledge performed better on a structural knowledge test if they had worked on the hypertext condition with reduced access than if they had

worked on the free browsing condition. In addition, participants working in the free browsing condition were much more dependent on their prior knowledge level when answering the structural knowledge questions than participants in the reduced browsing condition. Cromley and Azevedo (2009) have investigated the search for information within extended hypermedia (online information environments consisting of multiple webpages) in a *reading-to-do* setting. Middle school, high school, and undergraduate students were asked to search for information on the circulatory system in Encarta, a closed computer environment, while thinking aloud. They were tested on prior knowledge in advance. Overall, the students turned out to be moderately successful, although success did increase by age. Having prior knowledge helped them find the key pages and doing this in fewer moves. Lawless, Schrader, and Mayall (2007) found that students with prior knowledge on the topic of genetics were more engaged in the information on a genetics website than the students without prior knowledge. The knowledgeable students spend more time browsing, viewed more information and followed a more complex navigational path. This resulted in significantly higher scores on the knowledge recall test. Rouet (2003), on the other hand, did not find a strong effect of prior knowledge on document search strategy for students searching hypertexts: participants were not significantly faster or more precise when searching information about a topic relevant to their area of study, although the observed trends did point in that direction. He attributed the lack of a significant effect to the small size of the sample.

In this study, we consider layering to be a special form of hypertext. In the case of layering, the hierarchical structure is explicitly relevance-based. The goal of layering is not just to help readers construct a conceptual structure of the domain, but it is mainly designed to enable readers to easily access the information that is most important to them. Whether or not layering actually facilitates this goal will be investigated in this study.

2.3 Effects of prior knowledge and language skill on reading performance

Previous research on the role of readers' abilities in finding and understanding textual information focuses mainly on prior knowledge *or* language skill effects. Not much is known about the relative roles of both, although there are reasons to assume that investigating this relationship is crucial in understanding performance on online financial documents. In this section, we first discuss studies concerning either prior knowledge or language skill, followed by some studies that compare both abilities.

2.3.1 Prior knowledge

Prior knowledge has been significantly associated with finding (Byrnes & Guthrie, 1992; Symons & Pressley, 1993) and understanding (Gilabert, Martínez, & Vidal-Abarca, 2005; Kendeou & van den Broek, 2007; Kobayashi, 2009; McKeown, Beck, Sinatra, & Loxterman, 1992; Potelle & Rouet, 2003; Tarchi, 2010) information in both online and offline texts.

McDonald and Stevenson (1998) examined the role of prior knowledge in performance on three hypertext topologies: a hierarchical text, a non-linear text, and a mixed text. In the hierarchical version, the nodes formed a strict hierarchy, in which a node at one level provided access only to those nodes directly above and below it. In the non-linear document, the nodes formed a network based on a number of cross-referential links, in which any node could be connected to any number of other nodes. The mixed version had the same hierarchical structure as the hierarchical text, but also had cross-referential links that allowed users to jump across the branches. Participants performed best on the mixed hypertext. Also, knowledgeable participants performed better than non-knowledgeable participants on both the hierarchical and the non-linear hypertext. For the mixed hypertext, no difference between levels of prior knowledge was found. These results indicate that presenting the information in a way that offers a certain amount of guidance, but also enough freedom to connect information – in a way that may vary between individuals – benefits both readers with and without prior knowledge, closing the performance gap between both groups. Coiro (2011) suggests that higher levels of online reading comprehension skills in adolescents may help compensate for lower levels of prior knowledge when they are asked to perform well-defined online locating tasks. These tasks may require them 'to interact with hypertexts in ways that deemphasize the influence of topic-specific prior knowledge on online reading performance' (p. 376). This suggestion is supported by the findings of Calisir and Gurel (2003) and Calisir, Eryazici, and Lehto (2008). In these studies non-knowledgeable readers turned out to understand information better when it was presented in a hierarchical hypertext than when it was presented in a linear text. In addition, whereas knowledgeable readers had an advantage compared to non-knowledgeable readers when reading a linear text, this advantage was not present when it came to hypertexts. Müller-Kalthoff and Möller (2006) additionally showed that users without prior knowledge benefited from reduced access to the contents of a hypertext as opposed to free access to all content areas (also see Shin et al., 1994). In the free browsing condition the participants with high prior knowledge performed better on deep-level comprehension than those with low prior knowledge, whereas no difference was found for the reduced browsing condition. This indicates that reduced access is effective for participants of all prior knowledge levels. Amadieu, Tricot, and Mariné (2010), who compared performances on a network structure and a hierarchical hypertext structure, found similar results and indicated that the hierarchical hypertext structure was beneficial for low prior knowledge readers. Proceeding from this, we might expect that either well-developed online reading skills or transparently structured hypertexts environments overrule the contribution of prior knowledge to finding and understanding performance on hypertexts.

In many studies into the comprehension of offline texts, the concept of prior knowledge has been divided into *domain* knowledge and *topic* knowledge (Alexander,

Kulikowich, & Schulze, 1994; Shapiro, 2004). Domain knowledge covers the broader, pre-existing knowledge an individual has about a certain area, whereas topic knowledge specifically relates to the content of the text. Most of these studies examine either topic knowledge or domain knowledge as a possible predictor for text comprehension in the field of education. Without exception, comprehension correlates positively with prior knowledge in studies on printed documents. Shapiro found that especially domain knowledge was an important factor in text comprehension, even if the text topic was fictional or new to readers. In addition, she showed that novices to a text topic can vary substantively in topic knowledge, and that these variations lead to significant differences in text performance. Alexander, Kulikowich, and Schulze compared domain and topic knowledge in a study on scientific texts. They found that domain knowledge in particular was a strong predictor of expository text comprehension and they explained this by suggesting that domain knowledge acts as a scaffold, into which topic-specific information in the text can be subsumed. The more domain knowledge a reader has available, the stronger and more extensive the scaffold is. In this study, we distinguish between financial knowledge in general (the domain knowledge) and pension knowledge (the topic knowledge).

2.3.2 Language skill

We indicate language skill as the second important factor in finding and understanding information in texts. The level of language skill can be measured in different ways. In this study, we consider *vocabulary* and *reading skill* as two separate constructs of language skill.

The ability of readers to comprehend texts in print is strongly related to their vocabulary (Hall et al., 2015; Malatesha Joshi, 2005; Landi, 2010; Lentz & Pander Maat, 2013; Stahl, 2003; Stahl et al., 1991): the more familiar they were with the words in a text, the better they understood it (Carver, 1994). Hall et al. showed that secondary school children with good vocabulary skills performed better on text comprehension than those with fewer vocabulary skills, both on texts low and high in cohesion. In addition, Landi found that for university students, vocabulary was the best predictor of comprehension compared to print exposure, decoding ability, spelling ability, and non-verbal IQ. Although readers with high levels of vocabulary are usually better comprehenders, Stahl (2003) stated that using simple words has not always proven to make texts less difficult. It is therefore not entirely clear why the relationship between vocabulary and text comprehension is so strong. Stahl argued that it is not only important to know the meaning of words, but also to be able to embed the words in a larger context and to understand how a word's meaning changes in different contexts. He proposed that it is this sophistication that leads to understanding. The role of vocabulary in finding and understanding in hypertext has – to our knowledge – not been investigated as such.

The relationship between reading skill and finding performance on online and offline texts neither is very clear. This is mainly due to the strongly varying definition of reading skill between studies. For example, Hall et al. (2015) defined reading skill by only measuring vocabulary, whereas Landi (2010) considered spelling ability, vocabulary, and decoding ability as reading skill components. Both studies found a significant relation between vocabulary and text comprehension, as was described in the previous paragraph. Additionally, in both studies of Bilal (2000; 2001) reading ability of the participants was measured by teacher ratings. It was found that reading ability did not affect children's online finding performance. Finally, Coiro (2011) made a distinction between offline and online reading ability. Offline reading ability of the participants – seventh graders – was estimated by their standardized reading score on the Reading Mastery Test of the state of Connecticut. Online reading ability was estimated by their performance on two comprehension measures that assessed online reading through a series of three related information tasks that the participants had to accomplish. She found that both online reading comprehension and offline reading comprehension skills made significant and unique contributions to students' online reading performance.

In this study we will make a clear distinction between two constructs of language skill and we will investigate the roles of both. In addition, we will reflect on the role of both constructs in reading linear text and hypertext.

2.3.3 Prior knowledge and language skill compared

Finally, very few studies have investigated the relative roles of both reading skill and prior knowledge in reading performance. The majority of the studies that did focused on educational settings and found mainly significant effects for prior knowledge (Lipson, 1982; O'Donnell, 1993; Ozuru et al., 2009; Shapiro, 2004; Stahl et al., 1991). For example, Ozuru et al. (2009) stated that for college students reading expository biology texts, prior knowledge was a more significant predictor of text comprehension than reading skill. Prior knowledge helped readers to fill gaps in texts by affording quick and relatively effortless access to relevant information. This enables the reader to build a mental representation of the text (Zwaan & Rapp, 2006). Lipson (1982) also examined the prior knowledge and reading skill in relation to text comprehension. Her test subjects were children in the third grade. She stated that for both average and weak readers prior knowledge was an important factor in text comprehension. Nevertheless, Lipson did not give a definitive answer on the relative roles of both prior knowledge and reading skill in text comprehension. Neither did Stahl et al. (1991), who examined the roles of vocabulary and prior knowledge in the recall of different aspects of text. In their study, 159 tenth-graders read a magazine article about baseball. They found an effect of prior knowledge on mental text representation: readers with high prior knowledge were better able to grasp the structure of the text than their peers with low prior knowledge, although both groups did not differ in the

amount of recalled information. Vocabulary mainly affected the microstructure tasks: the recall of individual propositions and the amount of numbers included in the recall. Finally, O'Donnell (1993) found that high prior knowledge participants outperformed those with low prior knowledge on the search for information in documents. Also, participants with high levels of vocabulary performed better than those with low levels of vocabulary, but only when they also had prior knowledge.

These results are not replicated for performance on digital information. Bilal (2000; 2001) did not find any effect of domain knowledge, topic knowledge, and reading ability on children's online finding performance, although this result might have to do with the small size of the sample. On the other hand, Coiro (2011, p. 374) provided evidence to suggest that some readers with higher levels of online reading skills and lower levels of prior knowledge performed equally well or better than some students with higher prior knowledge and lower levels of online reading skills, indicating that online reading skill is a better predictor for performing on the Internet than prior knowledge. It should be noted that offline reading skill played almost no role in reading performance on the Internet, implying that reading in online settings may require different skills than reading in offline settings (Coiro, 2011).

Although previous work mainly shows effects of prior knowledge on reading performance, we have to point out that their approach differs from our perspective in two respects. First, participants in our study performed *reading-to-do* tasks instead of *reading-to-learn* tasks (Sticht, 1977). To our knowledge, only Lentz and Pander Maat (2013) report a study that describes the use of documents in a non-educational setting and addresses both prior knowledge and language skill. The authors compared an existing and a revised version of a document in which readers were informed about their pension situation. The participants' levels of vocabulary and topic knowledge were measured. The results showed that topic knowledge did not contribute to reading performance (both finding and understanding), but that the contribution of vocabulary to understanding was significant. The second difference between earlier work and our study is that much of the knowledge about the role of readers' competences addresses performance on *offline* text, whereas in our study we compare a linear and a hypertext version of an *online* text.

We conclude from the previous studies that still much is unclear when it comes to the roles of prior knowledge and language skill in reading performance. Whereas the studies in educational settings without exception show a substantial contribution of prior knowledge to understanding, the study of Lentz and Pander Maat (2013) indicates the opposite. Therefore, there still are some issues to be addressed. For example, based on previous results, we will distinguish between finding and understanding information in documents as well as between domain and topic knowledge. In addition, we do not only consider vocabulary but also reading skill as a factor of language skill. With these

nuances, we hope to contribute to the knowledge about the relative roles that various subsets of prior knowledge and language skill play in the use of documents outside educational settings, with a focus on financial communication.

3. METHOD

3.1 Participants

Two hundred participants took part in the study. The selection of the sample was based on the gender, age, and educational level of the participants. Participants were distributed into four different age categories and three educational levels (low, intermediate, and high[11]), based on the highest form of education people had completed. Because we wanted these demographics to be equally represented in this experiment, we made a pre-categorization in which all age categories and both sexes were evenly spread over all educational levels and vice versa. For instance, we aimed for ten women aged 20-35 with a low education, ten men aged 20-35 with a low education, et cetera. Subsequently, we recruited participants who fit these categories. They were selected from the personal network of the experimenters who assisted in the study. Retirees and students were excluded from participation, because they were not considered part of the target group of the material that was tested. The distribution of the participants is shown in Table 4.1.

Table 4.1 *Participant distribution.*

	Low education level		Intermediate education level		High education level		Total*
	Men	**Women**	**Men**	**Women**	**Men**	**Women**	
Aged 20-35	7	9	10	11	9	10	56
Aged 36-45	5	7	8	10	7	6	43
Aged 46-55	9	10	8	12	8	7	54
Aged 56-70	9	10	6	8	8	6	47
Total**	66		73		61		
Total***			200				

** Total amount of participants per age group*
*** Total amount of participants per education level*
**** Total amount of participants*

11 The lowest education level ranged from elementary school to junior intermediate vocational education. The intermediate education level consisted of intermediate vocational education, senior general secondary education, and pre-university education. The highest educated group consisted of higher vocational education and university level participants.

In the sample, men and women were almost equally represented with 106 (53%) females and 94 (47%) males. The average age was 43.5 (*SD* 13.6), the youngest participant being 20 years old, the oldest being 68 years old – and still employed. The participants were divided into the following age categories: 20-35 (28%), 36-45 (21.5%), 46-55 (27%), and 56-70 (23.5%). In addition, three educational levels were distinguished. The lowest education level ranged from elementary school to junior intermediate vocational education (33%). The group with the intermediate education level had an intermediate vocational education, senior general secondary education or pre-university education (36.5%). The highest educated group consisted of higher vocational education or university level participants (30.5%).

During the experiment, participants also indicated their type of employment: full-time paid employment (50.5%), part-time paid employment (38.5%), self-employed (5.5%), jobseeker (3.5%), or other forms of employment (such as being a volunteer) (2%). Finally, the participants specified their gross annual income. There were three income levels: low (up to €25.000), intermediate (€25.001 - €40.000), and high (above €40.000). 52% of the participants had a low income, 27.5% had an intermediate income, 15.5% had a high income, and 5% did not specify.

3.2 Pension document

The material tested in the experiments was based on a pension document of a Dutch pension insurance company. Pension insurance companies are obligated by law to send this type of document to new clients. Its purpose is to describe the pension scheme in understandable terms. These documents usually contain a lot of information: more than twenty pages of financial information directed to laypersons is no exception. The original document used in this study consisted of seventeen pages.

Because reading on paper may differ from reading on a computer screen (Mangen, Walgermo, & Brønnick, 2013), we presented only digital versions of the document to participants. In order to create one non-layered and one layered condition, the existing content first was restructured. This new structure was based on a proposal of The Federation of the Dutch Pension Funds and the Dutch Association of Insurers[12] and consisted of the following sections:

1. What does this pension arrangement offer you?
2. What doesn't this pension arrangement offer you?
3. How do you accrue a pension?
4. What choices do you have?
5. What are the risks of your pension?

12 This proposal dates from September 2014, see www.pensioen123.nl.

6. What costs does ABC Pensions[13] make?
7. When should you take action?

This restructuring resulted in the non-layered pension document, which was offered to participants as a digital PDF document. The first page contained a table of contents that listed the seven sections. The entire document contained 4.577 words. A fragment is shown in Figure 4.1.

Figure 4.1 *Fragment of the non-layered pension letter, offered as a digital PDF document (translated from Dutch).*

A. What does this pension arrangement offer you?

1. Old-age pension
Are you retiring? You will receive an old-age pension.

Old-age pension is your income after you turn 65. In other words, pension is money for the future. You save or invest through a pension arrangement for a payment you will receive later on.

This is how you get a pension through Huisman & van den Assem B.V.:

1. **Huisman & van den Assem B.V. pays ABC Pensions a monthly pension premium.** You contribute to this. Huisman & van den Assem B.V. takes your share of the pension premium from your gross salary.
2. **ABC Pensions invests the pension premiums.** Read more about how ABC Pensions invests on page 7.
3. **You will receive an amount.** When you retire, we sell the investments. How much your investments yield, we do not know yet. Because investments may become more valuable, but also less. Therefore, you are at risk.
4. **You buy a pension for the amounts that the investments have yielded.** You do this at ABC Pensions or at another insurer.
5. **Once you have purchased your pension you will receive a monthly pension for as long as you live.**

Paying taxes on your pension
You do not have to pay taxes on pension premiums. But once you retire, you will have to pay taxes on your pension.

Subsequently, we created the layered condition by dividing the non-layered document into layers. We kept the content of the document exactly the same; only some sentences had to recur in both layer 1 and 2 for clarity purposes, but we kept those adjustments as limited as possible. The layered condition of the pension document was offered to participants as an online click model through which they could navigate. Participants started at 'layer 0', which showed the table of contents that was also present in the non-layered condition. All titles linked to the corresponding information in the first layer. This first layer consisted of the main pension themes, information that readers needed to know in order to be able to take action on their pension situation. In other words: when having read the information that is presented in the first layer, pension clients should be adequately informed about the most important aspects of the pension arrangement. An example of this first layer is shown in Figure 4.2.

13 The fictitious name of the pension insurance company that is used in the pension documents.

After reading this page, the readers roughly knew what the pension arrangement offered ('the pension arrangement in five minutes'): they would receive an old-age pension when they retire. The second layer, which was accessible by clicking links in the first layer, elaborated on the main themes, as is shown in Figure 4.3. The readers now also knew how this old-age pension was composed ('the pension arrangement in thirty minutes'). The third layer, accessible by clicking links in the second layer, presented even more detailed information, such as calculations ('the pension arrangement in detail'). This document contained 1.375 words in the first layer, 3.029 words in the second layer, and 248 words in the third layer – a total of 4.652 words. Table 4.2 shows the distribution of topics across the three layers. The assignment of the participants to the conditions was based on their demographics. We aimed at an equal distribution of gender, age, and educational level in both conditions. This resulted in the assignment of 105 participants to the non-layered condition and 95 participants to the layered condition.

Both documents were divided into 105 (the non-layered condition) and 110 (the layered condition) content units to quantify the locations. A content unit could, for example, be a paragraph, table, figure, or textbox. This division was not visible to the participants. As mentioned before, all interventions in the documents were limited to structure. The content of both conditions was exactly the same. For privacy reasons, the names of the insurer, employer, and original recipient were changed into fictitious names.

3.3 Competence tests

All two hundred participants in this study filled out a demographics questionnaire, five competence tests, and a reading performance test. In the demographics questionnaire, the participants were asked about their age, gender, educational level, type of employment, and income (scale). The competence tests established the levels of prior knowledge and language skill. We have also added a test in order to establish to what extent the combined variable prior knowledge and language skill is a predictor for reading performance. Finally, the performance test measured to what extent the participant was able to find and understand information in the pension document. As is shown in Table 4.3, each of the competences as well as the performances were divided into measurable constructs and subsequently operationalized, which resulted in five competence tests and one performance test.

Figure 4.2 *Fragment of the layered pension letter, offered as an online click model (translated from Dutch). This fragment shows a part of the first layer. Clicking on 'Read more about the old-age pension' leads to the second layer (Figure 4.3).*

Your pension at ABC Pensions > What does this pension arrangement offer you?

What does this pension arrangement offer you?

- Are you retiring? You will receive an old-age pension.
  > Read more about the old-age pension
- Do you keep working for this employer? Then your partner will receive a monthly partner pension if you pass away.
  > Read more about the partner pension
- Do you keep working for this employer? Then your children will receive a monthly orphans' pension if you pass away.
  > Read more about the orphans' pension
- Do you become partially disabled? Then the accumulation of your pension remains to continue. You will pay no further contributions for the part that you are disabled.
  > Read more about disability and pension
- You *can* make decisions about you pensions, but you do not have to.
  > Read more about your choices

> Read more about the duration of your pension arrangement

Figure. 4.3 *Fragment of the layered pension letter, offered as an online click model (translated from Dutch). This fragment shows the second layer.*

Your pension at ABC Pensions > What does this pension arrangement offer you? > Old-age pension

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Old-age pension

Old-age pension is your income after you turn 65. In other words, pension is money for the future. You save or invest through a pension arrangement for a payment you will receive later on.

This is how you get a pension through Huisman & van den Assem B.V.:

1. **Huisman & van den Assem B.V. pays ABC Pensions a monthly pension premium.** You contribute to this. Huisman & van den Assem B.V. takes your share of the pension premium from your gross salary.
2. **ABC Pensions invests the pension premiums.**
   > Read more about how ABC Pensions invests.
3. **You will receive an amount.** When you retire, we sell the investments. How much your investments yield, we do not know yet. Because investments may become more valuable, but also less. Therefore, you are at risk.
4. **You buy a pension for the amounts that the investments have yielded.** You do this at ABC Pensions or at another insurer.
5. **Once you have purchased your pension you will receive a monthly pension for as long as you live.**

Paying taxes on your pension
You do not have to pay taxes on pension premiums. But once you retire, you will have to pay taxes on your pension.

Table 4.2 *Distribution of topics across the layers.*

Layer 1	Layer 2	Layer 3
1. What does this pension arrangement offer you?		
	1.1 Old-age pension	
		1.1.1 Pension regulations (PDF)
	1.2 Partner pension	
		1.2.1 Who counts as partner?
		1.2.2 Calculation partner pension
		1.2.3 Pension regulations (PDF)
	1.3 Orphans pension	
		1.3.1 Calculation orphans pension
	1.4 Disability	
		1.4.1 Pension regulations (PDF)
	1.5 Duration of your pension arrangement	
2. What doesn't this pension arrangement offer you?		
3. How do you accrue a pension?		
	3.1 Your pension payment	
	3.2 Pension premium	
	3.3 How ABC Pensions invests	
4. What choices do you have?		
	4.1 Investment profiles	
	4.2 Value transfer	
	4.3 Stop working for this employer	
5. What are the risks of your pension?		
6. What costs do we make?		
	6.1 Costs of investing	
7. When should you take action?		
	7.1 Splitting up	
	7.2 If your pension is not enough	
		7.2.1 Personal digital environment
8. Contact		

Table 4.3 *Operationalization of competences and performance.*

	Measurable constructs	Tests to measure the concepts
	COMPETENCES	
Prior knowledge	Domain knowledge	1. Financial knowledge test
	Topic knowledge	2. Pension knowledge test
Language skill	Vocabulary	3. Vocabulary test
	General reading skill	4. Organ donation cloze test
Prior knowledge + language skill	Topic-related reading skill	5. Pension cloze test
	PERFORMANCE	
Reading performance	Finding	6. Scenario questions
	Understanding	

3.3.1 Domain knowledge test

So far, the concept of financial literacy has been measured in different ways (Huston, 2010). An often and widely used instrument is the questionnaire that has first been proposed by Lusardi and Mitchell (2005), and was later reviewed and extended by van Rooij, Lusardi, and Alessie (2011b), among others. It distinguishes between basic and advanced financial literacy, questioning the knowledge as well as the numeracy skills of participants. In addition, other instruments have been in use, such as the financial literacy questionnaire proposed by Beal and Delpachitra (2003; revised by Noon & Fogarty, 2007), the Jump$tart questionnaire for personal financial literacy (Mandell, 2008), and the economic survey of The National Council on Economic Education (Markow & Bagnaschi, 2005; Noon & Fogarty, 2007), although their use has mostly been limited to Australia and the United States.

The financial knowledge test that was developed for this study consisted of fourteen multiple-choice items, distributed over four topics: the value of money, saving and investing, interest rates and inflation, and salary and income tax. The authors considered (minimal) knowledge about these topics essential for everyday life in the Netherlands. Most questions used in the test were derived from existing financial literacy tests (Lusardi & Mitchell, 2005; Mandell, 2008; Markow & Bagnaschi, 2005; Noon & Fogarty, 2007; van Rooij et al., 2011b) and were adapted to the Dutch situation if necessary. In addition, three extra items were designed where existing financial literacy tests did not contain suitable questions on the predetermined topics. The option 'I don't know' was added to all items in the test. Participants were encouraged not to guess, but to choose this option if they were not sure. A sample question is shown in Figure 4.4. In the analysis, three items were discarded due to unclear questioning or ambiguous response options.

The remaining eleven questions form a reliable instrument (α = .76) to measure financial knowledge. The domain knowledge test can be found in Appendix C (p. 202).

Figure 4.4 *An example of a financial knowledge question.*

If investors spread their money across different stocks and bonds, what will happen to the risk of losing money?

a. The risk increases.
b. *The risk decreases.*
c. The risk stays the same.
d. I don't know.

3.3.2 Topic knowledge test

The pension knowledge test, that was designed to measure topic knowledge, consisted of twenty multiple-choice items. These items were divided over seven pension-related topics, such as options at retirement, the pension amount, and life events. The test was previously designed and used in the study of Lentz and Pander Maat (2013). Two professionals working in the pension field checked the questions.

The test proved to be a reliable instrument (α = .75) to measure pension knowledge. A sample question is shown in Figure 4.5. The complete test can be found in Appendix D (p. 205).

Figure 4.5 *An example of a pension knowledge question.*

What is value transfer?

a. Transferring your pension to your heirs.
b. *Taking your pension entitlements with you to your new pension fund when changing employers.*
c. Converting the partner pension that you have accrued for your partner into old-age pension for yourself.
d. I don't know.

3.3.3 Vocabulary test

The vocabulary test (a sample question is shown in Figure 4.6) consisted of twenty-five multiple-choice items (α = .87) and was previously used in Lentz and Pander Maat (2013). Based on the results of this study, a number of items in the initial test was removed and replaced by more difficult items. The new version of the test contained words such as *demagogue* and *segregation* (see Appendix E, p. 210). All words were presented to the participants in neutral sentences. The questions proposed five answers, one of which was an 'I don't know' option.

Figure 4.6 *An example of a vocabulary question.*

She is known as a *philanthropist*.

a. A person who is very rich.
b. A person who let's changing conditions determine their opinion.
c. A person who is a victim of fraud.
d. *A person who gives lots of money to the poor.*
e. I don't know.

3.3.4 General reading skill test

As a measure of general reading skill, the participants received a cloze test on the subject of becoming an organ or tissue donor (Figure 4.7). The test consisted of twenty-five items (α = .79) and can be found in Appendix F (p. 215). A cloze test is a text that is presented with missing words. It is the task of the participants to fill in the blanks with words that they believe are correct. To be able to predict which words are missing, they must rely on the same types of knowledge they need to read a text smoothly, such as text knowledge, topic knowledge, and language knowledge (Jansen & Boersma, 2013).

Figure 4.7 *A fragment from the donor registration cloze test.*

The registration of your choice in the donor register provides ……. and certainty for all those involved in organ and ……., such as potential donors, your loved ones, but also doctors and nurses. ……. in the Donor Register is not compulsory. ……. your choice is not registered, it means that after your death your ……. must decide whether you are a ……. or not.

Abraham and Chapelle (1992) distinguished three types of cloze tests: the fixed-ratio cloze test, the rational cloze test, and the multiple-choice cloze test. In the fixed-ratio cloze test, random words are deleted from the text at a fixed interval. In the rational cloze test, the designers of the test decide which words they leave from the text. This offers the opportunity to remove only content words, reducing the likelihood that the participants use grammatical and lexical knowledge instead of contextual knowledge about the topic to complete the test. In the multiple-choice cloze test, participants can choose from different answer options. From their comparative study, Abraham and Chapelle concluded that scores on the fixed-ratio cloze tests reflected on the readers' 'ability to retrieve content words from long-term memory or to find them elsewhere in the text', whereas scores on the rational cloze test 'indicate an ability to identify context clues and to produce sophisticated, specific content words and appropriate inflections' (p. 474). The donor registration cloze test used in our study was constructed as a rational cloze test.

3.3.5 Topic-related reading skill test

As a measure of topic-related reading skill, a cloze test on the subject of pensions was used. The test consisted of twenty-five items (α = .82) and was developed following the same principles as the donor registration cloze test (see Appendix G, p. 216). A fragment of this test is shown in Figure 4.8.

Figure 4.8 *A fragment from the pension cloze test.*

> To keep pensions affordable, the government wants to change the pension system thoroughly. For example, the age for the ……. will be raised gradually to 67 in 2021, and the rules for insurers and ……. will become more strict.

3.3.6 Scenario questions

Finally, the participants received a verbal scenario test with twelve open questions, divided into 24 subquestions, to measure their performance (finding and understanding information in the pension document). This test was the same for both conditions (see Appendix H, p. 217). All seven sections of the document were covered by the scenario questions, in such a way that participants started at the first page and subsequently had to find the answers crosswise through the document. The questions were considered to be issues that we can reasonably expect pension consumers to have. They were aimed at applying the provided information in a new context: participants had to actually use the information instead of just reproducing it (De Jong & Lentz, 2006). The test was drafted from the perspective of a 43-year-old employed woman named Maria, to whom the document was directed. An example question is 'Maria expects to receive a low pension when she retires. What can she do?' By formulating the questions like this, participants were encouraged to do more than only reproduce the text: they needed to apply the information in the document to Maria's situation. In other words, active involvement was required. In the literature, this type of comprehension is referred to as 'situation model comprehension' (Ozuru et al., 2009) or 'transfer' (Mayer, 2014).

3.4 Procedure

The experiments took place in the home environment of participants. An experimenter observed them during these sessions. Both in real life and in this study, most individuals are not particularly motivated to read pension information (Visser et al., 2012). Reading pension documents usually appeals on extrinsic motivation. Whereas in the real world this motivation is mainly activated because the reader wants to avoid a certain negative effect (e.g. risking a low pension, lagging behind on administration tasks), the motivation in this study was prompted by the small financial incentive the participants received and/or by the fact that they were acquainted to the experimenter.

The experimenter started by emphasizing that the pension document, and not the participant, was tested. After that, participants were asked to fill out the questionnaire that addressed their demographics. This questionnaire was followed by the competence tests in alternate orders per participant to rule out a learning effect. Participants were given five minutes to complete the vocabulary test and ten minutes to complete the other questionnaires. These restrictions were imposed to prevent the experiments from taking too long.

After filling out the questionnaires on paper, the participants were invited to open the pension document they had been assigned to on their computer. They were given thirty seconds to scan the document. Next, the experimenter asked the scenario questions one at a time. After every question, the participants had to answer these questions by finding and interpreting the correct information in the provided online document. They were not allowed to use the 'search document' function on their computer, but had to browse the documents by scrolling and clicking. On the observation form the experimenters noted particular details about their search as well as the number of the content unit in which the answer was found. The answer subsequently given was also noted on the form. Participants who couldn't find the answer were asked to stop looking after two minutes. In these cases, the answer was considered not found and therefore incorrect. Experimenters were allowed to repeat (parts of) the questions if the participants asked them to. After completing the scenario questions, all participants received a gift voucher to the value of 5 Euros for taking part in the study. Each session lasted 60 to 90 minutes.

4. RESULTS

4.1 Effects of layering

In this section we will provide an answer to the first research question: to what extent does layering have an effect on finding and understanding information in financial documents? To establish this, we first checked to what extent the participants in the two layering conditions differed in knowledge and language skill levels. It was then determined whether any effects between conditions occurred.

4.1.1 Competence test scores

In the financial knowledge test, the pension knowledge test, and the vocabulary test, participants received one point if they had answered a question correctly. The answer 'I don't know' was considered incorrect. Subsequently, an overall score per test was calculated for each participant. The cloze tests were scored using the conceptual scoring method, in which synonyms that syntactically and semantically fit the place of the

deleted word are accepted as well as answers that literally match the deleted word (Kobayashi, 2002). An overall score per cloze test was calculated for each participant.

Overall, participants appear to have relatively little prior knowledge: on average, they answer about half of the questions correctly in both the domain knowledge test (*M* = 6.2, *SD* = 2.8) and the topic knowledge test (*M* = 9.4, *SD* = 3.7). The scores for general reading skill (*M* = 12.9, *SD* = 4.1) and topic-related reading skill (*M* = 12.0, *SD* = 4.6) are also quite low. On the other hand, the level of vocabulary (*M* = 18.5, *SD* = 5.2) is generally high. In Table 4.4, the competence test scores per condition are shown.

Table 4.4 *Competence test scores (descriptive statistics and confidence intervals).*

	Non-layered (*n* = 105)		**Layered (*n* = 95)**		
Variables (number of items)	***M* (*SD*)**	**95% CI**	***M* (*SD*)**	**95% CI**	***p***
Domain knowledge (11)	5.9 (2.9)	[5.38, 6.49]	6.6 (2.8)	[5.98, 7.12]	.126
Topic knowledge (20)	9.4 (3.6)	[8.71, 10.09]	9.5 (3.8)	[8.69, 10.22]	.919
Vocabulary (25)	17.9 (5.3)	[16.89, 18.94]	19.2 (5.0)	[18.14, 20.20]	.088
General reading skill (20)	12.0 (4.2)	[11.16, 12.78]	13.8 (3.9)	[13.05, 14.63]	.001*
Topic-related reading skill (20)	11.5 (4.7)	[10.59, 12.41]	12.5 (4.5)	[11.61, 13.46]	.117

** $p < 0.05$ (2-tailed)*

For general reading skill, we found a significant difference ($t(194) = 4.79$, $p = .001$): participants in the layered condition (*M* = 13.8, *SD* = 3.9) scored better on the general reading skill test than participants in the non-layered condition (*M* = 12.0, *SD* = 4.2). Therefore, we included general reading skill as a covariate in the following univariate analyses. The other competences showed no significant differences.

4.1.2 Scenario test scores

In order to assess the answers to the scenario questions that were given by participants, it was predetermined which keywords had to be mentioned in each answer and in which content units (paragraph, table, figure, or textbox) these keywords could be found. Because some information was repeated in the documents, some answers could be found in multiple content units. 37 keywords in total were distinguished, divided over the twelve questions. Participants could achieve a *finding score* of up to 37 points, which corresponded with the total amount of 37 keywords. Participants were assigned one point when they had found the correct content unit. Participants could also achieve an *understanding score* of a maximum of 37 points. They received one point when they were able to name a correct keyword. It is important to point out that the understanding score was only measured when a participant had found the answer in the correct content unit. A participants' total understanding score could therefore only be as high as the overall finding score, since a fragment could not be understood if it was not found.

We established that participants identified less than half (44%, *SD* = 0.16) of the information in the documents, regardless of which condition they read. Understanding performance, which is reported as a proportion of finding performance, appears to be relatively high: on average 92% of the found information was also understood (*SD* = 0.09). In Table 4.5, the finding and understanding proportions per condition are shown. Two of the participants in the layered condition did not finish the scenario questions and were therefore excluded from the analysis. In the non-layered document (*n* = 105) they found 44% of the information, whereas in the layered document (*n* = 93) 45% was found. The analysis subsequently shows that participants do not find the information significantly better or worse when it is presented in layers ($F(1,195) = 2.35$, $p = .13$).

Table 4.5 *Performance test scores.*

	Non-layered (*n* = 105)		**Layered (*n* = 93)**		
Variables (number of items)	***M* (*SD*)**	**95% CI**	***M* (*SD*)**	**95% CI**	***p***
Finding	0.44 (0.16)	[0.41, 0.47]	0.45 (0.15)	[0.41, 0.48]	.127
Understanding	0.92 (0.09)	[0.91, 0.94]	0.93 (0.10)	[0.91, 0.95]	.426

** p < 0.05 (2-tailed)*

Participants understood 92% of the found information in the non-layered document, whereas in the layered document 93% of the found information was understood. These differences are neither significant ($F(1,195) = 0.64$, $p = .43$). The results for understanding performance show that a ceiling effect has occurred: the majority of the participants have relatively high scores (> 90%) on this dependent variable, resulting in very limited variation of the data. Using these data for further analyses could compromise the reliability of estimates. Therefore, we will continue this chapter focusing on finding performance, leaving understanding performance aside.

It was then established whether the layer in which the target information could be found affected finding success. Of the 37 keywords in total, twelve were located in the first layer, twenty-four in the second layer and one in the third layer. We calculated two average finding scores per participant for layer 1 and layer 2. A within-subject analysis of these average scores showed no difference in finding success between layer 1 and 2; neither the participants in the layered group, nor the participants in the non-layered group found the information better in one of the layers.

4.1.3 Layering effects for individual questions

In order to gain more insights into the role played by layering in finding information in pension documents, we investigated how the individual questions within the tests have been answered and what the role of layering is. The finding percentages of each of the answers can be found in Appendix I (p. 219). A logistic regression analysis shows that 5

out of 37 sub-answers demonstrate effects of layering: the non-layered answers were significantly better found compared to their layered equivalents.[14]

We will discuss the finding process for questions 8a and b, in which we found this layering effect. The issues mentioned are also encountered in the other questions that showed a similar effect. Question 8a and b were: 'Huisman & van den Assem B.V. is facing financial difficulties. Maria believes that her employer should nevertheless continue to pay her pension premiums. Is Maria's statement correct? Why (not)?' This set of questions can be considered a complex question; the answer cannot be directly found in the text because readers will need to make an inference to relate question and text. The answer to question 8a and b consists of a total of three sub-answers: 1) no, 2) Huisman & van den Assem may decide not to pay pension premium anymore, and 3) in case the situation of Huisman & van den Assem significantly changes. All three of these sub-answers were found more often in the non-layered pension document than in the layered pension document, as evidenced by the finding scores of 59% compared to 32%, 59% compared to 32% and 32% compared to 18% respectively (see Appendix I, p. 219). Evidently, the finding scores of sub-answer 3 in both versions are significantly lower than those of the two preceding sub-answers. We do not so much attribute this low finding score of sub-answer 3 to the design of the documents, but to the ambition level of the participants: many of them considered the questions fully answered after providing the first two sub-answers.

In both conditions, the passage required to correctly answer the question could be found under the heading 'How do you accrue a pension?' (layer 1 in the layered condition) and subsequently under the subheading 'Your pension premium' (layer 2 in the layered condition). When we examine the finding process of the layered document more closely, we notice that problems already start at the table of contents ('layer 0'): participants have trouble choosing the correct section. Competitors for the correct link 'How do you accrue a pension?' are 'What are the risks of your pension?' and 'When should you take action?'. When participants (eventually) find the correct section, layer 1 usually offers them no direct relevant cue for finding the answer to the question (see Figure 4.9). The information provided here does not guide the reader in the right direction. We have identified this as a *grouping issue* (Pander Maat et al., 2015): no information group 'financial distress of the employer' (or similar) exists. Therefore, readers must more or less guess which link needs to be clicked in order for them to arrive at the correct information in layer 2. The three links provided are so called *weak scent links* (Chi et al., 2000). Although the link 'Read more on your pension premium' might be considered the most appropriate in light of the question,

14 We used additional logistic regression analyses in order to be able to identify interactions between document condition and reading level. For an additional four sub-answers, such an interaction effect was found. For three of these answers the readers with low general reading skill were helped by layering, whilst for the fourth, layering was of help to readers with a high level of general reading skill. These results have been discussed in detail in Nell, Lentz, and Pander Maat (2016).

Figure 4.9 *The fragment 'How do you accrue a pension?' (layer 1) needed to answer question 8a and b (translated from Dutch).*

Your pension at ABC Pensions > How do you accrue a pension?

How do you accrue a pension?

You accrue a pension in three ways:

1. **Government pension**. You will receive this pension from the government. You can read more on the government pension at www.svb.nl/aow.
2. **Pension at pension insurer ABC Pensions**. You accrue this pension via your employer. Did you work for a different employer before? Then you might have saved or invested for your pension via this employer too.
3. **Pension you arrange yourself.** For example if you want a higher income than the government pension of the pension from ABC Pensions, for example with a life annuity or bank savings.

You pay a premium for your pension every month. The amount of premium is based on you gross salary. We invest the pension premiums for you. For this, you do not need to know anything about investing. What you need to know is that the value of your investments changes constantly. **Therefore, you are at risk.** How much your pension pot is worth therefore depends on the investments results. On you pension date, you will buy a pension payment from the money your pension pot contains. This type of arrangement is called a premium arrangement.
> Read more about your pension payment
> Read more about the way ABC Pensions invests

Your employer contributes to the pension premium. At ABC Pensions your employer pays 85% of the premium and you pay 15%.
> Read more about your pension premium

it sits at the bottom of the page at a most unfortunate location. Readers that *were* on the right track and clicked this link, ended up on the 'Your pension premium' page in layer 2: a page containing so much text that the information needed to answer the question can only be found by scrolling all the way to the bottom of the page (see Figure 4.10). Again, it is unlikely that all readers will do so, either because they do not realize this is a possibility or because the text that is visible at first sight (see Figure 4.11) does not indicate that the required information could be found elsewhere on the page. Once more, we are dealing with weak scented information. As a consequence of these potential finding issues, a finding percentage of only 32% was achieved.

Figure 4.10 *The fragment 'Your pension premium' (layer 2) in which the correct answer can be found. This answer is located at the bottom of the page, which means that readers have to scroll to get to the correct answer.*

Your pension premium (20,00% of €17.550,40)	€3.510,08
You will pay yourself (3,00% van €17.550,40)	€526,51

If you start working more or less
Will you start working more or less? We will calculate again how much pension premium Huisman & van den Assem B.V. should pay us. The more you work, the more premium Huisman & van den Assem B.V. pays.

Your employer will also establish again what amount they have to deduct from your gross salary. If you start working more, you will pay more yourself.

If Huisman & van den Assem B.V. is not able to pay anymore
Does something happen that significantly changes Huisman & van den Assem B.V.'s situation? Huisman & van den Assem B.V. then might decide to pay less pension premium for you, or to stop paying altogether. Huisman & van den Assem B.V. may also change the pension arrangement. Huisman & van den Assem B.V. only has these options in extraordinary situations. If this happens we will send you a letter.

If we compare this finding process to the non-layered version, we see that in this version is not helpful to readers either. Here, too, participants experience difficulties in trying to choose the correct section from the table of contents. Taking the group that chooses the correct section 'How do you accrue a pension?', we note that the text directly under the heading does not provide any indications that the readers are on the right track (Figure 4.12). The answer to the question is only given a page and-a-half later on. In other words: in the non-layered version it is a matter of continuing to read through the document to get to the correct answer. As shown by the analysis of the other finding processes in this research, this is an advantage compared to the layered version, in which this 'continue-reading-option' does not exist: in order for the reader to arrive at different locations within the document, the reader is forced to choose from the links provided regardless whether this choice is easy or not.

We may conclude that layering in this instance does not univocally assist the reader in finding information. Readers in the layered condition consistently only have limited information at their disposal, which forces them to make uncertain choices in their quest. This is also the case in instances where it is not evident what the correct choice is; not choosing effectively means reaching a deadlock. On the other hand, in the non-layered version, readers are able to read through or go back-and-forth much more easily: they have the entire text at their disposal – as a default option, as it were. This however, could also be disadvantageous; more available text means that more text actually needs to be read. For lesser skilled readers this may pose even more problems (Nell, Lentz, & Pander Maat, 2016).

Figure 4.11 *The fragment 'Your pension premium' (layer 1) that is directly shown to readers. This fragment barely gives any cues that lead to the correct answer.*

Your pension at ABC Pensions > How do you accrue a pension? > Your pension premium

Your pension premium

Huisman & van den Assem B.V. pays ABC Pensions your pension premium. Below you can find how much pension premium Huisman & van den Assem B.V. pays annually and how much of this you pay yourself. Your employer has determined the amount of pension premium and your contribution.

These premiums are intended for:

- Your old-age pension
- The payment to your partner if you die. We call this partner pension.
- The payment to your children if you die. We call this orphans' pension.
- The extra payment to your partner until your partner is 65. We call this the dependants bridging pension.
- Continuation of premium payments in case of disability.

We will first deduct €13.062,- (government pension offset) from your full-time annual salary that counts for your pension. This happens because you already receive government pension when you retire. The amount that remains – the pensionable amount – is being adjusted with your part-time percentage. Of this, Huisman & van den Assem B.V. pays a percentage as premium. In the table below is shown which percentage of the pensionable amount Huisman & van den Assem B.V. pays per year in total.

You pay for part of the pension premium yourself. In the table below is also shown how much you pay yourself. Huisman & van den Assem B.V. deducts this from your gross salary.

Pension premium as percentage of the pensionable amount:

Your age	Pension premium employer	Of this, you pay yourself:
21 to 24	6,10%	3,00%
25 to 29	7,30%	3,00%
30 to 34	8,90%	3,00%
35 to 39	10,90%	3,00%
40 to 44	13,30%	3,00%
45 to 49	16,30%	3,00%
50 to 54	20,00%	3,00%
50 to 65	24,80%	3,00%
from 60 years	31,10%	3,00% if increasing
from 21 years	6,10%	3,00% if unchanged

Calculation example

Figure 4.12 *The fragment 'How do you accrue a pension?' in the non-layered condition. This fragment barely gives any cues to indicate that readers are on the right track.*

C. How do you accrue a pension?

You accrue a pension in three ways:

1. **Government pension**. You will receive this pension from the government. You can read more on the government pension at www.svb.nl/aow.
2. **Pension at pension insurer ABC Pensions**. You accrue this pension via your employer. Did you work for a different employer before? Then you might have saved or invested for your pension via this employer too.
3. **Pension you arrange yourself.** For example if you want a higher income than the government pension of the pension from ABC Pensions, for example with a life annuity or bank savings.

4.2 Effects of prior knowledge and language skill

In this section we will answer our second research question: to what extent do prior knowledge and language skill affect finding information in financial documents? We started by exploring the correlations to provide a first insight into the interrelationship between competences and finding performance (Table 4.6). Domain knowledge and topic knowledge, both constructs of prior knowledge, correlated .51. Vocabulary and general reading skill – both measuring language skill – correlated .56. Topic-related reading skill had substantial correlations with all other competences, indicating that it was related to both prior knowledge and reading skill. Finding information correlated with all competences.

Table 4.6 *Significant correlations between competences and finding performance.*

	Domain knowledge	Topic knowledge	Vocabulary	General reading skill	Topic-related reading skill	Finding
			COMPETENCES			
Domain knowledge	1					
Topic knowledge	0.50**	1				
Vocabulary	0.52**	0.54**	1			
General reading skill	0.40**	0.40**	0.56**	1		
Topic-related reading skill	0.56**	0.58**	0.61**	0.66**	1	
			PERFORMANCE			
Finding	0.44**	0.30**	0.41**	0.48**	0.50**	1

** p < 0.05 (2-tailed), ** p < 0.01 (2-tailed)*

We subsequently analyzed to what extent prior knowledge and language skill were related to the participants' demographics (Table 4.7). The analyses indicate that age, education level, and income level are predictors of performance on all competence tests: higher ages, education levels, and income levels were associated with better test scores, with the exception of age versus general reading skill (older participants are not better readers than younger participants).

Table 4.7 *Significant relationships (p < .05) between demographics and competences.*

	Demographics			
Competences	Gender	Age	Education	Income
		PRIOR KNOWLEDGE		
Domain knowledge	$t(198) = 4.84$, $p < .001$	$r = .18$; p (two-tailed) $= .01$	$r_s = .37$; p (two-tailed) $< .001$	$r_s = .36$; p (two-tailed) $< .001$
Topic knowledge	-	$r = .43$; p (two-tailed) $< .001$	$r_s = .21$; p (two-tailed) $= .003$	$r_s = .35$; p (two-tailed) $< .001$
		LANGUAGE SKILL		
Vocabulary	-	$r = .46$; p (two-tailed) $< .001$	$r_s = .43$; p (two-tailed) $< .001$	$r_s = .33$; p (two-tailed) $< .001$
General reading skill	-	-	$r_s = .50$; p (two-tailed) $< .001$	$r_s = .24$; p (two-tailed) $= .001$
		PRIOR KNOWLEDGE & LANGUAGE SKILL		
Topic-related reading skill	-	$r = .30$; p (two-tailed) $< .001$	$r_s = .40$; p (two-tailed) $< .001$	$r_s = .37$; p (two-tailed) $< .001$

4

In order to determine to what extent demographics and reader competences – prior knowledge on the one hand and language skill on the other hand – are predictors for finding performance, we performed five linear regression analyses. The goal was to gain insight in the role of the competences separately *and* combined. Therefore, we respectively entered the following variables as predictor variables:

1. demographics (gender, age, education level, and income level);
2. demographics and prior knowledge (domain knowledge and topic knowledge);
3. demographics and language skill (general reading skill and vocabulary);
4. demographics, prior knowledge, and language skill;
5. demographics, prior knowledge, language skill, and topic-related reading skill.

The demographic variables education and income originally consisted of three values: low, intermediate, and high. To make them suitable for regression analyses, these variables were dichotomized twice, with intermediate education and intermediate income being the reference values. This resulted in the variables 'having a high education' (yes or no), 'having a low education' (yes or no), 'having a high income' (yes or no), and 'having a low income' (yes or no). Since no differences in finding performance were found between the non-layered and the layered condition of the pension document, these results have been aggregated in all regression analyses. Table 4.8 shows the regression models for finding. Only significant predictors are reported.

Table 4.8 *Regression models for finding scores in the pension documents.*

Model		Predictors	B	*SE*	β	*t*	*p*
		Demographics					
1	**Finding**	Low education	-4.46	0.87	-0.37	-5.11	.000
	$r = 0.51$; $\boldsymbol{R^2 = 0.26}$; $SE = 4.9$	High education	2.68	0.87	0.22	3.07	.002
		Demographics and prior knowledge					
2	**Finding**	Low education	-3.54	0.87	-0.29	-4.06	.000
	$r = 0.56$; $\boldsymbol{R^2 = 0.32}$; $SE = 4.7$	Domain knowledge	0.53	0.13	0.26	3.93	.000
		High education	2.10	0.85	0.17	2.46	.015
		Demographics and language skill					
3	**Finding**	General reading skill	0.35	0.11	0.25	3.17	.002
	$r = 0.57$; $\boldsymbol{R^2 = 0.32}$; $SE = 4.7$	Low education	-3.52	0.85	-0.29	-4.15	.000
		Vocabulary	0.18	0.08	0.17	2.24	.026
		Demographics, prior knowledge, and language skill					
4	**Finding**	General reading skill	0.37	0.10	0.29	3.75	.000
	$r = 0.59$; $\boldsymbol{R^2 = 0.34}$; $SE = 4.6$	Low education	-3.15	0.85	-0.26	-3.70	.000
		Domain knowledge	0.44	0.14	0.22	3.25	.001
		Demographics, prior knowledge, language skill, and topic-related reading skill					
5	**Finding**	Topic-related reading skill	0.45	0.08	0.37	5.67	.000
	$r = 0.61$; $\boldsymbol{R^2 = 0.37}$; $SE = 4.6$	Low education	-2.81	0.86	-0.23	-3.28	.001
		High education	2.12	0.81	0.18	2.61	.010

Model 1 finds that education levels explain 26% of the variation. Having a low education has a negative coefficient, meaning that in a group of participants with the same gender, age, and income level, the ones with a low education level perform 12% worse on finding information than the ones with an intermediate education level. Conversely, highly educated readers perform 7% better than readers with an intermediate education. Next, we added the variables domain knowledge and topic knowledge. Model 2 shows that only domain knowledge affects the finding scores, while the education level predictors remain significant. The new model accounts for 32% of the variation in finding scores. Model 3 concentrates on language skills. Both general reading skill and vocabulary are significant predictors, whereas having a low education remains a disadvantage. The language skills apparently take over the role of the high education factor. In Model 4, both prior knowledge variables (domain knowledge and topic knowledge) and language skill variables (general reading skill and vocabulary) were candidate predictors. The model retains the low education factor, and also uses the more general knowledge and language predictors: domain knowledge and general reading skill, together with low education, explain 34% of the variation. That is, both language skill and prior knowledge are needed for finding information. Model 5 shows that the 'combination variable' topic-

related reading skill outperforms the separate language and knowledge predictors. Both education factors remain significant. This model accounts for 37% of the variation.

In summary, we can conclude from this section that both general reading skill and domain knowledge are helpful competences when it comes to finding information, while topic knowledge does not predict finding performance at all. Also, having a low education plays an important role.

4.3 Effects of prior knowledge and language skill in relation to layering

In this section we address the final research question by exploratively investigating what prior knowledge and language skill contribute to finding information in both the non-layered and layered financial document. We performed two linear regression analyses, in which we entered demographics, prior knowledge (domain knowledge and topic knowledge), and language skill (vocabulary and general reading skill) as predictor variables. The first regression analysis addresses finding in the non-layered document, the second regression analysis addresses finding in the layered document (Table 4.9).

Table 4.9 *Regression models for finding scores in the non-layered and layered pension documents.*

Model	Predictors	B	*SE*	β	*t*	*p*
	NON-LAYERED					
1 Finding	General reading skill	0.43	0.14	0.30	3.14	.002
$r = 0.62$; $\boldsymbol{R^2 = 0.38}$; $SE = 4.8$	Low education	-3.00	1.14	-0.25	-2.63	.010
	Domain knowledge	0.47	0.18	0.22	2.53	.013
	LAYERED					
2 Finding	Low education	-4.57	1.27	-0.35	-3.60	.001
$r = 0.56$; $\boldsymbol{R^2 = 0.31}$; $SE = 4.5$	General reading skill	0.51	0.15	0.34	3.47	.001

The model for the non-layered document (Model 1) shows that 38% of the variation can be explained by general reading skill, a low education level, and domain knowledge. For the layered document (Model 2), a low education level and general reading skill predict 31%. This indicates that for the non-layered condition prior knowledge and language skill both play a role in finding, whereas for the layered condition only language skill is relevant. Having a low education level is relevant for both. This indicates that the advantage of knowledgeable readers when reading a linear text disappears when reading hypertexts, as was found in previous research (Coiro, 2011; Calisir and Gurel, 2003; Calisir et al., 2008). We subsequently established whether the model for the non-layered condition was significantly stronger than the model for the layered condition by comparing the R^2 confidence intervals of both models. These confidence intervals turned out to have considerable overlap, indicating that a significant difference between the non-layered and the layered model was not present.

5. CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

In this study, we tried to answer three research questions:

RQ1. To what extent does layering have an effect on finding and understanding information in financial documents?
RQ2. To what extent do prior knowledge and language skill predict finding and understanding performance in financial documents?
RQ3. Does the role of prior knowledge and language skill in finding and understanding information vary with layering?

While analyzing the data, we had to decide to leave the outcomes for understanding performance out of the analyses because of a ceiling effect that had occurred. The research questions are therefore answered with regard to finding performance.

The first finding of this study, and an answer to the first research question, is that we did not find an effect of text presentation (non-layered versus layered) on reading performance. Information was not better found or understood in one of these two conditions. We therefore conclude that based on this study, we cannot establish that layering contributes to finding pension information better. These results are similar to those of Müller-Kalthoff and Möller (2006), who did not find a direct effect of browsing condition. We believe the lack of an effect for layering in this study has two reasons (also see Nell, Lentz, & Pander Maat, 2016). First of all, the layered condition required readers to choose between information fragments in order to continue browsing the document, which already started at 'layer 0'. Especially if there were doubts about the correct choice, for example in case of 'weaker scented' links (Chi et al., 2001), the finding process could easily stagnate, whereas readers in the non-layered condition always had the 'read-through option'. Also, many of the search destinations were inadequately designed. Often, main information was placed at the end of a fragment, or topics that belonged together were not placed together. Layering did not solve these problems, which leads us to the conclusion that layering is not a direct solution for deficient document design: an inadequate document does not by definition improve by layering it. Neither could we verify that the layered condition was an improvement with respect to the non-layered condition for information that could be found in the first layer. Nevertheless, there is reason to assume that layering can be useful. Previous research (Müller-Kalthoff & Möller, 2006; Shin et al., 1994) already indicated that readers might benefit from reading online information in parts. The structure of layered (pension) information could assist readers in their effort to integrate the information and to create a mental model (Stadtler & Bromme, 2007). In turn, the cognitive energy that is saved might be utilized to understand the information. We conclude that layering has the potential to assist readers, with one important footnote: it entails more than merely splitting the

online information in pieces. A layered document demands a higher quality of structural cues compared to standard text. Special attention is needed with respect to grouping and ordering topics, as well as the level of details of the subsections and (moreover) the wording of the directions (Pander Maat et al., 2015).

This study has also contributed to the knowledge about the relative roles that prior knowledge and language skill play in finding information in *reading-to-do* settings. As an answer to our second research question, we found that prior knowledge and language skill are both involved in finding information in pension documents: general reading skill and domain knowledge account for a large part of the variation. Topic knowledge (pension knowledge) is not associated with reading performance at all. This finding is consistent with Alexander, Kulikowich, and Schulze (1994) and Shapiro (2004), who found that domain knowledge is a more important factor in text comprehension than topic knowledge.

Furthermore, we can conclude that prior knowledge is not a stronger predictor for finding performance than language skill. The important role of language skill found in this study, differs from the findings of earlier studies done in *reading-to-learn* settings, where prior knowledge often was a more important factor in reading performance (O'Donnell, 1993; Ozuru et al., 2009; Stahl et al., 1991). How can we explain these results? We should emphasize again that in our study we have investigated a different kind of reading performance than most previous studies did. We did not aim at participants storing the information in their long-term memories, but at answering questions on the spot (*reading-to-do*). It is likely that this approach affected the outcomes, since both aims call on different types of mental models of the text. We believe that searching for information and using it to accomplish a goal requires fewer inferences and therefore less prior knowledge than learning information, which explains why prior knowledge is not the main predictor of finding performance in this context. Additionally, we believe the role of language skill – which is relatively large compared to other studies – could be explained by the possibility that general reading skill partly correlates with a certain 'using documents skill'. In that case, the test we used to measure general reading skill could be seen as an umbrella instrument for skills related to reading. Future research should give more insight into the skills which general reading skill actually consists of, and which of those play a role when *reading-to-do*.

Finally, we explored whether the role of prior knowledge and language skill in finding information varied with layering. Coiro (2011) states that prior knowledge of the topic might be less important when reading on the Internet than when reading print materials, because higher levels of online reading comprehension skills possibly help compensate for lower levels of prior knowledge when performing well-defined online locating tasks. This suggestion is supported by the findings of Calisir and Gurel (2003) and Calisir et al. (2008). These studies show that whereas readers with higher levels of

prior knowledge had an advantage compared to non-knowledgeable readers when reading a linear text, this advantage was not present when it came to hypertexts. The results in our study point in the same direction: domain knowledge plays a role in the non-layered condition, but not in the layered condition.

To conclude, we will make some recommendations for future research. In this study, we did not find an effect of layering. To establish whether layering can still help readers find information in financial documents, we suggest that in future research the quality of the source document is ensured before it is edited into non-layered and layered structures. This way, document deficiencies do not hinder possible effects of layering. Second, we found evidence that the set of skills in *reading-to-do* settings differs from the skills needed in *reading-to-learn* settings. The question is to what extent this finding also applies to other document genres in *reading-to-do* settings, such as patient information leaflets and user manuals. Neither familiarity with the genre nor genre expectations have been investigated in this study, but could both be of importance (Zwaan, 1994). Finally, within these *reading-to-do* settings, we should also try to gain more insight in the nature and role of general reading skill, because this concept seems to be much more complex than it appears at first sight.

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CHAPTER 5

ELIMINATING FINANCIAL LITERACY DEMANDS IN DESIGNING PERSONAL DIGITAL PLATFORMS ON PENSION INFORMATION

ABSTRACT[15]

This study examines to what extent financial literacy – prior knowledge and language skill – is a predictor for user performance on two versions of a personal digital pension platform named *My pension overview* (MPO). Two hundred and forty adults aged 21 to 65 took part in the study. First, they were presented tests that measured their levels of domain knowledge, topic knowledge, vocabulary, and reading skill. Subsequently, they used either the old (MPO-1) or the new (MPO-2) version of a digital pension platform. Their finding and understanding performances were measured by scenario questions to which the participants had to answer verbally. Results indicated that MPO-2 was a considerable improvement with respect to MPO-1. This is partly due to the fact that participants found information in MPO-2 somewhat more often. But more importantly, the participants' levels of language skill and financial knowledge played a far lesser role here. We identify the aspects that are likely to have contributed to the improvement of MPO-2.

1. INTRODUCTION

Helping the public understand their financial situation and letting them make well thought-out decisions about money is a continuous challenge for both governments and financial organizations. A promising avenue is to provide users with relevant and tailored data and to demonstrate the effects of potential life events (Hoeken et al., 2011). Digital platforms are potentially very suitable for this, since they can present dynamic content adjusted to individual users (Stone, 2009). In the Netherlands, the government has made available a personal digital platform – an online tool to which users can log in – that provides citizens insight into their own, up-to-date, and overall pension situation and the possible financial effects of life events and economic fluctuations. This platform, named *My pension overview*, enables users to see how much pension they have accrued at all pension organizations they are affiliated to, what their monthly pension will be when they retire, and what will happen to this amount if users, for example, divorce or lose their jobs. Within the world of financial institutions, where online banking platforms are usually limited to one financial institution at a time, this is an innovative approach (Alt & Puschmann, 2012). The topic of this personal platform – the financial situation of pension plan members – is the second of two main topics that pension plan members are informed about (see Chapter 6). In Chapter 4, the first topic – the pension arrangement – is addressed.

Finding and comprehending information on digital platforms is affected by user competences (Scheiter, Gerjets, Vollmann, & Catrambone, 2009; Verhoeven & Graesser, 2008). Users must meet certain literacy demands to be able to successfully use these platforms. In this study, we examine to what extent financial literacy is a predictor for user performance. Within financial literacy, we define two determinants: prior knowledge and language skill. Prior knowledge consists of general financial knowledge on the one hand and specific knowledge of pensions on the other hand (*domain knowledge* versus *topic knowledge*, see Alexander, Kulikowich, & Schulze, 1994; Shapiro, 2004). Lan-

15 This manuscript has been submitted for publication.

guage skill is measured by testing the participants' vocabulary and reading skill levels. The other factor investigated in this chapter is the design of the digital platform: we compare the performance on the initial design and the redesign of *My pension overview*. This provides us with two research questions:

RQ1. How does the version of the digital pension platform affect the finding and understanding of information?
RQ2. To what extent does literacy predict performance on both versions of the digital pension platform, and how are the underlying competences related?

2. THEORETICAL BACKGROUND

2.1 Digital financial platforms

The development of digital financial tools and platforms has skyrocketed over the past decade. In order to improve decision-making processes and to provide mass customization and online (self-)service opportunities, financial institutions have tried to optimize their relationships with customers by making technology a central component of customer support (Alt & Puschmann, 2012; Hedley, White, Petit dit de la Roche, & Banerjea, 2006; Heng, Meyer, & Stobbe, 2007). Nevertheless, many financial online platforms are still far from meeting all customers' needs (Alt & Puschmann, 2012; Stone, 2009). In the Netherlands, digital communication on pensions has been around since 2011, when *My pension overview* was introduced: a personal digital platform that informs Dutch citizens about the latest status of their pension situation. Although some pension organizations already offered digital platforms to their own clients (The Netherlands Authority of Financial Markets [AFM], 2015), *My pension overview* was launched by the Dutch pension sector to comply with its legal obligation to provide all citizens a complete overview of their pension rights. These pension rights consist of government pension, usually supplemented with pension that is acquired via one or several employers. Both the government and pension organizations transfer their data on individual pensions to *My pension overview*, where the information is aggregated. *My pension overview* subsequently allows users – after logging in – to check the amount they have accrued, their expected monthly pension, and what their dependants will receive if they die.

The main characteristics of digital platforms are a rich user experience and strong user participation and control (Stone, 2009). Pérez, López Hernández, and Pedro Rodríguez Bolívar (2005, p. 261) additionally report three[16] advantages that specifically apply to the

16 The original list consists of five advantages of the Web as a public financial reporting medium, which we have limited to those relevant for personal financial reporting.

Web as a financial reporting medium: 1) allowing constant online financial reporting, 2) providing a more flexible information structure, and 3) allowing the introduction of figures and elements that make for more attractive and comprehensible information. Although these characteristics are beneficial from the reporters' point of view, it is open to question whether figures such as tables and graphs actually help people understand quantitative data, let alone base their decisions on this information (Kemp & Kissane, 2010). Zikmund-Fisher et al. (2012) compared animated risk graphics with static pictographs used to communicate side effects of two cancer treatments. They found that the static images performed better on measures of knowledge and choice accuracy, and concluded that a simpler, more focused information presentation can result in improved understanding. A study by Sharma (2006) shows that 14- to 16-year-olds had more problems reading and interpreting a table than a bar graph, which could be partially due to linguistic problems. Douglas, Hurst, and Quinn (1994) and Douglas and Hurst (1996) indeed argue that linguistic elements, such as lead-in text, labels, and titles, foster the interpretation of tables for information extraction by enhancing focus, making connections, providing context, and improving interpretation. In the next paragraph, we discuss how cognitive load might affect how people use and understand financial digital platforms.

2.2 Cognitive load in using digital platforms

When using a digital platform, users experience cognitive load: performing a task imposes pressure on the cognitive system of the user (Verhoeven, Schnotz, & Paas, 2009). These platforms usually present both words (printed text) and pictures (such as static graphics, including illustrations, graphs, diagrams, maps, or photo's, or dynamic graphics, including animation, and video), which together are known as multimedia (Mayer, 2014). The arrangement of a set of multimedia is a main source of cognitive load, even more than the amount of information that is presented (Rouet, 2009). Nevertheless, large quantities of information – as well as novel or complex interfaces – *do* increase the difficulty of locating, selecting, and accessing information. If the processing demands exceed the processing capacity of the cognitive system, *cognitive overload* occurs (Mayer & Moreno, 2003). A problem that for example might result in cognitive overload is the violation of the *spatial contiguity principle*: text and visual material should be placed near each other (Schrader & Rapp, 2016). A violation might cause a *split-attention effect*, which occurs when individuals have to integrate two or more sources of information that are not placed closely together (Al Asraj, Freeman, & Chandler, 2011; Mayer & Moreno, 2003; Yeung, Jin, & Sweller, 1997). Consequently, users have to hold information in their memory while they search or wait for corresponding information (Schrader & Rapp, 2016). A second effect that often occurs is the *redundancy effect*, which appears when information is presented simultaneously as pictures and as text (Chandler & Sweller, 1991; Mayer & Moreno, 2003; Yeung et al., 1997). In this case, the user is required

to process nonessential information, which imposes an increased cognitive load and possible overload. Hence (e-learning) tools should only use redundant formats when the information cannot be presented in isolation (Al Asraj et al., 2011). Cognitive load can also be reduced when signals or cues are used about how to select and organize the material (Mayer & Moreno, 2003). This way, the attention of the users is drawn to the most important details. This is known as *the signaling principle* (Schrader & Rapp, 2016).

2.3 The role of user competences in performing on digital platforms

2.3.1 Reading skill in online performance

Online reading is – more than offline reading – specifically focused on solving a particular problem or answering a particular question. Because rapid access to (often different) sources increases the importance of being able to logically integrate multiple source materials, online reading (or better: online performance) may require greater amounts of higher level thinking than offline reading (Kinzer, 2010; Leu et al., 2013). Indeed, there is evidence that performance in online settings might require a different set of skills than reading in offline settings (Afflerbach & Cho, 2008; Coiro, 2011): prior knowledge of the topic seems to be less important when reading on the Internet than when reading print materials. Coiro (2011, p. 374) suggests that students with higher levels of online reading skills and lower levels of prior knowledge performed equally well or better when asked to perform well-defined online locating tasks than students with higher prior knowledge and lower levels of online reading skills. This indicates that online reading skill is a stronger predictor of digital information processing performance than prior knowledge and, as found by Bilal (2001), offline reading ability. In these studies, offline reading skill has been measured either by teacher ratings (Bilal, 2001) or by students' standardized reading test scores (Coiro, 2011). For this study, we have developed a reading skill test as well as a vocabulary test to measure the level of participants' language skill. The reading skill test is designed to measure offline reading skill because of practical reasons and in order to be able to compare the results to Chapter 4.

2.3.2 Prior knowledge in online performance

Although the aforementioned studies show that the role of prior knowledge in online performance may be smaller than in offline reading, prior knowledge remains relevant. A study by Cromley and Azevedo (2009) on the search for information in Encarta, a closed computer environment, shows that middle school, high school, and undergraduate students were moderately successful in searching for information, although success increased by age. Having prior knowledge helped them find the key pages and doing this in fewer moves. Lawless, Schrader, and Mayall (2007) found that students with prior knowledge on the topic of genetics were more engaged in the information on a genet-

ics website than the students without prior knowledge. The knowledgeable students spend more time browsing, viewed more information and followed a more complex navigational path. This resulted in significantly higher scores on the knowledge recall test. Scheiter et al. (2009) showed that high-knowledge students used more effective utilization strategies in a hypermedia environment. Additionally, they experienced lesser cognitive load and showed better problem-solving performance. Rouet (2003), on the other hand, did not find a strong effect of prior knowledge on document search strategy for students searching hypertexts: participants were not significantly faster or more precise when searching information about a topic relevant to their area of study, although the observed trends did point in that direction. He attributed the lack of a significant effect to the small size of the sample. In the context of graphs and diagrams, which are relevant to financial digital platforms such as *My pension overview*, Kalyuga (2008) found that users with lower levels of prior knowledge benefited more from static diagrams than from animated diagrams, whereas the opposite was true for high-knowledge users. This is explained by differences in cognitive load: animated diagrams are too cognitively demanding for users with lower levels of prior knowledge. It should be noted, however, that the diagrams in this study were used to instruct users rather than informing them.

To sum up, high-knowledge users generally perform better online than low-knowledge users. For a service such as *My pension overview* this is an undesirable situation, since both high- and low-knowledge users should be able to successfully use this platform. In this study we will examine the importance of prior knowledge for performance in both conditions of *My pension overview*, and focus on how this role could be reduced.

3. METHOD

3.1 Participants

A total of 240 participants (50.4% females, 49.6% males) took part in the study. They were selected based on their gender, age, and educational level. Because we wanted these demographics to be equally represented in this study, we made a pre-categorization in which four age categories (20-35 years, 36-45 years, 46-55 years, and 56-65 years) and both sexes were evenly spread over the same three educational levels (low, intermediate, and high) as in Chapter 4. For example, we aimed for ten women aged 36-45 with a high education, ten men aged 36-45 with a high education, et cetera. Subsequently, we recruited participants who fit these categories. They were selected from the personal network of the experimenters who assisted in the study. Retirees and students were excluded from participation, because they were not considered part of the target group of the material. The subsequent assignment of the participants to the conditions aimed

for an equal distribution of genders, age groups, and education levels. The final distribution of the participants is shown in Table 5.1 (MPO-1) and Table 5.2 (MPO-2).

Table 5.1 *Participant distribution MPO-1.*

		Low education level		Intermediate education level		High education level		Total*
		Men	Women	Men	Women	Men	Women	
MPO-1	**20 - 35**	6	5	5	6	5	5	32
	36 - 45	4	5	5	5	5	6	30
	46 - 55	2	4	8	4	4	6	28
	56 - 70	5	5	5	5	5	5	30
Total**		36		43		41		
Total***				120				

** Total amount of participants per age group*
*** Total amount of participants per education level*
**** Total amount of participants in MPO-1*

Table 5.2 *Participant distribution MPO-2.*

		Low education level		Intermediate education level		High education level		Total*
		Men	Women	Men	Women	Men	Women	
MPO-2	**20 - 35**	5	6	7	6	8	9	41
	36 - 45	2	4	2	4	4	4	20
	46 - 55	5	4	10	6	5	5	35
	56 - 70	2	3	5	4	5	5	24
Total**		31		44		45		
Total***				120				

** Total amount of participants per age group*
*** Total amount of participants per education level*
**** Total amount of participants in MPO-2*

The average age of the total sample was 42.2 years (*SD* 13.3) with a range of 21 to 65 years. 30.4% of the participants was 20-35 years old, 20.8% was 36-45 years old, 26.3% was 46-55 years old, and 22.5% was 56-65 years old. Based on their highest completed education, 28% had a low education, 34% had an intermediate education and 38% had a high education. Participants also indicated their type of employment: full-time paid employment (55.8%), part-time paid employment (31.3%), self-employed (7.1%), jobseeker (5.0%), or other forms of employment (such as being a volunteer) (0.8%). Finally, they specified their gross annual income. There were three income levels: low (up to €25.000), intermediate (€25.001 - €40.000), and high (above €40.000). 41.7% of the participants had a low income, 30.8% had an intermediate income, 24.2% had a high income, and 3.3% did not specify.

3.2 Two versions of the digital pension platform

In this study, two versions (an initial design and a redesign) of the pension platform *My pension overview* have been studied and compared. For this purpose, demonstration versions of the platform with fixed amounts were used, so the participants did not have to disclose personal financial information to the experimenters. We should also note here that the authors of this chapter were involved neither in the design nor in the redesign of the platform. In this section, we will describe both versions of *My pension overview* in more detail.

In 2011, the initial version of *My pension overview* was launched. This version will from now on be referred to as MPO-1 (see Figure 5.1). It provided the users with fairly basic information: the expected gross amounts they would receive at certain ages and the amounts their relatives would be entitled to after the user died. MPO-1 consisted of seven main sections and four subsections (eleven sections in total). This number of sections applied to both the demo platform and the actual platform. Each main section dealt with a topic, such as 'expected pension' or 'life events'. Within the main sections, some topics were divided into subsections. For example, the section 'expected pension' consisted of the subsections 'expected pension in total' (see Figure 5.1) and 'expected pension per pension organization'. Every (sub)section covered one webpage; a button click brought the user to a new section. Excluding single words and phrases (for example accompanying a table or graph), the sections contained an average of 96 words per section. The design of the platform was set up so that users were almost automatically routed through the various sections: clicking on the buttons *back* and *forth* at the bottom of the webpages brought users to previous or next (sub)sections. Users could navigate via the main menu, which listed the main sections, as well.

In 2015, a new and improved version of *My pension overview* (from now on: MPO-2) was launched (see Figure 5.2), which replaced MPO-1. In addition to the changed design, several new functionalities and topics were added. The main sections and subsections have remained, but the number was expanded: MPO-2 consists of twelve main sections and thirty-two subsections (forty-four sections in total). This number applied only to the demo platform we have used in this study; in reality, the number of subsections may vary per user. One of the design changes was that in MPO-2 only the main sections had their 'own' page; these pages further unfolded when users clicked a button, showing the subsections. In Figure 5.2 for example, the table on the right side of the page has appeared after the user has clicked on the read circle with the text '65 jaar' (65 years). Excluding single words and phrases the sections in MPO-2 contained an average of 50 words per section. As in MPO-1, users in MPO-2 were automatically routed through the various sections as well, although they can also navigate via the main menu, which listed the main sections. The 'routing buttons' in MPO-2 are also labeled with the names of the main sections.

To summarize: MPO-2 contains more words in total than MPO-1, but the sections are smaller on average. This results in more sections with less information per section in MPO-2 than in MPO-1. We refer to the Appendix for a full description of the content of the several sections in each of the versions of *My pension overview* (Appendix J, p. 221).

3.3 Competence tests

All two hundred and forty participants in this study filled out a demographics questionnaire, five competence tests, and a performance test. These tests and questionnaire have been previously used and described in Chapter 4. In the demographics questionnaire, participants were asked about their age, gender, educational level, type of employment, and income (scale). With the competence tests, we established two of the participants' abilities: prior knowledge (both financial knowledge and pension knowledge) and language skill (both vocabulary and reading ability). Table 5.3 shows the constructs and tests for each of the competences. The performance test measured to what extent participants were able to find and understand information in the pension document. We will briefly describe these tests in this section; for a more extensive description, see Chapter 4.

Table 5.3 *Operationalization of competences and performance.*

	Measurable constructs	Tests to measure the concepts
	COMPETENCES	
Prior knowledge	Domain knowledge	1. Financial knowledge test
	Topic knowledge	2. Pension knowledge test
Language skill	Vocabulary	3. Vocabulary test
	Reading skill	4. Organ donation cloze test
	PERFORMANCE	
Users' performance	Finding	5. Scenario questions
	Understanding	

3.3.1 Domain knowledge test

The domain knowledge test consisted of fourteen multiple-choice items (see Appendix C, p. 202). The following financial topics were covered: the value of money, saving and investing, interest rates and inflation, and salary and income tax. The majority of the questions was derived from other financial knowledge tests (Lusardi & Mitchell, 2005; Mandell, 2008; Markow & Bagnaschi, 2005; Noon & Fogarty, 2007; van Rooij, Lusardi, & Alessie, 2011b) and adapted to the Dutch situation if necessary. An example is shown in Figure 5.3. In the analysis, three items were discarded due to unclear questioning or ambiguous response options. The remaining eleven questions proved reliable ($\alpha = .75$).

Figure 5.1 *A screenshot of MPO-1 (2011). This page shows what expected gross amount per year the user will receive at certain ages.*

Figure 5.2 *A screenshot of MPO-2 (2015). This page shows what expected net and gross amounts per year the userwill receive at certain ages.*

5

Figure 5.3 *An example of a financial knowledge question.*

Considering a long period of time (for example 10 or 20 years), which asset normally gives the highest return?

a. Savings accounts.
b. Bonds.
c. *Stocks.*
d. I don't know.

3.3.2 Topic knowledge test

To measure the participants' topic knowledge, a pension knowledge test was designed (Lentz and Pander Maat, 2013). It consisted of twenty multiple-choice items concerning seven pension-related topics, such as different types of pensions and pension security (see Appendix D, p. 205). The test was reliable (α = .72). A sample question is shown in Figure 5.4.

Figure 5.4 *An example of a pension knowledge question.*

Which changes in your life affect your future pension?

a. Your partner stops working, you have children, you are promoted.
b. *Your partner stops working, you are promoted, you start working less.*
c. You have children, you are promoted, you start working less.
d. I don't know.

3.3.3 Vocabulary test

The vocabulary test consisted of twenty-five multiple-choice items (α = .89). In this test, the participants were presented words in neutral sentences and were asked to select the correct synonyms. They were given five possible answers, including an 'I don't know' option. The test contained low-frequency words such as *obstinate, status quo,* and *unambiguous*. An example is shown in Figure 5.5. We refer to Appendix E (p. 210) for the complete vocabulary test.

Figure 5.5 *An example of a vocabulary question.*

He is an *erudite* man.

a. attractive
b. *scholarly*
c. unwise
d. fat
e. I don't know.

3.3.4 Reading skill test

A cloze test on the subject of donor registration was used as a measure of reading skill (see Figure 5.6), consisting of twenty-five items (α = .69). A cloze test is a test that is presented with missing words. The participants' task is to fill in the blank with words that they believe are correct. To be able to predict which words are missing, they must rely on the same types of knowledge they need to read a text smoothly, such as text knowledge, topic knowledge and language knowledge (Jansen & Boersma, 2013). For more details on the construction and scoring method of the donor registration cloze test, we refer to Chapter 4.[17] The complete test can be found in Appendix F (p. 215).

Figure 5.6 *A fragment from the donor registration cloze test.*

The registration of your choice in the donor register provides ……. and certainty for all those involved in organ and ……., such as potential donors, your loved ones, but also doctors and nurses. ……. in the Donor Register is not compulsory. ……. your choice is not registered, it means that after your death your ……. must decide whether you are a ……. or not.

3.3.5 Scenario questions

To establish their performance, the participants received a scenario test that measured to what extent they were able to find and understand the information in the two conditions. Both the scenario tests for MPO-1 and MPO-2 consisted of six questions, divided into sixteen subquestions. The questionnaires were drafted from the perspective of a 53-year-old employed male named John. All questions were considered to be issues that can be reasonably expected users of a pension platform to have. This resulted in questions such as 'What amount will John's partner receive if John dies before he retires?'

Since both MPO-1 and MPO-2 differ considerably in design, navigation structure, and covered topics, the corresponding questionnaires partially differed as well. Nine out of the sixteen subquestions from both of the questionnaires were consistent with each other. Those are shown in Table 5.4. In the comparative analysis we will refer to this set of questions as the *short questionnaire*. In the other analyses the remaining questions are used as well. The full set of questions is from now on referred to as the *complete questionnaire*. We refer to Appendix K (p. 224) and Appendix L (p. 226) respectively for the complete questionnaires.

17 In Chapter 4, reading skill is referred to as 'general reading skill' as opposed to topic-related reading skill.

Table 5.4 *The short questionnaire.*

No.	Questions (MPO-1/MPO-2)
1	The website has not received information from (MPO-1: the Bread & Pastry pension fund) (MPO-2: Zwitserleven). Nevertheless, John wants to know those amounts to have a complete overview. Show what he should do to receive this information.
2	a. What pension amount will John receive (MPO-1: between the ages of 60 and 65) (MPO-2: when he turns 67)? b. Is that an amount per year, per month or other?
3	Assume John wants to retire in full when he is (MPO-1: 69 years and 9 months) (MPO-2: 67). What total amount will he receive per year?
4	John is currently accruing a pension at (MPO-1: the Pension fund for Coffee roasters & Baristas) (MPO-2: Nationale-Nederlanden). a. What amount has he accrued there so far? b. Is that an amount per year, per month or other? c. Is that a gross or a net amount? d. How high is the amount that can be achieved?
5	What amount will John's partner receive if John dies before he retires?

3.4 Analysis

3.4.1 Linguistic analysis

Because any performance differences between the two versions of *My pension overview* could possibly be explained by distinctions in language use, we have quantitatively assessed the linguistic nature of MPO-1 and MPO-2. For this purpose, we have used a software tool for analyzing Dutch text named *T-Scan* (Pander Maat et al., 2014). T-Scan aims at extracting text features that influence the complexity of a text, such as lexical complexity, sentence complexity, referential cohesion and lexical diversity, relational coherence, and personal style. In this study, we have used this tool to diagnose the language use in both digital platforms. For this purpose, we have analyzed the available running text from MPO-1 and MPO-2. That is: all text, with the exception of single words and phrases such as menu items, headings, tables, graphs, et cetera. The T-Scan analysis produced an output of 411 text features in nine classes (Pander Maat et al., 2014). Each of these features resulted in a frequency, proportion, or density. Paragraph 4.1 compares these features for MPO-1 and MPO-2.

3.4.2 Analysis of the scenario questions

The answers to the scenario questions were analyzed both quantitatively and qualitatively. In order to quantitatively assess the answers given by the participants, it was predetermined which keywords had to be mentioned in each answer and where in both versions of the pension platform these answers could be found. Then, a *finding score* and an *under-*

standing score per participant were calculated. In the corresponding questions (the short questionnaire), 9 keywords were distinguished. This meant that participants could achieve a *finding score* of up to 9 points. Participants were assigned one point when they had found the paragraph, table, figure, or textbox the keyword appeared in. Participants could also achieve an *understanding score* of a maximum of 9 points. They got one point when they were able to name a correct keyword. We need to point out that the understanding score was only measured when a participant had found the correct fragment. A participants' total understanding score could therefore only be as high as the overall finding score, since a fragment could not be understood if it was not found.

During the experiments, the experimenters noted on observation forms if any issues occurred when users searched for and processed the information in the pension platform. Comments were made if (1) users deviated from the expected search path, and if (2) users gave a wrong or incomplete answer. In these two situations, the experimenter noted how the search path or answer deviated from the expected outcome and – if this could be deduced – why this detour or mistake was made. Based on the number of occurrences, the problems were subsequently ranked. In the results section, we discuss the most frequent issues.

3.5 Procedure

The experiments were led by an experimenter, and took place at the home environments of participants. All of the participants were tested individually. First, they filled out a demographics questionnaire, followed by the four competence tests described above. The tests were presented in alternate orders per participant to rule out a learning effect. Participants were given five minutes to complete the vocabulary test and ten minutes to complete every other competence test.

After filling out the competence tests on paper, the participants were invited to open the condition of the pension platform they were assigned to on their computer. First, the experimenter read out a short text about John, the man from whose perspective the scenario questions where written. This text indicated that John is a 53-year old male with a 48-year-old partner and two daughters. He also has an ex-partner. He works full-time. Next, the experimenter read the scenario questions out loud. After every question, the participant provided an answer by finding and interpreting the information in the platform. The experimenters noted particular details about the search path as well as the answer that was given on an observation form. Participants who couldn't find the answer were asked to stop looking after two minutes. In these cases, the answer was considered not found and therefore incorrect. Experimenters were allowed to repeat the questions if participants asked them to. After completing the scenario questions, all participants received a gift voucher to the value of 5 Euros for taking part in the study. Each session lasted 45 to 75 minutes.

4. RESULTS

4.1 Linguistic analysis of MPO-1 and MPO-2

When analyzing the amount of running text in both versions of the digital platform, we found that MPO-1 contains 1.054 words and MPO-2 contains 2.178 words. As was indicated in paragraph 3.2, MPO-1 consisted of eleven main- and subsections, whereas MPO-2 includes forty-four main- and subsections. This results in an average of 96 words per section for MPO-1 and 50 words per section for MPO-2. With the help of T-Scan, we conclude that there are no significant text differences between MPO-1 and MPO-2 when it comes to lexical complexity, sentence complexity, referential cohesion and lexical diversity, relational coherence, and personal style. This result does not come as a surprise, since MPO-1 and MPO-2 have the same purposes and cover more or less the same topics. In the next paragraph, the difference in performance between both versions is described.

4.2 Version effects

We first checked for differences in the competence levels of participants between conditions. Participants achieved an average domain knowledge test score of 6.4 out of 11 (SD = 2.8), an average topic knowledge score of 9.3 out of 20 (SD = 3.7), an average vocabulary score of 19.4 out of 25 (SD = 5.2), and an average reading skill score of 14.1 out of 20 (SD = 3.4). Table 5.5 shows the average competence test scores per condition that participants achieved. We found a significant effect for reading skill ($t(238) = -2.401$, $p = .02$): participants in the MPO-1 condition (M = 13.5, SD = 3.7) had significantly lower scores on the reading skill test than participants in the MPO-2 condition (M = 14.6, SD = 3.0). Therefore, we included reading skill as a covariate in the following univariate analyses. As will turn out later, reading skill indeed affects performance on the digital platform. The other competences showed no significant differences between conditions and neither did the demographic measures.

Table 5.5 *Competence test scores (descriptive statistics and confidence intervals).*

	MPO-1 (*n* = 120)		**MPO-2 (*n* = 120)**		
Variables (number of items)	***M* (*SD*)**	**95% CI**	***M* (*SD*)**	**95% CI**	***p***
Domain knowledge (11)	6.1 (3.0)	[5.61, 6.68]	6.6 (2.6)	[6.08, 7.02]	.257
Topic knowledge (20)	8.9 (3.8)	[8.21, 9.60]	9.7 (3.4)	[9.07, 10.31]	.098
Vocabulary (25)	19.2 (5.5)	[18.17, 20.14]	19.7 (4.9)	[18.78, 20.55]	.448
Reading skill (20)	13.5 (3.7)	[12.86, 14.22]	14.6 (3.0)	[14.05, 15.13]	.017*

** $p < 0.05$ (2-tailed)*

In Table 5.6, readers' performance on both the short and complete questionnaires is presented for both versions. Understanding is reported as a proportion of finding: information could only be understood if it was found. One of the participants assigned to MPO-2 did not finish the scenario questions and was therefore excluded from the analysis. The finding scores as well as the understanding scores for both conditions *and* for both the short and the complete questionnaires are quite high.

Table 5.6 *Performance test scores in percentages (descriptive statistics and confidence intervals).*

Variables (number of items)	MPO-1 (*n* = 120)		MPO-2 (*n* = 119)		*p*
	M (*SD*)	95% CI	*M* (*SD*)	95% CI	
Short questionnaire (both conditions)					
Finding	0.86 (0.14)	[0.84, 0.87]	0.91 (0.14)	[0.87, 0.94]	.025*
Understanding	0.96 (0.08)	[0.95, 0.98]	0.97 (0.08)	[0.96, 0.99]	.321
Complete questionnaire MPO-1					
Finding	0.83 (0.14)	[0.80, 0.85]	-	-	-
Understanding	0.98 (0.04)	[0.95, 1.01]	-	-	-
Complete questionnaire MPO-2					
Finding (16)	-	-	0.91 (0.12)	[0.88, 0.93]	-
Understanding (16)	-	-	0.97 (0.08)	[0.96, 0.98]	-

** p < 0.05 (2-tailed)*

In MPO-1 the participants found 86% of the information requested in the short questionnaire ($M = 7.8$, $SD = 1.2$), while MPO-2 scores somewhat higher with 91% ($M = 8.2$, $SD = 1.3$). The difference is significant ($F(1,236) = 5.09$, $p = .025$, $\eta_p^2 = .021$). The understanding scores for both conditions do not differ: in MPO-1, participants understood 96% of the found information, whereas in MPO-2 they understood 97%. As in Chapter 4, the understanding scores showed a ceiling effect: finding the information almost guarantees understanding the information. As the understanding scores show very little variation, we will only report on finding scores for the remainder of this chapter.

To better understand the findability differences between both versions of *My pension overview*, we studied the finding scores of the individual questions in the short questionnaire. The finding percentages are presented in Table 5.7. A logistic regression analysis indicates that three out of nine answers show a version effect: two of the answers are found more often in MPO-2, one is found more often in MPO-1. In addition, we find an interaction effect for question 4a: less capable readers are significantly better in finding the answer in MPO-2 than in MPO-1. For good readers, there is no difference between both conditions.

Let us take a closer look at some of the steps that were followed by the users, in order to explore any problems they encountered during their search. The description of this search path is based on the notes the experimenters made during the experiments, as described in paragraph 3.4.2. To illustrate, we discuss question 4a (for which we found that less capable readers are significantly better in finding the answer in MPO-2 than in MPO-1) and question 5 (for which we found a version effect in favor of MPO-2).

Question 4a was: 'John is currently accruing a pension at the Pension for Coffee roasters & Baristas/Nationale-Nederlanden. What amount has he accrued there so far?' The answers to this question are €363 for MPO-1 and €8.700 for MPO-2. The information is found more often in the MPO-2 version than in the MPO-1 version, but only by the less capable readers (MPO-1 = 68%, MPO-2 = 89%, $p = .01$). For more capable readers, no difference was found (MPO-1 = 84%, MPO-2 = 88%, $p = .36$).

First, we look at the search path for MPO-1 (see Figure 5.7). The answer can be found in the section *Pension upon retirement* ('Pensioen bij pensionering') and is indicated by the green arrow. We find that the participants usually have no difficulty in finding the correct section, partially because they are led through the website chronologically, so they automatically visit the page early on. The designated page contains a lot of information, consisting of text and a table with amounts. The introduction (see index [1] in Figure 5.7) indicates that users can find both their *reachable pension* ('te bereiken pensioen') and their *accrued pension* ('opgebouwd pensioen'). The introduction also states that the difference between those amounts is important, and subsequently directs the user to one of the textboxes on the right side of the webpage, where the difference is explained (this explanation is not shown in Figure 5.7, but was visible to the participants of the study). This scattered information presentation may cause a *split-attention effect*. The table (see index [3] in Figure 5.7). presents the amounts of government pension and employers' pension, both reachable and accrued, per pension organization. This is a lot of information at once. It seems that because of this, users experience difficulties indicating the correct amount to answer the question. Users who answered the question incorrectly often mentioned the amount of €7.147, which can be found directly beneath the word *accrued* ('opgebouwd') in the table.[18] Another problem was that it was not clear to all users that the amounts had to be interpreted as gross amounts per year, as indicated in de sentence just above the table ('Alle genoemde bedragen zijn bruto bedragen in euro per jaar') which could be due to a possible violation of *spatial contiguity* (see index [2] in Figure 5.7). This information was often missed by users.

18 We have to point out that Figure 5.7 shows the description 'Pensioenuitvoerder 1, Pensioenuitvoerder 2, Pensioenuitvoerder 3', whereas the version that was used in our study stated 'Pension fund for Coffee roasters & Baristas, ABC Pensions, Pension fund for Textile care'.

Table 5.7 *Finding percentage per question (short questionnaire).*

No.	Question (MPO-1/MPO-2)	Answer (MPO-1/MPO-2)	MPO-1 (*n* = 120)	MPO-2 (*n* = 119)
1	The website has not received information from the Bread & Pastry pension fund/Zwitserleven. Nevertheless, John wants to know those amounts to have a complete overview. What does he have to do to receive this information?	Call or send email to the pension fund/ Email via contact form	71%	75%
2a	What pension amount will John receive between the ages of 60 and 65/when he turns 67?	€200/€1.520	94%	98%
2b	Is that an amount per year, per month or other?	Per year/ per month	98%	98%
3a	Assume John wants to retire in full when he is 69 years and 9 months/67. What total amount will he receive per year?	€11.572/€24.391	78%	87%*
4a	John is currently accruing a pension at the Pension fund for Coffee roasters & Baristas/ Nationale-Nederlanden. What amount per year has he accrued there so far?	€363/€8.700	76%	88%**
4b	Is that an amount per year, per month or other?	Per year/per year	95%	92%
4c	Is that a gross or a net amount?	Gross amount/ gross amount	98%*	92%
4d	How high is the amount that can be achieved?	€2.500/€8.890	94%	92%
5	What amount will John's partner receive if John dies before he retires?	€6.044/€8.353	73%	99%*

** version effect at $p < 0.05$ (2-tailed), ** interaction effect version*reading skill at $p < 0.05$ (2-tailed)*

In MPO-2, users also get to the correct section *My pension until now* ('Mijn pensioen tot nu toe', see Figure 5.8) automatically and quite quickly. On this page, they have two choices: *You are currently accruing pension at* ('U bouwt nu pensioen op bij', see index [1] in Figure 5.8) or *You have previously accrued pension at* ('U hebt eerder pensioen opgebouwd bij', see index [4] in Figure 5.8). Given the question, this choice was clear for nearly every user. The next step is for users to click on the link *Details*, which opens a subsection (see index [2], Figure 5.8). Here, the answer to the question, indicated with a green arrow, can be found (see index [3], Figure 5.8). In line with the *principle of spatial contiguity*, the information that belongs together is placed together. For example, the amount of €8.700 is preceded by the text *accrued gross amount per year* ('opgebouwd bruto per jaar'), clarifying how this amount should be interpreted. Also, in comparison to the same section in MPO-1, the MPO-2 section contains considerably less information: it presents the information of only one pension organization at a time (instead of all pension organizations at once) and confines itself to the accrued pension (instead of both the accrued and the reachable pension). This makes processing and understanding the available information less difficult.

Figure 5.7 *A fragment of the section Pension at retirement ('Pensioen bij pensionering') in MPO-1.*

Figure 5.8 *A fragment of the section My pension until now ('Mijn pensioen tot nu toe') in MPO-2.*

An important distinction we can make based on the analysis of this search path is the difference between two types of 'finding'. First, participants have to be able to find the

correct (sub)section, which appears to come relatively easy to them in both versions of the platform. This could be attributed to the automatic routing of the platform. Then, the participants have to be able to find the correct information within this section, which poses problems in MPO-1.

The next search path that we will discuss is that of question 5: 'What amount will John's partner receive if John dies before he retires?' For MPO-1, the answer to his question is €6.044. For MPO-2 it is €8.353. This information is found significantly better in MPO-2 than in MPO-1 (99% vs. 73%).

In MPO-1 the answer can be found at the section *Upon death* ('Bij overlijden'). This answer is indicated with a green arrow (see Figure 5.9, index [4]). When we study the search path for MPO-1, we find again that users reached the correct page automatically and relatively quickly (see Figure 5.9), which we have also seen in the search path for question 4a. Nevertheless, probably because they are automatically guided through the website, not all participants seem to be fully aware of the existence of the main menu. The design of this menu does not seem to be prominent enough to make all participants actually use it (see index [1] in Figure 5.9), which violates the *signaling principle*. Instead, they use the *back* ('terug') and *forth* ('verder') buttons on the bottom of every page (see index [2] in Figure 5.9). This seems to lead to a limited understanding of the website structure, resulting in some participants having trouble finding the correct section. A second problem occurs when users have reached the correct page. The page starts with a quite comprehensive introduction, which makes it hard for users to understand at once what exactly they can find on this page (see index [3] in Figure 5.9). Finally, the correct

Figure 5.9 *The section Upon death ('Bij overlijden') in MPO-1.*

answer can be found in a table that shows the amounts for both partner and possible children. For partners, a distinction is made between 'pension' and 'indicative pension', but the meaning of these terms is not explained any further. This leads to confusion and in some instances the wrong answer (see index [4] in Figure 5.9).

In MPO-2 the answer can be found in the section *If my situation changes* ('Als mijn situatie verandert'), which is shown in Figure 5.10 (index [3]). Users can reach this page via the main menu on top of the website, but also via a red button on the bottom of the page *My pension*. This can be considered a successful execution of the *signaling principle*: users are pointed to this information in several ways. Next to this button, a short explanation is given about the information on this page. On the page itself a list of possible life events is shown. In some cases these are accompanied by the phrase *with pension amounts* ('met pensioenbedragen'), indicating that a personalized calculation is provided (see Figure 5.10, index [1]). These are cues that help the user select the correct link and create correct expectations, again successfully meeting the *signaling principle*. *Death* is at the top of the list. Clicking on this link leads to two new choice options: *If I die now* ('Als ik nu overlijd') and *If I die when I'm unemployed* ('Als ik overlijd wanneer ik werkloos ben'). In this case, users should click on the first option (see Figure 5.10, index [2]), which opens a table titled *What will my partner and children receive if I die now?* ('Wat ontvangen mijn partner en kinderen als ik nu overlijd?'). The first line immediately displays the amount the partner will receive per year up to the age of 67, followed by the

Figure 5.10 *The section If my situation changes ('Als mijn situatie verandert') in MPO-2.*

amount the partner will receive from 67 on. This search path barely went wrong, leading to a 99% finding score for this information in MPO-2.

We conclude from both search paths that finding the correct (sub)section does not cause many problems in both versions of *My pension overview*, but that subsequently finding the correct information within this section poses difficulties in MPO-1. This might have to do with the amount of information presented and with the extent to which the design principles for reducing cognitive load are met. Limiting the amount of information presented at once seems to increase finding success: while MPO-1 systematically presents quite large chunks of information – text, tables, and graphs – on one page, MPO-2 uses a more step-by-step approach, in which bits of information are released gradually. Consequently, users in MPO-1 are required to scan all of the information provided, whereas users in MPO-2 have to a greater extent a choice as to what information they do and do not read. Additionally, MPO-2 successfully makes use of the *signaling principle*, by providing clear and unambiguous headings (and therefore clear and unambiguous choices), whereas MPO-1 has shown to violate the *principle of spatial contiguity*, which might result in a *split-attention* effect.

4.3 Literacy demands

In this section we address the second research question: To what extent does literacy predict performance on financial platforms, and how are both abilities related? We started by exploring the correlations. The significant correlations between competences and performances are shown in Table 5.8. Domain knowledge and topic knowledge, both constructs of prior knowledge, correlated .60. Vocabulary and reading skill – both measuring language skill – correlated .40. Finding – as measured with the short questionnaire – correlated with domain knowledge (.31), topic knowledge (.19), vocabulary (.28), and reading skill (.24). In addition, finding as measured with the complete questionnaire for MPO-1 correlates significantly with all competences, while finding as measured with the complete questionnaire for MPO-2 only correlates with domain knowledge and vocabulary. These results indicate that competences are less relevant for performance on MPO-2 than on MPO-1.

We subsequently analyzed to what extent prior knowledge and language skill are related to demographic features (Table 5.9). The analyses indicate that age, education level, and income level are predictors of performance on all competence tests: higher ages, education levels, and income levels are associated with better test scores, with the exception of age and income level versus reading skill (older participants are not better readers than younger participants, nor are individuals with higher incomes better readers than those with lower incomes). In addition, gender is related to both domain knowledge and vocabulary: men had better overall scores than women on both tests.

Table 5.8 *Significant correlations between competences and finding performance.*

	Domain knowledge	Topic knowledge	Vocabulary	Reading skill
		COMPETENCES		
Domain knowledge	1			
Topic knowledge	0.60**	1		
Vocabulary	0.56**	0.54**	1	
Reading skill	0.37**	0.30**	0.40**	1
		PERFORMANCES		
Finding SQ (MPO-1 + MPO-2)	0.31**	0.19**	0.28**	0.24**
Finding (MPO-1)	0.39**	0.29**	0.34**	0.43**
Finding (MPO-2)	0.22*	0.13	0.19*	0.03

** p < 0.05 (2-tailed), ** p < 0.01 (2-tailed)*

Table 5.9 *Significant relationships (p < .05) between demographics and competences.*

	Demographics			
Competences	Gender	Age	Education	Income
		PRIOR KNOWLEDGE		
Domain knowledge	$t(238) = 5.77$, $p < .001$	$r = .21$; p (two-tailed) $= .001$	$r_s = .43$; p (two-tailed) $< .001$	$r_s = 47$; p (two-tailed) $< .001$
Topic knowledge	-	$r = .40$; p (two-tailed) $< .001$	$r_s = .30$; p (two-tailed) $< .001$	$r_s = .39$; p (two-tailed) $< .001$
		LANGUAGE SKILL		
Vocabulary	$t(238) = 2.60$, $p = .010$	$r = .38$; p (two-tailed) $< .001$	$r_s = .51$; p (two-tailed) $< .001$	$r_s = .45$; p (two-tailed) $< .001$
Reading skill	-	-	$r_s = .37$; p (two-tailed) $< .001$	-

In order to determine what role the demographics and the user competences – prior knowledge on the one hand and language skill on the other hand – played in users' performance, we used a step-by-step approach. This examined to what extent demographics, pension knowledge and language skill contribute separately *and* together to finding information in both versions of the digital platform. We performed four linear regression analyses for each version. The dependent variable was the finding performance on the complete questionnaires. As predictor variables, we respectively entered:

1. demographics (gender, age, education level, and income level);
2. demographics and prior knowledge (domain knowledge and topic knowledge);
3. demographics and language skill (reading skill and vocabulary);
4. demographics, prior knowledge, and language skill;

The demographic variables education and income originally consisted of three values: low, intermediate, and high. To make them suitable for regression analyses, these vari-

ables were dichotomized twice, with intermediate education and intermediate income being the benchmarks. This resulted in the variables 'having a high education' (yes or no), 'having a low education' (yes or no), 'having a high income' (yes or no), and 'having a low income' (yes or no).

4.3.1 The role of demographics and competences in MPO-1

Table 5.10 shows the regression models for finding in MPO-1 (complete questionnaire). Only significant predictors are reported.

Table 5.10 *Regression models for finding scores in the MPO-1 condition.*

Model		Predictors	B	*SE*	β	*t*	*p*
		Demographics					
1	**Finding**	Low education	-1.448	.416	-.299	-3.482	.001
	$r = .39$; $\boldsymbol{R^2 = .16}$; $SE = 2.06$	Gender	-1.111	.380	.251	-2.925	.004
		Demographics and prior knowledge					
2	**Finding**	Domain knowledge	.281	.069	.375	4.068	.000
	$r = .47$; $\boldsymbol{R^2 = .22}$; $SE = 1.99$	Age	-.038	.015	-.217	-2.532	.013
		Low education	-.857	.432	-.177	-1.984	.050
		Demographics and language skill					
3	**Finding**	Reading skill	.259	.048	.438	5.451	.000
	$r = .51$; $\boldsymbol{R^2 = .26}$; $SE = 1.93$	Gender	-1.179	.356	-.266	-3.313	.001
		Demographics, prior knowledge, and language skill					
4	**Finding**	Reading skill	.259	.048	.438	5.451	.000
	$r = .51$; $\boldsymbol{R^2 = .26}$; $SE = 1.93$	Gender	-1.179	.356	-.266	-3.313	.001

Model 1 concentrates on demographics. We found that a low education and gender explain 16% of the variation. This means that having a low education and being a woman lowers your score. Next, we added the variables domain knowledge and topic knowledge. Model 2 shows that only domain knowledge affects the finding scores, while a low education remains significant. Age takes over for gender: older participants perform worse on finding than younger participants. The new model accounts for 22% of the variation in finding scores. Model 3 concentrates on language skills instead of on prior knowledge. Gender remains part of the model, while reading skill takes over the role of the low education factor. The model accounts for 26% of the variation. In Model 4, prior knowledge and language skill variables were entered together. The model does not change, however, indicating that in MPO1, language skill is a stronger predictor than prior knowledge.

4.3.2 The role of demographics and competences in MPO-2

Table 5.11 shows the regression models for finding performance on MPO-2 (complete questionnaire). Again, only significant results are reported.

Table 5.11 *Regression models for finding scores in the MPO-2 condition.*

Model		Predictors	B	*SE*	β	*t*	*p*
		Demographics					
1	**Finding** *r* = .22; R^2 **= .05**; *SE* = 1.93	Gender	-.880	.363	-.224	-2.442	.017
		Demographics and prior knowledge					
2	**Finding** *r* =.30; R^2 **= .09**; *SE* = 1.99	Domain knowledge	.197	.070	.260	2.808	.006
		Age	-.028	.013	-.196	-2.117	.036
		Demographics and language skill					
3	**Finding** *r* = .22; R^2 **= .05**; *SE* = 1.93	Gender	-.880	.363	-.224	-2.442	.017
		Demographics, prior knowledge, and language skill					
4	**Finding** *r* =.30; R^2 **= .09**; *SE* = 1.99	Domain knowledge	.197	.070	.260	2.808	.006
		Age	-.028	.013	-.196	-2.117	.036

Model 1 shows that gender explains 5% of the variation in finding performance. As in MPO-1, women perform worse on finding than men. In Model 2, we added the variables domain knowledge and topic knowledge. Only domain knowledge affects the finding scores and accounts, together with age, for 9% of the variation. Age has a negative coefficient: older participants perform worse on finding than younger participants. In Model 3, prior knowledge was left out of the analysis, while vocabulary and reading skill were entered. None of the language skills is a significant predictor, so only gender remains in the model. In Model 4, both prior knowledge variables (domain knowledge and topic knowledge) and language skill variables (reading skill and vocabulary) are candidate predictors. Of these variables, only domain knowledge affects the finding scores, indicating that language skill does not play a role in finding information in MPO-2.

We draw two conclusions from these analyses. First, we look at the nature of the competences that play a role in performance on the digital platforms. Language skill is an important predictor for finding information in MPO-1. As we have seen in paragraph 4.1, both versions of the platform are equally 'textual'. A possible explanation for the role of reading skill in performance on MPO-1, is that although the amount of text per section does not differ, MPO-1 presents more running text (see Figure 5.7 en 5.9) than MPO-2, which displays the larger text amounts in listings (see Figure 5.8). Whether this difference actually causes the reading skill demands for MPO-1 requires further investigation. The role of gender – in both conditions – could possibly be explained by the fact that women are known to show patterns of comprehensive and itemized analyses of all

available information when acquiring information: they exhibit a more complex information search process than men (Meyers-Levy & Maheswaran, 1991; Richard, Chebat, Yang, & Laroche, 2007). In other words, they might make the search path too difficult for themselves. In the context of this study, this approach could be a disadvantage to women because the search path is to a large extent already laid out to users. Deviating from this search path ignores the existing structure of the platform and possibly complicates the information provided.

Performance on MPO-2, on the other hand, is predicted by domain knowledge and age. Additionally, we have found a negative effect for age: older participants perform worse on finding than younger participants. Dommes, Chevalier, and Lia (2010) found in their study that this might be caused by differences in cognitive flexibility between younger and older searchers on the Internet. Younger searchers showed to be quite flexible in adjusting their search path when necessary, whereas older searchers found it hard to get out of impasses. We might argue that this result has to do with Internet experience: it is likely that younger participants are more experienced in using the web than older participants.

The second conclusion, which we believe is more important than the first, is that the regression models for MPO-1 are significantly stronger than those for MPO-2 (26% vs. 9% explained variance): the confidence intervals turned out not to overlap, indicating that a significant difference between the non-layered and the layered model was present. We consider this a positive outcome, since it means that demographics and competences account for less of the variation in finding in MPO-2 than in MPO-1. This in itself makes MPO-2 an improvement compared to MPO-1.

5. CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The results of this study first of all show that the concepts of finding and understanding information in both conditions of the platform are not easy to separate: finding the information often also implies understanding. As we have discussed in Chapter 4, understanding is already of importance when searching for information, and not just when answering the question. During the search, users interpret certain aspects of the digital platform. They need, for example, to understand the main structure. This indicates that when users arrive at the correct information, they have followed a search path that helped construct meaning step by step, instead of only having to depend on the information at the end point of the search. Therefore, once the needed information is located, the step towards actually understanding this information has become substantially smaller. In this study we have found a distinction between finding the (sub)section itself and finding the correct information within this section. Finding the (subsection)

usually went without problems, whereas the second type of finding has shown to cause some difficulties in MPO-1.

We have seen that the finding percentages are high for both MPO-1 and MPO-2 (86% versus 91%). We presume that these high finding scores are partly due to the structure of the platforms: in both conditions, users are gradually guided through the sections. This way, they can build a schema for the provided information step by step. Every next step can thus be incorporated into the existing schema quite easily (Al Asraj et al., 2011). But despite the high overall finding scores, participants performed slightly better on MPO-2, even though the total amount of information was increased here in relation to MPO-1. We believe that this result has to do with the structure of the information within the sections. MPO-1 offers relatively much information at once in both the main sections and the subsections, while MPO-2 presents the information in smaller quantities. This means that MPO-2 has more subsections – and therefore requires more clicks – than MPO-1. Another finding is that in MPO-1, readers have direct access to all the information, whereas in MPO-2 they are offered choices. Because MPO-2 has done a good job on the *signaling principle* – it provides clear and unambiguous links – these choices help the users to find the correct information. Also, the *principle of spatial contiguity* is well executed in MPO-2. Labels such as 'accrued gross pension per year' are placed next to the amounts instead of in separate paragraphs, and the explanatory text boxes on the right side of the page used in MPO-1 – possibly causing a *split-attention effect* – have been removed. Finally, a *redundancy effect* is prevented in MPO-2 by presenting financial information only in tables, whereas in MPO-1 the same information was sometimes presented in both tables and graphs (as is shown in Figure 5.1). These aspects are – to various extents – likely to have reduced the cognitive load compared to MPO-1.

We have also found that whereas reading skill is an important predictor of finding information in MPO-1, performance on MPO-2 is mainly predicted by domain knowledge. This result probably has to do with the *signaling principle*; participants need significantly less reading skill when using MPO-2 because this version of the platform provides clearer and more unambiguous links and titles than MPO-1. It might also be due to the fact that MPO-1 presents more running text than MPO-2. A third reason could be that the interpretation of the tables and graphs in MPO-1 require a certain reading skill. As research has shown, graphs and tables are only likely to be of help to users when they are supported by effective linguistic elements (Douglas et al., 1994; Douglas & Hurst, 1996). This appeared to be not always the case in MPO-1. The demographics age and gender also seem to be of relevance: older participants and women performed worse on both conditions. The lower performance of older participants compared to younger participants could very well be related to Internet experience: younger searchers showed to be quite flexible in adjusting their search path when necessary, whereas older searchers found it hard to get out of impasses (Dommes et al., 2010). Also, when

age increases, the preference for an offline channel increases. At the same time does the preference for online channels decrease when age increases (Bouwmeester, 2016). The role of gender might be explained by the fact that women exhibit a more complex information search process than men (Meyers-Levy & Maheswaran, 1991; Richard, Chebat, Yang, & Laroche, 2007), possibly making their search path more difficult than necessary.

Finally, performance on MPO-2 turns out to be substantially less dependent on user competences than performance on MPO-1, which means that users with lower levels of education, financial knowledge, and reading skill are to a much lesser extent hampered by this while using MPO-2 than while using MPO-1. In other words, literacy demands are considerably reduced for MPO-2. This is a very positive outcome, since *My pension overview* eminently is a platform that should be accessible for users with various demographics and levels of competences.

To conclude, we will suggest some possibilities for future research. In this study, we have investigated the role of literacy demands in performance on a financial digital platform by distinguishing prior knowledge and language skill as two determinants of literacy. Nevertheless, literacy could be considered a much broader concept, divided into knowledge on the one hand, and a varying range of skills on the other hand (Lemke, 1998). In future research into literacy demands, we would therefore recommend to include measures of graph literacy, numeracy, and online reading skill to form a broader picture of the role of literacy in performing on digital platforms. Another recommendation is to further investigate the concept of the structure of sections. In this study, we have studied two digital platforms as they are used in the real world, which did not give us the opportunity to manipulate certain features. To be able to provide more insight into the role of section structuring we recommend investigating several conditions of one platform that varies only in structure levels.

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CHAPTER 6

THE PENSION INFORMATION PACKAGE: AN INTEGRATED ASSESSMENT OF PURPOSES AND PRACTICES

ABSTRACT[19]

This chapter presents an expert review of the communication activities of pension organizations in a changed regulatory environment. A methodology combining functional analysis (FA) and media synchronicity theory (MST) was used. We analyzed legal documents and research reports that prescribe the pension communication purposes – the guiding documents – as well as the functions realized in actual pension communication practice. Seven guiding functions were identified, and 433 functions realized in the existing media of pension organizations. When the two sets of functions are mapped, it turns out that not all guiding functions are sufficiently addressed in pension communication practice *and* that existing pension communication provides information not required by the guiding functions. We also find that the functions the government has established for pension communication are inaccurately formulated, which leads to communication designers providing an overload of information. Additionally, the analysis shows that four different media are used to communicate two central topics: the financial specifics and the content of the pension arrangement. This media strategy results in redundant information, because some of the basic concepts need to be explained in each of the media in order to understand the more complex information. Our analysis leads us to propose seven new guiding functions for pension communication and to outline two scenarios for an improved pension information package.

1. INTRODUCTION

Pension communication in the Netherlands has changed considerably over the last decade. A financial crisis happened, rules on pension accrual were overhauled, and pension clients became much more critical and skeptical towards pension organizations. Pension communication experts tried to keep up with these changes by developing new media, conducting user research, and – most of all – trial and error. In this chapter we reflect on the results of all this: the current pension communication situation in the Netherlands. Also, we glance ahead towards the near future by laying out some suggestions for improved pension communication.

The events described above lead to a new Dutch law on pension communication, which went into effect in 2015. This chapter presents a study on the communication activities of pension organizations in this new regulatory environment. We will refer to the collection of printed and digital media that pension organizations provide to inform pension plan members as *pension information package* (PIP). The documents that lay down the pension communication rules are referred to as *guiding documents* (GD).

For the vast majority of pension organizations, the pension information package consists of both legally required media and non-required media.[20] Since the introduction of the new law in 2015, Dutch pension communication legislation requires pension organizations to provide their clients with two types of information: basic information

19 This manuscript has been submitted for publication.

20 We refer to Chapter 2 for an explorative study on the design of the pension communication environment and media choices within this environment.

about the pension arrangement[21] and information about the financial status of their pension.[22] New clients should receive (part of) the basic information about the pension arrangement from the pension provider within three months after becoming affiliated, whereas they should receive an updated status on their acquired pension rights in print every year. Furthermore, the law requires that all Dutch citizens should have access to the website *My pension overview*, which surveys their accumulated pension rights with several pension organizations. These pension rights consist of government pension, usually supplemented with pension that is acquired via one or more employers. Both the government and pension organizations transfer their data on individual pensions to *My pension overview*, where the information is aggregated. *My pension overview* subsequently allows users – after logging in – to check the amount they have accrued, their expected monthly pension, and what their relatives will receive if they die.

Besides the legally required media, pension organizations also include non-required media in their pension information package. Whilst the previous law on pension communication was in effect, many organizations looked negatively upon the legally required pension communication media.[23] As a result, many pension organizations focused their attention on 'additional' media such as the website, brochures, video's, and digital tools, in order to inform their clients in a more flexible way. Although the new regulatory environment seems to have lain to rest some of the objections against legally required media[24], additional media are still widespread. Increasingly, personal digital platforms are offered to clients, which provide them with up-to-date information about their pension income and the effect of scenarios such as retiring early or later.

In this study, we evaluate pension communication in the new regulatory environment, focusing on the current pension information package on defined benefit agreements. This analysis leads to a proposal for an improved model for pension communication. Our research questions and subquestions are the following:

RQ1: What are the functions of pension communication in the new regulatory environment required by guiding documents and addressed in the actual pension information package?
RQ2: To what extent are the required purposes addressed in the actual package?

21 The structure of the new communication instrument that is used to inform consumers about the basic contents of their pension arrangement was evaluated and discussed in Chapter 4 of this dissertation.

22 The usability of the website *My pension overview* that is used to inform consumers about their financial situation was evaluated and discussed in Chapter 5 of this dissertation.

23 In Chapter 2 we report on interviews with pension communication professionals on how communication legislation affected the communication environment.

24 These objections are listed in Chapter 2 of this dissertation.

RQ3: Can we identify a media strategy in the pension information package, and how should we evaluate this strategy?
RQ4: Based on our findings, what recommendations can be made for an improved pension communication model?

2. ANALYTICAL APPROACH

Our analytical approach combines functional analysis (FA) and media synchronicity theory (MST). An earlier example of this methodology can be found in the study by Herijgers and Pander Maat (2015) on a multichannel communication package on mortgage information.

2.1 Functional analysis

Functional analysis aims at establishing the functions of a medium or set of media (Lentz & Pander Maat, 2004; also see Karreman & Steehouder, 2008). These functions focus on the intended cognitive effects on readers by making the reader the subject of the description sentence, for example: *Patients suffering from AIDS know how to correctly administer Drug Y to achieve an effective use of the drug*. Every communicative effort can be directed at three kinds of effects (Lentz & Pander Maat, p. 388):

1. A *cognitive change* in the mental state of the reader, who learns something or forms a particular attitude;
2. A *change in the reader's behavior*, such as handling a machine or buying a product;
3. A *change in social reality* as a result of the collective behavior of readers, such as the sale of a product.

The last two effects can be seen as possible (not necessary) consequences of the cognitive change. According to Lentz and Pander Maat, the intended change in the reader's cognitive state is the only effect for which a communication team can be held responsible.

Usually, media or sets of media aim to achieve several functions at once (Lentz & Pander Maat, 2004). These functions are related to each other in a hierarchical network. The hierarchy of purposes in itself does not say anything about the structure of the media or set of media, but it can help design teams to understand how specific information should be presented.

2.2 Media synchronicity theory

Media synchronicity theory focuses on the ability of media to support communication processes. Dennis, Fuller, and Valacich (2008) distinguish two primary processes: *conveyance of information* and *convergence on meaning*. Conveyance is the unilateral transfer of information from transmitter to receiver, whereas convergence requires communication back and forth to establish a shared understanding. They contend that convergence processes have a greater need for rapid information transmission and lesser needs for

information processing, while the reverse is true for conveyance processes (p. 581). These processes benefit from different kinds of media. Some media can be used to communicate at the same time, or synchronously (e.g., face-to-face communication, video conference, telephone conference). Others are typically used to communicate in turns, or asynchronously (e.g., a website, voice mail). Others can be used either synchronously or asynchronously depending upon how they are used (e.g., discussion forums, electronic mail) (p. 581). Dennis et al. propose that low-synchronicity media are better suited for conveyance processes, whereas high-synchronicity media are preferable for convergence processes.

3. CORPUS AND ANALYSIS

3.1 Corpus of guiding documents

To help us establish the functions of pension communication from a guiding perspective, we have studied two kinds of guiding documents:

1. documents that legally prescribe pension communication functions;
2. documents that report on research on these functions and that are commissioned by the Dutch government or the supervisor of the financial markets in the Netherlands.

As Table 6.1 reveals, the collection of guiding documents contains four legal documents and three research reports. All of these documents either were created in the process of designing the new law on pension communication or were the result of this process.

Table 6.1 *Collection of guiding documents.*

Document	Type	Author
Letter to the Dutch Parliament on pension communication to pension plan members (June 26, 2012)	Legal document	The Minister of Social Affairs and Employment, H.G.J. Camp
Explanatory Memorandum to the law on pension communication (September 2, 2014)	Legal document	The State Secretary of Social Affairs and Employment, J. Klijnsma
Law on pension communication (May 29, 2015)	Legal document	The State Secretary of Social Affairs and Employment, J. Klijnsma and The Minister of Security and Justice, G. A. van der Steur
Letter of commencement of the law on pension communication (June 29, 2015)	Legal document	The State Secretary of Social Affairs and Employment, J. Klijnsma
Pension communication: needs and barriers (June 26, 2012)	Research report	TNS NIPO commissioned by the Ministry of Social Affairs and Employment
Pension in clear language (June 26, 2012)	Research report	Ministry of Social Affairs and Employment
Research digital pension communication (July 1, 2015)	Research report	The Netherlands Authority of Financial Markets

Together, they reflect the current views of the national government and provide an overview of the requirements that the pension information package is required to meet.

3.2 Analysis of the guiding documents

We identified functions by answering the question what pension plan members should know, do, or be able to do after reading or using the pension media. In other words: what are the intended cognitive effects of pension communication according to the guiding documents? Since not all purposes were formulated explicitly in the guiding documents, we have used two criteria to identify them:

1. The source of the purpose, which could be either *policy makers* or *external authorities*; and
2. The nature of the purpose, which could be either *a need* or *a problem* brought up by the source.

Functions that could be attributed to these criteria were identified as guiding functions. In Table 6.2, these categories are illustrated by matching passages. The collected passages were subsequently grouped by topic, which resulted in a list of overarching guiding functions of pension communication. These functions are discussed in paragraph 4.1.

Table 6.2 *An illustration of the passages collected based on the criteria for guiding functions.*

Source	Nature	Passage
Policy makers	Need	*"It is important that pension plan members in a changing (pension) world better understand the level and adequacy of their own pension."* (Letter to the Dutch Parliament on pension communication to pension plan members, p.3)
	Problem	*"Moreover, the current regulatory information displays an overly positive view of the pension amount, gives no insight into risks and can therefore mislead people."* (Explanatory Memorandum, p.1, paragraph 2)
External authorities	Need	*"(...) This study shows that pension plan members initially are especially interested in the amount of their pension income and whether this is sufficient. This information should be presented to everyone first."* (Research report 'Pension communication: needs and barriers', p.6)
	Problem	*"The current communication on purchasing power and risks is insufficient. Pension plan members are used to the current value of money. They will therefore assume that the expected pension amount will have the same purchasing power at their retirement age as it has now. Pension plan members therefore have an overly optimistic view of their future pension income. Furthermore, they often cannot make realistic assessments of the risks."* (Research report 'Pension in clear language', p.17)

3.3 Corpus: the pension information package

After identifying intended functions for pension communication, we reconstructed the functions actually addressed in pension communication practice. During the first half of 2016, we gathered both legally required and non-required documents and digital resources that new clients got access to when they became affiliated to a pension fund

or a pension insurance company. These media, which together form the pension information package, are:

1. *Pension 1-2-3*. In *Pension 1-2-3*, the specifics of the pension arrangement are described. This medium answers questions such as: what does my pension arrangement offer? What options do I have? The information is presented in so-called layers. In the first layer, the most important information is presented. If readers want to know more, they can proceed to the second layer, which elaborates on all the information in layer one. The third layer contains information at the greatest level of detail, including legal documents. *Pension 1-2-3* is a legally required medium for pension organizations.
2. *Annual pension statement*. The *Annual pension statement* is a legally required document that provides the pension amounts that have been accrued so far as well as prognoses of the amounts that could be reached.[25] The *Annual pension statement* is provided in print.
3. *My pension overview*. All Dutch citizens have access to this legally required personal digital platform that informs them about the latest status of their pension situation. Both the government and pension organizations transfer their data on individual pensions to *My pension overview*, where the information is aggregated. *My pension overview* subsequently allows users – after logging in – to check the amount they have accrued, their expected (net and gross) monthly pension, and what their relatives will receive if they die. Also, users can compare their expected pension to their current salary, and check how changes in their personal situation – such as becoming unemployed – affect their pension.
4. *Personal digital platform*s. Many pension organizations also provide their pension plan members with their own digital platform, which lays out their personal pension situation. These platforms – that are not legally required – differ from *My pension overview* because they only present data from the pension organization that the pension plan member is currently affiliated to. In other words: if the pension plan member has accrued pensions at other pension organizations in the past, these are not taken into account in the information presented. Additionally, pension organizations have more liberty in displaying information because there are no design requirements for these platforms.

An overview of the components of the media described above is shown in Table 6.3.

25 Soon after completing this study, plans for a new *Annual pension statement* were announced in which the financial prognoses would be removed (see http://www.pensioenfederatie.nl/services/themas/Pages/Uniform_Pensioenoverzicht_UPO__39.aspx).

Table 6.3 *Media in the pension information package.*

No.	Medium	Delivery format	Legally required?	Retrieved on
1	*Pension 1-2-3*	print/digital	yes	
	• Defined benefit agreement model	"	"	March 14, 2016
2	*Annual pension statement*	print	yes	
	• Defined benefit agreement model	"	"	April 25, 2016
	• Defined benefit agreement explanation	"	"	April 25, 2016
3	Website *My pension overview*	digital	yes	January 18, 2016
4	Personal digital platforms	digital	no	
	• Pension organization A	"	"	March 21, 2016
	• Pension organization B	"	"	February 15, 2016

For our analysis of *Pension 1-2-3* and the *Annual pension statement*, we have used the model documents designed by Federation of the Dutch Pension Funds and the Association of Insurance Companies. Pension organizations have to use these documents and (to a certain limit) adjust them to their own pension arrangements. For both the *Pension 1-2-3* and the *Annual pension statement* three different models exist: one for pension plan members with a defined benefit agreement, one for those with a defined capital agreement, and one for members with a defined contribution agreement. Below, we will limit ourselves to the information package for plan members with defined benefit agreements.[26] The analysis of *Pension 1-2-3* is confined to layer 1 and 2, since the content of layer 3 depends on choices the pension organizations make themselves. It can therefore contain a large and varying amount of all sorts of (legal) documents. For *My pension overview*, we have included the Frequently Asked Questions published on the website in our analysis, although we have selected only those that were actually relevant for active pension plan members and that concerned pensions (for example, we have excluded information about the government login system that was used). Finally, we have included two personal digital platforms in the analysis. These personal digital platforms are intended for pension plan members with a defined benefit agreement and are considered best practices in the field.

3.4 Analysis of the pension information package

As described before, a communication function should indicate the intended cognitive effect for readers or users. In the functional analysis, it was decided for every content element (e.g. heading, sentence, or image) whether it could be identified as a required

26 Analyses addressing the pension information package on the defined capital agreement and the defined contribution agreement have also been carried out, but will not be reported on in this study. We can confirm that the conclusions in this chapter based on the defined benefit agreement also apply to both other types of pension agreements.

knowledge element. In other words, the question was answered: should the reader know this, according to the document or platform? We will illustrate the functional analysis of the pension information package by means of the *Pension 1-2-3* fragment shown in Figure 6.1.

Figure 6.1 *A fragment of Pension 1-2-3 (translated from Dutch).*

How do you accrue a pension?

A. Government pension: you will receive this pension from the government
Government pension is the legal pension from the government. You accrue government pension in 50 years. You only accrue government pension when you live and/or work in the Netherlands. The age from which you receive government pension, depends on your date of birth. The government pension age will increase during the coming years. Also, the amount of government pension is not the same for everyone. The government pension amounts are adjusted every year. You can find more information about the government pension and the government pension age on www.svb.nl.

Note: Have you not always lived or worked in the Netherlands? Then your government pension may be lower.

For the fragment shown above, the analysis resulted in the following functions:

1. Pension plan members know how their pension is accrued;
2. Pension plan members know they receive government pension;
3. Pension plan members know that government pension is the legal pension they receive from the government;
4. Pension plan members know that they accrue government pension in 50 years;
5. Pension plan members know that they only accrue government pension when they live and/or work in the Netherlands;
6. Pension plan members know that the age from which they receive government pension depends on their date of birth;
7. Pension plan members know that the government pension age will increase in the coming years;
8. Pension plan members know that the amount of government pension is not the same for everyone;
9. Pension plan members know that the government pension amounts are adjusted every year;
10. Pension plan members know that they can find more information about the government pension and the government pension age on www.svb.nl;
11. Pension plan members know that if they haven't always lived or worked in the Netherlands, their government pension might be lower.

All extracted functions were modeled in a hierarchical network that provided an overview of the pension information package. The colors of the boxes within this functional network indicate the media that address these functions: blue represents *Pension 1-2-3*,

red represents *My pension overview*, green represents the *Annual pension statement* and yellow represents the two personal digital platforms.

Within the hierarchical network, two types of relationships occur. In many cases, especially in the upper levels of the network, subfunctions are considered necessary to reach the main function. An example is shown in Figure 6.2. In order for pension plan members (PPM) to know how their pension is accrued, they need to know that the foundation of their pension is an allowance they receive from the government, that their pension includes pension they have accrued with their employer, and whether their pension also includes any additional features. In other words: without realizing the subfunctions, the main functions cannot be realized. In other instances, however, the lower functions are not required in order to realize the main function, but merely act as elaborations that provide additional detail on the main function. For example, in order for pension plan members to know that they can exchange part of the old-age pension for partner's pension for their partner, it is not necessary that they know that in that case their old-age pension will be lower or that their partner then will receive a higher amount of partner pension (see Figure 6.3). This information can be considered an enhancement of the main function, though; the main function is realized more extensively by means of the additional details. These elaboration relationships mainly occur in the lower levels of the network.

Figure 6.2 *Hierarchical network of functions in which subfunctions are necessary for the main function.*

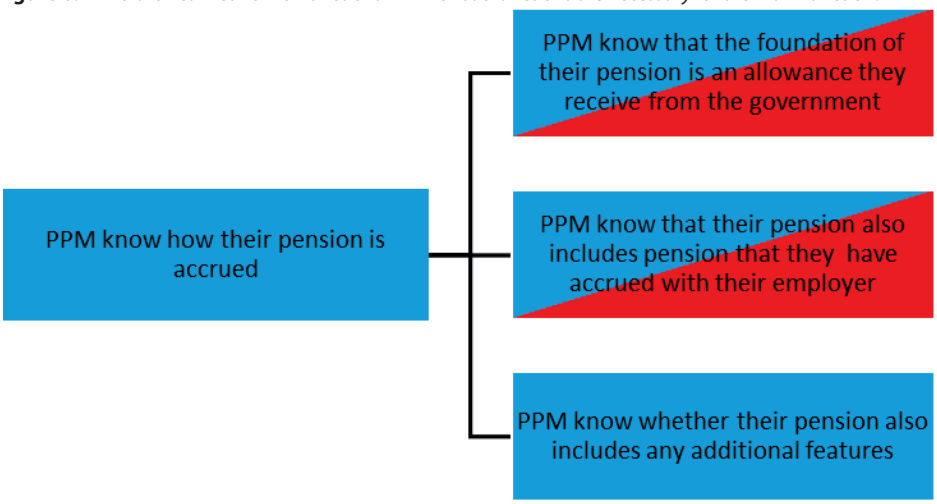
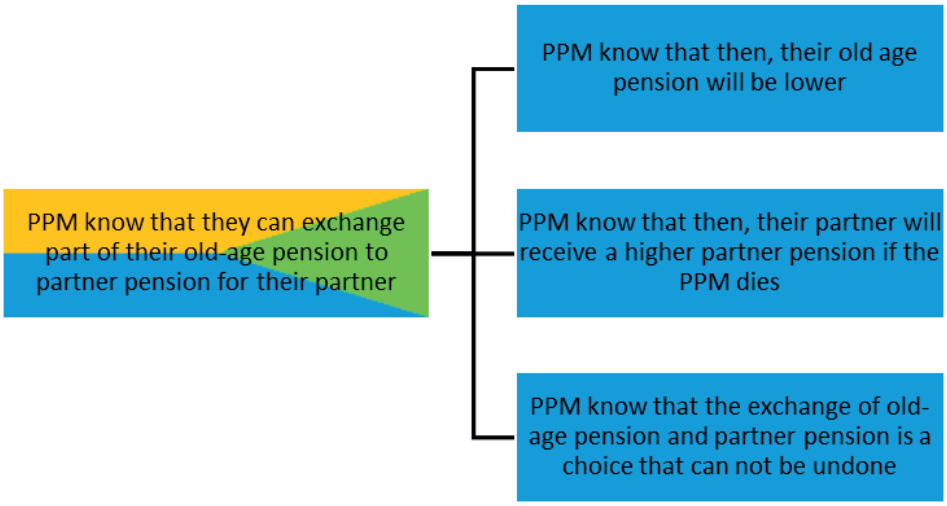


Figure 6.3 *Hierarchical network of functions in which subfunctions are an elaboration of the main function.*



4. RESULTS: FUNCTIONS OF PENSION COMMUNICATION

In this section, we first present the functions for pension communication identified in the guiding documents, followed by the functions found in the pension information package.

4.1 Functions in the guiding documents

The analysis of the guiding documents led to a set of 53 passages subsequently grouped by topic, resulting in seven overarching guiding functions of pension communication. Each of these functions is illustrated with a source document passage.

1. Pension plan members know how much pension income they can expect.
   "For the pension plan member, it is important to obtain an overview of pension income at the retirement age." (Explanatory Memorandum, p.10, paragraph 1)
2. Pension plan members know whether their expected pension income is sufficient.
   "The pension plan member also wants to know whether the level of pension income is adequate. Insight into a pension amount is not enough, one should also know whether it is sufficient or not." (Research report 'Pension communication: needs and barriers', p. 7)
3. Pension plan members know what risks their pension entails and have a realistic perspective on their pension rights and consumer purchasing power.
   "Moreover, the current regulatory information is too positive about the pension amounts, does not give insight into risks and therefore might set people on the wrong path." (Explanatory Memorandum, p.1, paragraph 2)

4. Pension plan members know what options they have within their pension arrangement.
   "In addition, pension communication has to show what options the pension plan member has." (Explanatory Memorandum, p.1, paragraph 3)
5. Pension plan members know what actions are expected of them and when.
   "Also, it is important that the pension plan member knows whether it is necessary to take action, and if so, what action." (Research report 'Pension in clear language', p.25)
6. Pension plan members know what the (financial) consequences of choices and life events are.
   "The financial implications must be presented upon changes in the personal life situation (e.g. a new job), or when a pension plan member makes certain choices, for example working longer or part-time retirement." (Letter to the Dutch Parliament on pension communication to pension plan members, p.3)
7. Pension plan members know what advantages and disadvantages of their pension arrangement are.
   "The standard 'balanced' means that the relevant pros and cons need to be properly displayed. To provide an honest perspective, a pension organization should, in addition to information about the positive features, also provide information about the limiting characteristics or conditions of the arrangement." (Explanatory Memorandum, p.5, paragraph 6)

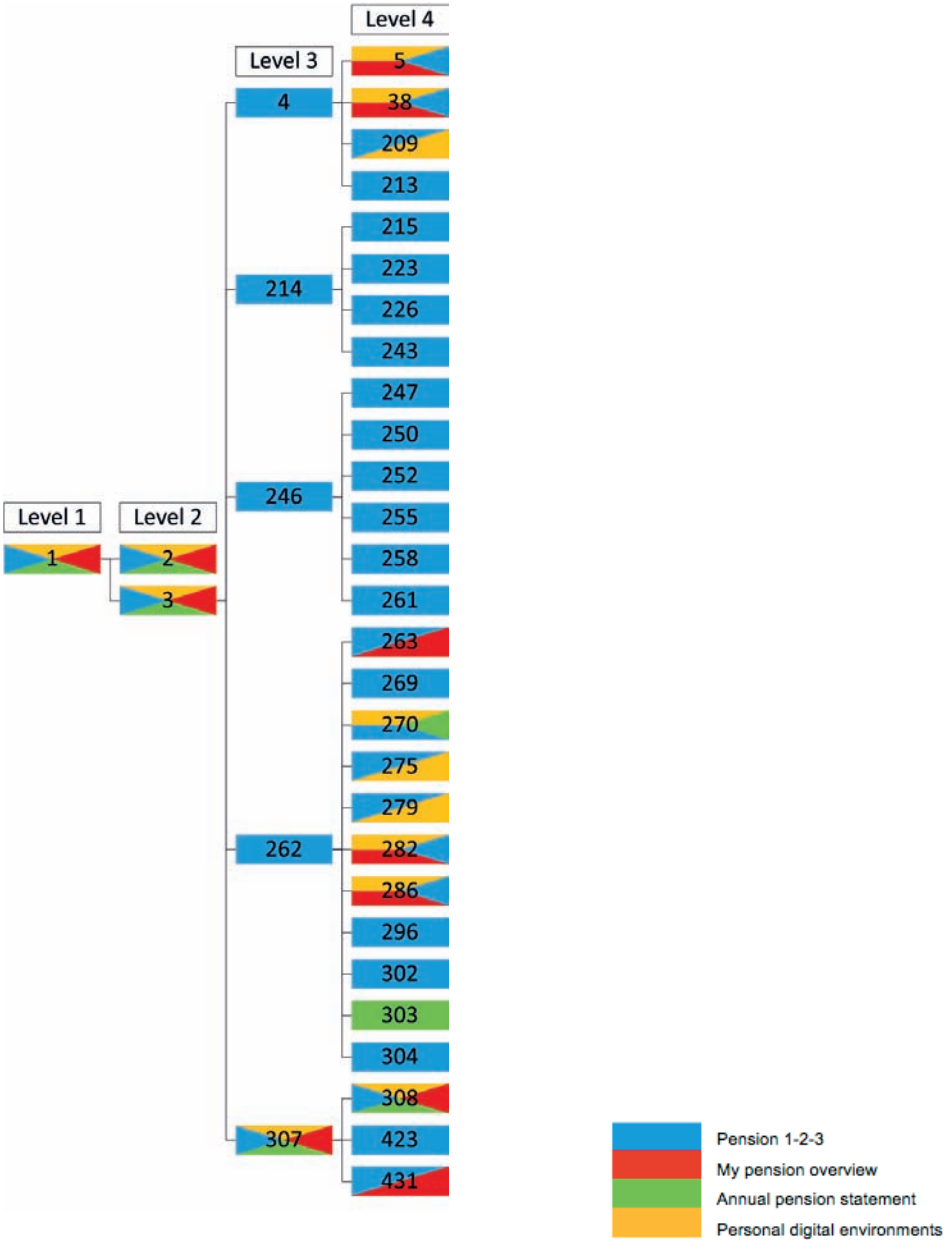
4.2 Functions of the pension information package

Our information package analysis resulted in 433 functions, found in *Pension 1-2-3*, the *Annual pension statement*, the website *My pension overview* and two personal digital platforms. Apart from these 433 functions, we have identified 116 'meta-functions' that address what information can be found in which medium and what the limitations and legal status of this information are (see Appendix M, chart 7 and 7.1, p. 240-241). These functions are left out of the rest of the analyses because they do not directly contribute to pension knowledge.

We will not be able to discuss all functions. Therefore, we will start by presenting a hierarchical network (see Figure 6.4) in which the functions on the four upper levels are shown. The numbers in this network correspond to the functions in Table 6.4. The full hierarchical network of all 433 functions can be found in Appendix M (p. 228).

As can be deduced from the functional chart (Figure 6.4) and corresponding functions (Table 6.4), the highest purpose of the current information package is 'Pension plan members have the most appropriate pension product' (level 1). This purpose tells us what should happen after the document has accomplished its communicative purposes *and* it helps an evaluation team deciding what should be the yardstick for the success of the pension communication as a whole (Lentz & Pander Maat, 2004). Lentz and Pander Maat

Figure 6.4 *Hierarchical summary chart of functions occurring in the pension information package.*



refer to this purpose as the organizational purpose, as it concerns a change in social reality. In this case, the organizational purpose would be to reduce the number of Dutch elderly people living in poverty. Two functions serve as a precondition to reach the main function (level 2): pension plan members are motivated to make sure they have an appropriate

Table 6.4 *Functions connected to the numbers shown in the summary chart of the pension information package (Figure 6.4).*

No.	Functions Pension plan members…
1	…have the most appropriate pension product
2	…are motivated to make sure they have an appropriate pension product
3	…are able to monitor their pension and to adjust it if necessary
4	**…know how their pension is composed**
5	…know that their basic pension is an allowance they receive from the government
38	…know that their pension also includes pension that they have accrued with their employer
209	…know whether their pension also includes any additional features
213	…know that they can contact their pension organization if they have questions about their pension arrangement
214	**…know that financial risks may cause lower pensions**
215	…know what financial risks their pension is facing
223	…know that pension organizations try to be prepared for the risks that pensions are facing
226	…know which measures a pension organization takes or can take in case of a pension deficit (recovery plan)
243	…know where they can find more information on pension risks
246	**…know what required actions they have to take within their pension arrangement**
247	…know that they have to take action if they become disabled
250	…know that they have to take action if they get married, start living together or enter into a registered partnership
252	…know that they have to take action if they divorce or end their registered partnership or cohabitation agreement
255	…know that they have to take action if they move abroad
258	…know that they have to take action if they become unemployed
261	…know that they can contact their pension organization if they have questions or want to take action
262	**…know what options they have within their pension arrangement**
263	…know that they can take their accrued pension to a new pension organization if they change jobs and that this is called value transfer
269	…know that if they earn more than €101.159, they can choose to enroll in a separate pension arrangement
270	…know that they can exchange part of their old-age pension for partner pension for their partner, and when
275	…know that they can exchange part of their old-age pension for orphans' pension for their children, and when
279	…know that they can exchange (part of) the partner pension for old-age pension, and when
282	…know that they can start with a higher or lower pension
286	…know that they can retire earlier or later
296	…know whether they can accrue extra pension within the pension arrangement
302	…know that they can compare their pension arrangement at <website>
303	…know that they should consult their pension organization in time about choices they have
304	…know where they can find more information on pension options

Table 6.4 *(continued)*

No.	Functions Pension plan members…
307	**…know whether they face a pension deficit and what they should do about this**
308	…know whether their pension will be sufficient
423	…know what actions they can take to accrue extra pension
431	…know where they can find more information on pension deficits and solutions

pension product (function 2), and they are able to monitor their pension and to adjust it if necessary (function 3). This monitoring and adjusting requires an appropriate choice architecture that should present choices in a way that reduces the risk of pension plan members making suboptimal decisions (Prast & van Soest, 2016). In this context, it should be kept in mind that choices are often made based on rules of thumb. Prast and van Soest argue that within these decision processes, 'people are often sensitive to contextual cues such as the phrasing of the information, the emphasis on specific aspects of the choice, and the way in which the choice is presented and organized' (p. 116).

In order for function 3 to be achieved, pension communication should realize five communication functions (level 3).

1. Pension plan members know how their pension is composed (function 4);
2. Pension plan members know that financial risks may cause lower pensions (function 214);
3. Pension plan members know what required actions they have to take within their pension arrangement (function 246);
4. Pension plan members know what options they have within their pension arrangement (function 262);
5. Pension plan members know whether they face a pension deficit and what they should do about this (function 307).

Function 246, 'Pension plan members know what required actions they have to take within their pension arrangement', could be considered the odd one out, because knowing what required actions to take – such as reporting your divorce to the pension organization – is not necessarily a prerequisite for monitoring and adjusting pensions. However, it *is* a prerequisite for maintaining the relationship with the pension organization: if pension plan members do not report their divorce, the pension organization cannot keep the expected pension amounts up to date.

To provide a glimpse of the level of detail that can be found in our functional network, we will further examine function 262 in level 3, 'Pension plan members know what options they have within their pension arrangement' and its subfunctions (Figure 6.5). The numbers in the chart correspond to the functions in Table 6.5. Again, the colors of the boxes indicate the media that include these functions: blue represents *Pension 1-2-3*,

red represents *My pension overview*, green represents the *Annual pension statement* and yellow represents the two personal digital platforms.

Figure 6.5 *Hierarchical chart of functions related to 'Pension plan members know what options they have withintheir pension arrangement' occurring in the pension information package.*

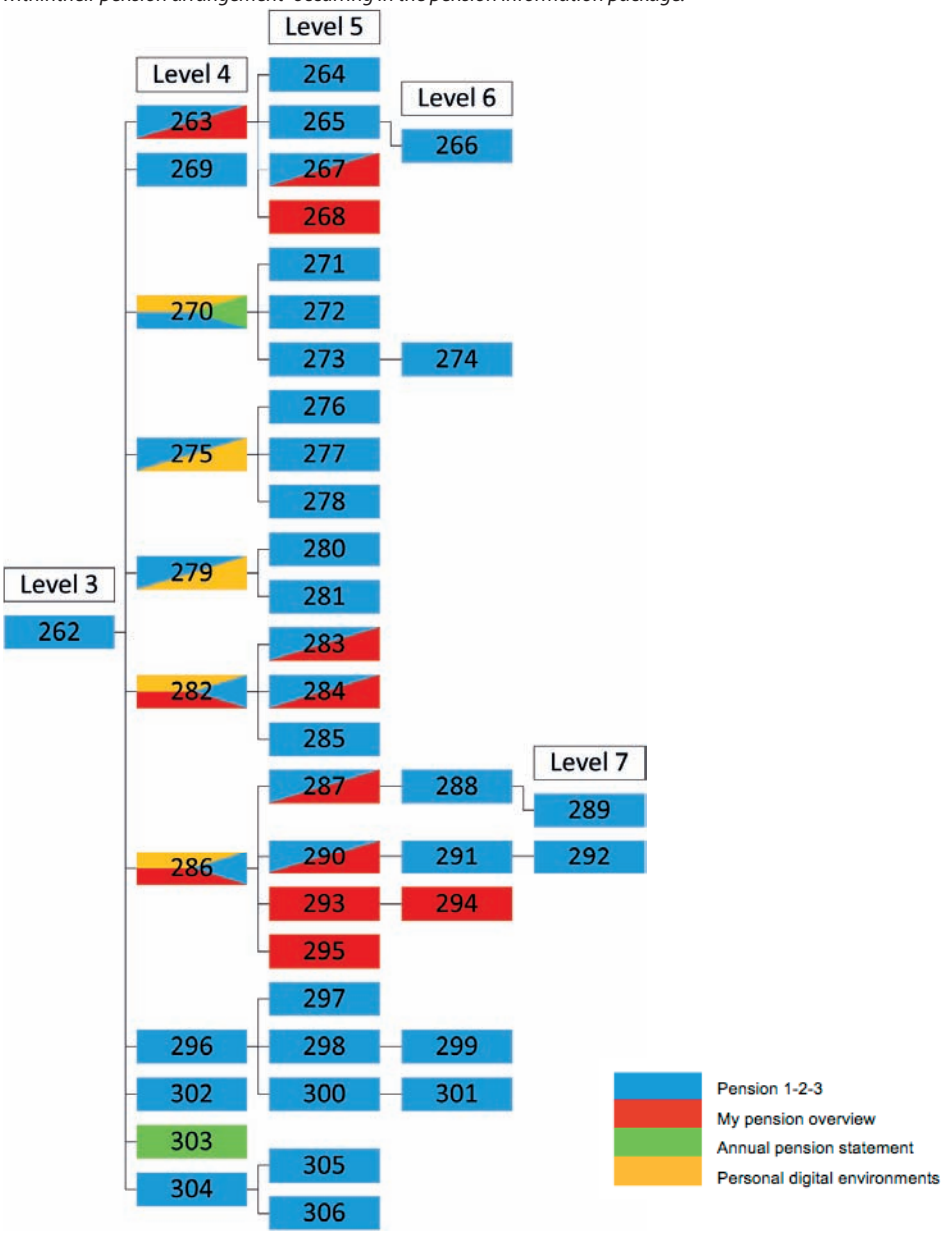


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Table 6.5 *Functions connected to the numbers shown in the hierarchical chart of 'Pension plan members know what options they have within their pension arrangement' occurring in the pension information package (Figure 6.5).*

No.	Functions Pension plan members know…
262	**…know what options they have within their pension arrangement**
263	…know that they can take their accrued pension to a new pension organization if they change jobs and that this is called value transfer
264	…know that it, among other things, depends on the financial situations of both the current and future pension organization whether value transfer is a good choice
265	…know that if they decide not to apply for value transfer, their pension remains with the current pension organization and that it is paid as of the pension date
266	…know that if they decide not to apply for value transfer they no longer pay pension premiums to the current pension organization and go on to accrue a pension in the pension arrangement of the new employer
267	…know that they should apply for value transfer with their new pension organization within 6 months after changing jobs
268	…know that they can find more information about changing employers and the implications for their pension at Pensioenkijker.nl
269	…know that if they earn more than €101.159, they can choose to enroll in a separate pension arrangement
270	…know that they can exchange part of their old-age pension for partner pension for their partner, and when
271	…know that if they convert part of their old-age pension to partner pension, their old-age pension becomes lower
272	…know that if they convert part of their old-age pension to partner pension, their partner will receive a (higher) partner pension upon the pension plan members' death after retirement
273	…know that the exchange of old-age pension for partner pension is a onetime choice that cannot be undone
274	…know that they will make the decision to exchange of old-age pension for partner pension when they retire or leave employment
275	…know that they can exchange part of their old-age pension for orphans' pension for their children, and when
276	…know that if they convert part of their old-age pension to orphans' pension, their old- age pension becomes lower
277	…know that if they convert part of their old-age pension to orphans' pension, their children will receive a (higher) orphans' pension upon the pension plan members' death after retirement
278	…know that the exchange of old-age pension for orphans' pension is a onetime choice that cannot be undone
279	…know that they can exchange (part of) the partner pension for old-age pension, and when
280	…know that the exchange of partner's pension for old-age pension is a onetime choice that cannot be undone
281	…know that the partner must agree on the exchange of partner's pension for old-age pension
282	…know that they can start with a higher or lower pension
283	…know that if they choose to receive a higher pension first and a lower pension later, they receive an amount that is less than the Annual pension statement states starting from the second moment

Table 6.5 *(continued)*

No.	Functions Pension plan members know…
284	…know that if they choose to receive a lower pension first and a higher pension later, they receive an amount that is higher than the Annual pension statement states starting from the second moment
285	…know that the decision to start with a lower or higher pension is a onetime choice that cannot be undone
286	…know that they can retire earlier or later
287	…know that if they retire later, the accrued old-age pension is increased and that the pension accrual is being continued
288	…know that if they retire later, the payment of the old-age pension is postponed until they actually retire
289	…know that they can find the conditions for postponing retirement in the pension arrangement
290	…know that if they retire early, the accrued pension is reduced and the pension accrual stops earlier
291	…know that the government pension payments possibly start later than the early retirement
292	…know that they can check the SVB website to see when their government pension starts
293	…know that pension organizations offer a variety of choices when it comes to receiving pensions earlier or later
294	…know that if they want to know what options they have, they can contact their pension organizations
295	…know that if they want general information about early retirement and working longer, they can find their options at Pensioenkijker.nl
296	…know whether they can accrue extra pension within the pension arrangement
297	…know that the additional pension premium will then be deducted from the salary by the employer and paid to the pension organization
298	…know that there is not a minimum, but that there is a maximum amount to accrue within the pension arrangement, which is the fiscal space for pensions
299	…know that the fiscal space is the difference between the amount legally allowed to accrue tax free and the amount that is actually accrued
300	…know that they can learn more about the opportunity to accrue voluntary additional pension from their employer
301	…know that they can register with their employer to accrue voluntary additional pension
302	…know that they can compare their pension arrangement at <website>
303	…know that they should consult their pension organization in time about choices they have
304	…know where they can find more information on pension options
305	…know that they can contact their pension organization if they have questions or want to use the options
306	…know that they can find more information about the options in the pension arrangement and on the website

Most functions shown in Figure 6.5 are derived from *Pension 1-2-3*, as indicated by the blue boxes. This is only natural, as the purpose of *Pension 1-2-3* is to 'provide general insight into the key characteristics of the pension arrangement' (Explanatory Memorandum, p.7). In other words, *Pension 1-2-3* is aimed at describing the general rules and rights of the pension arrangement, without going into the personal financial situation of the plan members. Pension options are an important part of these arrangements. *My pension overview*, the *Annual pension statement* and the personal digital platforms on the other hand, *do* describe the personal financial situations and pay less attention to content of the pension arrangements, although the pension plan members' options are incidentally mentioned.

In the next section, we will discuss the extent to which the required purposes extracted from the guiding documents are actually achieved in the pension information package. We will first determine whether all of the required purposes are addressed in the analyzed media and how likely it is that the addressed purposes are also realized.

5. RESULTS: ACHIEVING THE GUIDING FUNCTIONS

When comparing the functions drawn from the guiding documents to the functions of the pension information package, we find that most guiding functions are addressed, although to different extents (see Table 6.6).

Table 6.6 *Connecting the guiding functions to the pension information package.*

No.	Guiding functions	Functions in the pension information package
1	Pension plan members know how much pension income they can expect	340- 417
2	Pension plan members know whether their expected pension income is sufficient	308-4221
3	Pension plan members know what risks their pension entails and have a realistic perspective on their pension rights and consumer purchasing power	195-208, 214-245
4	Pension plan members know what options they have within their pension arrangement	262-306
5	Pension plan members know what actions are expected of them	246-261
6	Pension plan members know what the (financial) consequences of choices and life events are	401-4172
7	Pension plan members know what advantages and disadvantages of their pension arrangement are	-

1 Knowing how much pension to expect is a prerequisite for knowing whether an expected pension income is sufficient. Guiding function 1 is therefore by default in its entirety also part of guiding function 2.

2 Knowing what the (financial) consequences of choices and life events are is a prerequisite for knowing how much pension to expect, which is a prerequisite for knowing whether an expected pension income is sufficient. Guiding function 6 is therefore by default in its entirety also part of guiding functions 1 and 2.

5.1 Addressing the guiding functions within the pension information package

In order to delve deeper into the analysis behind Table 6.6, let us start with function 2 of the guiding documents ('Pension plan members know whether their expected pension income is sufficient'). In order to determine whether an expected pension income is sufficient, pension plan members should first know what pension they can expect and what amount they will need when they retire. Additionally, knowing what they have accrued so far might help them determining whether they are on track. In the pension information package, two of these prerequisites are addressed quite extensively, as is shown in Figure 6.6 and Table 6.7.

'Pension plan members know what pension amount they have accrued so far' includes functions 309 to 339, and 'Pension plan members know what pension amount they can expect' includes functions 340 to 417. 'Pension plan members know how much pension they need after retirement', on the other hand, only includes functions 418 to 422. Of course, this in itself is not a problem (rather an advantage), *if* the function is sufficiently realized. We believe this is not the case. First of all, knowing, or even estimating how much pension is needed after retirement, requires one to assess future expenses. This, in turn, requires envisaging the family situation upon retirement (e.g. having studying children, being divorced) and having a clear idea of future plans (e.g. buying a smaller house, travelling). A study of MoneyWise (2014) – a Dutch platform in which partners aim to advance responsible financial behavior in the Netherlands – showed that at least 50% of the Dutch working population was unable to estimate their required pension. Additionally, knowing what pension amount you will need in the future requires knowing what the *current* income and expenses are.

These prerequisites are only addressed in one of the two[27] analyzed personal digital platforms, which uses a step-by-step approach to guide pension plan members through estimating their future expenses based on their current personal and financial situation. This means that pension plan members only have access to this information if they are affiliated to this particular pension organization. *My pension overview* also covers this topic, but does so in very general terms:

> *"In order to know whether you have a pension deficit, you must first know how much pension you need. That depends on your expenses and your plans for the future. If you can determine what your monthly costs are, you also know how much pension you need. Then you can check whether your accrued pension plus your government pension is enough to make ends meet." (Answer to the FAQ 'Do I have a pension deficit?' on Mypensionoverview.nl)*

27 A scan of twelve other personal digital environments of pension organizations has shown that none of them addresses the question whether an expected pension income is sufficient.

Table 6.7 *Functions connected to the numbers shown in the hierarchical chart of the level 3 function 'Pension plan members should know whether their expected pension income is sufficient' occurring in the pension information package (Figure 6.6).*

No.	Functions Pension plan members know…
308	...whether their pension will be sufficient
309	**...what amount of old-age pension they have accrued so far**
310	…what gross government pension amount per year they have accrued so far (optionally together with their partner)
311	…that these amounts apply if nothing changes in their current personal or professional situation
312	…what gross amount (per year or per month) they have currently accrued in total with one or more pension organizations (optionally together with their partner
313	…that the accrued pension is the amount of annual pension that they have accrued until <date>
314	…from which pension organizations they will receive a pension
315	…their pension organizations' contact details
316	…that if they have chosen to apply for value transfer in the past, there is no pension registered with the old pension organization anymore
317	…that they should contact their pension organization if they are missing pensions in the overview or believe that the amounts are incorrect
318	…that if they forgot if and where they have accrued a pension in the past, they can contact the service desk of the Pension Register Foundation
319	…how they can prepare themselves for this conversation
320	…that the pension amounts on the overview can change, for example because their salary changes
321	…that the amounts are rounded down
322	…that the government pension is not included in the amounts
323	…that pay roll tax credit is not applied to the amounts
324	…that the amounts are updated until the previous month
325	…what net pension amount per month they have accrued so far (optionally together with their partner)
326	…that this amount will grow if they keep accruing pension with this pension organization
327	…that the amount is rounded down
328	…that the government pension is not included in the amount
329	…that pay roll tax credit and other arrangements are not applied to the amount
330	…what the accrual periods per year are
331	…what the pensionable salary was in each of these accrual periods
332	…what the part-time percentage was in each of these accrual periods
333	…what their pension growth (Factor A) is
334	…that pension growth stand for the gross growth of their pension in a calendar year
335	…that they might need this amount for their tax return
336	…that they need this amount to determine their fiscal space for individual additions to their pension
337	…that if they received multiple pension overviews, they should add up the Factor A amounts on these overviews
338	…the pension growth in the past several years

Table 6.7 *(continued)*

No.	Functions Pension plan members know…
339	…that if they want to make a calculation of their fiscal space, they can use the Tax authorities' Calculation tool Life Annuity Premium, and that they can find this at www.belastingdienst.nl
340	**… what pension amount they can expect**
341	… what old-age pension amount they can achieve
342	… the conditions of the expected old-age pension
343	…that the expected pension is the amount of annual pension that they receive from the pension age on
344	…that they receive this amount if they keep working until their pension date and keep on accruing pension in their current pension arrangement without changes in their personal situation
345	…from which age on they will receive a pension (and optionally when their partner will receive a pension)
346	…that their pension is paid in monthly or quarterly terms
347	…what gross amount they will receive every year (in total and per pension organization)
348	…that the singles' pension is the amount that they receive in addition to their expected or accrued pension
349	…what amount they will receive in addition to the old-age pension amount if they do not have a partner at <age>
350	…that if they will get a partner after this moment, the additional amount is canceled
351	…that the 'expected pension' consists of a certain amount they will receive conditionally, and what amount this is
352	…what part of this is already granted to them
353	…what conditions they must meet in order to receive the second part too
354	…that in order to receive this pension, they should stay employed with their current employer until <condition>
355	…that when their affiliation to the pension agreement ends before these entitlements are (fully) financed, they are only entitled to the part that is financed and accrued up until that moment
356	…that if upon termination of the affiliation to the pension arrangement no promised pension for past years of service is purchased and accrued for them, they therefore have no right to this part of their commitment
357	…that if it is promised to them that pension rights for past years of service are purchased, these must be financed no later than 15 years after the promise was made
358	…that if they would retire within those 15 years, the pension rights have been financed earlier, at the latest at the time of retirement
359	…that commitments to purchase entitlements over the past can in principle not be withdrawn or modified
360	...if there were years of service that they accrued less pension than was possible in accordance with tax rules and if therefore they are entitled to conditional pension
361	…if the pension that will be purchased for them because they have had one or more periods during their employment in the past in which less pension was accrued than was possible on the basis of the tax regulations, will only be accrued at the time and to the extent that the promised entitlements are financed.
362	…whether their pension is reduced or increased
363	…whether their pension <until date> is increased annually

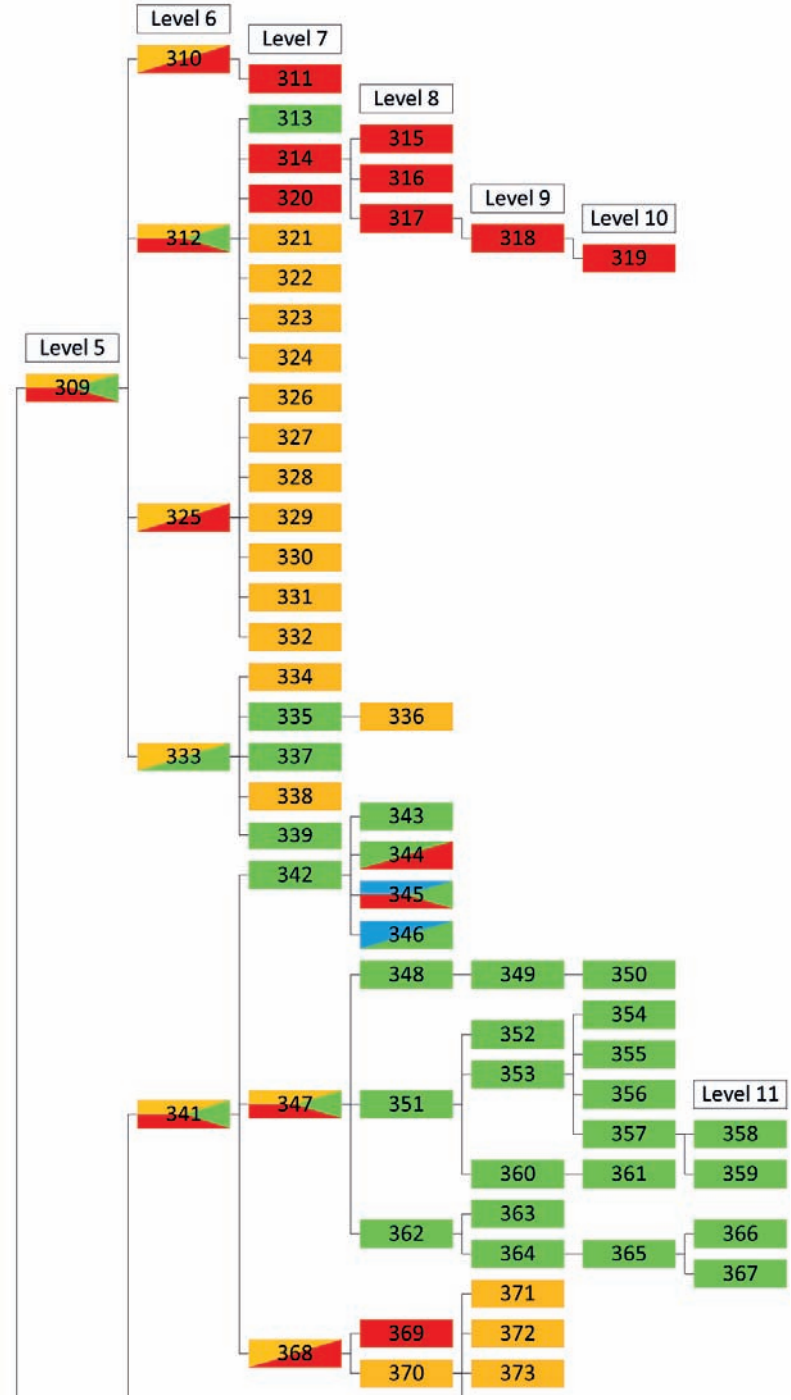
Table 6.7 *(continued)*

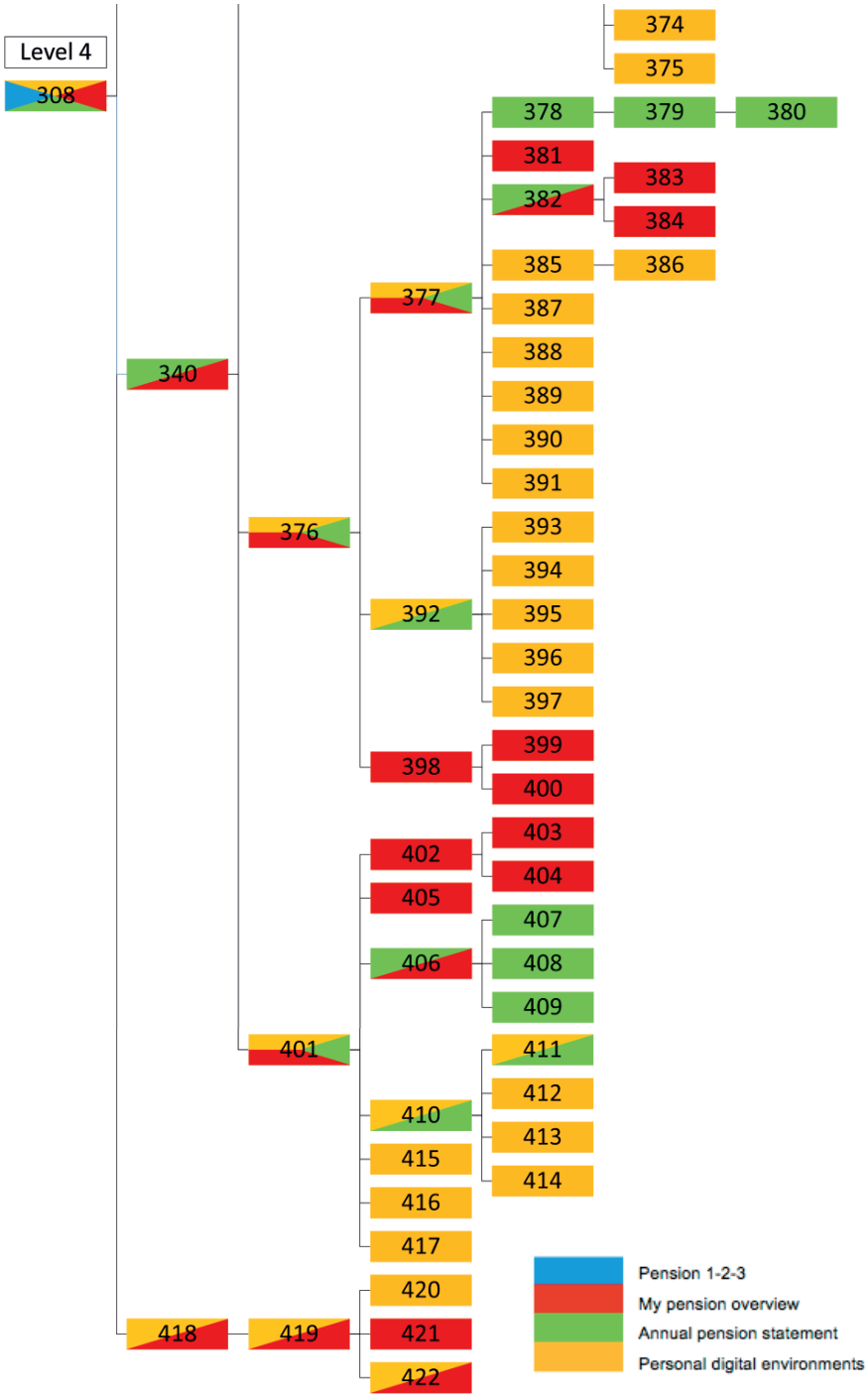
No.	Functions Pension plan members know…
364	…whether the pension they have accrued <until date> is reduced, with which percentage, and if this reduction is taken into account in the overview
365	… whether the accrual rate was reduced and starting when
366	…what the accrual rate is now
367	… whether the lower accrual rate is taken into account in the amounts indicated in this overview
368	… what net amounts they will receive each year per pension organization
369	…if applicable, how much more or less this is than they currently receive per month
370	…to what net amount per month their pension will grow or shrink if they start working more or less
371	… that if in addition to their work they also receive a benefit, this amount may vary
372	…that it is calculated as if the new part-time percentage takes effect as of next month
373	…that the amount is rounded down
374	…that the government pension amount is not included in the amount
375	…that payroll tax credit has not yet been applied
376	…what pension their partner and children can expect if the pension plan members die *and* what amount they can expect from their partner
377	…what net and/or gross annual amount their partner and/or children receive if the pension plan members die before their pension date, and when
378	… the conditions attached
379	…if and for what period the dependants' pension is insured on a risk basis
380	…that this means that if they stop working for their current employer, their pension upon death is (partly) cancelled
381	…from which pension organizations these amounts are derived
382	…that these amount can change if they die after retirement of after they have quit their current job
383	…that their partner and children possibly will not receive anything
384	…that they should check the information provided by the pension organization for this
385	…that Anw or government pension and any other arrangements are not applied to this amount
386	…that the amount that their partner receives can be supplemented with a maximum of €430 per month consisting of Anw compensation from the pension organization if it turns out that they are not (fully) entitled to Anw
387	…that the amounts are rounded down
388	…that pay roll tax credit is not yet applied to the amounts
389	…that the amounts are updated until the previous month
390	…that any additionally saved pension is not taken into account in this amount
391	…that any investments for extra partner pension is taken into account in this amount
392	…what net and/or gross annual amount their partner and/or children receive if the pension plan members die after their pension date
393	…that children qualify for an orphans' pension if they are younger than 21 and are not married or do not have a registered partnership
394	…that the amounts are rounded down

Table 6.7 *(continued)*

No.	Functions Pension plan members know…
395	…that pay roll tax credit is not yet applied to the amounts
396	…that the amounts are updated until the previous month
397	…that any additionally saved pension is not taken into account in this amount
398	…what pension they will receive if their possible partner dies before pension date, and when
399	…from which pension organizations these amounts are derived
400	…that in these amount possible orphans' pension for the children is not taken into account
401	…that changes in their professional and personal situation can have (financial) consequences for their pension
402	…what net and gross amount they will receive annually per pension organization if they become unemployed
403	…how these amounts differ from the pension they can reach if nothing changes in their professional and personal situation
404	…that if they want to know how much pension they can expect after retirement, they can contact their pension organization
405	…that there are financial consequences for their pension when they get a new job, start living together, get married, get a registered partnership or have children
406	…that divorce can have an effect on the pension amount
407	…that a possible divorce is taken into account in the pension amounts if they have received a confirmation of the allocation from the pension organization
408	…that a divorce can have an effect on the pension amount for their partner if they die
409	…that these pension amounts are not fixed and could be higher or lower
410	…whether they can expect a pension if they become disabled and how much the amount is
411	…whether they will or will not receive a supplement to the WIA benefit they receive from the government if they become disabled
412	… that pay roll tax credit is already applied to the amount
413	…that the amounts are rounded down
414	…that this is true only if the UWV has assessed that they are fully (100%) and permanently disabled
415	…what the expected financial consequences are if they die today
416	…what the expected financial consequences are if they decide to retire earlier of later
417	… what the expected financial consequences are if changes in the economy occur
418	**…how much money they need after retirement**
419	…how they can estimate their future expenses
420	…how they can assess their personal situation and civil status upon retirement
421	…their future plans
422	…their current income and expenses

Figure 6.6 *Hierarchical chart of functions related to 'Pension plan members should know whether their expected pension income is sufficient' occurring in the pension information package.*

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375
Pension 1-2-3
My pension overview
Annual pension statement
Personal digital environments

6

To sum up, the subfunctions that should lead up to realizing the main function are insufficiently addressed in the current pension information package, so that the main function cannot be realized either. Given that guiding function 2 is essential in reaching the overall purpose ('Pension plan members have the most appropriate pension product'), this is a real problem.

Another problem concerns function 7 of the guiding documents ('Pension plan members know what advantages and disadvantages of their pension arrangement are'). This function could not be directly matched to any of the functions in the pension information package. In order to assess whether certain aspects of a pension arrangement are advantages or disadvantages, one needs to evaluate the provided information; the feasibility of this step could not be determined by our functional analysis. Although *Pension 1-2-3* presents part of the content of the pension arrangement in terms of 'What this pension arrangement offers' and 'What this pension arrangement does not offer', this classification obviously does not cover all advantages and disadvantages of pension arrangements: many of these depend on personal situations and preferences. The current pension information package does not provide pension plan members help in assessing the pension arrangements based on their personal situation. Hence guiding function 7 is insufficiently addressed.

5.2 Pension information package functions not linked to guiding functions

Our comparison between the guiding functions and the functions in practice shows that 206 of the pension information package functions can be connected to guiding functions (see Table 6.6). This also means that 227 of the 433 functions in practice are *not* directly linked to guiding functions. For example, the functional analysis of the pension information package stipulates that pension plan members should know how their pension is composed (functions 4 to 213). This includes the functions 'Pension plan members know what type of pension arrangement they have and what its terms and conditions are' (functions 39 to 159) and 'Pension plan members know how their pension is calculated' (functions 160 to 194). This information is not required by means of the guiding functions we have identified.

5.3 Defining the discrepancies between the guiding functions and the pension information package

The discrepancies between the guiding functions and the pension information package could be explained in two ways: the guiding functions are incomplete or unclear, or the information provided in the pension information package is redundant (not necessary to reach the main goal). To a certain extent, both conclusions apply.

First of all, we should not forget that the designers of media within the pension information package have not used the same checklist of guiding functions that we

have constructed. Although we can assume that most of the purposes of pension communication were more or less known to these designers, it is likely that they have derived (slightly) different, or different amounts of purposes from the available guiding documents, or have not used a checklist at all. In fact, there is no such thing as a complete list of guiding functions. Hence we propose that guiding purposes should play a more prominent role in the design of pension communication. A prerequisite for this is that the purposes are stated more explicitly than is currently the case. For example, the current phrasing of guiding function 7 ('Pension plan members know what advantages and disadvantages of their pension arrangement are') leaves open why pension plan members need this knowledge, and how the advantages and disadvantages should be defined. Likewise, guiding function 3, 'Pension plan members (…) have a realistic perspective on their pension rights (…)', raises various questions. What is a realistic view? And how should we interpret 'pension rights'? Is this a reference to the amounts they can expect, or to the content of the pension arrangement? As many of the guiding purposes are multi-interpretable, it seems understandable that communication designers fall back into their natural tendency to provide as much information as possible in order to be 'safe'. This easily leads to providing information that is not relevant for achieving the main function.

A case in point is the extensive explanation of how pensions and pension premiums are calculated. The relevance of this information seems overrated, as pension calculation procedures cannot be changed by pension plan members. These calculations are neither necessary to reach the overarching purpose 'knowing how the pension is composed'. The calculation information does not need to be hidden from pension plan members, but it could very well be placed in layer 3 of *Pension 1-2-3*.

The current size of the pension information package considerably complicates achieving the required purposes. It seems out of the question that any plan member achieves all 433 functions. Moreover, our analysis has only taken the first two layers of *Pension 1-2-3*, *My pension overview,* the *Annual pension statement* and the personal digital tools into account; pension plan members have access to various other websites, letters, brochures, et cetera, which further increase package size.

6. RESULTS: MEDIA CHOICES IN THE PENSION INFORMATION PACKAGE

In this section, we will try to identify a media strategy in the current pension information package and evaluate it.

A look at the hierarchical chart in Figure 6.4, which displays the upper level functions in the pension information package, suggests a media strategy: the main functions in level 3 are linked to specific media. *Pension 1-2-3* is used to describe risks, options, and actions ('the pension arrangement'), while the remaining media explain the financial

Table 6.8 *Occurrence of guiding function in the pension information package.*

No.	Guiding functions	Media in the pension information package
1	Pension plan members know how much pension income they can expect	*My pension overview, Annual pension statement*
2	Pension plan members know whether their expected pension income is sufficient	*My pension overview, Personal digital platform*
3	Pension plan members know what risks their pension entails and have a realistic perspective on their pension rights and consumer purchasing power	*Pension 1-2-3*
4	Pension plan members know what options they have	*Pension 1-2-3*
5	Pension plan members know what actions are expected of them	*Pension 1-2-3*
6	Pension plan members know what the (financial) consequences of choices and life events are	*My pension overview, Personal digital platform, Annual pension statement*
7	Pension plan members know what advantages and disadvantages of their pension arrangement are	-

specifics (pension income, financial consequences of risks, financial options, and life events, and whether their expected pension income is sufficient). An analysis in terms of the guiding functions (see Table 6.8) shows the same outcome: *My pension overview,* the *Annual pension statement* and the personal digital tools describe the financial topics, whereas *Pension 1-2-3* discusses the pension arrangement.

Using four media to communicate two messages causes several problems. First of all, it conveys the impression that pension plan members should study all media in order to be well informed, as the difference between the three media used to communicate the financial specifics is not really clear. For example: although the introduction of personal digital platforms by pension organizations may offer new and valuable information, the personal digital tool is an extra medium and may therefore be perceived as *more* information rather than *clearer* information. This situation is likely to affect the pension plan members' self-efficacy (Bandura, 1993): offering many different media on the same topic reduces confidence in actually being able to study all of them, which might lead to ignoring all or part of the information.

Another consequence of offering four different media to communicate closely linked messages is recurrence. For example, pension clients can read in *Pension 1-2-3*, *My pension overview* as well as the *Annual pension statement* that if their pension organization is a pension fund, it tries to increase the pensions every year and that this is called indexation (level 6, function 195). Our analysis shows that 105 of the 433 functions (24%), mainly mid-level functions, appear in two or more of the analyzed media. The likely reason for this is that certain basic concepts need to be explained in each of the media in order for pension plan members to understand the more complex pension information. Although we believe that functional recurrence is unavoidable when using different media, we would

also argue that recurring information makes individual media longer and more extensive, with the risk of the information becoming harder to find and lowering the pension plan members' self-efficacy and information processing motivation.

Reducing the amount of pension information media seems in order, but this is not the way pension communication seems to be headed. Currently, a redesign of the current *Annual pension statement* is being developed in which the expected pension is eliminated, so pension plan members can only see what they have accrued so far. This not only means the number of media used in the pension information package stays intact, but also that this medium continues to offer information that is also occurring elsewhere (in *My pension overview*).

Although *Pension 1-2-3*, the *Annual pension agreement* and *My pension overview* are legally required media, a thorough 'helicopter view' over pension communication seems to be lacking. The four media are designed by different designer groups, and it is up for debate whether they view 'their' medium as part of an interconnected network, or as an independent medium. Our impression is that the Dutch pension sector more or less considers *Pension 1-2-3* and the *Annual pension statement* as complementary, but the relationship between these two media and the digital tools is much less articulated. This is also shown by the paucity of cross-references between the four media on what information can be found in which medium (see Appendix M, chart 7 and chart 7.1, p. 240-241). All this leads to a lack of coherence between the media (i.e. style differences, inconsistencies, and content overlap).

When assessing the media strategy from an MST perspective, we need to distinguish low-synchronicity media (suitable for conveyance processes: the unilateral transfer of information from transmitter to receiver) and high-synchronicity media (suitable for convergence processes: communication back and forth to establish a shared understanding). Both *Pension 1-2-3* (digital or in print) and the *Annual pension statement* can be considered typical low-synchronous media. Their transmission velocity is low (if presented in print), while their reprocessability is high (Dennis et al., 2004). This makes them suitable for the transmission of larger amounts of information. *My pension overview* and the personal digital platforms, on the other hand, are more difficult to categorize. Digital tools are potentially qualified to support convergence processes, but this requires that they are programmed to interact with users and are able to respond to specific and personal requests. Although *My pension overview* provides customized information for specific situations, interaction between pension plan member and platform is lacking. Currently, the only serious attempt to establish convergence with a digital platform is found in one of the personal digital platforms. Here, pension plan members step-by-step enter information about their current financial situation, after which the platform gradually shows what the consequences are for their pension situation in terms of income sufficiency.

7. FUTURE PERSPECTIVES

In this section, we will suggest some possibilities for improving the current pension communication model. First, we will discuss optimization of the guiding functions, followed by two proposals to improve pension communication practices.

7.1 Future perspectives for the guiding functions

We have shown that the purposes prescribed in the guiding documents are not all adequately addressed in the pension information package. Also, a significant part of the identified 433 functions in the pension information package could not be allocated to one of the guiding functions. We recommend taking guiding functions more seriously, both in order to reduce the amount of information and to do better in managing the achievement of communication purposes.

In order to achieve this, the pension sector should first reach consensus on approaching pension communication as an interconnected network, rather than as a set of independent media. Although this necessity might be accepted theoretically, it has not been implemented in pension communication practice. The next step is to identify the guiding functions more systematically than is currently the case, by formulating them more explicitly and compile a single list of them.

What could such a list look like? In what follows, we intend to open the discussion. Our analyses of the current pension communication model have produced seven guiding functions and five main functions in pension communication in practice. First, we discuss the current guiding functions:

1. Pension plan members know how much pension income they can expect;
2. Pension plan members know whether their expected pension income is sufficient;
3. Pension plan members know what risks their pension entails and have a realistic perspective on their pension rights and consumer purchasing power;
4. Pension plan members know what options they have within the pension arrangement;
5. Pension plan members know what actions are expected of them and when;
6. Pension plan members know what the (financial) consequences of choices and life events are;
7. Pension plan members know what advantages and disadvantages of their pension arrangement are.

Although they could be more explicit, most of these functions concern important requirements for the pension communication package. There is one exception: 'Pension plan members know what advantages and disadvantages of their pension arrangement are'. Whether certain aspects of a pension arrangement are an advantage or a disadvantage requires value judgment and depends heavily on an individuals' personal situation. This makes this function very hard to realize, as was already discussed in paragraph 5.1.

Additionally, the Explanatory Memorandum attached to the law on pension communication argues that describing advantages and disadvantages of pension arrangements can be used to compare different pension arrangements. One may doubt the use of such a comparison: pension plan members are generally not in a position to opt for another pension arrangement if not satisfied with their current one. Hence, we would suggest abandoning this guiding function. Next, we take a look at the functions of the pension information package. The current package addresses five functions:

1. Pension plan members know how their pension is composed;
2. Pension plan members know that financial risks may cause lower pensions;
3. Pension plan members know what required actions they have to take within their pension arrangement;
4. Pension plan members know what options they have within their pension arrangement;
5. Pension plan members know whether they face a pension deficit and what they should do about this.

We have two reservations about these functions. We agree that pension plan members should have a fair amount of background knowledge on the composition of pensions, and that they consist of government pension, employers' pension, and any additional pensions. But in order to realize the overall function 'Pension plan members know how their pension is composed', it is not necessary to know how pensions are calculated or what the exact terms and conditions of the pension arrangement are. Of course, we do not believe this information should be hidden from them, but it could very well be placed in layer 3 of *Pension 1-2-3*. The second reservation concerns a current subfunction of 'Pension plan members know whether they face a pension deficit and what they should do about this', which is that pension plan members know how much pension they have currently accrued. We question whether knowing the amount of the accrued pension contributes to knowing if a pension deficit is imminent – especially if it is already known what the expected pension will be. Research also shows that pension plan members are not particularly interested in this information: the pension accrued so far does not appear in the top 5 of topics that they think should be in their *Annual pension statement* (Visser, Oosterveld, & Kloosterboer, 2012). Finally, we propose a change in the functional network, since some of the functions are prerequisites to realizing others.

All this leads to the following set of guiding functions:

1. Pension plan members roughly know how their pension is composed;
2. Pension plan members know what actions they are required to take within their pension arrangement;
3. Pension plan members know what options they have within their pension arrangement;
4. Pension plan members know what risks their pension entails;
5. Pension plan members know whether their expected pension income is sufficient;

a. Pension plan members know how much pension to expect (including potential financial consequences of risks, choices, actions, and life events);
b. Pension plan members know how much pension they need;
6. Pension plan members know what actions they can take to improve their pension situation.

We believe these functions incorporate the information that is necessary to present pension plan members a choice architecture that prevents suboptimal pension decisions as much as possible, without overinforming them (Prast & van Soest, 2016).

7.2 Future perspectives on the pension information package

As our analysis has shown, the current media strategy used in the pension information package leaves much to be desired. Four different media are used to inform pension plan members about two central topics (specifics of the pension arrangement and financial specifics), without a transparent distribution of functions over media. In this paragraph, we follow a stepwise approach towards an improved pension communication model. First, we determine whether the newly formulated guiding functions require conveyance or convergence. This leads to the allocation of suitable media to realize the guiding functions.

Four of the new guiding functions are suitable for conveyance; they contain information that merely needs to be transmitted to the recipient:

1. Pension plan members roughly know how their pension is composed;
2. Pension plan members know what actions they are required to take within their pension arrangement;
3. Pension plan members know what options they have within their pension arrangement;
4. Pension plan members know what risks their pension entails.

The remaining functions require convergence processes in order to establish a mutual understanding:

5. Pension plan members know whether their expected pension income is sufficient;
   a. Pension plan members know how much pension to expect (including potential financial consequences of risks, choices, actions, and life events);
   b. Pension plan members know how much pension they need;
6. Pension plan members know what actions they can take to improve their pension situation.

In the next paragraph, we will outline two future scenarios for a new model of pension communication based on the improved guiding functions: a conservative one suitable to be implemented in the short term and an ambitious one that would need more time to be realized. Both models should directly lead to pension plan members being able to monitor their pension and make choices and adjustments if necessary.

7.2.1 The conventional pension communication model

The conventional scenario distinguishes between convergence and conveyance functions. The four guiding functions (guiding function 1-4) concerning the pension arrangement are all suitable for conveyance processes and could be very well realized in one medium, for which we would suggest *Pension 1-2-3*. Lentz and Pander Maat (2016) propose several improvements for the current digital presentation of *Pension 1-2-3*. The fifth function and subfunctions (functions 5, 5a, and 5b) require convergence processes in order to establish a mutual understanding: they discuss financial specifics based on information that can only be provided by pension plan members themselves. *My pension overview* is particularly suitable to provide this kind of financial information. The purpose of knowing whether an expected pension amount is sufficient is currently under-represented within the pension communication package: only one personal digital platform within the pension information package is able to translate data provided by pension plan members into a desired pension amount and to compare it to the expected amount. We suggest that *My pension overview* incorporates a similar tool, so this feature will be available to all pension plan members. Since the law prohibits pension organizations to advise their pension plan members on financial actions outside of their pension arrangement, improving the pension situation (function 6) requires a financial advisor. Nevertheless, *My pension overview* and *Pension 1-2-3* should provide all the information about financial actions they are allowed to and direct pension plan members as much as possible to engaging an advisor. Table 6.9 schematically shows our new pension communication model.

Table 6.9 *Proposal for a conventional pension communication model.*

No.	Guiding functions *Pension plan members…*	Requires conveyance/ convergence	Medium
1	… roughly know how their pension is composed	conveyance	*Pension 1-2-3*
2	…know what actions they are required to take within their pension arrangement	conveyance	*Pension 1-2-3*
3	…know what options they have within their pension arrangement	conveyance	*Pension 1-2-3*
4	…know what risks their pension entails	conveyance	*Pension 1-2-3*
5	…know whether their expected pension income is sufficient	convergence	*My pension overview*
	a …know how much pension to expect (including potential financial consequences of risks, choices, actions, and life events)	convergence	*My pension overview*
	b …know how much pension they need	convergence	*My pension overview*
6	…know what actions they can take to improve their pension situation	convergence	Personal financial consultation

The conventional pension communication model goes without the *Annual pension statement* and the personal digital tools. Within the new model, these media offer no surplus value. Apart from (possibly) providing the opportunity to verify whether an expected pension will be sufficient, the personal digital tools offer less complete information than *My pension overview* does, because they only have access to the pension amounts accrued with a specific pension organization. Additionally, having to use multiple online systems with different interaction procedures is considered a problem (Alt & Puschmann, 2012). As for the *Annual pension statement*, it only presents information that already appears in *My pension overview*.

We recognize that from the pension organizations' point of view, the personal digital platforms are an opportunity to attract customers (employers). Eliminating them means eliminating an opportunity to distinguish themselves from competitors. However, the accessibility, findability, and comprehensibility of pension information must outweigh other considerations when designing the pension communication package. As we have described before, from the pension plan members' point of view such a platform is considered as *more* information rather than as *a clarification* of the information, which results in an overcrowded pension information package.

7.2.2 The ambitious pension communication model

A more progressive scenario would involve one central medium suitable to present different types of dynamic information. *My pension overview* would be the designated medium for this, because it is the only medium that has access to the financial information of all pension organizations. Another particular attractive feature of *My pension overview* is that not only the financial specifics, but also the pension arrangement specifics could be offered in customized form, based on the personal and professional situation of the pension plan member. This would save pension plan members the trouble of figuring out in what medium they can find specific information, because they would only have one place to go.

This approach would have two consequences for pension organizations. First, it would require a sector-wide 'central manager' of the pension arrangement information, as is currently the case for the financial information. This central manager would in no way own or control the contents of the pension arrangements, but would only function as a gathering point where all pension arrangements are uploaded to the platform. And second, because this procedure implies the use of a (more or less) fixed format, it might force pension organizations to simplify their pension arrangements because there will be no room for lengthy explanations and exceptions.

Providing all available pension information within one medium has the advantage that an optimally structured network of links could be provided, which reduces the cognitive load for pension plan members trying to understand their pension situation.

As in *Pension 1-2-3,* the information could be provided in layers from the obvious to the more complex functions, since this might involve casting the information in a more personal and relevant light (Singer, Baradwaj, Flaherty, & Rugemer, 2012). An additional feature would be to provide scenarios for each amount: if the financial situation is as expected, better than expected, and worse than expected (AFM, 2015). Also, having all the information regarding pensions at a single digital location provides the option to alert plan members via email when their pension situation requires their attention. This way, providing pension plan members with a list of hypothetical events and consequences at the start of their pension accrual will not be necessary anymore: they will be informed at the relevant point in time, which substantially increases their action perspective.

8. CONCLUSION

In this chapter, we have addressed the following research questions:

RQ1: What are the functions of pension communication in the new regulatory environment in The Netherlands, both according to the guiding documents and according to the actual pension information package?
RQ2: To what extent are the required guiding purposes addressed in the pension information package?
RQ3: Can we identify a media strategy in the pension information package, and how should we evaluate this strategy?
RQ4: Based on the analysis, what recommendations can be done for improved pension communication models?

An analysis of legal documents and research reports resulted in the identification of seven pension communication functions that should be realized according to Dutch policy makers. In the actual pension information package, represented by the media *Pension 1-2-3*, the *Annual pension statement*, *My pension overview*, and two personal digital platforms, 433 functions were identified. Within these 433 functions, we have indicated five main functions that need to be achieved in order for plan members to be able to monitor their pension and to make adjustments if necessary:

1. Pension plan members know how their pension is composed;
2. Pension plan members know that financial risks may cause lower pensions;
3. Pension plan members know what required actions they have to take within their pension arrangement;
4. Pension plan members know what options they have within their pension arrangement;

5. Pension plan members know whether they face a pension deficit and what they should do about this.

Several problems were identified when comparing the guiding functions to the actual pension information package. First, not all guiding functions are sufficiently addressed in the pension information package. Furthermore, we found that the pension information package provides a large amount of information that is not required by the guiding functions. This shows that the guiding functions are not really attended to in the current pension communication design process. This might also be due to their unclear wording, which may lead designers to play it safe and add more information rather than confining themselves to the essentials. The impressive size of the information package likely hinders the achievement of the guiding functions.

Regarding the media strategy, we found that the current pension information package does not operate as an interconnected network, but rather as a set of independent media. Four different media are used to communicate two topics (the content of the pension arrangement and the financial specifics). As a result, pension plan members get the impression that all of these media should be studied in order to understand their pension situation. Also, the use of several media results in recurring information, as some basic concepts must be explained in each of the media before more complex information can be dealt with. This further increases the size of the information package.

Our analysis leads us to propose a new pension communication model. First, the pension sector should approach pension communication as an interconnected network instead of as a set of independent media, and formulate strong and overarching guiding functions. We suggest the following set of functions:

1. Pension plan members roughly know how their pension is composed;
2. Pension plan members know what actions they are required to take within their pension arrangement;
3. Pension plan members know what options they have within their pension arrangement;
4. Pension plan members know what risks their pension entails;
5. Pension plan members know whether their expected pension income is sufficient;
    a. Pension plan members know how much pension to expect (including potential financial consequences of risks, choices, actions, and life events);
    b. Pension plan members know how much pension they need;
6. Pension plan members know what actions they can take to improve their pension situation.

We have outlined two scenarios based on these new guiding functions. In the conventional model, we assign the functions suitable for conveyance processes to *Pension 1-2-3* and those suitable for convergence to *My pension overview*. In the ambitious model, all relevant pension information is aggregated into one dynamic platform – *My pension*

overview – to be able to offer pension plan members a clear overview of their financial situation in one location. Main objective for both models is to improve their coherence and consistency (Reis, Amorim, & Melão, 2015). This offers the opportunity to provide an optimally structured information network, which likely reduces the information-processing load for pension plan members.

CHAPTER 7

CONCLUSION AND DISCUSSION

This dissertation has investigated how the design of pension communication is currently realized and how pension communication could be more effective in informing pension consumers. It has presented the results of five studies on (components of) the communication environments of pension organizations. Two of these studies dealt with the relation between the various media that pension organizations provide, both from a strategic and a practical point of view. The three remaining studies discussed the efficacy of media and – in two instances – the role of user characteristics and financial literacy herein. This has led to a proposal for an improved pension communication model that increases consumers' understanding of complex pension information.

In this concluding chapter the results of the studies that were conducted in this dissertation will be summarized. These findings are then discussed, and the research methods will be reflected on. Furthermore, the implications for the future of pension communication are considered. This chapter will conclude with an overall conclusion.

1. SUMMARY AND DISCUSSION OF THE RESULTS

In what ways can pension communication environments be more effective? The main question that was raised in the introduction chapter of this dissertation has been investigated from two different perspectives: a design perspective and a user perspective. In this section, both will be discussed. This discussion will lead to an overall recommendation for improving pension communication environments.

1.1 Designing multichannel pension communication environments

The research presented in this dissertation first of all shows that many communication professionals consider pension communication legislation to be an obstruction while designing communication environments (Chapter 2). The *introduction letter* and the *Annual pension statement* (that were required under the 2007 Pension Act) are thought of as expensive, time-consuming, and not achieving the desired effects. Nevertheless, instead of attempting to make the required media more effective, many pension organizations are resigned to 'just' complying with regulations as not to be reprimanded by the regulatory authority. Others focus their attention on additional media, such as websites and brochures, which they provide to their clients based on the idea that these *are* effective. Pension organizations have this possibility because the legislation only applies to the media that are required by law. This situation increases the amount of media provided to pension clients, which may come at the expense of the findability of the information, the feelings of self-efficacy, and reader motivation. Also, it results in the legally required media not getting the attention they actually deserve.

The interviews additionally show that the regulations offer more options than many respondents realize. Only some organizations appeared capable to exploit this oppor-

tunity. Pension organizations generally consider the legal restrictions to be larger than they actually are. In practice, this means that very often, the legally required media and the additional media receive a different treatment: additional media are analyzed and optimized, whereas the legally required media are created and provided according to the minimum requirements. This results in incoherent pension communication environments.

The finding that interpreting the regulations and complying with them is often open to confusion is also reflected in Chapter 6. Here, seven functions of pension communication required by the Dutch government under the 2015 Pension Act were established. We also looked at the extent to which these functions are addressed in the pension communication in practice. It turns out that not all guiding functions are sufficiently addressed in pension communication practice, and conversely, that existing pension communication – in which 433 functions were identified – provides information that is not required by the guiding functions. This is possibly due to the secondary role the functions play in communication legislation: there is no such thing as a complete list of guiding functions that is handed out to all communication designers. We can therefore only guess to what extent the designers are actually aware of these functions. A second obstacle is the ambiguous wording of some of the functions in the guiding documents, which might lead to communication designers providing an overload of information in order to play it safe. The analysis of the media used to communicate the functions presented in Chapter 6, showed the same situation that was previously described in Chapter 2: the media within the pension communication environment are not coherently fit together. Four different media are used to communicate two topics (the content of the pension arrangement and the financial specifics). This approach leads to overlapping information, which increases the size of the information package. Chapter 6 proposes five overarching guiding functions for pension communication and outlines two scenarios for an improved pension communication package: a conventional and an ambitious model.

The result that pension communication environments are not as coherent as they should be also received support in Chapter 3. Here, pension helpdesk agents appeared to have insufficient knowledge of the other components in the communication environments, which led to confusion and sometimes annoyance with callers. Also, many pension consumers called the helpdesk because the information found elsewhere in the communication environment was unclear, so that they need to ask for clarification. The findings implicate that helpdesk could help improve coherence between the media by logging the communication-related problems in the helpdesk calls. This would additionally free the helpdesk from conveyance tasks in which agents have to solve problems with other media, so more resources can be spent on micro-convergence and referring callers to pension advisors.

Although pension communication legislation has changed since the research in Chapter 2 and Chapter 3 was conducted, there are reasons to assume that the feelings of being restricted by regulations and the subsequent different treatment of legally required and additional media still exist. Lentz and Pander Maat (2016) have evaluated the implementation of the new requirements concerning *Pension 1-2-3* in practice. They found many instances in which *Pension 1-2-3* is not optimally exploited: it is placed at a hidden location on the website, few attempts are made to present the information user-friendly, and/or jargon is used. The findings additionally show that pension organizations still emphasize their additional resources next to the required media: many organizations offer *Pension 1-2-3* adjacent to their own information, so pension plan members often have to find their way through overlapping information sources. But Lentz and Pander Maat have also found successful implementations of *Pension 1-2-3*, which shows that there certainly are possibilities to optimize legally required media. Nevertheless, pension communication professionals do not always seem to perceive it that way, which corresponds with the findings reported in Chapter 2.

1.2 Using pension media and the role of literacy demands

The second perspective from which we have studied pension communication environments, is the use of media by pension consumers When studying the telephone helpdesk, we found that helpdesk calls are most often used to repair unsuccessful communication processes by providing extra information, rectifying information, or by addressing misunderstandings (Chapter 3). This happens when callers need to solve problems with other media, such as unclear or incomplete information. Optimizing these 'unsuccessful' media based on the information provided by the helpdesk calls could ease the pressure on the telephone helpdesk, so agents can focus on their micro-convergence role.

Another component of pension communication environments investigated in this study was *Pension 1-2-3* (Chapter 4). This instrument has replaced the *introduction letter* as an informative document with general information about the new pension arrangement of pension plan members. In order to reduce information overload, the information in *Pension 1-2-3* is presented in three 'layers': the first layer presents the most important information on the pension arrangement (either digitally or in print), the second layer elaborates on this information, and the third layer contains very detailed information, such as the pension regulation. In Chapter 4 a comparison on finding performance was made between a linear document and a hierarchically structured ('layered') document through observation studies of participants working with scenario questions. No difference was found for text presentation: participants did not find the information better in one of the conditions (non-layered = 44%, layered = 45%). One of the explanations we have given for this is that readers in the layered condition were always required to choose between links in order to proceed in the document: not choosing meant that

they would get stuck. This obligation to choose could especially cause problems for 'weak scent' links (Chi et al., 2001; Pander Maat et al., 2015). The non-layered document, on the other hand, always had a 'read-through' option. If readers had doubts about whether they were on the right track to find their answer, they simply could keep on reading. A second problem was that the architecture of the search destinations often was less than optimal.

It was also established to what extent financial literacy played a role in finding success when reading these documents, and how the underlying abilities prior knowledge and language skill are related. Results showed that reading skill and domain knowledge were both important predictors for finding, whereas topic knowledge was not associated with reading performance at all. These findings differ from those often found in *reading-to-learn* settings, where prior knowledge is usually the main predictor for document performance. This would indicate that searching for information and using it to accomplish a goal (*reading-to-do*) requires less prior knowledge than learning information, quite possibly because it calls on different mental models of the text and requires fewer inferences. When differentiating between text presentation conditions, the results indicated that domain knowledge only plays a role in the non-layered condition. This finding is supported by Coiro (2011), who suggested that when reading on the Internet, prior knowledge might be less important than when reading print materials, because online reading comprehension skills might compensate for low levels of prior knowledge.

In a similar study, reported in Chapter 5, we have investigated finding performance on the former (MPO-1) and the current version (MPO-2) of the digital platform *My pension overview*. Both versions contain main sections and subsections. Each main section deals with a topic, such as 'expected pension' or 'life events'. Within these main sections, the topics are divided into subsections. The results show that even though MPO-2 overall contains more information than MPO-1, the information in MPO-2 is slightly better found (86% vs. 91%). Also, we could distinct two types of finding in this study: finding the subsection itself, which did not cause many problems, and finding the correct information within this section, which turned out to be more problematic for participants. It is likely that this has to do with the way the information is structured and highlighted in both versions. In both versions, the user is routed through the main structure of the platform almost automatically. However, the information structure within the sections differs: MPO-2 has more and smaller subsections that are indicated with clear and unambiguous marks, which makes them easier to process than the relatively large and poorly marked subsections in MPO-1. Therefore, the information provided by every next subsection in MPO-2 is integrated into the former processed information more effortless than in MPO-1. This could explain the (somewhat) higher finding scores found for MPO-2 in Chapter 5. When investigating the role of literacy in using the two versions of the

digital pension platform, we found that language skill and financial knowledge played a far lesser role in MPO-2 than in MPO-1, which we consider a positive outcome: users have to be considerably less literate to successfully use MPO-2. Vocabulary and topic knowledge did not contribute to finding success in either version of the platform.

The results found in Chapter 4 and Chapter 5 raise two questions. The first question is why the principle of hierarchical structuring seems to have a positive effect on finding performance in Chapter 5, but not in Chapter 4. There are two explanations for this result. First of all, we might argue that the hierarchical structuring of the layered condition in Chapter 4 was not implemented profoundly enough. The amount of information per subsection in this condition is comparable to the amount of information per subsection in MPO-1 in Chapter 5, which might simply be too large an amount for users to be able to benefit from the cognitive load reduction prompted by the hierarchical structuring. Nevertheless, there is a big difference in finding scores for the layered condition in Chapter 4 (45%) and MPO-1 in Chapter 5 (86%). Of course, we cannot compare these finding percentages one on one, but these results might imply that the automatic routing through the digital platform, which was not present in de pension documents studied in Chapter 4, have helped users find the information better. In turn, MPO-2 has resulted in even higher finding scores than MPO-1, which indicates that MPO-2 has done a better overall job on reducing the cognitive load by satisfying the requirements of the *signaling principle* and the *principle of spatial contiguity* (Schrader & Rapp, 2016), than both MPO-1 and both conditions in Chapter 4.

The second question is what the results of Chapter 4 and Chapter 5 implicate for the role of financial literacy in using pension communication. We have found in both studies that literacy demands seems to be smaller in the more hierarchically structured versions of the document and digital platform respectively. As for Chapter 4, we present this conclusion very cautiously, since the results only point in this direction, but the models do not significantly differ. For Chapter 5, the findings are significant. Perhaps even more interesting is that these findings do not seem to stand on their own. Two other studies within the domain of financial communication have presented results that indicate that literacy demands are smaller in performance on the document revisions than on the original documents (Lentz & Pander Maat, 2013; Sikkema, Lentz, Pander Maat, & Jungmann, 2017). In both of these studies, revisions concerned structure optimization.[28]

28 This recurring effect was first reported by Leo Lentz and Henk Pander Maat at the *Conference of comprehensible language and effective communication* in Utrecht, the Netherlands (November 11th, 2016). They named it the 'Martin effect' as counterpart of the Matthew effect (Merton, 1968): it occurs when document interventions lead to a decreasing role of literacy in performance.

1.3 Improving pension communication environments

We can conclude that in order to improve the effectiveness of pension communication, the pension media within pension communication environments should coherently fit to a much greater extent than is currently the case. This task of bridging the gap between the legally required and the additional media and all media separately is in the hands of legislator, regulatory authority, and pension sector. First of all, the pension sector should reach a consensus on the overall functions of pension communication, partly based on the current legislation. In Chapter 6 of this dissertation an initial proposal was made for a list of functions (p. 163). All pension organizations should then aim to realize these functions by means of the media provided in their pension communication environment, based on a well thought-out media strategy. The strategy that we have often seen during this research is that pension organizations provide additional media in order to clarify all the information from the legally required media. We strongly advise against this strategy, because it substantially increases the amount of information for pension consumers. We do recommend pension organizations to adopt the existing legally required media and develop them into media that they feel comfortable with. The regulatory authority and the legislator should, in turn, take into account the difficult position in which pension organizations find themselves. Also, we should emphasize again that from the pension consumer's point of view we are very much in favor of providing all pension information on one location, as we have proposed in the ambitious pension communication model in Chapter 6. In this scenario, all information would be aggregated into one dynamic platform, for which *My pension overview* would be very suitable. Of course, we do realize that this scenario encounters practical difficulties.

When it comes to the design of the digital components of the pension communication environments, the research presented in this dissertation has indicated that combining hierarchical structuring and reducing cognitive load could have a positive effect on finding performance. Additionally, the literacy demands were smaller in the more hierarchically structured versions of the document and digital platform. These results indicate that pension organizations should aim at presenting their information in limited fragments and take into consideration the design principles to reduce cognitive load to help pension plan members create a solid mental model of their pension situation – such as highlighting the important details and using clear and unambiguous wording for links and titles. Nevertheless, further research on this topic is needed, which will be further discussed in paragraph 7.3 of this chapter.

2. RECOMMENDATIONS FOR FUTURE RESEARCH

2.1 Discussion of research methods

A distinctive feature of the research reported in this dissertation is the *mixed methods approach* that was used, and which has resulted in an integrated perspective on multimodal pension communication (Cresswell, Plano Clark, Gutmann, & Hanson, 2003). We have collected and analyzed both qualitative and quantitative data and have integrated these findings at various stages of the research process. Because multichannel pension communication is a complicated topic, combining different research methods gives the most optimal insight into the different complexities and their interrelationship.

One of the main objectives of the research presented in this dissertation was to investigate pension communication within 'the real world' by taking into account both the theoretical *and* practical challenges that legislators, communication designers, and pension plan members face. Since this approach made it impossible to control all variables involved, some obstacles had to be overcome. First of all, legislative changes came into effect halfway through our research project that substantially transformed the pension communication landscape in the Netherlands. As a result, the studies reported in Chapter 2 and 3 are performed while the 2007 Pension Act was in effect, while the studies in Chapter 4, 5, and 6 are performed while keeping the upcoming 2015 Pension Act in mind. Second, we did not want to investigate interventions and proposing improvements without taking their feasibility in practice into account. Hence we studied documents and platforms that were actually used to inform pension plan members. Despite the challenges this approach entailed, we believe that the choice to study pension communication within its natural environment is the only way to make a substantial contribution to improving pension communication.

Reflecting on the research methods used in this research, we have identified some areas for improvement. First of all, the study addressed in Chapter 4 reports findings obtained based on just one source document. It would have increased the validity of this study if either more than one pension document would have been tested for effects of layering and financial literacy, or if the study would have included documents from more than one genre – for example the health domain. A second area for improvement of this particular study is that the source document has not been reviewed and optimized before it was tested. This has possibly affected the results, since some of the findings could be explained by defects of the source document and not directly to the extent of layering. Another issue in the studies reported in Chapter 4 and Chapter 5 is that a ceiling effect was found for understanding pension information. This implies that the method of data collection was insufficiently suitable to distinguish between the concepts of finding and understanding. This might call for more complicated interpreting tasks for participants in the future, so that understanding the information after a

fragment is found requires extra inferences, which would make the difference between both concepts better observable. Additional methods that provide more insight in the performance processes instead of only the performance result, such as eye tracking, are also worth considering.

2.2 Future research

In this dissertation it was established that when it comes to finding information, hierarchical structuring is a likely method to increase performance in digital pension communication. To gain more insight into the effects of hierarchical structuring as well as into the effects of hierarchical structuring combined with design principles to reduce cognitive load, follow-up studies are needed in the pension domain, the broader financial domain as well as other domains. These studies should aim to focus on aforementioned variables and be able to rule out the role of possible other aspects.

The second area for future research is the concept of financial literacy. Although the role of financial literacy in pension planning and behavior has been investigated thoroughly (Prast, Teppa, & Smits, 2012; Prast & van Soest, 2016), we have only just started to explore what financial literacy can mean for using pension communication – and more importantly, how its role in performance on documents and digital platforms can be reduced. First of all, we have defined financial literacy in this research as prior knowledge (domain knowledge and topic knowledge) and language skill (vocabulary and reading skill), but we could very well argue that more user competences should be investigated in this context. One of the competences that has not been part of this research, but that is likely to play a role in performing on digital pension communication, is online reading skill (Coiro, 2011). Additionally, competences such as numeracy and graph literacy might be of importance when studying pension information and should be investigated further.

Finally, future research should focus on how literacy demands in performance on media could be reduced, allowing both high and low literate users to become well enough informed to make optimal decisions. Investigating how to narrow this performance gap requires establishing the effect of media interventions while taking the role of the financial literacy into account.

3. CURRENT DEVELOPMENTS IN THE PENSION COMMUNICATION CHALLENGES

In the introduction of this dissertation, some of the challenges faced by pension communication were listed. With this research we have tried to contribute to an improved model of pension communication that eliminates these challenges as much as possible. In this section, we will discuss the current developments.

One of the challenges mentioned in the introduction chapter is that consumers are confronted with more and more information on financial products, presented in different communicative modalities. In Chapter 2 and Chapter 3 we have confirmed this for pension communication. Additionally, we have established in Chapter 6 that providing information using several independent media containing an overload of messages is inadvisable and that a better thought-out strategy on pension communication functions and media is needed. The pension communication situation currently does not seem to be heading towards a more efficient way of informing consumers, as a redesign of the current *Annual pension statement* proves.[29] Lentz and Pander Maat (2016) found that many organizations offer *Pension 1-2-3* adjacent to their own information, which also confirms this assumption.

Another challenge is that understanding the legal and financial intricacies of financial products requires a level of literacy and reading motivation that few clients possess. The studies in Chapter 4 and Chapter 5 show that financial literacy does indeed play a role in finding the information in pension media, but that the interventions of the last few years seem to have reduced the role of competences in successful performance. These findings indicate that when it comes to this second challenge, some steps have been taken towards reducing literacy demands in pension communication.

The research presented in this dissertation has not been able to contribute to the elimination of all challenges presented in the introduction chapter. The negative image of pension organizations as well as the lack of feelings of involvement and urgency remain, and would need additional research to propose an adequate solution.

Finally, we take a moment to shift the focus from pension communication to the broader perspective of financial communication. Although pension communication is a domain with specific characteristics and requirements, many of the challenges described in this dissertation are also likely to apply to other financial domains, such as the domains of mortgage and debt collection (Herijgers, 2017; Sikkema, 2017). From this point of view, a more efficient function and media strategy based on the principles that were identified in this research could improve financial communication in other domains considerably. This also applies to the reduction of literacy demands in using other financial media, for which evidence was also found in performance on debt collection documents (Sikkema, 2017).

29 This redesign will only show what pension plan members have accrued so far. This means that the number of media used in the pension information package stays intact, that the medium will offer information that is also occurring elsewhere (in *My pension overview*), *and* it will only contain information that this research has designated as redundant.

4. GENERAL CONCLUSION

The design of pension communication environments often leaves to be desired. This is partly due to pension communication legislation, which in practice is often difficult to interpret and to comply with. In addition, media are often considered as independent by both legislator and pension organizations, resulting in the separate evaluation and optimization of these media. This results in communication environments not being optimally interconnected. In addition to the legally required media, pension organizations often decide to provide their own media, based on the belief that these are more effective. This is not a desirable situation from the perspective of pension plan members: they will receive more information, which may come at the expense of the findability of the information, feelings of self-efficacy, and motivation. We therefore propose to consider pension communication environments as an interconnected network with a well thought out media strategy. In the more distant future, we argue for one central location for all pension information.

The pension helpdesk study has shown that many pension plan members having questions about their retirement first try to find answers elsewhere in the communication environment of their pension organization before contacting the helpdesk. Optimizing the legally required media under the 2015 Pension Act was therefore in order. A central premise within this optimization is hierarchical structuring, which is applied to both the *Pension 1-2-3* medium and the digital platform *My pension overview*. The research results show that this type of structuring does not improve the findability of information in *Pension 1-2-3*, but has a small effect on the findability of the information in *My pension overview*. These differences are likely to be caused by hierarchical structuring and the application of design principles that reduce cognitive load. A second finding is that the literacy demands of users in both studies seem to decrease as the medium is more hierarchically structured. These results are promising, because they offer clues to significantly improve pension communication in the direction of a more even access for high and low literate pension plan members.

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APPENDICES

APPENDIX A

Distribution of the respondents over the pension organizations and their (generic) function titles.

Respondent code	Type of pension organization	Function of the respondent
R1a	Industry pension fund	Communication manager
R1b	Industry pension fund	Communication manager
R2	Industry pension fund	Communication and policy manager
R3	Industry pension fund	Communication manager
R4a	Industry pension fund	Communication manager
R4b	Industry pension fund	Communication manager
R5a	Industry pension fund	Communication manager
R5b	Industry pension fund	Account manager
R6	Industry pension fund	Communication manager
R7	Industry pension fund	Communication manager
R8	Industry pension fund	Account manager
R9a	Company pension fund	Communication manager
R9b	Company pension fund	Communication manager
R10a	Company pension fund	Communication manager
R10b	Company pension fund	Communication manager
R11a	Company pension fund	Communication manager
R11b	Company pension fund	Service manager
R12	Company pension fund	Communication and policy manager
R13	Company pension fund	Director
R14a	Company pension fund	Communication manager
R14b	Company pension fund	Communication manager
R15a	Occupational pension fund	Director
R15b	Occupational pension fund	Policy manager
R16a	Pension insurance company	Communication manager
R16b	Pension insurance company	Product manager
R17a	Pension insurance company	Communication manager
R17b	Pension insurance company	Legal manager
R18a	Pension insurance company	Communication manager
R18b	Pension insurance company	Policy manager
R19	Pension insurance company	Communication manager
R20	Pension insurance company	Communication manager
R21a	Pension administrator	Communication manager
R21b	Pension administrator	Product manager
R22	Pension administrator	Communication manager

R23	Pension administrator	Communication manager
R24	Pension administrator	Communication manager
R25a	Pension administrator	Communication manager
R25b	Pension administrator	Service manager
R26a	Regulatory authority	Supervisor
R26b	Regulatory authority	Supervisor

APPENDIX B

Interview topics and corresponding subquestions discussed in the interviews.

The design of the introduction letter

1. What does the design process look like?
2. Who are involved in the design process (both internal and external parties)?
3. Were any dilemmas and disagreements encountered during the design process? Which ones, and why?

Experience with and opinion on pension communication laws and regulations

1. Do laws and regulations affect the quality of the introduction letter and UPO? If so, how?
2. To what extent does the pension organization follow laws and regulations?
3. What are desired changes in laws and regulations?
4. How would you describe your relationship with AFM?

Determination and realization of communication goals

1. What communication goals does the pension organization have?
2. How are these goals (hierarchically) related to each other?
3. Do the goals differ per medium?
4. To what extent are these goals realized? Why?

The vision on pension communication

1. Does the pension organization have a certain vision on pension communication?
2. If so, how would you describe that vision?
3. Is that vision complied to? Why (not)?

Distinguishing and reaching target audiences

1. Does the pension organization distinguish target audiences? Which ones?
2. How are these target audiences (hierarchically) related to each other?
3. Is the communication being adapted to the different target audiences? If so, how?

The use of media in addition to the introduction letter and UPO

1. Besides the legal media, which other media (written, oral and digital) are used to inform pension plan members?
2. Why these? What considerations played a role?
3. How are the legal media and the additional media related?

Media and audience research among pension plan members

1. Does the pension organization conduct research among pension plan members? How?
2. How are the results used in pension communication?

Expectations for the future of pension communication within the organization and the pension sector in general

1. What are expectations for the future of pension communication?
2. What should change?
3. What would be an ideal situation, and why?

APPENDIX C

Domain knowledge test (the correct answers are in italics).

The value of money

1. The value of the Euro is determined by:
   a. The government
   b. De Nederlandsche Bank (DNB)
   c. What the international market is prepared to pay
   d. The terms of international trade agreements
   e. I don't know

Savings and investments

2. Suppose you have € 100,- in a savings account. The interest rate is 20% per year and you never withdraw money or interest. How much money do you have in your account after 5 years?
   a. More than €200, -
   b. Exactly €200, -
   c. Less than €200, -
   d. I don't know

3. What is a bond?
   a. A proof of ownership of a (small) part of an enterprise
   b. A loan to the government or a company in exchange for an interest rate reimbursement
   c. A risky savings account with a relatively high interest rate
   d. A mutual fund that merges the investment of several investors and spreads it over several investments
   e. I don't know

4. When investors spread their money among different assets, what will happen to the risk of losing money?
   a. The risk increases
   b. The risk decreases
   c. The risk stays the same
   d. I don't know

5. If you are offered to make an investment with an expected return of 15%, while the expected return on similar investments is 10%, then the risk of the investment is likely:
   a. To be lower than that of similar investments
   b. To be the same as that of similar investments
   c. To be higher than that of similar investments
   d. I don't know

6. Considering a long period of time (for example 10 or 20 years), which asset normally gives the highest return?
   a. Savings accounts
   b. Bonds
   c. Stocks
   d. I don't know

Interest and inflation

7. Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?
   a. More than today
   b. Exactly the same
   c. Less than today
   d. I don't know

8. Inflation can cause difficulty in many ways. Which group would have the greatest problem during periods of high inflation that last several years?
   a. Older, working couples saving for retirement
   b. Older people living on fixed retirement income
   c. Young couples with no children who both work
   d. Young working couples with children
   e. I don't know

9. Which of the following are most likely to be helped by inflation?
   a. Banks that loaned money at a fixed rate of interest
   b. People who borrowed money at a fixed rate of interest
   c. People living on fixed incomes
   d. I don't know

10. If the interest rates charged by banks decreased, businesses are most likely to:
    a. Decrease the number of people they employ
    b. Increase the prices of goods they produce
    c. Increase their investment spending
    d. I don't know

Salary and income tax

11. Income fees are withheld from your salary. What do these income fees consist of?
    a. Income tax
    b. Income tax and pension premium
    c. Income tax and premium for social insurances
    d. Income tax, premium for social insurances, and pension premium
    e. I don't know

APPENDIX D

Topic knowledge test (the correct answers are in italics).

What is pension and what is a pension arrangement?

1. In what three ways can you accrue a retirement income?
   a. Government pension, pension for entrepreneurs, own capital
   b. Government pension, pension from the employer, own capital
   c. Pension from the employer, pension for entrepreneurs, pension from a foreign pension fund
   d. I don't know

2. Within the pension arrangement of the company she works at, Anna has a so-called **benefit agreement**. **Defined contribution agreements** also exist. What is the difference between these agreements?
   a. In a defined contribution agreement supplementary pension is accrued, in a benefit agreement supplementary pension in case of unemployment is accrued
   b. In a defined contribution agreement the pension amount depends on the amount of paid contributions, in a benefit agreement the pension amount depends on the average paid salary
   c. In a defined contribution agreement the amount of premiums that is paid is fixed, in a benefit agreement the amount of pension that is aimed for is fixed
   d. I don't know

3. Todd is accruing a pension with his employer via an **average pay plan**. What does that mean?
   a. The pension is based on the average salary that he has earned during his career
   b. The pension is based on the salary that he has earned in the middle of his career
   c. The pension is based on the salary that an average employee with the same job earns
   d. I don't know

4. Why do pension funds invest money in stocks?
   a. Pension funds invest money in stocks to achieve the highest possible return, so they can increase pension payments in line with inflation
   b. Pension funds invest money in stocks to be able to pay their employees and other expenses, because the premiums that employees pay are only enough to pay for his their pension
   c. Pension funds invest money in stocks to distribute their assets so the risk of losing all their money at once decreases
   d. I don't know

5. Which changes in your life affect your future pension?
   a. Your partner stops working, you have children, you are promoted
   b. Your partner stops working, you are promoted, you start working less
   c. You have children, you are promoted, you start working less
   d. I don't know

6. Who are pension plan members?
   a. Employees participating in a pension arrangement
   b. Former employees who now receive pension
   c. Partners and children for which employees now accrue pension
   d. I don't know

Who is entitled to government pension and employers' pension?

7. Michel has reached the legal government pension age. He is a French national but has lived in the Netherlands for about 25 years. Will he receive pension from the Dutch government?
   a. Michel does not receive government pension
   b. Michel only receives government pension for the years he has worked in the Netherlands
   c. Michel only receives government pension for the years he has lived in the Netherlands
   d. I don't know

8. Hanna wins the lottery jackpot when she is 64, making her a multimillionaire. Is she still entitled to government pension when she reaches the legal government pension age?
   a. No, her own capital has become too high to receive government pension
   b. Yes, government pension is a social insurance: everyone working or living in the Netherlands accrues it
   c. Yes, the state pension is a fixed percentage of the own capital: Hanna now gets even more government pension
   d. I don't know

The amount of government pension and employers' pension

9. If you earn an income during your retirement, will the income be deducted from your pension?
   a. Yes, this income will be deducted from the government pension you receive
   b. Perhaps, this depends on how much additional money you make and how you do that
   c. No, because you have accrued this pension during your career and is therefore fixed
   d. I don't know

10. Will someone with a high employers' pension receive less government pension?
   a. No, the amount of government pension is not related to the amount of employers' pension
   b. No, the government pension is a fixed percentage of the employers' pension: someone with a high pension will receive more government pension than someone with a low pension
   c. Yes, cuts will be made on the government pension for anyone who has an employers' pension of over €100.000 per year
   d. I don't know

Life events that affect pension

11. What changes in your life affect your future retirement?
   a. Your partner stops working, you have children, you get a promotion
   b. Your partner stops working, you get a promotion, you start working less
   c. You have children, you get a promotion, you start working less
   d. I don't know

12. What is value transfer?
    a. Transferring your pension to your heirs
    b. Taking your pension entitlements with you to your new pension fund when changing employers
    c. Converting the partner pension that you have accrued for your partner into old-age pension for yourself
    d. I don't know

13. When does a government pension gap arise?
    a. If the income of a partner under 65 will be deducted from the government pension
    b. If the partner allowance for old age pensioners with a partner under 65 is cancelled
    c. If the pre-pension arrangement will end on 65, while the government pension has not yet started
    d. I don't know

Partner pension

14. Who else, except for your partner, will receive a dependants' pension when you die?
    a. Your (student or disabled) children under the age of 27 or 30 years
    b. This depends on the arrangements you have made with your employer
    c. When you die, only a pension for your partner is arranged
    d. I don't know

15. Karen is divorced. Is she entitled to a partner pension when her ex-partner dies?
    a. No, partner pension only applies to the spouse at the time of death
    b. Only if she is not remarried, because then she will already receive a partner pension from her new partner
    c. Yes, unless the partner pension was insured on a risk basis
    d. I don't know

16. Todd got divorced five years ago. Is he entitled to part of his ex-partners pension?
    a. No, partner pension only applies to the current partner
    b. Only if it is determined at the divorce
    c. If he has not agreed to anything else, he is entitled to half of the employers pension his ex has accrued during their marriage
    d. I don't know

Choices at retirement

17. Suppose you are married and you want to exchange the pension you have accrued for your partner for pension for yourself. Is that possible?
    a. Yes, that is possible, if your partner agrees
    b. No, that is not possible, unless explicitly stated in the pension arrangement
    c. No, that is not possible, you are never allowed to trade partner pension for old-age pension
    d. I don't know

18. Can you choose to have your pension vary in height?
    a. No, the pension amount is fixed
    b. Yes, after your retirement you can withdraw your entire accrued pension at once, or you can opt for a monthly payment
    c. Yes, you can opt for a lower benefit during the first years and raise it later, or vice versa
    d. I don't know

Pension and crisis

19. What measures can pension funds take if they can not pay anymore?
    a. Increase premiums, stop indexating pensions, cutting back on pension payments
    b. Increase premiums, require an additional contribution of employers, cutting back on pension payments
    c. *Stop indexating pensions*, require an additional contribution of employers, cutting back on pension payments
    d. I don't know

20. Can my pension fund, like a bank, get into trouble because people take out all their money?
    a. Yes, people always have access to their paid premiums
    b. Yes, if a pension fund is administered by a bank
    c. No, you can not take out your money from a pension fund
    d. I don't know

APPENDIX E

Vocabulary test (the correct answers are in italics).

What is the meaning of the words in bold?

1. Our conversation ended **abruptly**.
   a. surprisingly
   b. suddenly
   c. tediously
   d. positively
   e. I don't know

2. She was very **recalcitrant** yesterday.
   a. cheerful
   b. annoyed
   c. rebellious
   d. accommodating
   e. I don't know

3. The guests took an **aperitif**.
   a. pre-dinner drink
   b. dessert
   c. smoke break
   d. second serving
   e. I don't know

4. She is known as a **philanthropist**.
   a. A person who is very rich.
   b. A person who let's changing conditions determine their opinion.
   c. A person who is a victim of fraud.
   d. A person who gives lots of money to the poor.
   e. I don't know

5. His contribution to the work has been **marginal**.
   a. substantial
   b. small
   c. positive
   d. negative

e. I don't know

6. That politician has a **distinctive** face.
   a. ugly
   b. handsome
   c. *striking*
   d. nondescript
   e. I don't know

7. What is the **moral** of this story?
   a. *what we can learn from it*
   b. how it ends
   c. how it is appreciated
   d. how long it is
   e. I don't know

8. That boy has written a **macabre** story.
   a. *creepy*
   b. incomprehensible
   c. bad
   d. magical
   e. I don't know

9. He knows the **status quo**.
   a. *the current state of affairs*
   b. the most important moment
   c. the history
   d. the prospects for the future
   e. I don't know

10. She is the **pivot** of the family.
    a. she is the outsider
    b. she is everyone's darling
    c. *she plays a central role*
    d. she is the most successful
    e. I don't know

11. He is a **demagogue**.
    a. a person who does a lot for the common people
    b. someone who lets the people decide
    c. someone who represents the people in the House of Representatives
    d. *someone who misleads the people*
    e. I don't know

12. She has no **scruples**.
    a. misfortune
    b. *conscientious objections*
    c. stress
    d. responsibilities
    e. I don't know

13. This building is a **labyrinth**.
    a. important historical monument
    b. *maze in which you can easily get lost*
    c. concrete square colossus
    d. luxuriously palace
    e. I don't know

14. His comments were **unambiguous**.
    a. *clear*
    b. unclear
    c. friendly
    d. unfriendly
    e. I don't know

15. It is **equitable** that he pays for this.
    a. probable
    b. necessary
    c. *reasonable*
    d. unfair
    e. I don't know

16. This measure is painful for **commuters**.
    a. people working in the forensic sector
    b. *people who travel back and forth between home and work*
    c. people who have a high income
    d. people who have just bought a house
    e. I don't know

17. When he said that, there was **turmoil**.
    a. laughter
    b. crying
    c. *commotion*
    d. happiness
    e. I don't know

18. He is an **erudite** man.
    a. attractive
    b. *scholarly*
    c. unwise
    d. fat
    e. I don't know

19. This creates **friction** between John and Mary.
    a. sympathy
    b. *disagreement*
    c. amourosness
    d. competition
    e. I don't know

20. The **segregation** has increased in Amsterdam's Bijlmer.
    a. crime
    b. nuisance of vandals
    c. cooperation between groups
    d. *seperate living of groups*
    e. I don't know

21. The design looks stunning in the **maquette**.
    a. trial copy
    b. *scale model*
    c. plan
    d. drawing
    e. I don't know

22. His coming to this company has **consequences**.
    a. causes
    b. benefits
    c. cons
    d. *effects*
    e. I don't know

23. She is **megalomanic**.
    a. *has delusions of grandeur*
    b. is uncertain
    c. is bleak
    d. is hyperactive
    e. I don't know

24. Mary replied **decisive**.
    a. *firmly*
    b. slowly
    c. unintelligibly
    d. positively
    e. I don't know

25. He **dissociates** himself from the problems.
    a. *distances himself*
    b. is not interested in
    c. deals lazily with
    d. invents a solution for
    e. I don't know

APPENDIX F

General reading skill test.

Donor registration

In the Donor Register you can record whether you want your organs to be available for transplantation after your death. … (*1) You* … can also choose to have your relatives or one … *(2) specific* … person decide after your … *(3) death* … You can … (*4) record* … your decision by completing and sending the … *(5) donor form* … This can be done online or by mail.

The registration of your choice in the donor register provides … (*6) clarity* … and certainty for all those involved in organ and … (*7) tissue donation* … such as potential donors, your loved ones, but also doctors and nurses. … *(8) Registration* … in the Donor Register is not compulsory. … *(9) If* … your choice is not registered, it means that after your death your … *(10) dependants* … must decide whether you are a … *(12) donor* … or not.

Not everyone can enroll in the Donor Register: you must be … *(13) at least*... twelve years old and you must be registered with a Dutch municipality. At present, more than five million … *(14) choices* … are recorded in the Donor Register. Most of the registrants give permission for … *(15) donation* … whether or not with exclusions. If you record your choice, you can … *(16) always* ... change it. In that case, you need to fill in a ... *(17) new* ... donor form.

Minors can … *(19) record* … their preferences in the Donor Registers from … *(18) their* ... twelfth birthday on. Parents or guardians do … *(20) not* … have to authorize this. If … *(21) minors* ... agree to being a donor and die before they are sixteen, parents or guardians can … *(22) still* … refuse. Parents or … *(23) guardians* … can not consent to donation if the minor … *(24) itself* … has recorded not to be a donor. From sixteen years on, one has full decision-making authority and the own declaration of intention ... *(25) applies* …

APPENDIX G

Topic-related reading skill test.

Pension

To keep pensions affordable, the government wants to change the pension system thoroughly. For example, the age for the …*(1) state pension*…. will be raised gradually to 67 in 2021, and the rules for insurers and …*(2) pension funds*…. will become more strict.

Old-age pension provides an … *(3) income* ... for when you stop working later in life. There is a possibility for additional pension, for example if you become … *(4) disabled* … because of illness. Finally, a pension benefit for your partner is possible in case of … *(5) death* … These are the pension forms that are part of a typical … *(6) pension arrangement* …

In the Netherlands we distinguish three pension ... *(7) pillars* ... If you ... *(8) retire* ... you get a basic income from the ... *(9) government* ... that we call the government pension. In addition, you usually accrue a supplementary pension at your … *(10) employer* ... You can also take out a personal ... *(11) pension insurance* ... Usually you contribute to your pension between your 21st and 65th. Your … *(12) employer* ... and you both pay pension premium. How much pension you pay depends on your personal situation and your ... *(13) income* ... When … *(14) calculating* … the premium, a portion of your salary is left out of consideration. Paying premiums on this portion is not necessary because you already receive … *(15) government pension* … Pension funds … *(16) invest* … these premiums to be able to pay the pension in the future.

Finally, it is possible to voluntarily … *(17) save* … additional pension. This can be done through income from own capital, life insurances, lump-sums, and … *(18) annuities* … This is especially of importance if you have a … *(19) pension gap* … for instance because you want to retire early. You cannot … *(20) commute* … your pension from your pension fund or pension insurer, but small amounts (up to € 451,22) are an exception.

Because of the economic crisis, part of the … *(21) pension funds* … has gotten into financial difficulties. The government demands that pension funds have adequate … *(22) fault coverage* ..., so that they can continue to meet their obligations in the future. If pension funds do not succeed in this, they sometimes increase the … *(23) premiums* ... But a pension fund may also decide to disregard the annual ... *(24) inflation* ... and not to indexate. Sometimes they even have to lower the … *(25) pension payments* ...

APPENDIX H

Scenario questions for both conditions of the pension documents.

Maria is 43 years old and has just started a new job. She has a 48-year-old partner and two daughters. Now, she has received a letter from her new pension organization, in which her pension arrangement is laid out.

Question 1

Maria starts working at Huisman & Van den Assem B.V. and will be accruing a pension at ABC Pensions. Who will contribute to her pension premium?

Question 2

Suppose Maria gets disabled for 50% in an accident. She starts working half days.

a. Will her pension premium still be paid?
b. If so, by whom?

Question 3

Maria wants to know how ABC Pensions calculates the amount of pension premium she has to pay.

a. How does ABC Pensions determine the pensionable amount?
b. What amount of pension premium does the employer restrain from Maria's salary?
c. Is that per year, per month or else?

Question 4

a. If the investments of Maria's premiums become worth less, who bears the burden?
b. Will the investment result for Maria be more certain or less certain as her retirement gets closer?

Question 5

a. May Maria decide for herself how her premiums are invested?
b. Can Maria decide in advance what her pension amount will be?
c. Will Maria pay tax on her pension?
d. Should Maria have her investment income transferred to the new pension arrangement if she changes jobs?

Question 6

Suppose Maria dies when she is 61. She then still works for Huisman & Van den Assem B.V. Her partner Brent is left behind with two daughters, who are 17 and 25 years old.

a. Who will receive a monthly payment after Maria's death?
b. How much will Maria's daughter of 17 receive?
c. Until when will she receive this?
d. How much will this daughter receive if her father dies in the same year?

Question 7

Suppose Maria dies when she is 69. Are her partner and children entitled to money after her death?

Question 8

Huisman & Van den Assem B.V. is in serious financial trouble. Maria thinks her employer should continue paying her pension premiums.
a. Is Maria right?
b. Why or why not?

Question 9

Maria is unsure how many say she wants to have in the investments of ABC Pensions. Please tell what options she has.

Question 10

Maria expects to receive a low benefit if she retires. What can she do?

Question 11

Suppose Maria and her partner Brent, who have a registered partnership, end their relationship.
a. Is Brent then entitled to a partner pension after Maria retires?
b. What possible consequences does the separation have for Maria's pension?

Question 12

Maria is almost retiring. Should she decide what part of her pension is for her partner? (Assumed that they are still together)

APPENDIX I

Effects of layering in the pension documents.

No.	Question	Sub-answers		Non-layered	Layered
1	Maria starts working at Huisman & Van den Assem B.V. and will be accruing a pension at ABC Pensions. Who will contribute to her pension premium?	1	Maria/employee	33%	28%
		2	Huisman & Van den Assem B.V./ employer	42%	40%
2a	Suppose Maria gets disabled for 50% in an accident. She starts working half days. Will her pension premium still be paid?	1	Yes	57%	66%
2b	If so, by whom?	1	ABC Pensions	41%	39%
		2	Maria	19%	37%
		3	Huisman & Van den Assem B.V./ employer	34%	58%
3a	Maria wants to know how ABC Pensions calculates the amount of pension premium she has to pay. How does ABC Pensions determine the pensionable amount?	1	Full-time annual salary	25%	16%
		2	Subtract	16%	14%
		3	€ 13,062, - and/or government pension franchise in 2014	18%	15%
		4	Part-time rate	18%	9%
3b	What amount of pension premium does the employer restrain from Maria's salary?	1	€ 526,51	21%	19%
3c	Is that per year, per month or else?	1	Per year	50%	45%
4a	If the investments of Maria's premiums become worth less, who bears the burden?	1	Maria	47%	58%
4b	Will the investment result for Maria be more certain or less certain as her retirement gets closer?	1	More certain	10%	23%
5a	May Maria decide for herself how her premiums are invested?	1	Yes	64%	59%
5b	Can Maria decide in advance what her pension amount will be?	1	No	20%	27%
5c	Will Maria pay tax on her pension?	1	Yes	20%	21%
5d	Should Maria have her investment income transferred to the new pension arrangement if she changes jobs?	1	No	52%	52%
6a	Suppose Maria dies when she is 61. She then still works for Huisman & Van den Assem B.V. Her partner Brent is left behind with two daughters, who are 17 and 25 years old. Who will receive a monthly payment after Maria's death?	1	Partner/Brent	52%	57%
		2	Daughter of 17	43%	60%
		3	Daughter of 25, if she is studying or disabled	36%	55%
6b	How much will Maria's daughter of 17 receive?	1	€ 2.352,48 (per year)	84%	88%

No.	Question	Sub-answers		Non-layered	Layered
6c	Until when will she receive this?	1	Until she is 21	81%	81%
		2	Until she is 27 in case she is studying or disabled	77%	66%
6d	How much will this daughter receive if her father dies in the same year?	1	Two times €2.352,48	76%*	59%
7	Suppose Maria dies when she is 69. Are her partner and children entitled to money after her death?	1	Only her partner is	45%	47%
		2	If Maria has bought a pension for him	22%	34%
8a	Huisman & Van den Assem B.V. is in serious financial trouble. Maria thinks her employer should continue paying her pension premiums. Is Maria right?	1	No	59%*	32%
8b	Why or why not?	1	Huisman & Van den Assem B.V. may decide not to pay pension premiums anymore	59%*	32%
		2	If the situation of Huisman & Van den Assem B.V. really changes	32%*	18%
9	Maria is unsure how many say she wants to have in the investments of ABC Pensions. Please tell what options she has.	1	'Horizon investing'	69%*	47%
		2	'Profile investing'	70%	60%
		3	'Free investing'	67%	56%
10	Maria expects to receive a low benefit if she retires. What can she do?	1	(Discuss situation with) financial consultant	47%	62%
11a	Suppose Maria and her partner Brent, who have a registered partnership, end their relationship. Is Brent then entitled to a partner pension after Maria retires?	1	Yes	55%	53%
11b	What possible consequences does the separation have for Maria's pension?	1	Maria may receive less pension	50%	47%
12	Maria is almost retiring. Should she decide what part of her pension is for her partner? (Assumed that they are still together)	1	Yes	23%	31%

** effect of layering at $p < 0.05$ (2-tailed)*

APPENDIX J

Information provided in MPO-1 and MPO-2.

Section	MPO-1	MPO-2
Homepage	**Welcome** • Paragraph on what to find on the website • Paragraph on 'Who are we?' • Video clip that explains what to find on the website • Log on button	**Welcome to Mypensionoverview.nl** • List (4) of what to find on the website • List (2) of what can't be found on the website • Log on button
Log on	**Log on** • External login window	**Log on to Mypensionoverview.nl** • External login window
Terms of use	**Terms of use** • Has to be agreed to every time users visit the website	**Terms of use** • Only when users log in for the first time
Personal details	**Details** (*2 pages)* *Page 1* • List of pension organizations the user is affiliated to *Page 2* • Users are required to tick a box indicating whether they have changed employers in the last two years • Users are required to tick a box indicating whether they have ever been divorced.	**My details** • Age of user • List of pension organizations the user is affiliated to • Users are required to tick a box indicating whether they have a partner or are single • Optional: indicating current salary
Current situation		**My current situation** • Starting age of pension (both government and employers' pension) • Amounts accrued so far (both government and employers' pension)

Section	MPO-1	MPO-2
Expected pension	**Upon retirement** (*2 pages)* *Page 1* (See Figure 5.1) • Explanatory paragraph on what users can find on this page. • Pension amounts presented in a bar graph (both government and employers' pension) • Pension amounts presented in a table (both government and employers' pension) • Optional: explanatory text boxes appear on the right side of the page when users click on a highlighted word. *Page 2* • Explanatory paragraph on what users can find on this page. • List of pension organizations the user is affiliated to and the amounts users *have* reached and *could* reach per pension organization. • Optional: explanatory text boxes appear on the right side of the page when users click on a highlighted word.	**My pension** (See Figure 5.2) • Reachable pension amounts if nothing changes in current personal or work situation • Calculation of the amounts • Net and gross amounts per year and per month • Optional: comparison to current salary
Life events	**Upon death** (*2 pages)* *Page 1* • Explanatory paragraph on what users can find on this page. • Pension amounts that partner and children will receive if the users dies at this moment *Page 2* • Explanatory paragraph on what users can find on this page. • Pension amounts per pension organizations that partner and children will receive if the user dies at this moment	**If my situation changes** • List of ten life events that possibly affect pension • The (calculated or described) effects of each life event
Pension organizations	**Summary** (*2 pages)* *Page 1* • Contact details of pension organizations the user is affiliated to *Page 2* • List of pension organizations the user is affiliated to	**My pension organizations** • List of pension organizations the user is affiliated to • Shows starting age, accrued amount, expected amount and contact details per organization
Joint pension		**Joint pension** • Only shown when users stated they have a partner • Both partners can log in separately with own login codes • Shows joint reachable pension • Shows joint (calculated or described) effects of possible life events

Section	MPO-1	MPO-2
Meta menu	• FAQ • Use • Contact • Who are we • Links • Log off	• About Mypensionoverview.nl • FAQ • Terms of use • Disclaimer

APPENDIX K

Scenario questions for MPO-1.

SCENARIO QUESTIONS

John is 53 years old and has been working full-time at the headquarters of a chocolate manufacturer for the past three years. He has a 48-year-old partner and two daughters. He also has an ex-partner. Since his retirement is getting closer, he has decided to view the website www.mijnpensioenoverzicht.nl. Here, he can find more information about his current pension situation and the amounts that he can expect when he retires.

Question 1

The website has not received information from the Bread & Pastry pension fund. Nevertheless, John wants to know those amounts to have a complete overview.

a. Show what John should do to receive this information*
b. John believes a pension fund is missing from the list, but he forgot its name. What can he do?

Question 2

a. What pension amount will John receive between the ages of 60 and 65?*
b. Is that an amount per year, per month or other?*
c. From which pension organization or pension organizations will John receive this?

Question 3

Assume John wants to retire in full when he is 69 years and 9 months.

a. What total amount will he receive per year?*
b. Until when will he receive this amount?

Question 4

John would also like to know what pension amount he is going to receive per month if he retires when he is 69.

a. What gross amount is that?
b. What net amount is that?
c. Does this amount include or exclude government pension?

Question 5

John is currently accruing a pension at the Pension fund for Coffee roasters & Baristas.

a. What amount has he accrued so far?*

b. Is that an amount per year, per month or other?*
c. Is that a gross or a net amount?*
d. How high is the amount that can be achieved?*
e. What should he do to achieve this amount?

Question 6

What amount will his partner receive if John dies before he retires?*

** indicates that the question is part of the short questionnaire*

APPENDIX L

Scenario questions for MPO-2.

SCENARIO QUESTIONS

John is 53 years old and has been working full-time at the headquarters of a chocolate manufacturer for the past three years. He has a 48-year-old partner and two daughters. He also has an ex-partner. Since his retirement is getting closer, he has decided to view the website www.mijnpensioenoverzicht.nl. Here, he can find more information about his current pension situation and the amounts that he can expect when he retires.

Question 1

The website has not received information from Zwitserleven. Nevertheless, John wants to know those amounts to have a complete overview. Show what he should do to receive this information.*

Question 2

a. What pension amount will John receive when he turns 67?*
b. Is that an amount per year, per month or other?*
c. How much of it does he get from ABP?
d. Is that an amount per year, per month or other?

Question 3

Assume John wants to retire in full when he is 69 years and 9 months/67.

a. What total amount will he receive per year?*
b. Does this amount include or exclude government pension?
c. How certain is this amount?

Question 4

John is currently accruing a pension at Nationale-Nederlanden.

a. What amount has he accrued so far?*
b. Is that an amount per year, per month or other?*
c. Is that a gross or a net amount?*
d. How high is the amount that can be achieved?*

Question 5

John dies before he is retired.

a. What amount will John's partner receive?

b. Until when will his partner receive this?

Question 6

John and his partner are looking at their joint expected pension.

a. What will their joint pension be in 2029?

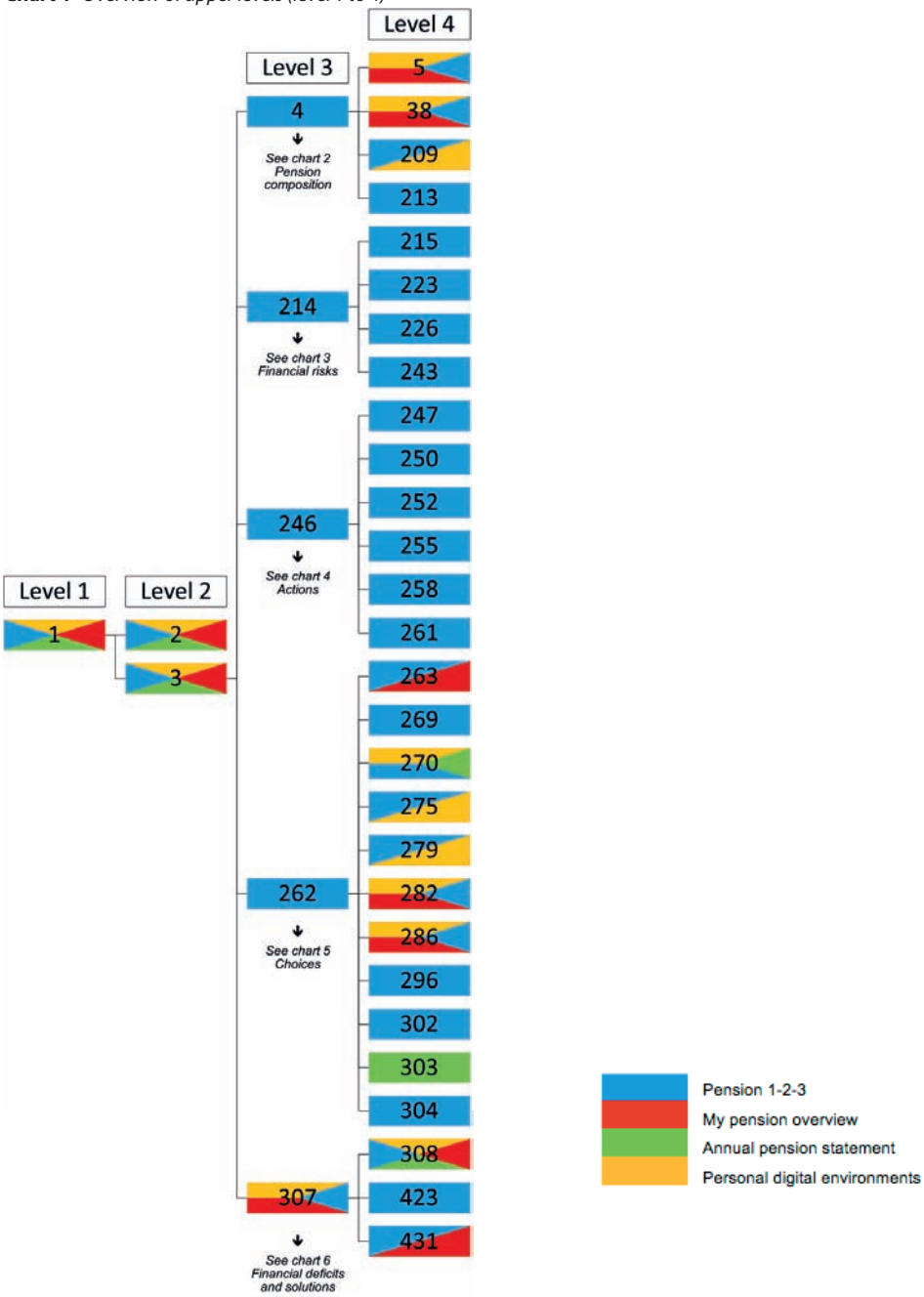
b. What amount does his partner contribute to this expected pension?

** indicates that the question is part of the short questionnaire*

APPENDIX M

Hierarchical function chart of the pension information package and list of functions.

Chart 1 *Overview of upper levels (level 1 to 4)*



A

Chart 2 *Pension composition*

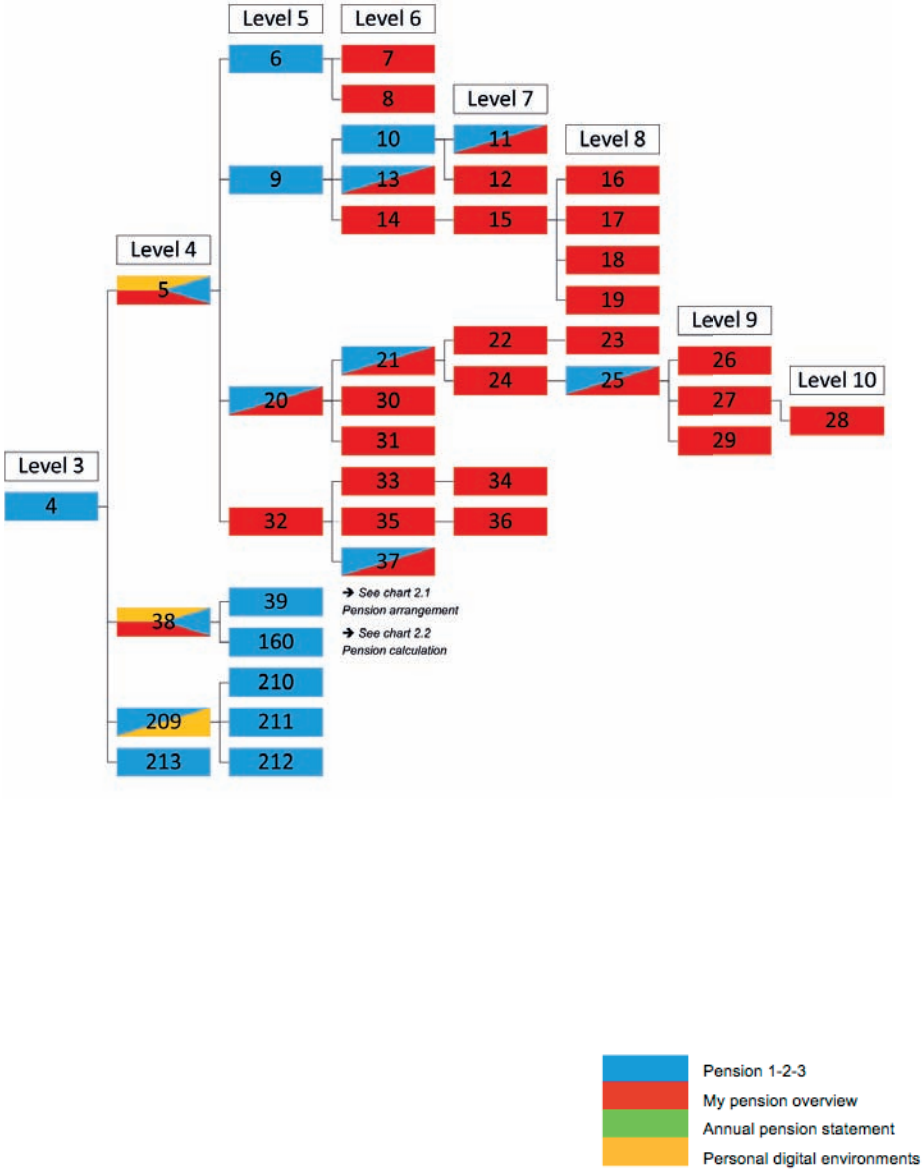
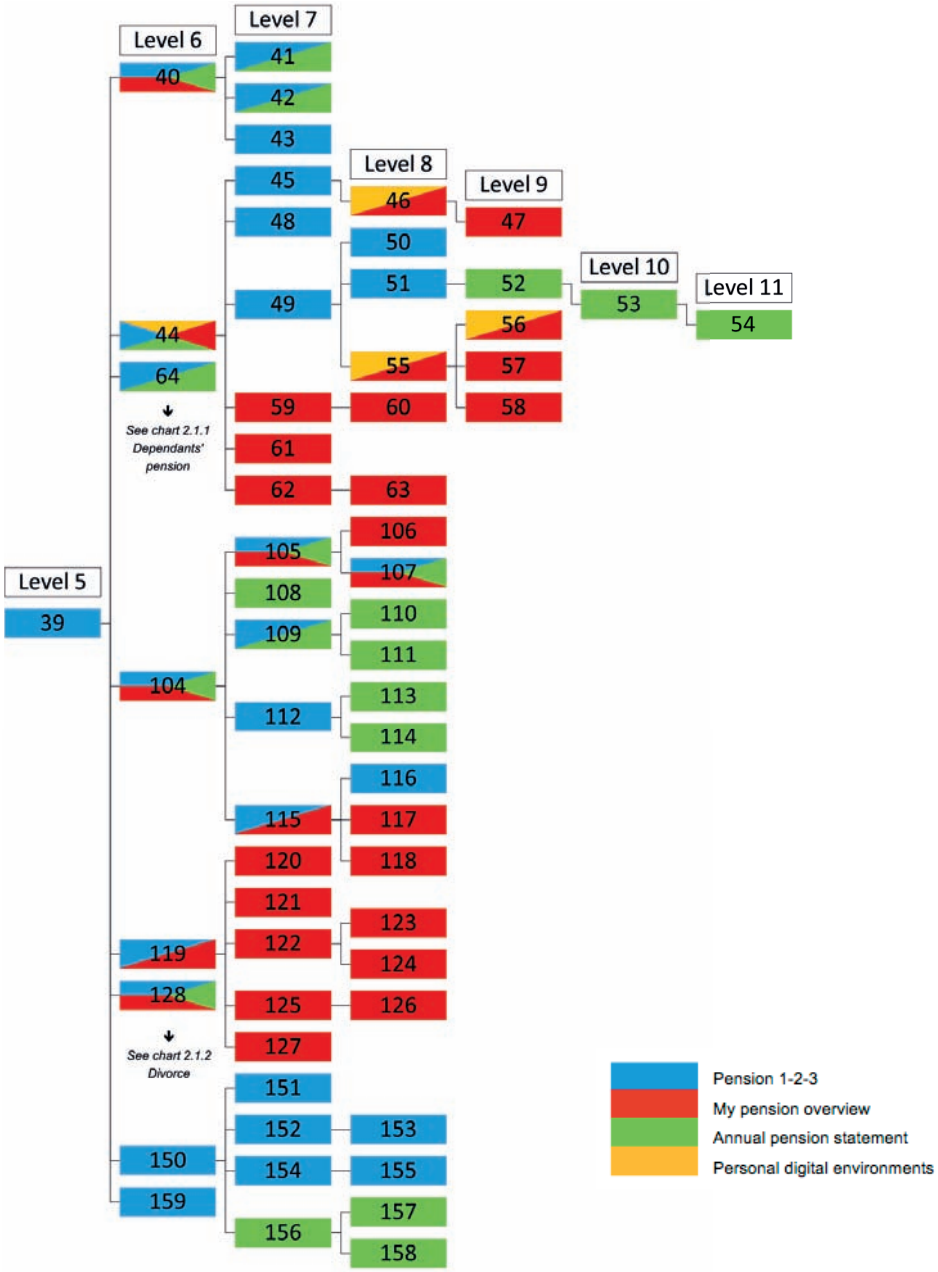


Chart 2.1 *Pension arrangement*



A

Chart 2.1.1 *Dependants' pension*

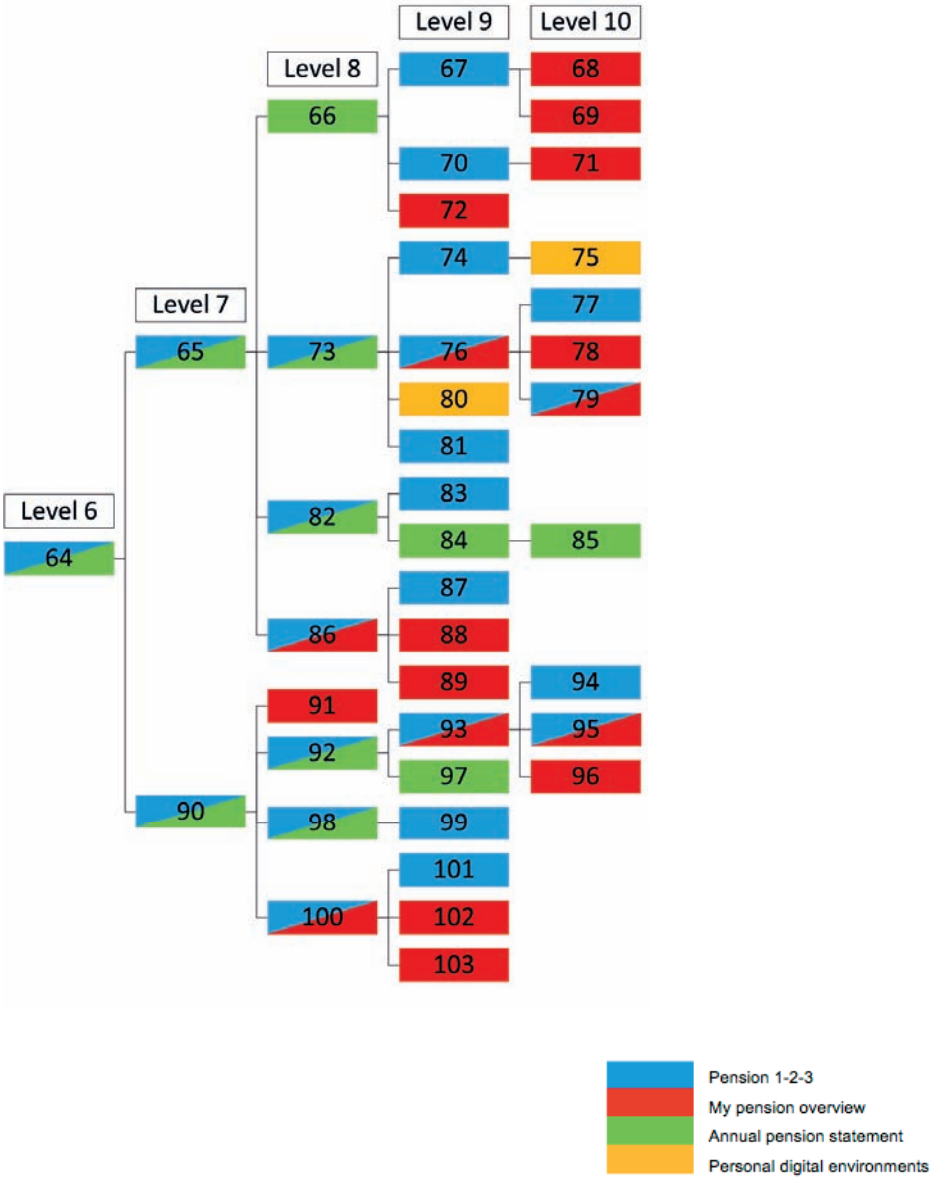
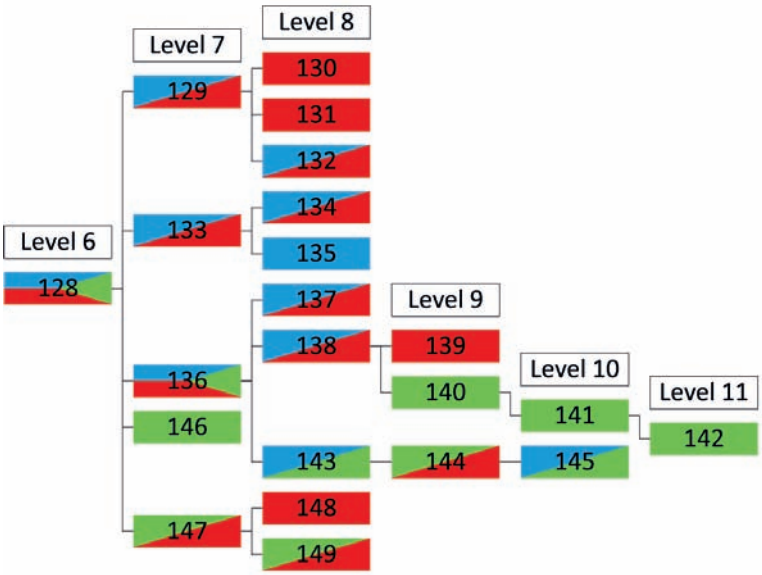


Chart 2.1.2 *Divorce*



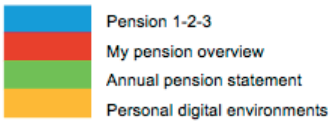


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Chart 2.2 *Pension calculation*

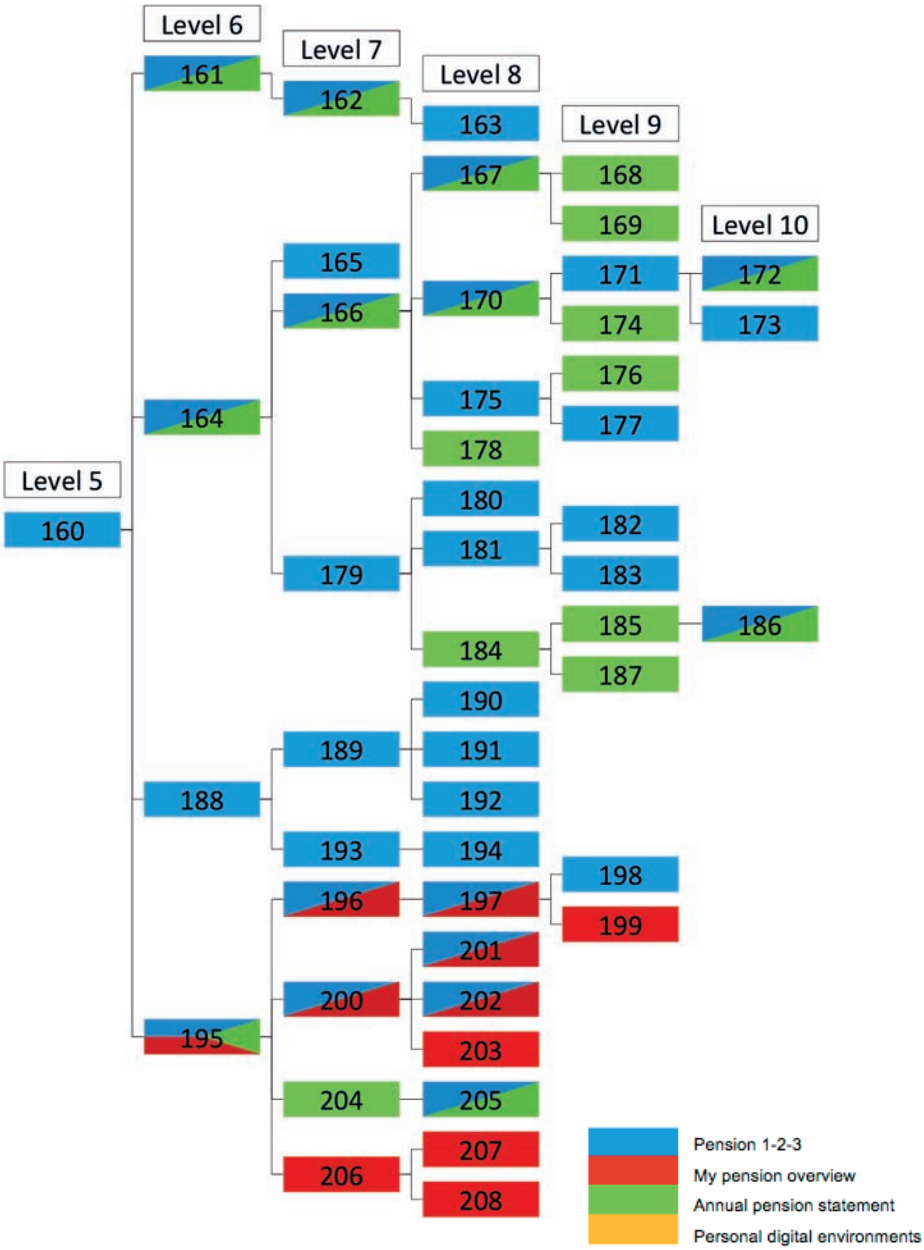

Chart 3 *Financial risks*

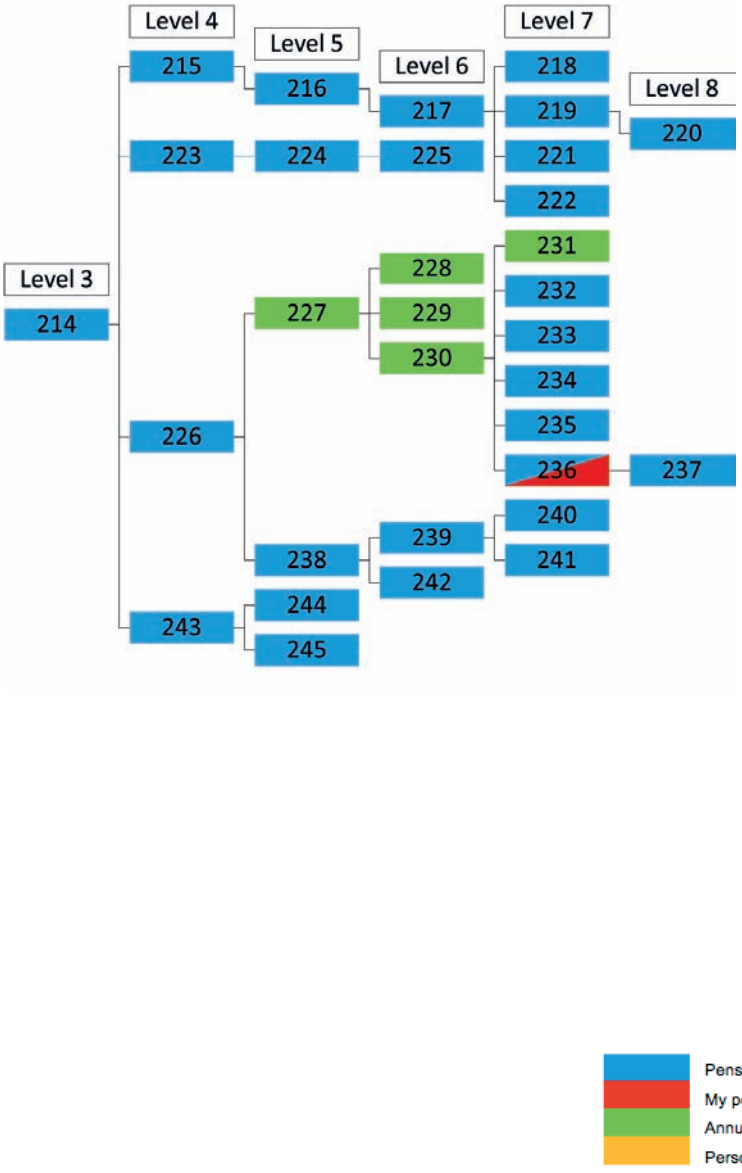

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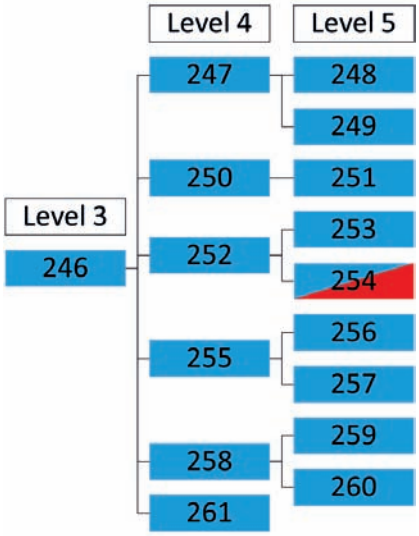
Chart 4 *Actions*



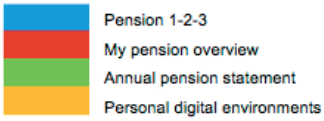


Chart 5 *Options*

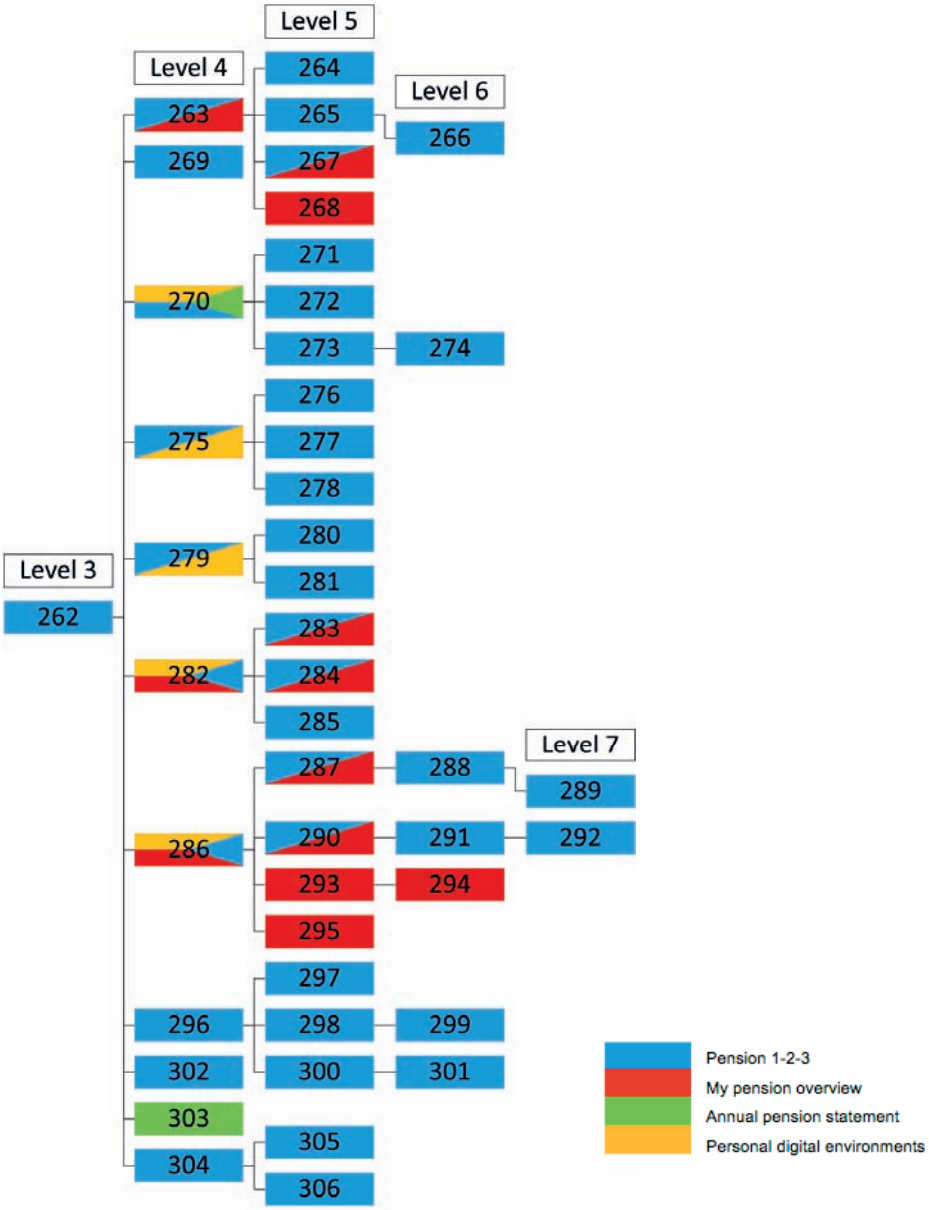


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Chart 6 *Pension deficits and subsequent actions*

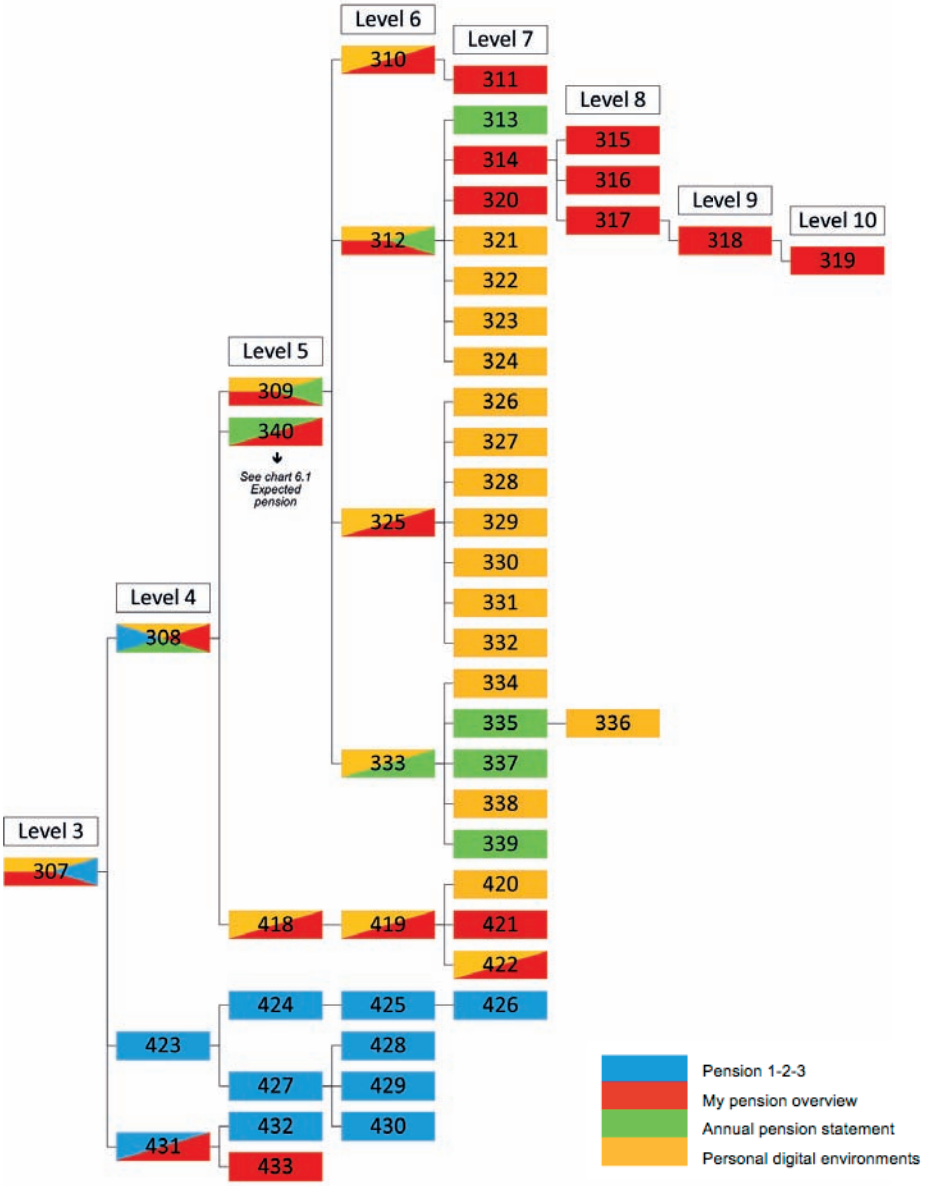

Chart 6.1 *Expected pension*

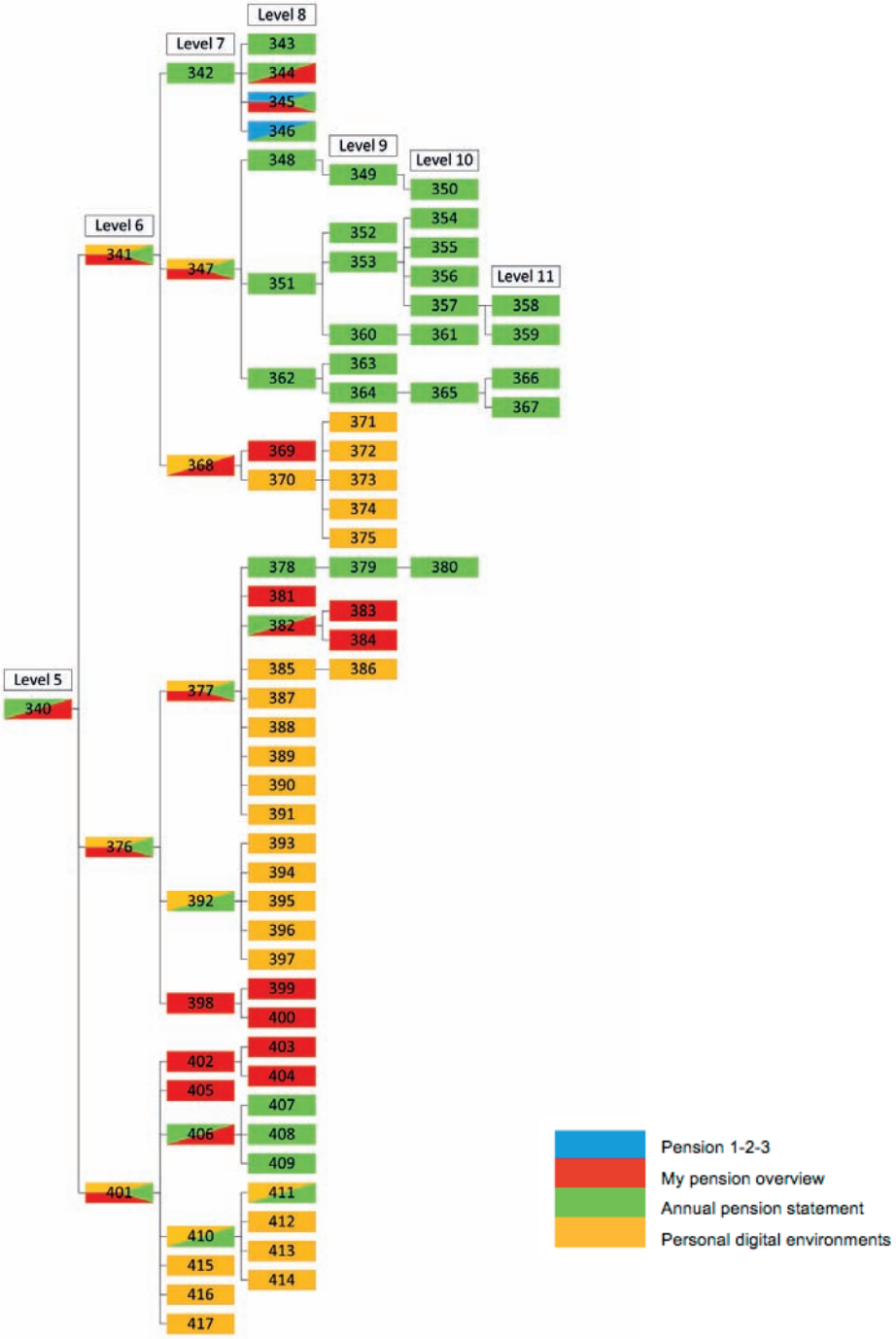

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Chart 7 *Meta-functions*

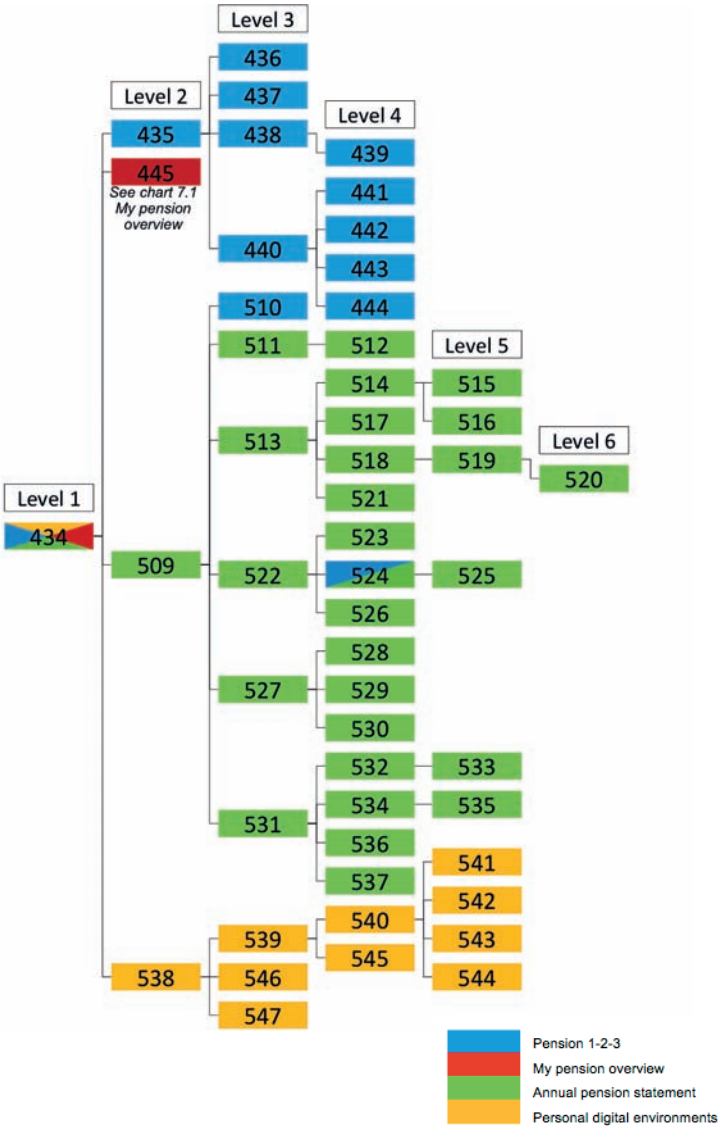

Chart 7.1 *My pension overview*

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No.	Functions
	Pension plan members…
1	…have the most appropriate pension product
2	…are motivated to make sure they have an appropriate pension product
3	…are able to monitor their pension and to adjust it if necessary
4	**…know how their pension is composed**
5	…know that their basic pension is an allowance they receive from the government
6	…know that they accrue a government pension in 50 years
7	…know that they accrue 2% government pension every year
8	…know that they can accrue a maximum of 100% government pension
9	…know that the amount of government pension may vary
10	…know that the amount of government pension is not the same for everyone
11	…know that if they have not always lived or worked in the Netherlands, their government pension may be lower
12	…know that the government pension amount differs depending on whether they live alone or together with someone else
13	…know that the amount of government pension will be adjusted to the wage development
14	…know that the government pension amount they see on *My pension overview* is lower than the amount the SVB credits to their bank account every month
15	…know that the amount they receive every month consists of the government pension amount and the government pension income support
16	…know that the government pension income support is an extra amount on top of their government pension
17	…know that how much government pension income support they receive depends on how many years they have accrued government pension
18	…know that the government pension income support is a maximum of €25,35 gross per month
19	…know that they can find more information about the government pension income support on the website of the Sociale Verzekeringsbank (SVB)
20	…know that they receive the government pension from their government pension age on
21	…know that their government pension age depends on their date of birth and is decided on by the government
22	…know that they can find their government pension age in the *Annual pension statement*
23	…know that the government pension age they find in their *Annual pension statement* is currently the legal government pension age
24	…know that the current legal government pension age is a maximum of 67 years
25	…know that if they were born in 1955 or later, their government pension age will increase
26	…know that the government pension age will increase from 66 years in 2016 67 years in 2021
27	…know that from 2022 on the government pension age will be linked to the life expectancy
28	…know that the House of Representatives on March 26, 2015 has approved with this bill and that the Senate has also adopted the bill on Tuesday, June 2nd, 2015
29	…know that they can calculate their government pension age at www.svb.nl/aowleeftijd
30	…know that they cannot receive their government pension at another age

31 …know that they can stop working at their government pension age, but that they can also decide to stop earlier on or to continue longer

32 …know that the SVB pays the government pensions

33 …know that the SVB sends a letter approximately 5 months before they reach their pension age on how they can apply for government pension

34 …know that if they have not received an application letter 4 months before they reach their pension age, they have to contact SVB themselves

35 …know that they can check the SVB website for more information on pensions

36 …know that they will also receive a government pension if they live abroad

37 …know that they have to apply for a government pension themselves if they live abroad and that they can find more information on the SVB website

38 …know that their pension also includes pension that they have accrued with their employer

39 …know what pension arrangement they have and what its terms and conditions are

40 …know at which pension organizations they accrue a pension

41 …know from which date on they accrue a pension

42 …know that they have a defined benefit agreement

43 …know that they can check the website of their pension organization or request their pension arrangement if they want to know exactly what the pension arrangement offers

44 …know that they are accruing an old-age pension

45 …know that the old-age pension will be paid as long as they live

46 …know that it is laid down in the pension arrangement at what age they receive a pension

47 …know that the age at which they receive a pension may not coincide with the government pension age and that it is possible that they will receive a pension when they are still working

48 …know that the old-age pension is an addition to the government pension

49 …know that their pension amount is not certain

50 …know that (an indication of) the old-age pension amount is shown on the *Annual pension statement* and at *My pension overview*

51 …know that the old-age pension amount will be mainly depending on the salary they have earned, the content of the pension arrangement and the number of years they are participating in the pension arrangement

52 …know that a participation year is each year that they have accrued a pension in employment

53 …know that the *Annual pension statement* states how many participation years the pension organization has registered

54 …know that before 2005 there might not have been kept a record of how many participation years the organization has registered

55 …know that the pension they can reach if they remain employed until their pension date, changes if their salary changes

56 …know that if they are going to earn more, the reachable pension amount will be higher

57 …know that if they are going to earn less, the reachable pension amount will be lower

58 …know that the pension amount that they have already accrued usually doesn't change because of a salary change, and that at least it does not become lower

59 …know that they can often withdraw their pension in whole or in part from the moment they stop working

60 …know that the decision to withdraw their pension influences the pension amount

61 …know that they can usually also receive their pension if they live abroad and that they should consult their pension organization about this

62 …know that several months before their pension date they usually receive an application form from their pension organization

63 …know that if they have not received an application form, they should request it at their pension organization

64 …know whether they accrue a dependant's pension

65 …know whether they accrue a partner pension and what the terms and conditions are

66 …know who counts as a partner

67 …know that a marriage and a registered partnership are considered the same in the pension arrangement

68 …know that within most pension arrangements, marriage and registered partnership lead to automatic designation for partner pension

69 …know that pension organizations often receive a notification from the local authorities when someone marries or commits to a registered partnership

70 …know that if they live together unmarried, their partner is not automatically entitled to partner pension in case of death, but that certain requirements need to be met

71 …know that if they live together, there will often be requirements on the duration of the relationship before the partner qualifies

72 …know that they almost always have to register their partner with the pension organizations themselves

73 …know that their partner receives a partner pension in case of death, if they are still working with this employer

74 …know that the partner pension will be paid to the partner as long as the partner lives

75 …know that if the partner remarries or commits to a registered partnership, this might have consequences for the dependants' pension

76 …know that if they die, their partner might be entitled to a statutory dependants' benefit from the government (Anw)

77 …know that to be entitled to the statutory dependants' benefit from the government, the partner has to be born before 1950, have at least 1 minor to take care of, or be disabled

78 …know that an entitlement to the statutory dependants' benefit from the government is not shown on *My pension overview*

79 …know that they can find more information on the statutory dependants' benefit arrangement on the SVB website

80 …know that if they do not have a partner, the dependants' pension is added as much as possible to the old-age pension when they retire

81 …know, if applicable, what the deal is with unpaid partner system, special partner pension and conditional pension for the partner

82 …know that their partner will not receive a partner pension in case of death if they are not working for this employer anymore

83 …know that if they have a partner and kids, and they stop working for their employer, it is important to consider if additional arrangements are necessary

84 …know that if they stop working for their employer, the partner pension in case of death becomes lower

85 …know that how much lower the partner pension becomes depends on the years of employment they have spent with this employer

86 …know where they can find more information

87 …know that they can read more information in the brochure and in the pension organizations' pension arrangement

88 …know that if they want to know whether a partner pension is arranged and how they should register their partner, they have to contact their pension organization

89 …know that they can find general information on living together, marriage, registered partnership and partner pension at Pensioenkijker.nl.

90 …know whether they are accruing an orphans' pension and what the terms and conditions are

91 …know that the orphans' pension is intended for their children if the pension plan member dies

92 …know that their children will receive an orphans' pension in case of death if they are still working at their employer

93 …know that the orphans' pension is paid until the child is <age>

94 …know that the orphans' pension amount is shown on the *Annual pension statement* and at *My pension overview*

95 …know that the pension payment can continue longer if the child is studying or is disabled

96 …know that if both parents or caregivers have died, the children that are left alone usually receive a double amount of orphans' pension

97 …know, if applicable, what the deal is with specific forms of orphans' pension

98 …know that their children will not receive an orphans' pension in case of death if they are not working for this employer anymore

99 …know that if they have a partner and children, and they stop working for this employer, it is important to consider if additional arrangements are necessary

100 …know where they can find more information

101 …know that they can read more in the brochure and in the pension organizations' pension arrangement

102 …know that if they want to know whether they have to register their children for an orphans' pension and until what age they will receive this pension, they will have to contact their pension organization

103 …know that they can find general information on having children and orphans' pension at Pensioenkijker.nl

104 …know what is arranged in case of disability

105 …know if they are (partially) entitled to continued payment of pension premium by the pension organization in case of disability

106 …know that in almost all pension arrangements is arranged that the accrual of old-age pension continues if they become disabled

107 …know that the amount of non-contributory pension accrual in case of disability depends on the degree of disability

108 …know that they keep the pension they have already accrued

109 …know if they receive (additional) disability pension from their employer if they become disabled

110 …know that they are entitled to a disability pension if they become disabled while they are employed with their employer

111 …know that if their employment ends whilst they already receive a payment from the pension organization, their payment will continue

112 …know that they possibly receive a government benefit (WGA or IVA) and that this depends on the degree of disability

113 …know that if they are declared disabled for more than 2 years (104 weeks) and for more than 35%, they are entitled to a disability benefit

114 …know that they receive this benefit from the UWV on behalf of the government under the Act Work and Income under Working Capacity
115 …know where they can find more information
116 …know that they can find more information about this in the brochure or on the website
117 …know that if they what to know what is arranged for them in case of disability, they should contact their pension organization
118 …know that they can find general information on disability and pensions at Pensioenkijker.nl
119 …know that if they become unemployed, their pension accrual stops
120 …know that they keep accruing government pension if they are unemployed
121 …know that if they leave their employer, they keep their entitlements to the pension they have accrued so far
122 …know that if they become unemployed, the amounts that their relatives will receive in case of death also change
123 …know that it might be possible that their relatives will not receive anything in case of death after becoming unemployed
124 …know that they can check the information they have received from their pension organization for this
125 …know that at job interviews they should always enquire about the pension arrangement of the new employer, and that they should also consider how much pension they will accrue
126 …know that if they keep working in the same sector, their new employer possibly has the same pension arrangement and that their pension accrual will continue with the same pension organization
127 …know that they can find general information on unemployment, dismissal, and the consequences for pensions at Pensioenkijker.nl
128 …know what is arranged in case of separation
129 …know that if they divorce or end their registered partnership, their ex-partner is entitled to half of the old-age pension they have accrued during their marriage or registered partnership
130 …know that after the start of their pension, they can transfer half of their old-age pension to their ex-partner themselves and that they can also leave this to their pension organization
131 …know that if their ex-partner dies, the part of their pension that was intended for their ex-partner is paid out to them again
132 …know that a right to part of the old-age pension does not apply to unmarried cohabitants and that unmarried cohabitants should make own arrangements on the distribution of old-age pension
133 …know that the partner pension that is accrued until the divorce is intended for the ex-partner
134 …know that the partner pension is also intended for the ex-partner in case of unmarried cohabitants
135 …know that the pension organization should be informed if this right is renounced
136 …know that they can make alternative arrangements with their ex-partner at divorce, both on partner pension and on old-age pension
137 …know that these arrangements should be put in writing in a divorce agreement
138 …know that they, or their ex-partner, should inform the pension organization about the divorce and any alternative arrangements within 2 years

139 …know they should use the form *Notice of divorce* to inform the pension organization about the divorce and any alternative arrangements because of the division of old-age pension

140 …know that if the desired division is passed on to the pension organization and it is confirmed, their ex-partner then receives the agreed proportion from the pension organization

141 …know that this part is deducted from the shown pension at payout

142 …know that they then receive less pension than is shown in the overview

143 …know that it is possible to reach an agreement with their ex-partner on part of their pension being converted to a pension for their ex-partner and that this is called conversion

144 …know that if the pension organization has confirmed the conversion, the pension that is meant for the ex-partner is being deducted from their pension

145 …know that the pension that is shown on the overview is then paid out in full

146 …know, if applicable, how value is or is not being processed in case of a divorce

147 …know where they can find more information

148 …know that if they want to know what they should do in case of a divorce or ending of registered partnership and what the consequences are for pensions, they can contact their pension organization

149 …know that they can find general information on divorce and pension at Pensioenkijker.nl

150 …know whether they can provide an extra addition to their pension within the pension arrangement

151 …know that the extra pension premium is then deducted from their salary by their employer and transferred to the pension organization

152 …know that there is not a minimum, but there is a maximum amount, namely the scope for pension tax relief

153 …know that the scope for pension tax relief is the difference between the amount legally allowed to build up tax free and the amount that is actually built

154 …know that they can ask their employer for more information on the possibility to voluntarily accrue extra pension

155 …know that they can also register with their employer

156 …know whether they have the possibility within their pension arrangement to receive an additional pension amount from the moment they turn 63

157 …if so, know that this applies if they have participated in the pension arrangement for 40 years

158 …know that the number of participation years can play a role if a new employer has a pension arrangement in which a pension plan member with 40 years of affiliation *does* have the possibility to receive an additional pension amount from the moment they turn 63

159 …know that they can find more information in the pension arrangement or on the website

160 …know how their pension is calculated

161 …know that their pension arrangement is a defined benefit agreement in the form of a final salary agreement or an average salary agreement

162 …know that with a defined benefit agreement, they will receive a pension from their pension date for as long as they live

163 …know that it is established what the amount of pension is

164 …know how the pension accrual is calculated

165 …know that the pension they accrue is the sum of all pieces they accrue per year

166 …know that the pension accrual is based on the pensionable amount and that this consists of the pensionable salary minus the offset
167 …know that the pensionable salary is the part of the gross annual salary that counts for their pension accrual
168 …know that the pension arrangement determines which parts of the salary count for the pension accrual and are therefore pensionable
169 …know whether the pensionable salary with partial or full employment is mentioned
170 …know that the part of their income over which no pension entitlements are accrued, is known as the offset
171 …know which part of their (gross) income this is
172 …know that they do not accrue pension entitlements over this, because this part is expected to be covered by the government pension
173 …know that this amount is approximately equal to the amount they receive from the government when they reach the government pension age
174 …know whether the offset at full or partial employment is mentioned
175 …know what percentage they annually accrue over their (gross) salary/ the pensionable amount
176 …know that the accrual percentage is a percentage of the pensionable amount per year
177 …know that the overall pension they accrue this way, is the sum of all years plus any indexation
178 …know whether the offset at full or partial employment is mentioned
179 …know that they and their employer pay premium for their pension at what percentages of this premium both pay
180 …know that the pension premium is in fact the price of the pension
181 …know that the employer periodically pays the pension premium to the pension organization and that the part that the pension plan member pays is deducted monthly from their gross salary
182 …know that they can find the premium they pay themselves on their pay slip
183 …know that the premium their employer pays is not indicated on their pay slip
184 …know that the total amount that is paid as premium in a year is known as the available premium
185 …know that their available premium is an age dependent percentage or a fixed percentage of the pensionable amount
186 …know that they can find the percentages per age category in their pension arrangement
187 …know that the premium is used to insure a fixed pension amount
188 …know that the pension organization makes costs in order to be able to execute the pension arrangement
189 …know what kind of costs the pension organization makes
190 …know that among the costs for the administration the costs for the pension payments and the premium locations are located
191 …know that the pension organizations make costs for communication
192 …know that among the costs for asset management the costs for the parties that invest and the transaction costs are located
193 …know where they can find more information
194 …know that on the website and in the annual report they can find a specification of the costs their pension organization makes
195 …know that if their pension organization is a pension fund, it tries to increase its pensions every year with the rise in prices and that this is called indexation

196 …know that money usually decreases in value every year, and that they can buy less with the same amount in 2015 than in 2014, and that this is called inflation

197 …know that because of inflation, pension organizations annually try to grow the accrued pension with the general price or wage increases

198 …know that this is known as a pension stable in value

199 …know that then the amounts on the *Annual pension statement* change

200 …know that indexation is only possible if the financial situation of the pension fund is good enough

201 …know that if the pension fund is not able to grow the pension with the general price or wage increases, the pension become worth less

202 …know that if it goes well financially after that, the pension can me indexed extra to restore purchasing power

203 …know that they annually receive information about whether or not an allowance is granted

204 …know how the pension organization handles increasing pensions or accrued pensions (compulsory text from the allowance matrix)

205 …know how the pension fund has indexed the pension in the recent years

206 …know where they can find more information

207 …know that if they want to know more about the value of their pensions in the future and the possible increase of their pension, they should contact their pension organization

208 …know that they can find general information about the preservation of purchasing power and the increasing of pensions at Pensioenkijker.nl

209 …know whether their pension also includes any additional features

210 …know that they can supplement their pensions through bank savings or insurances

211 …know that a financial advisor can assist them in making choices

212 …know they can look at the 'Pensioenschijf van 5' of the Nibud

213 …know that they can contact their pension organization if they have questions about their pension arrangement

214 …know that financial risks may cause lower pensions

215 …know what financial risks their pension is facing

216 …know that there can be an 80-year-difference between the start of the accrual and the end of the payment, and that in the meantime a lot can change in the world

217 …know that the pension organization is possibly unable to grow their pensions along with prices

218 …know that the increase in life expectancy is a risk

219 …know that the interest rate affects the value of pensions and that low interests make pensions more expensive

220 …know that the lower the interest rate, the more money pension organizations need to be able to pay out the pensions

221 …know that the investment results can disappoint and that hedging investment risks costs money

222 …know that there are more risks that pension organizations have to take into account

223 …know that pension organizations try to be prepared for the risks that pensions are facing

224 …know that that it can happen that the pension organization despite careful precautions is short of money to pay the pensions in the long term

225 …know that the pension organization then has the task to consider carefully what the best solution is

226 …know which measures a pension organization takes or can take in case of a pension deficit (recovery plan)

227 …know whether a recovery plan has been drafted because of a low coverage ratio (and whether there are other special circumstances)

228 …know whether DNB or AFM have given the pension organization an indication

229 …know whether DNB has appointed an administrator

230 …know that the pension organization may need to take any additional measures, and which measures these are

231 …know that they have received a letter about this and that they are kept up to date via the website

232 …know that in such cases pension organizations can increase the premiums

233 …know that in such cases pension organizations can decide not to index

234 …know that in such cases pension organizations can decrease the pension accrual

235 …know that the pension organization can also choose a combination of these measures or can make other choices

236 …know that, as a last resort, the pension organization may decide to reduce accrued pensions or pension payments

237 …possibly know how the pension organization indexed in recent years and reduced pension payments

238 …know that starting from 2015, pension funds have to use the policy coverage ratio when making policy decisions

239 …know that the policy coverage ratio of the pension organization is for example important in decisions of the board dealing with the amount of the premium and the granting of indexation

240 …know that it is a measure of whether the pension organization should reduce pensions payments

241 …know that if the policy coverage ratio is less than 100%, the pension fund is not allowed to participate in individual value transfers

242 …know that the policy coverage is an average over 12 months

243 …know where they can find more information on pension risks

244 …know where to turn for more information about their financial situation and the policy coverage ratio, which may have implications for their pension

245 …know that they can find more information on risk management of the pension organization on the website and in the brochure

246 …know what required actions they have to take within their pension arrangement

247 …know that they have to take action if they become disabled

248 …know that they do not have to inform their pension organization about disability, but that the UWV or the employer does

249 …know that it is important to assess the consequences of disability

250 …know that they have to take action if they get married, start living together or enter into a registered partnership

251 …know that they have to sort out whether their partner is entitled to a partner's pension after the pension plan member's death, and if they find that it is not arranged well enough, they must arrange something extra

252 …know that they have to take action if they divorce or end their registered partnership or cohabitation agreement

253 …know that they or their ex-partner should inform the pension organization about the divorce within two years

254 …know that they should inform the pension organization within two years if they make arrangements with their ex-partner other than those laid out in the pension arrangement

255 …know that they have to take action if they move abroad

256 …know that if they move abroad, they can request the consequences for their government pension with the SVB

257 …know that they should inform their pension organization as they move within countries
258 …know that they have to take action if they become unemployed
259 …know that they do not have to inform their pension organization about unemployment, but that the UWV does
260 …know that it is important to assess the impact of unemployment
261 …know that they can contact their pension organization if they have questions or want to take action
262 …know what options they have within their pension arrangement
263 …know that they can take their accrued pension to a new pension organization if they change jobs and that this is called value transfer
264 …know that it, among other things, depends on the financial situations of both the current and future pension organization whether value transfer is a good choice
265 …know that if they decide not to apply for value transfer, their pension remains with the current pension organization and that it is paid as of the pension date
266 …know that if they decide not to apply for value transfer they no longer pay pension premiums to the current pension organization and go on to accrue a pension in the pension arrangement of the new employer
267 …know that they should apply for value transfer with their new pension organization within 6 months after changing jobs
268 …know that they can find more information about changing employers and the implications for their pension at Pensioenkijker.nl
269 …know that if they earn more than €101.159, they can choose to enroll in a separate pension arrangement
270 …know that they can exchange part of their old-age pension for partner pension for their partner, and when
271 …know that if they convert part of their old-age pension to partner pension, their old-age pension becomes lower
272 …know that if they convert part of their old-age pension to partner pension, their partner will receive a (higher) partner pension upon the pension plan members' death after retirement
273 …know that the exchange of old-age pension for partner pension is a onetime choice that cannot be undone
274 …know that they will make the decision to exchange of old-age pension for partner pension when they retire or leave employment
275 …know that they can exchange part of their old-age pension for orphans' pension for their children, and when
276 …know that if they convert part of their old-age pension to orphan's pension, their old-age pension becomes lower
277 …know that if they convert part of their old-age pension to orphans' pension, their children will receive a (higher) orphans' pension upon the pension plan members' death after retirement
278 …know that the exchange of old-age pension for orphan's pension is a onetime choice that cannot be undone
279 …know that they can exchange (part of) the partner pension for old-age pension, and when
280 …know that the exchange of partner's pension for old-age pension is a onetime choice that cannot be undone
281 …know that the partner must agree on the exchange of partner's pension for old-age pension
282 …know that they can start with a higher or lower pension

283 …know that if they choose to receive a higher pension first and a lower pension later, they receive an amount that is less than the Annual pension statement states starting from the second moment

284 …know that if they choose to receive a lower pension first and a higher pension later, they receive an amount that is higher than the Annual pension statement states starting from the second moment

285 …know that the decision to start with a lower or higher pension is a onetime choice that cannot be undone

286 …know that they can retire earlier or later

287 …know that if they retire later, the accrued old-age pension is increased and that the pension accrual is being continued

288 …know that if they retire later, the payment of the old-age pension is postponed until they actually retire

289 …know that they can find the conditions for postponing retirement in the pension arrangement

290 …know that if they retire early, the accrued pension is reduced and the pension accrual stops earlier

291 …know that the government pension payments possibly start later than the early retirement

292 …know that they can check the SVB website to see when their government pension starts

293 …know that pension organizations offer a variety of choices when it comes to receiving pensions earlier or later

294 …know that if they want to know what options they have, they can contact their pension organizations

295 …know that if they want general information about early retirement and working longer, they can find their options at Pensioenkijker.nl

296 …know whether they can accrue extra pension within the pension arrangement

297 …know that the additional pension premium will then be deducted from the salary by the employer and paid to the pension organization

298 …know that there is not a minimum, but that there is a maximum amount to accrue within the pension arrangement, which is the fiscal space for pensions

299 …know that the fiscal space is the difference between the amount legally allowed to accrue tax free and the amount that is actually accrued

300 …know that they can learn more about the opportunity to accrue voluntary additional pension from their employer

301 …know that they can register with their employer to accrue voluntary additional pension

302 …know that they can compare their pension arrangement at <website>

303 …know that they should consult their pension organization in time about choices they have

304 …know where they can find more information on pension options

305 …know that they can contact their pension organization if they have questions or want to use the options

306 …know that they can find more information about the options in the pension arrangement and on the website

307 …know whether they face a pension deficit and what they should do about this

308 …know whether their pension will be sufficient

309 …know what amount of old-age pension they have accrued so far

310 …know what gross government pension amount per year they have accrued so far (optionally together with their partner)

311 …know that these amounts apply if nothing changes in their current personal or professional situation

312 …know what gross amount (per year or per month) they have currently accrued in total with one or more pension organizations (optionally together with their partner)
313 …know that the accrued pension is the amount of annual pension that they have accrued until <date>
314 …know from which pension organizations they will receive a pension
315 …know their pension organizations' contact details
316 …know that if they have chosen to apply for value transfer in the past, there is no pension registered with the old pension organization anymore
317 …know that they should contact their pension organization if they are missing pensions in the overview or believe that the amounts are incorrect
318 …know that if they forgot if and where they have accrued a pension in the past, they can contact the service desk of the Pension Register Foundation
319 …know how they can prepare themselves for this conversation
320 …know that the pension amounts on the overview can change, for example because their salary changes
321 …know that the amounts are rounded down
322 …know that the government pension is not included in the amounts
323 …know that pay roll tax credit is not applied to the amounts
324 …know that the amounts are updated until the previous month
325 …know what net pension amount per month they have accrued so far (optionally together with their partner)
326 …know that this amount will grow if they keep accruing pension with this pension organization
327 …know that the amount is rounded down
328 …know that the government pension is not included in the amount
329 …know that pay roll tax credit and other arrangements are not applied to the amount
330 …know what the accrual periods per year are
331 …know what the pensionable salary was in each of these accrual periods
332 …know what the part-time percentage was in each of these accrual periods
333 …know what their pension growth (Factor A) is
334 …know that pension growth stand for the gross growth of their pension in a calendar year
335 …know that they might need this amount for their tax return
336 …know that they need this amount to determine their fiscal space for individual additions to their pension
337 …know that if they received multiple pension overviews, they should add up the Factor A amounts on these overviews
338 …know the pension growth in the past several years
339 …know that if they want to make a calculation of their fiscal space, they can use the Tax authorities' Calculation tool Life Annuity Premium, and that they can find this at www.belastingdienst.nl
340 …what pension amount they can expect
341 …know what old-age pension amount they can achieve
342 …know the conditions of the expected old-age pension
343 …know that the expected pension is the amount of annual pension that they receive from the pension age on
344 …know that they receive this amount if they keep working until their pension date and keep on accruing pension in their current pension arrangement without changes in their personal situation

345 …know from which age on they will receive a pension (and optionally when their partner will receive a pension)

346 …know that their pension is paid in monthly or quarterly terms

347 …know what gross amount they will receive every year (in total and per pension organization)

348 …know that the singles' pension is the amount that they receive in addition to their expected or accrued pension

349 …know what amount they will receive in addition to the old-age pension amount if they do not have a partner at <age>

350 …know that if they will get a partner after this moment, the additional amount is canceled

351 …know that the 'expected pension' consists of a certain amount they will receive conditionally, and what amount this is

352 …know what part of this is already granted to them

353 …know what conditions they must meet in order to receive the second part too

354 …know that in order to receive this pension, they should stay employed with their current employer until <condition>

355 …know that when their affiliation to the pension agreement ends before these entitlements are (fully) financed, they are only entitled to the part that is financed and accrued up until that moment

356 …know that if upon termination of the affiliation to the pension arrangement no promised pension for past years of service is purchased and accrued for them, they therefore have no right to this part of their commitment

357 …know that if it is promised to them that pension rights for past years of service are purchased, these must be financed no later than 15 years after the promise was made

358 …know that if they would retire within those 15 years, the pension rights have been financed earlier, at the latest at the time of retirement

359 …know that commitments to purchase entitlements over the past can in principle not be withdrawn or modified

360 …know if there were years of service that they accrued less pension than was possible in accordance with tax rules and if therefore they are entitled to conditional pension

361 …know if the pension that will be purchased for them because they have had one or more periods during their employment in the past in which less pension was accrued than was possible on the basis of the tax regulations, will only be accrued at the time and to the extent that the promised entitlements are financed

362 …know whether their pension is reduced or increased

363 …know whether their pension <until date> is increased annually

364 …know whether the pension they have accrued <until date> is reduced, with which percentage, and if this reduction is taken into account in the overview

365 …know whether the accrual rate was reduced and starting when

366 …know what the accrual rate is now

367 …know whether the lower accrual rate is taken into account in the amounts indicated in this overview

368 …know what net amounts they will receive each year per pension organization

369 …know if applicable, how much more or less this is than they currently receive per month

370 …know to what net amount per month their pension will grow or shrink if they start working more or less

371 …know that if in addition to their work they also receive a benefit, this amount may vary
372 …know that it is calculated as if the new part-time percentage takes effect as of next month
373 …know that the amount is rounded down
374 …know that the government pension amount is not included in the amount
375 …know that payroll tax credit has not yet been applied
376 …know what pension their partner and children can expect if the pension plan members die *and* what amount they can expect from their partner
377 …know what net and/or gross annual amount their partner and/or children receive if the pension plan members die before their pension date, and when
378 …know the conditions attached
379 …know if and for what period the dependants' pension is insured on a risk basis
380 …know that this means that if they stop working for their current employer, their pension upon death is (partly) cancelled
381 …know from which pension organizations these amounts are derived
382 …know that these amount can change if they die after retirement of after they have quit their current job
383 …know that their partner and children possibly will not receive anything
384 …know that they should check the information provided by the pension organization for this
385 …know that Anw or government pension and any other arrangements are not applied to this amount
386 …know that the amount that their partner receives can be supplemented with a maximum of €430 per month consisting of Anw compensation from the pension organization if it turns out that they are not (fully) entitled to Anw
387 …know that the amounts are rounded down
388 …know that pay roll tax credit is not yet applied to the amounts
389 …know that the amounts are updated until the previous month
390 …know that any additionally saved pension is not taken into account in this amount
391 …know that any investments for extra partner pension is taken into account in this amount
392 …know what net and/or gross annual amount their partner and/or children receive if the pension plan members die after their pension date
393 …know that children qualify for an orphans' pension if they are younger than 21 and are not married or do not have a registered partnership
394 …know that the amounts are rounded down
395 …know that pay roll tax credit is not yet applied to the amounts
396 …know that the amounts are updated until the previous month
397 …know that any additionally saved pension is not taken into account in this amount
398 …know what pension they will receive if their possible partner dies before pension date, and when
399 …know from which pension organizations these amounts are derived
400 …know that in these amount possible orphans' pension for the children is not taken into account
401 …know that changes in their professional and personal situation can have (financial) consequences for their pension
402 …know what net and gross amount they will receive annually per pension organization if they become unemployed
403 …know how these amounts differ from the pension they can reach if nothing changes in their professional and personal situation

404 …know that if they want to know how much pension they can expect after retirement, they can contact their pension organization
405 …know that there are financial consequences for their pension when they get a new job, start living together, get married, get a registered partnership or have children
406 …know that divorce can have an effect on the pension amount
407 …know that a possible divorce is taken into account in the pension amounts if they have received a confirmation of the allocation from the pension organization
408 …know that a divorce can have an effect on the pension amount for their partner if they die
409 …know that these pension amounts are not fixed and could be higher or lower
410 …know whether they can expect a pension if they become disabled and how much the amount is
411 …know whether they will or will not receive a supplement to the WIA benefit they receive from the government if they become disabled
412 …know that pay roll tax credit is already applied to the amount
413 …know that the amounts are rounded down
414 …know that this is true only if the UWV has assessed that they are fully (100%) and permanently disabled
415 …know what the expected financial consequences are if they die today
416 …know what the expected financial consequences are if they decide to retire earlier of later
417 …know what the expected financial consequences are if changes in the economy occur
418 …know how much money they need after retirement
419 …know how they can estimate their future expenses
420 …know how they can assess their personal situation and civil status upon retirement
421 …know their future plans
422 …know their current income and expenses
423 …know what actions they can take to accrue extra pension
424 …know whether they can provide an extra addition to their pension within the pension arrangement
425 …know that they can ask their employer for more information on the possibility to voluntarily accrue extra pension
426 …know that they can also register with their employer
427 …know how they can provide an extra addition to their pension outside of the pension arrangement
428 …know that they can supplement their pensions through bank savings or insurances
429 …know that a financial advisor can assist them in making choices
430 …know they can look at the 'Pensioenschijf van 5' of the Nibud
431 …know where they can find more information
432 …know that they can contact their pension organization for more information on these topics and the possible consequences for their pension
433 …know that they can find more information on the reasons and possible solutions for a pension deficit at Pensioenkijker.nl

META-FUNCTIONS

434 …know what pension information they can find in which medium and what possible restrictions are
435 …know what information they can find in *Pension 1-2-3*
436 …know that they can find in this document what they are and are not entitled to within their pension arrangement

437 …know that the information in the document is important
438 …know that the document does not contain personal information
439 …know that they can find personal information at *My pension overview,* in the *Annual pension statement* and at the personal digital platforms
440 …know that *Pension 1-2-3* consists of three layers
441 …know that they briefly read the important information on their pension in the first layer
442 …know that layer 2 elaborates on all topic addressed in layer 1
443 …know that layer 3 contains legal and policy information of the pension organizations
444 …know that they can find layer 2 and 3 on the website of the pension organization or know where they can request them
445 …know what information they can find on *My pension overview*
446 …know that *My pension overview* is an informative website that they can see as the start of overview and insight into their pension
447 …know that they can find information on government pension, employers' pension, and what their reachable pension is
448 …know that if they are retired, they can check *My pension overview*, but will not see the government pension and the employers' pension that they already receive
449 …know that in that case they will receive this information via annual overviews at the start of the year
450 …know that they can see possible dependants' pension that their partner is entitled to
451 …know that they cannot see any additional pension arrangements that they have arranged themselves, because the Pension Register Foundation does not have access to this data
452 …know that this will change in the future
453 …know that if they have applied for value transfer in the past or have commuted their pensions, there is no pension registered with their old pension organizations anymore
454 …know that every citizen with a Dutch BSN and DigiD has access to his or her employers' pension and government pension data
455 …know that the website can be consulted 24 hours a day, free of charge
456 …know that they can find the answer to questions such as: how much government pension and employers' pension did I accrue? What is my expected government pension? What will my relatives receive when I die?
457 …know that the website has been expanded with a number of features and that the information is presented differently
458 …know that *My pension overview* leads the way to pension organizations for more insight and action
459 …know that *My pension overview* is not a pension planner, but that many organizations through their portal offer the opportunity to work with a planner
460 …know that they should contact their pension organization to learn more about the pension planner
461 …know that they can find several planners online and that they can find an overview of useful tools on *My pension overview*
462 …know that they should take into account that *My pension overview* is a starting point for an overview of and insight into their pension situation, and that is useful to annually check their financial status
463 …know that if they are facing a major financial decision, they should always contact their pension organization(s) about the latest situation
464 …know that if anything in their private or work situation happens (e.g. getting married, losing a job, divorce) it often affects their pensions, and that they therefore should contact their pension organization(s)
465 …know that *My pension overview* does not offer general pension information and advice, and that they can find this at Pensioenkijker.nl

466 …know that on *My pension overview* they see the amounts as provided by the pension organizations

467 …know that the gross and net amounts are estimates and that their pensions could be higher or lower than the amounts that they see

468 …know that the amounts are calculated based on the current laws, regulations and data from pension organizations

469 …know that pension organizations are required to update the information at least once a year, and some do so more often

470 …know that because lately much has changed in terms of legislation, it may be that not all changes have been implemented and are visible on *My pension overview*

471 …know that not only the pension organizations are responsible for the topicality of data, but also social partners, employers and the employees themselves play an important role

472 …know that the pension arrangements at legislative amendments should be adjusted in time, and that herein social partners play an important role

473 …know that if employee data changes, this must be passed on by employers in time

474 …know that if something changes in their personal or work situation (e.g. divorce), it is important that they themselves in time pass this information on to their pension organization(s)

475 …know that under the new Pension communication Act new agreements are made on updating the data on *My pension overview*

476 …know that in addition to the requirement that the data should be updated at least once a year, it was agreed that by January 1, 2016 pension organizations should update the data within four months after processing a so-called 'collective change' in the pension arrangement

477 …know that an exception is made if a pension reduction occurs: then, the changes should be visible within four months after the reduction has started

478 …know that as of July 1, 2017 individual changes (i.e. changes in their personal circumstances) must also be visible at Mijnpensioenoverzicht.nl four months after processing by the pension organization(s)

479 …know that the government pension amounts match the data of the Sociale Verzekeringsbank and that this data is updated daily

480 …know that both in the *Annual pension statement* and on *My pension overview* the fact is highlighted that these figures are not final and may change

481 …know that the gross and net amounts of their 'expected pension' they can find at this moment at *My pension overview* may differ from the amounts they will receive as soon as they stop working

482 …know that *My pension overview* first adds up all gross pension amounts per year (government pension and employers' pension)

483 …know that they therefore only see net amounts for total amounts and not separately for each pension organization

484 …know that then a calculation is made on the total gross pension amounts based on the tables for income tax

485 …know that this calculation is taking the statutory pension age into account

486 …know that this results in a net amount per year, which is then divided by 12, resulting in a net amount per month

487 …know that deductions, fees or income they receive in addition to their pension are not taken into account here

488 …know that neither the health insurance premiums and any premiums for supplementary health insurance that they have to pay their health insurer are taken into account, and that they therefore still have to deduct these expenses from the net pension amount that they see

489 …know that the actuality is the responsibility of the pension organizations

490 …know that they can see in the overview when these data are compiled
491 …know that the information that *My pension overview* gives about the gross amounts of accrued pension via employers corresponds to the information on the *Annual pension statement*, and that this information is factually correct (with few exceptions)
492 …know that the gross expected pension amounts via employers also correspond with gross amounts they see on the *Annual pension statement*
493 …know, however, that these amounts are calculated based on the information known to the pension organization(s) on set date of the data and that they are based on the regulations of that moment
494 …know that these gross amounts therefore cannot be seen as 'factual' and 'definitive', but that they are 'indicative' because a lot can change
495 …know that certain information possibly is not yet included in the final calculations
496 …know that the website also takes divorce into account
497 …know that what is visible of this, depends on the agreements they have made with their former partner and what is known by their pension organization(s)
498 …know that it is not shown what they possibly receive from their ex-partner
499 …know that if they have made alternative arrangements with their ex-partner, but they do not see this in the overview, they should contact their pension organization
500 …know that it is not possible to show whether and how much pension they will receive from their ex-partner, because the pension entitlements until retirement lies with the one that accrues the pension
501 …know that it is not yet possible on *My pension overview* to take the impact of divorce on pensions after death into account, and that if they have ever been divorced their pension upon death may be lower than shown in the table on this website
502 …know that if they want more information about the effects of divorce on their pension, they can check Pensioenkijker.nl
503 …know that in 2011 the website *My pension overview* was launched by the pension sector to give people a better understanding of their pension situation
504 …know that *My pension overview* is provided by the Pension Register Foundation, a joint venture between the Sociale Verzekeringsbank, the Pension Federation and the Association of Insurers
505 …know that the Pension Register Foundation board consists of representatives from the Sociale Verzekeringsbank, the Pension Federation and the Association of Insurers and that there is an independent chair
506 …know that the site has a legal basis
507 …know that several years ago, the government has required the pension sector to provide citizens with an overview of all of their pension entitlements
508 …know that a pension organization is a pension fund, a pension insurer or a PPI
509 …know what information can be found in the *Annual pension statement*
510 …know that they get the *Annual pension statement* every year
511 …know that the mentioned statements are gross amounts per year and that premiums and taxes still must be paid on that amount
512 …possibly know why the disclosure of the amount on the *Annual pension statement* are gross and what tools are available for gross-net calculations
513 …know for whom the *Annual pension statement* is designed and on what data the pension (overview) is based
514 …know whether their pension arrangement has changed as of January 1st <year>
515 …know what changes in the expected pension are incorporated into this pension overview
516 …know whether any change in their pension arrangement by January 1, 2014 is included in this pension overview
517 …know whether this pension arrangement does or does not take into account any additional products, a pension gap, individual choices, a divorce, et cetera

518 …know that because of this, some amounts might in reality be higher or lower
519 …know that this *Annual pension statement* reflects the situation of <year>
520 …know that any changes in their pension arrangement after December 31 <year> are not included in the pension statement
521 …know that this might change the amount of accrued pension and that they see the consequences of these changes in the next pension statement
522 …know that this pension statement has come about with care and that it is based on the known data and the pension regulations
523 …know that the *Annual pension statement* does not contain any information on the government pension and that if they want to know more about that, they can visit *My pension overview*
524 …know that the *Annual pension statement* gives insight into what they receive upon retirement and in case of disability
525 …know that the *Annual pension statement* also discloses what their partner and children receive in case of death
526 …know that they can see in the *Annual pension statement* how life events influence their pension
527 …know the meaning of the terms used in the *Annual pension statement*
528 …know that the 'date of employment' is the date on which their employment with their current employer started
529 …know that 'start participation' is the date on which they became affiliated to their current pension organization
530 …know that 'part-time rate' is the percentage that they work in relation to full-time employment
531 …know how they can be informed
532 …know that they receive the *Annual pension statement* every year
533 …know that they are advised to save this statement, along with the statements they received from other pension organizations
534 …know that they can contact the pension organizations if they have questions
535 …know that they can obtain the pension arrangement from their pension organization
536 …know that on *My pension overview* they can find a complete overview of their pensions, government pension entitlements, and their net pension indication
537 …know that they can find general information on pensions at Pensioenkijker.nl
538 …know what information can be found in the pension tools
539 …know that this tool offers customized information
540 …know that this tool in a few steps shows whether you have accrued enough pension
541 …know that this question is not easy to answer, and that therefore this tool helps
542 …know that the result is a snapshot
543 …know that the result is based on their own estimate of their expenditure
544 …know they can view the results including any own resources
545 …know that this tool shows what they can do if they are not on track and want to undertake action
546 …know that annual inflation and its impact on purchasing power are not taken into account is taken in this tool
547 …know that there are many factors that will affect the final amount of the pension

SUMMARY IN DUTCH

NEDERLANDSE SAMENVATTING

Nederlanders hebben veel moeite om hun pensioen te begrijpen. Ze zijn nauwelijks op de hoogte van hun pensioensituatie en blijken slechte pensioenplanners. Dat is een probleem, omdat deze omstandigheden kunnen leiden tot grote individuele pensioentekorten. Een van de redenen dat mensen hun pensioen niet snappen, is dat ze niet gemotiveerd zijn om pensioeninformatie te bestuderen. Dat komt omdat ze vaak weinig vertrouwen hebben in de pensioensector, de noodzaak niet zien, weinig kennis hebben, en geloven dat ze er toch niets van zullen begrijpen. Maar ook als ze pensioendocumenten en -websites wél bestuderen, blijkt de informatie vaak slecht te vinden en moeilijk te begrijpen. En zelfs als de relevante informatie wel wordt gevonden en begrepen, leidt dit niet tot de noodzakelijke acties om de pensioensituatie te verbeteren.

Het Nederlandse pensioensysteem bestaat uit drie soorten pensioen: het overheidspensioen (AOW), het werkgeverspensioen en individuele pensioenvoorzieningen. Dit onderzoek richt zich op de tweede variant: het pensioen dat mensen opbouwen via hun werkgever. Dit wordt beschouwd als de meest complexe soort, omdat mensen relatief weinig invloed op hebben op dit pensioen én het resultaat vaak onzeker is. Wat bijdraagt aan de complexiteit is dat pensioencommunicatiewetgeving veel eisen stelt aan de manier waarop pensioenorganisaties met hun klanten communiceren. In 2007 trad de eerste pensioencommunicatiewet in werking. Specifieke verplichtingen in die wet waren dat de informatie 'duidelijk' en 'begrijpelijk' moest zijn en dat pensioenorganisaties verplicht een *startbrief* en een jaarlijks *Uniform Pensioenoverzicht* moesten verstrekken. Ook werd de website *Mijnpensioenoverzicht.nl* gelanceerd. In 2015 werd de wet herzien, met als doel pensioenconsumenten meer inzicht te geven in hun keuzemogelijkheden en in hoe ze actief een rol kunnen spelen in hun eigen pensioenplanning. Die wetswijziging heeft geleid tot meer mogelijkheden voor digitale informatieverstrekking, het verdwijnen van de startbrief, uitbreiding van de mogelijkheden van *Mijnpensioenoverzicht.nl* en het 'gelaagd' aanbieden van pensioeninformatie (zie voor uitleg verderop in deze samenvatting). Hoewel deze veranderingen nog niet van kracht waren tijdens dit onderzoek, werd wel steeds duidelijker hoe ze eruit zouden zien. Deze situatie heeft tot gevolg dat een deel van de data is verzameld en geanalyseerd binnen de context van de Pensioenwet uit 2007, terwijl in een ander deel de Pensioenwet uit 2015 al een rol speelde.

Om hun klanten te informeren zetten pensioenorganisaties verschillende communicatiemiddelen in. Dat zijn deels wettelijke verplichte media, vaak aangevuld door extra media waar de pensioenorganisaties zelf voor kiezen. In dit onderzoek wordt aan deze verzameling geschreven, digitale en mondelinge communicatiemiddelen gerefereerd als *multimodale communicatieomgevingen*. Daarbinnen vinden de communicatieactiviteiten van de organisaties plaats. Zo'n communicatieomgeving bestaat meestal uit drie soorten communicatiemiddelen:

- documenten (zowel op papier als digitaal)

- digitale tools
- telefoongesprekken

In dit proefschrift is onderzocht hoe de samenstelling van pensioencommunicatieomgevingen op dit moment in de praktijk wordt gerealiseerd en hoe die samenstelling effectiever zou kunnen zijn bij het informeren van pensioenconsumenten. Daarbij wordt in ogenschouw genomen dat effectieve communicatie niet alleen betekent dat mensen hun pensioenproduct zelf begrijpen, maar dat ze vooral moeten weten of ze actie moeten ondernemen rondom hun pensioensituatie (met andere woorden: of ze bijvoorbeeld moeten bijsparen) en hoe ze dat kunnen doen. Om dit te kunnen onderzoeken, bestudeerden we de effecten van pensioencommunicatiewetgeving in de praktijk, de onderlinge verhouding tussen de verschillende communicatiemiddelen die worden ingezet om pensioenconsumenten te informeren, en de mate waarin financiële geletterdheid een rol speelt bij het gebruiken van deze communicatiemiddelen. Dit leidt uiteindelijk tot een voorstel voor een verbeterd pensioencommunicatiemodel.

1. EFFECTEN VAN PENSIOENCOMMUNICATIEWETGEVING IN DE PRAKTIJK

Voor documentgenres waarbij correcte en volledige informatie van groot belang is voor het welzijn van de lezer (zoals medicijnbijsluiters, voedseletiketten en hypotheekinformatie) wordt vaak communicatiewetgeving opgesteld. De theorie daarachter is zinvol, maar in de praktijk leiden dergelijke wetten vaak tot problemen. Zo wordt er in wetgeving rondom informatieverstrekking meestal vanuit gegaan dat consumenten alle mogelijke informatie willen verzamelen voordat ze handelen (Ben-shahar & Schneider, 2010). In de praktijk blijkt dat echter helemaal niet het geval te zijn. Daarnaast kan informatie nooit zowel helemaal volledig als helemaal begrijpelijk zijn, terwijl de wet dat vaak wel vereist. Er moet in de praktijk altijd een afweging gemaakt worden tussen beide voorwaarden (Lentz, 2011). Om inzicht te krijgen in de mate waarin wetgeving rondom pensioencommunicatie het doel bereikt én om te bepalen wat er eigenlijk verwacht kan worden van deze wetgeving en de uitwerking ervan in de praktijk, zijn in de eerste fase van dit promotieonderzoek face-to-face-interviews afgenomen met veertig communicatieprofessionals die werkzaam waren bij vijfentwintig verschillende pensioenorganisaties en de Autoriteit Financiële Markten (AFM; toezichthouder van de financiële markten in Nederland). De data zijn verzameld met behulp van half-gestructureerde interviews (Barriball & While, 1994).

De uitkomsten van die interviews – beschreven in Hoofdstuk 2 – laten zien dat degenen die bij pensioenorganisaties verantwoordelijk zijn voor de communicatie de wet vaak als moeilijk te interpreteren beschouwen en het lastig vinden om aan alle eisen te voldoen. Pensioencommunicatieprofessionals hebben daarom een overwegend negatieve houding ten opzichte van de wetgeving. De wettelijk verplichte com-

municatiemiddelen kosten teveel tijd en geld ten opzichte van het effect dat ermee bereikt kan worden. Ook voldoen ze niet aan de eisen die de geïnterviewden zelf stellen aan communicatie: ze zijn te lang en te moeilijk. Deze negatieve houding leidt tot drie ontwerpstrategieën bij pensioenorganisaties:

1. Berusten in huidige situatie (de wettelijk verplichte communicatiemiddelen accepteren zoals ze zijn);
2. Optimaliseren van wettelijk verplichte communicatiemiddelen;
3. Innoveren in aanvullende communicatiemiddelen.

De bevindingen laten ook zien dat door te berusten in de huidige situatie óf door zich in het ontwerpproces vooral te richten op de aanvullende communicatiemiddelen, de wettelijk verplichte middelen niet de aandacht krijgen die ze eigenlijk nodig hebben. Communicatieprocessen die in andere domeinen evident zijn, zoals doelgroeponderzoek, worden op de verplichte communicatiemiddelen niet toegepast. Dat valt te betreuren, omdat de interviews ook laten zien dat de ruimte voor optimalisatie er wel degelijk is. Het lijkt er dan ook op dat pensioenorganisaties de wettelijke beperkingen over het algemeen als groter beschouwen dan ze eigenlijk zijn.

In een volgende studie, die wordt beschreven in Hoofdstuk 6, is vervolgens geëvalueerd in hoeverre de pensioencommunicatiedoelen die de wet formuleert ook daadwerkelijk worden gerealiseerd in de praktijk. In de wetgevende documenten werden zeven overkoepelende communicatiedoelen geïdentificeerd, waaronder bijvoorbeeld 'Pensioenconsumenten weten welke keuzes ze hebben in hun pensioenregeling' en 'Pensioenconsumenten weten hoeveel pensioen ze kunnen verwachten'. Het blijkt dat niet al deze doelen voldoende aan bod komen in pensioencommunicatie in de praktijk, én dat de praktijk informatie verstrekt die niet door de wet vereist wordt. Mogelijke redenen hiervoor zijn dat de communicatieontwerpers onvoldoende op de hoogte zijn van deze doelen, en dat ze te ruim geformuleerd zijn.

2. ONDERLINGE VERHOUDINGEN TUSSEN COMMUNICATIEMIDDELEN

Een effectieve communicatieomgeving vereist dat de afzonderlijke componenten binnen die omgeving goed op elkaar zijn afgestemd: ze moeten niet teveel op elkaar lijken – bijvoorbeeld door dezelfde informatie te verstrekken – maar ook niet zo ver uit elkaar liggen dat de informatie uit de communicatiemiddelen onderling niet op elkaar aansluit. Een van de vragen die in dit proefschrift is beantwoord, is hoe de communicatiemiddelen in pensioencommunicatieomgevingen zich tot elkaar verhouden. Zoals de interviews aantoonden, zetten pensioenorganisaties uit onvrede over de wettelijk verplichte communicatiemiddelen vaak aanvullende communicatiemiddelen in, vanuit de gedachte dat die wél effectief zijn. Die mogelijkheid hebben ze, omdat de wetgever maar voor een deel van de communicatieomgeving regels stelt. In de praktijk leidt dit

ertoe dat de wettelijk verplichte communicatiemiddelen en de aanvullende communicatiemiddelen los van elkaar worden geëvalueerd en geoptimaliseerd en vaak niet goed op elkaar zijn afgestemd. Hoofdstuk 6 laat bijvoorbeeld zien dat in communicatieomgevingen (ten minste) vier verschillende communicatiemiddelen worden gebruikt om informatie over slechts twee onderwerpen te communiceren (de inhoud van de pensioenregeling en de financiële specificaties). Dit leidt ertoe dat sommige basisconcepten in ieder communicatiemiddel opnieuw moeten worden uitgelegd, wat de totale hoeveelheid informatie binnen een communicatieomgeving flink vergroot. Vanuit het perspectief van pensioenconsumenten is het inzetten van extra communicatiemiddelen om de wettelijk verplichte communicatiemiddelen te verduidelijken dan ook niet wenselijk, zeker als die zich niet goed tot elkaar verhouden: zij krijgen alleen maar meer informatie voor hun kiezen, wat ten koste kan gaan van de vindbaarheid, het gevoel van zelf-effectiviteit en de motivatie.

Dat communicatieomgevingen van pensioenorganisaties niet zo coherent zijn als ze misschien zouden moeten zijn, bleek ook uit een studie naar de rol van de telefonische helpdesk in relatie tot de andere communicatiemiddelen binnen de communicatieomgeving van pensioenorganisaties, beschreven in Hoofdstuk 3. Hiervoor zijn 77 telefoongesprekken opgenomen bij het klantcontactcentrum van een Nederlandse pensioenuitvoerder die telefoongesprekken ontvangt van zo'n dertig verschillende pensioenfondsen. De resultaten tonen aan dat mensen vaak bellen omdat de informatie elders in de communicatieomgeving niet duidelijk is, waardoor zij om opheldering moeten vragen. Daarnaast blijken telefonisten van de helpdesk niet veel kennis te hebben van de andere communicatiemiddelen binnen de communicatieomgevingen: ze weten niet goed welke media het pensioenfonds nog meer aanbiedt en welke informatie daarin te vinden is. Dit leidde soms tot verwarring en ergernis bij bellers. We beargumenteren daarom dat de helpdesk kan bijdragen aan het verbeteren van de coherentie van de communicatiemiddelen door de communicatie-gerelateerde problemen in de helpdeskgesprekken vast te leggen. Die informatie kan worden gebruikt om de andere communicatiemiddelen te verbeteren, zodat het voor pensioenconsumenten minder vaak noodzakelijk is om de helpdesk te bellen. Dit maakt ruimte vrij voor de telefonisten om bellers beter te helpen met het uitleggen van hun persoonlijke financiële situatie.

3. HET GEBRUIK VAN PENSIOENCOMMUNICATIE EN DE ROL VAN FINANCIËLE GELETTERDHEID

Vanuit het onderzoek naar de pensioenhelpdesk weten we dat een grote groep mensen met vragen rondom hun pensioen eerst elders in de communicatieomgeving van pensioenorganisaties op zoek gaat. Het is dan ook een voor de hand liggende keuze dat bij de invoering van de nieuwe pensioenwet is 2015 geprobeerd is de wettelijk verplichte communicatiemiddelen van die communicatieomgeving te optimaliseren. Een centraal uitgangspunt

bij die optimalisatie was hiërarchische structurering, die is toegepast op zowel het nieuwe communicatiemiddel *Pensioen 1-2-3* als op het digitale platform *Mijnpensioenoverzicht.nl*. In twee studies is de effectiviteit van deze communicatiemiddelen onderzocht. Deze studies zijn beschreven in respectievelijk Hoofdstuk 4 en Hoofdstuk 5.

Pensioen 1-2-3 vervangt de startbrief en geeft nieuwe pensioenconsumenten informatie over hun pensioenregeling. Om overbelasting van informatie te voorkomen, wordt de informatie in *Pensioen 1-2-3* opgedeeld in drie 'lagen'. De eerste laag bevat de belangrijkste informatie over de pensioenregeling. De tweede laag gaat dieper in op deze informatie, en de derde laag bevat informatie op detailniveau, zoals het pensioenreglement. In de eerste studie is een vergelijking gemaakt tussen een digitaal lineair document en een digitaal hiërarchisch gestructureerd ('gelaagd') document. De inhoud van beide documenten verschilde niet. Tweehonderd respondenten kregen ofwel het lineaire document ofwel het hiërarchisch gestructureerde document voorgelegd, en moesten aan de hand van scenariovragen (zoals: 'Welke mogelijke consequenties heeft een scheiding voor het pensioen?') in het document op zoek naar informatie. In de studie naar *Mijnpensioenoverzicht.nl* is daarnaast een vergelijking gemaakt tussen de vindbaarheid van informatie in het huidige ontwerp en in het herontwerp van dit digitale platform. Op het platform kunnen pensioenconsumenten terecht voor persoonlijke informatie over hun pensioensituatie: ze kunnen onder andere zien hoeveel pensioen ze op pensioendatum gaan ontvangen en wat hun partner aan pensioen krijgt op het moment dat ze komen te overlijden. 240 respondenten bezochten aan de hand van scenariovragen ofwel het huidige ontwerp ofwel het herontwerp van de website.

In beide studies is ook gemeten hoe financieel geletterd (Huston, 2010) de respondenten waren, en hoe deze geletterdheid een rol speelde in hun prestaties. Financiële geletterdheid is gemeten door enerzijds de voorkennis van de respondenten te bepalen, en anderzijds hun taalvaardigheid. Om het niveau van voorkennis te meten zijn voorafgaand aan de scenariovragen een financiële-kennistest (11 items) en een pensioenkennistest (20 items) afgenomen. Om te kunnen bepalen hoe taalvaardig de respondenten waren hebben zij daarnaast een woordenschattest (25 items) en een leesvaardigheidstest (20 items) ingevuld.

De resultaten laten zien dat hiërarchisch structureren geen effect heeft op de vindbaarheid van informatie in *Pensioen 1-2-3*, maar mogelijk wel op de vindbaarheid van de informatie op *Mijnpensioenoverzicht.nl*: in de nieuwe versie van het platform wordt de informatie iets beter gevonden. Een andere mogelijke verklaring voor dit verschil is dat het herontwerp voldoet aan verschillende principes die de cognitieve belasting van gebruikers verminderen, terwijl het huidige ontwerp daar niet aan voldoet. Een tweede bevinding is dat de geletterdheidseisen aan gebruikers voor zowel *Pensioen 1-2-3* als *Mijnpensioenoverzicht.nl* lijken af te nemen naarmate het medium in sterkere mate hiërarchisch gestructureerd is. Deze resultaten zijn hoopvol, omdat ze concrete

aanknopingspunten bieden om pensioencommunicatie voor zowel hoog- als laaggeletterde pensioendeelnemers aanzienlijk te verbeteren.

4. HET VERBETEREN VAN PENSIOENCOMMUNICATIE

Op basis van de bevindingen in dit proefschrift doen we enkele aanbevelingen om pensioencommunicatie te verbeteren. We pleiten allereerst voor het veel beter op elkaar afstemmen van communicatiemiddelen binnen pensioencommunicatieomgevingen. Deze taak is weggelegd voor zowel de wetgever als de pensioensector. Allereerst moet er overeenstemming en helderheid komen over de doelen waar pensioencommunicatie aan moet voldoen. Vervolgens moeten er doordachte mediastrategieën worden ontwikkeld om deze doelen te kunnen behalen: zowel per pensioenorganisatie als voor de pensioensector in zijn geheel. De veelgebruikte strategie om pensioenconsumenten te voorzien van extra communicatiemiddelen om de wettelijk verplichte communicatiemiddelen te verduidelijken, ontraden wij sterk, omdat dit vooral leidt tot méér informatie. Dat heeft waarschijnlijk een negatief effect op de vindbaarheid en de leesmotivatie. We adviseren pensioenorganisaties daarom om de wettelijk verplichte middelen te omarmen en binnen de mogelijkheden door te ontwikkelen tot een effectief communicatiemiddel. In de verdere toekomst pleiten we voor één centrale, digitale locatie waar pensioenconsumenten alle informatie kunnen vinden rondom hun pensioen.

Als het gaat om het ontwerp van de digitale componenten van de pensioencommunicatieomgevingen, heeft het onderzoek in dit proefschrift laten zien dat de combinatie van hiërarchische structurering en ontwerpprincipes om cognitieve belasting te verlagen een positief effect kan hebben op de vindprestaties van gebruikers. Daarnaast bleken de financiële-geletterdheidseisen kleiner in de meer hiërarchisch gestructureerde versies van het document en digitale platform. Dit geeft aan dat pensioenorganisaties moeten proberen om hun informatie te presenteren in kleine fragmenten en moeten voldoen aan de ontwerpprincipes om cognitieve belasting te verlagen. Aanvullend onderzoek over dit onderwerp is echter noodzakelijk.

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CURRICULUM VITAE

Louise Nell was born on the 23th of September 1984 in Kandy, Sri Lanka. In 2002 she obtained her Athenaeum diploma from the Marnix College in Ede, the Netherlands. She went on to study Dutch Language and Culture at Leiden University where she received a Bachelor's degree in 2007 (specializing in applied linguistics). As a part of her BA studies she went to Stellenbosch University in South Africa for a six-month exchange program. In 2009 she obtained her Master's degree in Communication Sciences from Utrecht University with a thesis on website evaluation methods. From 2009 to 2011, she worked as a communications consultant at Sabel Communicatie in Bilthoven/The Hague, where she specialized in target group research and website evaluation methods. She started her PhD research at the Utrecht Institute of Linguistics-OTS in 2011. This dissertation is the result of the research she carried out during that period. Louise currently works as a research methods lecturer at Utrecht University and lives in Haarlem with her partner and their two daughters. From 2017 onwards, she will continue her career as a researcher/consultant at Customer Revolution, a customer experience agency in The Hague.

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