

The PROGRESS of MANUFACTURING FIRMS in SERVITIZATION

A case study within Royal Philips

Master Thesis - Business Administration - Strategic Management

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Abstract

This research considers to what extent the maturity model, Kotter's (1996) eight steps, and the 3D model can support organizational transformation within servitization. Besides, it seeks to understand how to determine the progress of organizations within this transformation process. Moreover, this study aims to contribute to academic literature on servitization and change management, while simultaneously providing recommendations about the best practices and points of focus for practitioners during servitization. A qualitative research approach in the form of a single case-study at Philips is used to formulate an answer to the research question. The data is gathered through conducting semi-structured interviews and documents published by Philips.

The research analysis shows that all three change models directly or indirectly provide a way to determine progression within the transformation process. Besides, the models provide solutions to organizations' inability to operationalize their strategic plans for servitization. The maturity model provides direct feedback on the progression via an assessment and is used as a communication tool. Kotter's (1996) eight steps model is most useful for the design of the transformation process at a strategic level. The model concentrates on the role of leaders to influence employees to change. A more complete view on change is provided by the 3D model (Achterbergh & Vriens, 2019). The analysis shows that bottom-up change processes need more room to develop to increase engagement of employees. This can be reached by focusing on the three dimensions, continuously assessing progression, adjusting goals based on evaluation, creating an experimental working environment, involving employees in the design and diagnosis phases of the process, communication via multiple channels, and sharing knowledge.

Keywords: servitization, transformation process, change management, implementation, engagement, social perspective, maturity model, 3D model, eight step model, progression.

Preface

This master thesis is the final step in finishing my Master Business Administration with the specialisation in Strategic Management at the Radboud University Nijmegen. Investigating the change process at a large-scale global organization was challenging and has taught me a great deal at the same time. This thesis has provided me a unique insight into the processes, systems, challenges, and considerations that are involved when transforming an organization. The process of writing this thesis has tested my persistence and I want to express my gratitude to everyone that encouraged and supported me to complete this thesis. First, I want to thank my supervisor Dr. Ligthart for his guidance, patience, and support during the writing process. Our ever critical and extensive discussions supported to always find my way back to the goal of this master thesis and helped me reach my full potential. Moreover, I would like to thank my second supervisor, Dr. ir. S. Witjes.

Furthermore, I want to express my gratitude to Dennis van de Meulenhof, my supervisor at Royal Dutch Philips, for giving me the opportunity to peek behind the scenes during my internship. His enthusiasm and support made me feel welcome and part of the team. I feel honoured that I received his trust to carry out this project. Moreover, I am thankful to each interviewee that took time to participate in this research. Finally, I would like to express my thanks to my family and friends who are always there to provide me moral support and encouraging words.

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Table of Contents

1. Introduction	5
1.1 Problem definition	5
1.2 Research objective	6
1.3 Scientific and practical relevance	7
1.4 Research outline	8
2. Theoretical Framework	9
2.1 Servitization	9
2.1.1 Drivers of servitization	11
2.1.2 Servitization paradox	12
2.1.3 Challenges of servitization	12
2.1.4 Transition towards providing services.....	13
2.2 Maturity Model	15
2.2.1 Theory.....	15
2.2.2 The five-level scale.....	16
2.2.3 The maturity dimensions	17
2.2.3 The servitization maturity model.....	18
2.3. Kotter’s eight steps	20
2.4 The 3D model of Achterbergh and Vriens (2019)	21
2.4.1 Functional dimension	23
2.4.2 Social dimension	23
2.4.3 Infrastructural dimension.....	25
2.4.4 Conclusion of the 3D model.....	25
2.5 Case description	26
3. Methodology	28
3.1 Research Approach	28
3.2 Data Collection	28
3.2.1 Interviews	29
3.2.2 Documentation	30
3.2.3 Study population and sample.....	30
3.4 Data Analysis	31
3.5 Quality of research design and research ethics	32
3.5.1 Reliability and validity	32
3.5.2 Research ethics	33
4. Research Analysis & Results	34

4.1 Status of Philips within the transformation process	34
4.2 Maturity Model.....	34
4.2.1. General aspects Maturity Model	35
4.2.2. Maturity levels.....	36
4.3 Kotter’s (1996) eights steps.....	41
4.3.1 General aspects of the Kotter’s (1996) theory	41
4.3.2 Three phases of the model.....	42
4.4 Analysis 3D-Model	45
4.4.1. General aspects 3D Model.....	45
4.3.2. Functional dimension	46
4.4.3. Social dimension	49
4.4.4. Infrastructural	52
4.4.5. Conclusion 3D-model.....	54
4.5. Comparison three change models.....	55
4.5.1 Maturity Model.....	57
4.5.2 Kotter’s eight steps	58
4.5.3. The 3D model by Achterbergh & Vriens	58
4.5.4 To what extent do the models support Philips in solving their problems?.....	59
5. Conclusion and Discussion	62
5.1 Summary of the research.....	62
5.2 Discussion and implications.....	63
5.2.1. Theoretical implications	63
5.2.2. Practical implications and recommendations	64
5.4 Directions for future research.....	67
5.5 Ethical considerations and reflection	68
References	69
Appendices.....	74
Appendix 1: Overview Challenges Servitization	74
Appendix 2: Overview Maturity Models Servitization.....	75
Appendix 3: Maturity Model – Extensive version.....	82
Appendix 4: Overview Interviewees	84
Appendix 5: Interview Guide	85
Appendix 6: Overview of documentation data	88
Appendix 7: General aspects of change models.....	89

1. Introduction

In the past few decades, the manufacturing industry has gone through major changes due to increasing competition, decreasing product margins, and more transparent offerings (Neely, 2008). To cope with the ever-increasing environment, manufacturing firms improve their competitive advantage by shifting their focus from selling products to providing integrated solutions (Baines & Lightfoot, 2014; Fang, Palmatier, & Steenkamp, 2008; Reinartz & Ulaga, 2008). This phenomenon is defined by Vandermerwe and Rada (1988) as ‘servitization’. The rationale for servitization is to generate higher profit margins, create stability of income, enable differentiation, and induce repeat-sales (Baines et al., 2009a; Gebauer & Friedli, 2005; Gebauer & Fleisch, 2007; Visnjic & Van Looy, 2013; Wise & Baumgartner, 1999).

Servitization refers to the transformation process of manufacturing firms shifting from a product to a service-centric business model and logic (Kowalkowski, Gebauer, & Oliva, 2017). This transformation process requires significant organizational changes and is often complex and wide ranging (Martinez et al., 2017; Alghisi & Saccani, 2015). Some of the world’s leading companies, such as IBM, Rolls-Royce Aerospace, and Xerox have managed to successfully implement the necessary organizational changes to provide combinations of products and services (Neely, 2008). Contrary, most manufacturers have trouble to successfully implement and exploit a servitization strategy due the challenges they encounter during the transformation process (Baines & Lightfoot, 2013; Kindström & Kowalkowski, 2015). Both researchers and practitioners find difficulties in understanding and managing the transformation process towards providing services (Kowalkowski et al., 2017; Baines et al., 2017).

1.1 Problem definition

The transformation of a traditional manufacturer into a service provider requires fundamental changes in, among other things, the organization’s culture, structure, capabilities, relationships with customers and valuation systems (Martinez et al., 2010). Therefore, it is challenging for organizations to understand and implement the transformation process that enables them to provide services. Most studies regarding servitization focus on the context and content of organizational change and little is known about the implementation and organization of the transformation process (Baines et al., 2017). This research gap has been noted by Martinez et al. (2017), Lütjen, Tietze and Schultz (2017), and Kowalkowski et al. (2017), all stating that firms are struggling with organizational change.

Literature regarding organizational change describes different models that support organizations in implementing changes and as such transform their organization. Among these models, a practical model is the Maturity Model. This model can function as a tool to determine progress within the transformation process. Besides, it helps to determine the organization's current position and provides feedback regarding steps that need to be taken. Another well-known change model is proposed by Kotter (1996). He developed a prescriptive model that consists of eight different steps which need to be followed in a consecutive order and indirectly provides a way to investigate progression. Kotter's (1996) model focuses on the social aspect of change by transforming employees' vision and behavior. The 3D model of Achterbergh & Vriens elaborates Kotter's (1996) model by also investigating the infrastructural and functional dimension of organizational change.

Large scale organizations like Royal Dutch Philips (Philips) struggle to implement the necessary changes of servitization. At the beginning of this study in 2019, Philips was at the start of the implementation of the transformation. This is an intriguing phase of transformation as strategic plans are created and are translated to be implemented in lower levels of the organization. The organization needs to manage the chaos and information asymmetry that is accompanied with implementation of organizational changes, which is extremely challenges. Consequently, organizations like Philips want to understand the transformation process towards providing solutions. Besides, they wish to determine the progression of the organization within the transformation process. Therefore, this study investigates to what extent the three change models can support organizational transformation within servitization. It seeks to understand how to determine the progress of organizations within the transformation process. Besides, this study wishes to identify the best practices and points of improvements for Philips during servitization.

1.2 Research objective

The main objective of this study is to provide insights into the progression of the transformation process of organization from product-centric to service-centric business logics. In order to reach this objective, the following research question will be addressed:

“To what extent can the Maturity Model, Kotter's (1996) eight steps and the 3D model support the servitization process in a large-scale organization?”

To answer the central research question stated above, three sub research questions are formulated:

1. *What are the key elements of three change models?*
2. *To what extent are the change models complementary?*
3. *To what extent are the change models distinctive?*
4. *To what extent are the change models applicable in the transformation process of a manufacturing firm that started servitization?*

The transformation process will be explored based on a literature review and a case study within Philips. Besides, a maturity model will be created that can be used as a tool for manufacturing firms to assess their as-is situation and to determine how they can improve to reach a more advanced stage of servitization.

1.3 Scientific and practical relevance

There is a considerable amount of literature on servitization, nevertheless a lack of studies has focused on pre- and describing the transformation process of a manufacturing firm during servitization (Baines et al., 2017; Kowalkowski et al., 2017; Lütjen et al., 2017; Martinez et al., 2017). In this regard, this study provides three key contributions to literature about servitization. Firstly, this study contributes to theory development by filling the research gap about the design and implementation of a servitization transformation process. Several studies have been carried out with respect to the effect of servitization on firm performance and the relationship of servitization with external and internal factors (Neely, 2008; Visnjic & Van Looy, 2013). However, little is known about how to implement and organize the transformation process of a manufacturing firm towards providing solutions. Secondly, this study compares three well-known change models and investigates if they are recognized in the transformation process of a large-scale organization. Thirdly, the study expands servitization literature with practical knowledge from experts in the field by investigating the servitization process of Philips. These insights will enhance the understanding of researchers about the growth trajectories developed in practice and what the best practices within the transformation process are. Based on these insights researchers can make new contributions to literature that are more usable for practitioners, which will in turn support practitioners to develop a strategy to manage their transformation process.

As many manufacturers tend to fail to scale their service business, this study will be a valuable contribution for practitioners as well (Neely, 2008). This study contributes to the

knowledge of practitioners by supporting them to understand and manage the transformation process from manufacturer towards service provider (Bustina et al., 2017; Kowalkowski et al., 2017; Lütjen et al., 2017; Martinez et al., 2017). The study has a descriptive focus and provides insight into practices that support an organization that is in the middle of the transformation process. Besides, the study will investigate how an organization can determine its progression during servitization. Moreover, a maturity model (MM) is developed that can be used to assess the current position of an organization within servitization. In this way, manufacturing firms gather a deeper understanding of the coordination of the transformation process towards providing services. This knowledge enables them to decide which actions to prioritize. Furthermore, this study clarifies how different businesses and markets of Philips have designed and executed their transformation process. These insights can be used to adjust the current strategy of Philips on how they develop their servitization strategy and how they approach different markets and businesses.

1.4 Research outline

The remainder of this thesis is divided into five sections. First, chapter two provides a literature overview of servitization, the service paradox and identified challenges of servitization. Besides, the chapter describes and compares the change models: the Maturity Model, eight steps of Kotter (1993) and the 3D model of Achterbergh and Vriens (2019). Moreover, the current situation of Professional Services in Philips is outlined, as this is the sample for this qualitative case study. Subsequently, chapter three addresses the methodology of this research and justifies the research method. Chapter four consists of the analyses of the data and the main findings. Chapter five presents the conclusion and discussion. Additionally, a summary of the research and the discussion will be described in chapter five. Finally, practical recommendations and directions for future research that could expand the knowledge about servitization will be provided.

2. Theoretical Framework

In this chapter the theory behind the different key concepts will be defined. An introduction to servitization is provided in which the drivers and different levels of servitization, and the perspectives of multiple actors on the transition towards providing solutions will be discussed (§2.1). In the second paragraph, general aspects of change models are discussed. Next, the theory behind a maturity model will be elaborated (§2.3). In addition, the change model of Kotter (1996) and the 3D model of Achterbergh and Vriens (2019) will be discussed (§2.4 and §2.5). Lastly, a description of the case will be presented.

2.1 Servitization

Recently a new trend in the manufacturing industry has emerged, firms are shifting their focus from selling products to providing more advanced and integrated packages of products and services. Vandermerwe and Rada (1988) are the first to define this phenomenon as ‘servitization’, referring to the increased offering of “[33...] *market packages or “bundles” of customer-focused combinations of goods, services, support, self-service and knowledge*” (p. 314). Nowadays different conceptualizations of servitization are used in literature. Brax (2005) and Kowalkowski et al. (2012) define the phenomenon as “service infusion”, whereas Oliva and Kallenberg (2003) describe the process as a “service transition”. Baines et al. (2009a) and Neely (2008) refer to “providing integrated products and services that provide value in use”, while Tukker (2004) mentions the provision of “Product Service Systems (PSS)”. This study follows the conceptualization of Kowalkowski et al. (2017) who define servitization as “*the transformational process whereby an organization shifts from a product-centric to a service-centric business model and logic*” (p. 8).

Manufacturers start the transformation process by adding services to their portfolio to eventually provide integrated solutions of products and services. Organizations can establish a competitive advantage in today’s highly competitive and volatile market by offering value adding integrated packages of products and services (Gebauer, Fleisch, & Friedli, 2005; Oliva & Kallenberg, 2003). However, for manufacturers to provide services a transformation process is needed, as a service business logic differs from a product logic. This transformation process is often complex and comprehensive as it requires organizational changes in, among other things, structure, processes, capabilities, and position in the value network (Lütjen et al., 2017; Martinez et al., 2017; Storbacka, 2011). The question remains how organizations need to manage this transformation process to provide the integrated packages.

Product-Service Systems (PSS) is the collective name for numerous different combinations of packages of products and services defined in literature (Baines et al., 2009b; Goedkoop et al., 1999). PSS is closely related to servitization, as a result the concepts are often used as if they are synonyms. Therefore, it is important to elucidate the differences and the relation between the concepts. Goedkoop et al. (1999) define a Product Service System (PSS) as an integrated set of products and services which jointly fulfil a customer’s needs and deliver value in use. Servitization is defined as the innovation of an organization’s capabilities to create mutual value by shifting focus from selling products to selling PSS (Baines et al., 2009a). Thus, servitization refers to the transformation from a product-centric to service-centric business logic (Kowalkowski et al., 2017) and PSS is a result of this transformation process.

Tukker (2004) identified three different types of PSS business models (Figure 1). The first type, the product-oriented PSS, focuses on selling products by transferring ownership to customers. The manufacturer provides product-related services to ensure functioning of the product, such as maintenance contracts and repairing activities (Gebauer et al., 2005; Neely, 2008). The second type is the use-oriented PSS in which the manufacturer remains the owner of the product. The functions of the product are sold, and consumers pay to use the product. Lastly, when using result-oriented PSS a manufacturer and its customer agree on a specified result, not on the product that is used to deliver the result.

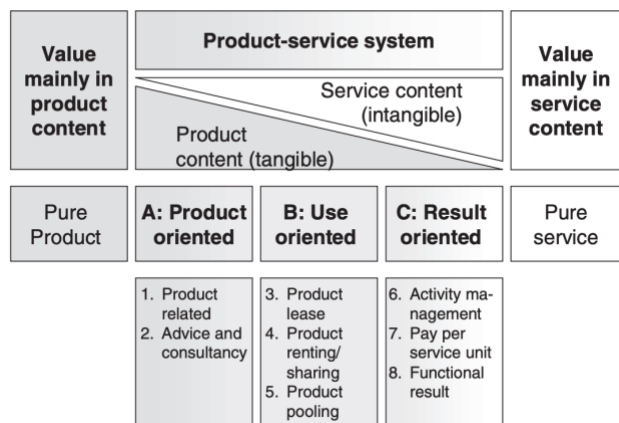


Figure 1: Main and subcategories of PSS (Tukker, 2004)

Neely (2008) argues that an extension to the classification of Tukker (2004) is needed to fully capture all forms of servitization utilized by firms in practice. He expands the classification with the integration and service-oriented PSS. According to Neely (2008) this is the first level of servitization, in which firms decide to go downstream by adding services to their portfolio

via vertical integration. The service-oriented PSS is the third level and refers to organizations that integrate services into their products (Neely, 2008).

To conclude, different conceptualizations of the general trend that shows a shift for manufacturing organizations from producing goods to delivering integrated packages of products and services, can be found in literature. Besides, literature describes various combinations of products and services which organizations can offer. The different possibilities of providing solutions can complicate determining which PSS organizations should start focusing on and how they can ultimately reach a higher level of PSS. The next section investigates the reasons for organizations to engage in servitization.

2.1.1 Drivers of servitization

The need for manufacturing companies to transform is driven by external and internal pressures (Pistoni & Songini, 2017). External pressures are among other things, increasing competition, globalization, and market deregulations (Baines et al., 2011). Internal pressures are discussed by business driven and environmentally driven knowledge streams (Vandermerwe & Rada, 1988). The environmentally driven stream focuses on improving environmental performance via servitization (Neely, 2008). This study follows the business-driven stream that categorizes drivers into financial, strategic, and marketing drivers (Baines et al., 2009a; Gebauer, Krempf & Fleisch, 2008; Mathieu, 2001; Neely, 2008). The main financial drivers often mentioned in literature are higher profit margins and a more stable income (Gebauer & Friedli, 2005). Offering services can lead to a more stable income since product-services sales tend to be counter-cyclical and are therefore able to balance the effect of unfavourable economic cycles (Brax, 2005; Gebauer & Fleisch, 2007; Oliva and Kallenberg, 2003).

The strategic driver of servitization is the will to differentiate the organization's offerings (Gebauer & Fleisch, 2007; Mathieu, 2001; Pistoni & Songini, 2017). Competitive advantages achieved via integrated offerings are more sustainable as services are more labour-intensive and less visible (Barney, 1991; Gebauer et al., 2005; Oliva & Kallenberg, 2003). Besides, servitization implies co-creation of value with customers, creating intangible resources that are unique and hard to imitate (Barney, 1991; Fang et al., 2008).

The ability of services to influence purchase decisions of customers and induce repeat-sales is the marketing driver for servitization (Visnjic, Wiengarten, & Neely, 2016). Servitization amplifies contact with customers, enabling firms to gain insight into their specific needs and develop desired offerings (Mathieu 2001). Moreover, services create customer loyalty (Vandermerwe and Rada, 1988).

In sum, different drivers for organizations can be defined to implement a servitization strategy. As a result, many firms attempted to implement a transformation process to provide solutions. However, not all organizations are able to achieve the expected benefits of servitization. The following section will present a possible reason why organizations fail to successfully implement the transformation process.

2.1.2 Servitization paradox

Organizations commit to a servitization strategy as they wish, among other things, to increase revenue and profits (Gebauer & Friedli, 2005). While some organizations can successfully exploit financial opportunities, most struggle to generate profits from their service businesses (Brax, 2005; Gebauer et al., 2005; Visnjic & Van Looy, 2013). Investments in service design and delivery increase costs, but the expected corresponding higher yields do not follow immediately. Gebauer et al. (2005) define this phenomenon as the “service paradox”.

Contrary, Visnjic and Van Looy (2013) describe a positive nonlinear cubic relationship between the scale of services and profitability. They notice that low levels of servitization provide an increase in profitability. However, servitization at a medium-scale level results in a temporary decrease in profitability, indicating that the investment costs to extend the service business are hard to control at this stage. The positive relation between servitization and firm performance will only re-emerge after a critical mass of providing services is achieved and investments are internalized (Fang, Palmatier, & Steenkamp, 2008). Alghisi and Saccani (2015) estimate that the critical mass in service sales needs to be 20 to 30 percent of total revenues.

Concluding, a profitability hurdle exists during servitization. Therefore, a positive effect of servitization on firm performance can only emerge if a critical mass of services of 20-30 percent of total revenue, is achieved (Alghisi & Saccani, 2015). However, most manufacturers face challenges when trying to transform their organisations, as a result they fail to generate this critical mass of services within their portfolio.

2.1.3 Challenges of servitization

When organizations implement a servitization strategy they are confronted with considerable challenges, as providing services requires significant changes in the organization’s strategy, business model, resource base, and capabilities (Baines et al., 2009a; Brax, 2005; Fang et al., 2008; Gebauer & Friedli, 2005). It is important to explore in more detail the challenges organizations face, to be able provide recommendations on how to prevent entering the

servitization paradox. Based on an elaborated literature review a framework is created that points out the most common challenges including short descriptions and possible solutions (Appendix 1).

The servitization challenges are divided into six categories. The first category refers to challenges related to developing and integrating the servitization strategy. The value proposition changes from being a unidirectional value delivery to value co-creation. The second category, internal organization, is about creating the right organizational infrastructure to support providing services. Besides, it investigates the allocation of roles and the adoption of management processes to control activities (Alghisi & Saccani, 2015; Martinez et al., 2010). Thirdly, product-service culture refers to the challenge to change the mindset of customers and employees to let them acknowledge the value of services (Neely, 2008). The fourth category investigates customer management. An organization must have a customer orientation, maintain long term relationships, and co-create with customers to provide services that meet the customer's demand (Kowalkowski et al., 2012; Martinez et al., 2010; Oliva & Kallenberg, 2003). The fifth category of challenges is the set-up of a service design and delivery process for which service capabilities need to be developed and/or acquired (Kowalkowski, 2014; Lütjen, Tietze, & Schultz, 2017). The last category is knowledge management, as organizations struggle to create a tool that enables them to use data from their installed base and share knowledge between different departments.

In sum, literature describes various challenges that manufacturing organizations face when transforming to a service organization. When firms are not able to overcome these challenges they will fall victim to the service paradox, as a result the organizations cannot successfully implement servitization. How do firms need to organize their transformation process to prevent themselves from entering the service paradox? Organizations may be overwhelmed by the amount of transformation models with different points of focus. As a result, many firms have difficulty defining which steps they need to take and on which aspects to focus. The next section presents literature on the transition from a traditional manufacturer to a service provider.

2.1.4 Transition towards providing services

Little is known about how the transformation process of product- towards service-oriented organizations can be carried out in practice. Several authors interpret the transformation as incremental rather than radical change (Gebauer et al., 2005; Oliva & Kallenberg, 2003;

Tukker, 2004; Vandermerwe & Rada, 1988). According to their viewpoint the transformation of the organization evolves in stages and moves along a continuum.

Oliva and Kallenberg (2003) have developed the product-service continuum (Figure 2) that serves as a framework to identify different levels of servitization. They describe a linear and well-structured transformation process along the product-service continuum, in which companies continuously redefine their position. As organizations move along the continuum the relative importance of services increases, offerings shift from product-oriented services to user’s process-oriented services, and interactions with customers change from short-term transactional to long-term relational-based (Reinartz & Ulaga, 2008). The continuum includes different stages related to a service provision category. Each transition from one stage to another requires a shift in service strategy (Tukker, 2004). Oliva and Kallenberg (2003) state that firms need to make the associated services and business models their own before moving to a new stage.

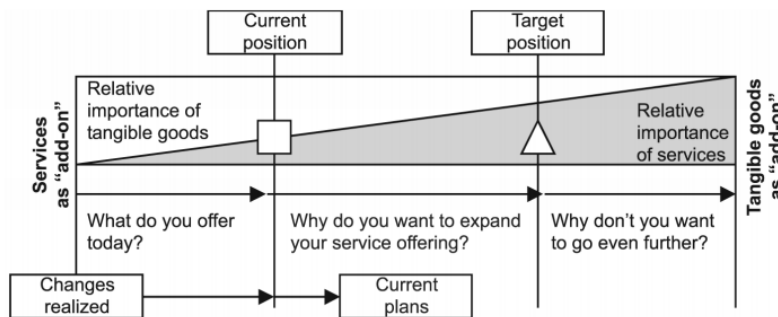


Figure 2: The Product-Service Continuum (Oliva & Kallenberg, 2003)

The product-service continuum is a well-established concept, nonetheless several empirical findings challenge this linear and structured view on the transformation process. Raddats and Kowalkowski (2014) and Kowalkowski et al. (2012) argue that an organization’s portfolio can consist of different types of service offerings resulting in multiple positions along the continuum. In addition, Kowalkowski et al. (2017) state that the transformation process towards providing services consists of experimental steps of trial and error in which firms add and remove services to their portfolio. Moreover, Turunen (2011) found evidence for a successful transformation process that is not set up according to the product service continuum. Instead, firms developed a customer-oriented business model by offering customer-related services before offering product-related services. Besides, he saw firms moving in the opposite

direction of the product service continuum. This process of moving backwards on the continuum is called deservitization (Kowalkowski et al., 2017).

Martinez et al. (2017) argue the change process of servitization follows a continuous approach. According to the authors continuous change is neither logical nor structured but is more emergent and intuitive. Contrary, Lütjen et al. (2017) provide an innovation management and resource-based perspective to servitization and identify three steps of service transitions, being: i) service initiation, ii) service anchoring, and iii) service extension. In addition, Baines et al. (2020) state the transformation process consists of four stages: i) Exploration, ii) Engagement, iii) Expansion, and iv) Exploitation. Besides, they argue that progression between these stages is unidirectional and progression within is intuitive, organic, and emergent.

In conclusion, different sorts of transformation processes with different starting and viewpoints can be found in literature. There is no general theory that can be followed when transforming a manufacturer into a service provider. Besides, it remains unclear how this transformation process can be implemented within the different levels of an organization. The following sections will investigate three different change models organizations can use when implementing a servitization strategy.

2.2 Maturity Model

There is a call for research to prescribe and describe servitization for manufacturing firms (Adrodegari & Sacconi, 2020; Baines et al., 2017). Maturity models (MMs) can be a suitable tool to fill this research gap, as they support organizations to assess their current position and identify the steps required to successfully transform.

2.2.1 Theory

MMs are based on theories that describe the evolution of organizations in a stage-by-stage manner along an anticipated, desired, or logical path (Röglinger, Pöppelbuß, & Becker, 2012). A MM consists of consecutive levels which together form a trajectory for organizations to grow from a low to a high maturity level (Becker, Knackstedt, & Pöppelbuß, 2009). Higher levels of maturity are inherent in increased capabilities of the organization in the tested domain. Per level of maturity, critical requirements are defined to determine the position of the organization (Alvarez, Martins & Silva, 2015). Based on the current and desired position, the organization can define priority areas that require more action.

A MM can be designed and used for different purposes (De Bruin, Rosemann, Freeze, & Kaulkarni, 2015). Firstly, a descriptive purpose is served when the model functions as a tool

to assess the current state of an organization. Secondly, a MM has a prescriptive purpose when the model is suitable to determine the next desirable maturity level. Thirdly, if a MM enables internal and external benchmarking, a comparative purpose is served. The general purpose of a MM is to delineate the conditions under which the examined object (for example the organizational structure) reaches the state of being mature (De Bruin et al., 2005).

MMs can be distinguished based on a staged and non-staged representation. The latter category includes Organizational Project Management Maturity Models (PMI, 2003). The former category refers to the Capability Maturity Models (CMM), which assume staged representation (Paulk, Curtis, Chrissis, & Weber, 1993). The CMM assesses the maturity of organizations based on a five-level scale, being: (1) initial stage, (2) repeatable, (3) defined, (4) managed and (5) optimized. Although this model is designed for process management, it is popular and has been applied successfully in varying management domains such as new product development (Fraser et al., 2002), R&D projects (Berg, Leinonen, Leivo, & Pihlajamaa, 2002) and supply chain management (Lockamy & McCormack, 2004). The CMM is used as a basis for this study because the model has a long history and a wide acceptance among academics and organizations (Alvarez et al., 2015).

Literature acknowledges the benefits a MM can provide to communicate the progress of the transformation process and the need for a change. Nevertheless, the applicability of a MM is subject to some criticism. First, a MM prescribes the transformation process in a stage-by-stage manner, stating that maturity levels are consecutive. Some authors argue that this way of looking at transformations provides a false image of reality, as it oversimplifies the necessary steps that need to be taken in practice (De Bruin & Rosemann, 2005; McCormack et al., 2009; Pöppelbuß & Röglinger, 2011). Second, researchers have criticized MMs for their lack of empirical foundation (Lasrado, Vatrappu, & Andersen, 2015).

In short, MMs describe an evolutionary improvement path from immature ad hoc to disciplined processes. A MM consists of five consecutive levels, being: (1) initial stage, (2) repeatable, (3) defined, (4) managed and (5) optimized (Paulk et al., 1993). Based on the current and desired position, the organization can define priority areas that require more action.

2.2.2 The five-level scale

The CMM forms the basis of this research when looking at and developing a MM. As stated before, CMM models adopt a staged-representation of maturity based a five-level scale:

Level 1 (initial state). The firm runs transformation projects, which are chaotic and ad hoc initiatives. There is no stable environment to support transformation projects. Besides, the

firm does not possess the right tools or resources to support the overall transformation process towards providing integrated solutions. The services that are provided depend on individual competences, instead of formal management practices.

Level 2 (repeatable). There is no common understanding of how services should be provided and financially booked, moreover the transformation processes are not carried out based on established guidelines. Some key elements are identified based on lessons learned from past experiences and are used in new projects.

Level 3 (defined). An approved schema is used to plan transformation projects. However, good practices and adequate tools and resources are still lacking. The key elements and competences for successful servitization are not fully exploited and understanding of contextual internal or external variables is still limited. Processes are thus not totally controlled, as a result the outcome is not predictable.

Level 4 (managed). Specific competences and the best practices are recognized and used to manage the transformation projects. Besides, projects are planned according to standardized guidelines. The transformation process is systematically managed and controlled by training resources to improve servitization skills and capabilities. The results of transformation projects are now predictable. However, they may be insufficient in achieving the established objectives due to continuously changing requirements for service performance from the market.

Level 5 (optimized). The firm continually improves their transformation processes via incremental and/or radical process innovation. The firm now has full understanding of the process and effects of different external and internal factors. Besides, the process, strategy and practices are continuously adjusted based on feedback generated from previously performed solution projects.

Concluding, by assessing the level of maturity, the model shows the as-is situation of the organization. However, to determine the domains that require more attention, an axis that shows the different dimensions on which maturity is tested must be added to the model.

2.2.3 The maturity dimensions

Currently, few MMs concerning servitization are found in literature (Adrodegari & Saccani, 2020). In addition, there is no consensus about a tool to measure the maturity of the servitization process of a manufacturing organization. The MMs found in literature all focus on different aspects of the organization or the transformation process (See Appendix 2 for an overview) Rapaccini et al. (2013) propose a MM to evaluate the new service development processes of

product-centric firms. Their MM is based on four dimensions: 1) Management of processes and projects; 2) Use of specific resources, skills, and tools; 3) Involvement of customers, suppliers, and other stakeholders; and 4) Adoption of performance management systems. The MM developed by Adrodegari & Saccani (2020) is bi-dimensional, as the model is based on nine business model components and five maturity dimensions. The dimensions proposed are mainly based on the MM of Rapaccini et al. (2013), being: 1) Organizational approach; 2) Process management; 3) Performance management; 4) Capabilities; and 5) Tools. In addition, Andersen, Madsen, and Goduscheit (2020) focus on the bi-dimensional reality and provide a holistic approach to the servitization transformation. The main dimensions of their model are: 1) Organizational governance; 2) Strategic management; 3) Value function activities; 4) Market reach; 5) Digital integration; and 6) Service integration. Moreover, Alvarez et al. (2015) propose a MM for manufacturing companies that already provide after-sales services but aim to deliver more services. They see servitization as an evolutionary process based on the relationships among stakeholders in the value chain. Their model consists of four levels of relationship maintenance: 1) Market, 2) Network, 3) Customer and 4) Internal. Lastly, Gudergan, Buschmeyer, Krechting and Feige (2015) focus on assessing change readiness and determining the success factors of the transformations from an organization towards a solution business. They developed a model that is called the Business Transformation Readiness Assessment which is grouped into four categories: 1) Strategy; 2) Design; 3) Delivery; and 4) Leadership & Communication.

The aim of this study is to understand how manufacturing organizations change their organization within the context of servitization. Rapaccini et al. (2013) and Adrodegari & Saccani (2020) are closest to this objective. However, Adrodegari & Saccani (2020) does not provide an extensive elaboration of the five concepts which they propose as maturity dimensions. The different sub concepts and requirements per concept are unclear, which makes it difficult for practitioners to apply this model. Therefore, the model of Rapaccini et al. (2013) is used as a basis to describe a MM for servitization. In the next section the MM for servitization will be elaborated on.

2.2.3 The servitization maturity model

As stated before, the model of Rapaccini et al. (2013) forms the basis of the MM for this study. However, Rapaccini et al. (2013) focus on new service development, therefore their MM must be adjusted to make it applicable to the overall transformation process of servitization. Besides, the model is enriched with insights from prescribed authors (See Appendix 3).

The first dimension of the servitization MM looks into the incorporation of stakeholders and consists of the elements: managers, employees, and customers. All stakeholders need to understand the need for change towards a service business, which is a goal at lower levels of maturity. For employees to be willing to change, they must understand the future state of the organization, feel valued in their job, and feel responsible for the transformation process (Rapaccini et al., 2013; Gudergan et al., 2015; Adrodegari & Saccani, 2020). In addition, managers must influence employees to gain support for the transformation process (Andersen et al., 2020). Besides, customers' willingness and readiness to change are important.

The second dimension investigates the strategy, with the elements vision and customer focus. The organization must be able to build and maintain a strategy to successfully implement the changes (Baines et al., 2017). To start, a clear vision regarding the future state of the organization in providing services is needed to guide the organization through the transformation process (Gudergan et al., 2015). In addition, servitization requires a change in the approach of the organization from product centric to customer centric (Kindstrom et al., 2014). Therefore, it is important for the organization to have a customer focus. This entails that customer experiences need to be enhanced and they must understand customer needs. Besides, the value propositions need to be built based on their customers' needs, by involving customers in the development of services via co-creation (Gebauer et al., 2005, Neely, 2009).

Resources is the third dimension of the MM, consisting of the elements: capabilities, tools and methods, and budget (Rapaccini et al., 2013). Capabilities to execute and manage the change process are needed. Besides, the organization needs to ensure it gathers capabilities and skills to provide services. Next to capabilities, a financial budget for servitization must be available. Lastly, tools and methods that support servitization by continuous improvement.

The fourth dimension is the organizational approach, which is divided into the relevance of services, roles, and project management (Rapaccini et al., 2013). The organizational approach looks at the ability of the organization to build, integrate and align with the transformational properties needed for servitization. The sub element roles refers to building a team that works smoothly together and supports the organization in becoming a service provider. Project management measures if the organization is able to realize and implement a temporary program designed to improve the overall performance (Adrodegari et al., 2020; Gudergan et al., 2015).

The last dimension, performance management, consists of feedback systems and KPI's (Rapaccini et al., 2013). Feedback systems are used to continuously observe and evaluate the transformation process. The weaknesses of the service development processes are investigated

and improved. Concluding, the servitization MM creates awareness regarding the aspects that must be controlled within the organization. The elements discussed must be aligned when organizations wish to successfully undertake a servitization journey.

2.3. Kotter's eight steps

Kotter (1996) developed a prescriptive multi-stage model consisting of eight consecutive steps firms need to follow when implementing changes. The model is based on research into 100 organizations undergoing change. It is one of the best-known frameworks for change management and is especially popular among practitioners due to the simplicity of the framework (Pollack & Pollack, 2015). Kotter's model has a social perspective and focuses on changing people's behavior to implement changes. His model is mainly applicable at a strategic level of an organization, as Kotter provides a leadership perspective with a top-down approach (Appelbaum, 2012). The model is focused on leading change rather than managing it. According to Kotter (1996) managers at a higher level of the organization are designated to lead the organization through a change process. Leaders must influence people to align their minds and create support for the purpose of the transformation process. Kotter's eight steps can be categorized into three different phases: i) creating a climate for change, ii) engaging and enabling the organization and iii) implementing and sustaining for change (See Figure 3).

According to the first phase, creating a climate for change, an organization should start to focus on motivating employees to change by creating a sense of urgency. Employees need to know why change is necessary before they are willing to change. Honest dialogues and discussions with employees about the issues and possible solutions can help them understand the need for change. Step two is building a powerful guiding coalition to support leaders in the transformation process. In big organizations the guiding coalition needs to grow to 20 to 50 people (Kotter, 1996). The guiding coalition must consist of key players with high positions that possess expertise of different aspects. The third step is to create a flexible, clear, focused, and communicable vision, which is key in the transformation process, as it enables the firm to break from and look behind the status quo (Kotter, 1996). Moreover, a change vision guides the transformation process and supports the firm in designing the right structure for the change.

The second phase of Kotter (1996) investigates engaging and enabling the change within the organization by communicating the vision to the employees to create support and acceptance. Following step five, barriers to change need to be removed to amplify action. According to Kotter (1996) an important tool to remove barriers are training, as this can support building a sense of responsibility and empowerment among employees. Besides, incentives

and performance systems can help to realign employees' interest with the firm's vision (Kotter, 1996). Next, step six is to create achievable short-term goals to build confidence and momentum towards the long-term goals. Notably, it is important for change leaders to find a balance between short-term gains and long-term goals.

The last phase described by Kotter (1996) focuses on implementing and sustaining the change within the organization. Step seven aims to use the confidence gathered by the short-term wins created in the previous phase, to tackle other problems concerning organizational change. However, it is important to not assume victory too soon as short-term wins are only the beginning of long-term change. Kotter (1996) proposes an organization must continuously improve what has been done to ensure the change process will bear fruit. The last step of the process is to make the change last, by institutionalizing new modes of behavior into the corporate culture. To achieve this, leaders need to communicate how employees' efforts helped manage the transformation. Besides, top management needs to realign their decision methods to the new organization.



Figure 3: Kotter's eight step model (1996).

2.4 The 3D model of Achterbergh and Vriens (2019)

The model developed by Achterbergh and Vriens (2019) supports organizations in understanding and creating a specific type of organizational development: episodic interventions in organizational structures. Healthy organizations can perform normal structural development, as employees continuously monitor the structure of their job. Hence, employees can notice work-related problems, analyse whether their job structure is the cause of the problem, and subsequently change the structure. However, some organizations are no longer able to perform normal structural development due to the state their organizational structure is in. More specifically, the organizational structure disables its own improvement, therefore

episodic interventions are needed. The strategic goal of offering services requires transformation of the organization’s structure (the intervention object) as new activities need to be integrated in the existing processes and structure of the organization. This transformation process of a manufacturing triggers an episodic intervention in the organization’s structure.

The authors define episodic interventions as “[...] *intentional, deliberate, comprehensive changes to the organization’s structure that have their own separate temporary intervention organization*” (p. 6). The intention of episodic interventions is to change the organization’s structure by means of deliberation, referring to designing alternative strategies and deliberating about the choice between the different options. Episodic interventions are comprehensive as they are focused on changing a big part of the organization.

Notably, the authors do not oppose episodic to continuous change, rather episodic to continuous interventions and they look at both types of interventions as modes of organizational change. Besides, the authors have a social systems perspective as they see organizations as a continuous flow of interactions in which change is continuous and endless. Moreover, Achterbergh and Vriens (2019) propose that episodic interventions cannot be planned. Rather, interventions should be looked at as experiments that require flexibility in design and involve employees of different levels in the organization. To realize the goal of an episodic intervention, the object of the intervention must be transformed. In case of servitization, the intervention object is the organizational structure. According to Achterbergh and Vriens (2019) at least three dimensions should be considered to successfully transform the object of the intervention: the functional, social, and infrastructural dimension (Figure 4).

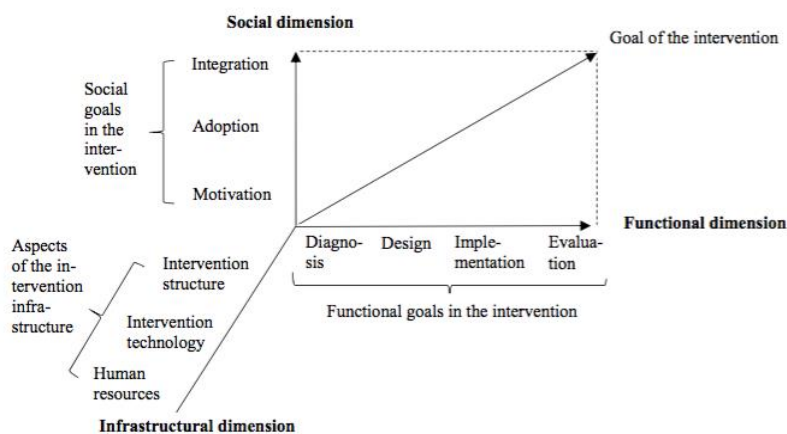


Figure 4: The 3D-model for (episodic) interventions in organizations (Achterbergh & Vriens, 2019)

2.4.1 Functional dimension

The first dimension is the functional dimension, representing the goals that should be reached to transform the structure in a way that it supports the realization of the goal of the intervention. The dimension consists of four goals, being: i) diagnosis, ii) design, iii) implementation and iv) evaluation (Achterbergh & Vriens, 2019).

The diagnosis goal includes determining the current problems, their causes and formulating the variables that need to be changed. A gap analysis is used to define problematic behavior within the organization. To start, the organization must determine the goals and the variables that describe its performance. After, the norm and actual value are specified, if these values differ a gap exists. When the problematic variables are defined, the structural causes of these variables need to be found in a step-by-step manner. First, structural parameters that might cause the problematic variables are determined. Second, actual, and current values of these parameters are specified. Lastly, the parameters that should be adjusted by transforming the structure of the organization are selected.

The design goal is to develop an organizational structure in which the selected parameters no longer cause organizational problems, and the goal of the intervention can be realized. An organizational structure consists of human resource measures, division of labour and required technology. De Sitter's (1994) design theory is used to design a structure with low parameter values.

The goal of the implementation activity is to ensure that the current structure is transformed into the desired structure. First, the difference between the two structures is determined. Second, executable implementation portions, which are parts of the structural change, and their sequence are defined. Third, the portions are implemented in the suggested sequence. The last phase consists of evaluation practices to assess if the implemented structure succeeded in reaching the intervention goal. However, to implement changes in the organization, social practices are necessary as these create acceptance among employees.

2.4.2 Social dimension

The social dimension is the second dimension that Achterbergh and Vriens (2019) describe. An intervention object has a social character as organizational structures are produced by interactions of organizational members based on interaction premises. To successfully implement the new structure of an organization, organization members must integrate new interactions and interaction premises into their routines. Achterbergh and Vriens (2019) based their social dimension on the three steps change model of Lewin (1947). According to the social

dimension, servitization practices should focus on motivation, adoption, and integration to change employees.

The first social goal in the intervention is to create motivation among employees to let go of their old way of working. Starting change in an organization can be problematic as employees can hold on to their old behaviour that is deeply rooted in their routines. Therefore, barriers to change need to be removed and employees need to gather confidence in the new structure. Besides, employees need to acknowledge that an episodic intervention is required to transform the organization. Both goals can be reached via the sub elements of motivation: design a shared vision and create a sense of urgency among employees, as defined by Kotter (1996). Notably, the design of the intervention organization can create affinities between the motivation goal and the diagnosis and design goal of the functional dimension. When employees are involved in diagnosis of their own jobs, they get the opportunity to investigate why current ways of working are not successful. In this way, creating a sense of urgency can be strengthened. Moreover, providing employees a chance to play a design role in the intervention organization by letting them develop a vision for their future jobs, their motivation to change may be amplified.

The second goal defined by Achterbergh and Vriens (2019) is adoption. Employees must adopt new interaction premises and interactions that produce the proposed structure which allows for realization of the intervention goal. It is important that employees get the opportunity to invent solutions and assess their usefulness themselves instead of being forced to act upon suggestions of managers. The adoption phase can thus be seen as a process of experimentation in practice. The sub-goal inventing refers to the search for new ways of working by translating helping concepts and models to make them fit to the organizational structure. More specifically, it is a learning process in which employees search for and adopt new interaction(premises) and let go of the old ones to improve the organization's quality of work. As a result, employees are willing to commit to the new way of working based on a justifiable confidence in its efficacy.

Lastly, the integration goal of Achterbergh and Vriens (2019) aims to ensure that the alternative modes of behaviour are implemented in daily operations of employees. Change needs to be irreversible, meaning that members do not gravitate back to their old behaviour. Notably, this goal is more than just inserting new interaction premises into employees' routines. The implementation is a synthesis, meaning that employees have actively adjusted their tasks and experienced how to perform and interact in the new structure. Besides, the integration goal includes providing employees feedback and rewards which will amplify the acceptance of change and provide opportunities to see and adjust to shortcomings.

2.4.3 Infrastructural dimension

The functional as well as the social dimensions are goal dimensions, specifying different goals that should be accomplished to realize the overall intervention goal. The infrastructural dimension is the third dimension with a focus on the means to realize the functional and social goals. Due to its comprehensive and transforming character an episodic intervention cannot be performed by the organization itself. Instead, episodic interventions require an intervention organization, which is a temporary organization on top of the organization. An intervention organization can consist of employees, clients, or other parties with a stake at the organization. An example of an intervention organization is a project group that supports the design of the new structure. Like any organization, the intervention organization has its own infrastructure that consists of i) an intervention structure, ii) human resources and iii) intervention technology.

The intervention structure is the allocation and categorization of operational and regulatory intervention activities into intervention tasks. Examples of the operational activities are performing a diagnosis and testing new ways of working. Regulatory activities refer to selecting the functional or social goals next in line. The authors define human resources as the people, their knowledge, skills, and motivation, who perform the intervention tasks. The human resources are supported by the intervention technology when executing the intervention activities. Examples of intervention technology are discussion fora where previous experiences and best practices can be shared.

Notably, an intervention infrastructure has a dynamic character as its' design depends on the selected functional and social goals and the status of the intervention. As a result, the infrastructure can be redesigned whenever a social or functional goal changes. Because of the situational design, the authors describe how the configuration of the intervention organization should be organized, but do not go into detail about the results of the configuring process.

2.4.4 Conclusion of the 3D model

The 3D model of Achterbergh and Vriens (2019) provides an overview of different dimensions necessary to transform an organizational structure. According to the authors a combination of the functional, social, and infrastructural dimension is necessary to successfully perform an episodic intervention. The functional dimension looks into the design and implementation of an organizational structure in a way that it supports the realization of the goal of the intervention. The social dimension aims to support employees in applying the new interaction premises into their daily work routines and behaviour. Lastly, the infrastructural dimension is concentrated on means to realize the functional and social goals, by providing an infrastructure

of the intervention organization. However, the 3D model does not elaborate on how organizations can manage the implementation process. Besides, the model does not prescribe how to manage and implement changes on different levels within an organization. The question remains how big organizations like Philips, that possess different business units and managerial levels, can successfully organize the transformation process towards providing services.

2.5 Case description

Philips is a global firm operating in the healthcare industry for over 125 years. The organization focuses on healthcare technology and is operating in the business-to-consumer and business-to-business market. Philips has consumers in over hundred countries, employs around 77.000 people and generates annual sales of €18.1 billion euros (Philips, 2019). In 2014 Philips announced the split-off of the business unit Lighting to create a new business called Signify. Philips continued operating with a newly formed Healthtech business that consists of two divisions: Healthcare and the Consumer Lifestyle. As Signify was a new business, they had the chance to redesign their business with a focus on providing services. Philips also wishes to create a focus on services, however their servitization process is significantly harder, as they are stuck in routines, cultures, norms, and values of a 125-year-old company (Philips, 2015). Currently, Philips already provides some services, but they perceive difficulties in defining a strategy and determining their process. Therefore, the organization must reorganize to become a successful service provider.

To conduct this study the researcher did an internship at the Centre of Excellence (CoE) of Professional Services (PS) at Philips in Eindhoven, the Netherlands. The CoE is a team with the task to establish the implementation of servitization for PS globally. The team consists of eight employees with different backgrounds from different disciplines and functions within Philips. The goal of the CoE is to optimize and harmonize PS throughout Philips, thereby improving the end-to-end quality and efficiency of services and supporting the improvement of solutions development, sales, and delivery. PS are a subset of services characterized by application of specialist knowledge, in-depth complex issues, and co-created desired outcomes. To guide the transformation process, the CoE wants to gain more knowledge regarding the as-is situation of the markets that currently join the transformation process. More specifically, they want to know how to determine progress in the transformation process, which practices are best and what aspects to focus on.

Concluding, Philips is currently at the start of the transformation process towards providing solutions. The CoE of PS is assigned to manage and optimize the transformation

process of PS throughout Philips. During the transformation fundamental change processes will take place in several levels within the organization, at different moments in time, which all need to be coordinated and balanced. Therefore, Philips provides an interesting research setting to investigate to what extent the change models provided by a Maturity Model, Kotter (1996) and Achterbergh and Vriens (2019) support a large-scale organization during servitization.

3. Methodology

This chapter delineates the methodological approach of this research. First the research approach and the reasoning for the research method are described (§3.1). Next, the procedures of the data collection (§3.2) and the study sample (§3.3) are explained. Finally, the chapter finishes by addressing the ethical considerations and research quality (§3.4).

3.1 Research Approach

The aim of this study is to provide insights into the progression of the transformation process of organization from product-centric to service-centric business logics. A qualitative research approach is used to formulate an answer to the research question: *To what extent can the MM, Kotter's (1996) eight steps and the 3D model support the servitization process in a large-scale organization.* More specifically, an embedded single case-study is conducted, as several departments within Philips are being analysed (Yin, 2014). Eleven semi-structured interviews are conducted with employees from different business units and markets within Philips to gather a thorough understanding of the transformation process and the challenges respondents have faced in the past, are currently facing and expect to face in the near future. A qualitative approach enables the researcher to gather in-depth insights about a phenomenon and to include the feelings of interviewees in the dataset (Bleijenbergh, 2015). Since Philips has no overview nor an enriched understanding of their progress and transformation path within servitization, a qualitative approach is justifiable in this setting.

Quantitative research methods would not provide the researcher with suitable in-depth information. Surveys could be used as an alternative quantitative research method in this study, however there is no possibility to interact with the interviewee to explain the complex concepts or to ask for clarification when a misunderstanding emerges. Besides, some questions need to be adjusted or skipped in the interview, as the respondents' background and position within Philips differ. It is hard to capture these adjustments in a survey, while still asking the right questions. Concluding, the choice to conduct this research through semi-structured interviews is justifiable.

3.2 Data Collection

The two sources of empirical data used in this study are in-depth interviews with employees and relevant documents published internally and in public by Philips. The two methods are popular methods for data collection when performing qualitative research (Bleijenbergh,

2013). Another commonly used method for data collection within case studies is the participant observation (Yin, 2014). During the internship at Philips weekly meetings of the CoE of PS team in Amsterdam are attended. However, due to the confidential information that was being shared during these meetings, observations could not be used as a research method for this study. Nevertheless, the weekly meetings are very useful for the research process as they helped to get a complete view on the problem that Philips is facing. Besides, the meetings provided background information about the organization, the structure, the culture, and their way of working.

First, the two methods of data collection are assessed (§3.2.1 & §3.2.2.). Next, this chapter investigates the study population and sample by describing on what criteria the interviewees were selected and (§3.2.3).

3.2.1 Interviews

One method to collect data for this research is to conduct semi-structured interviews. The structure of a semi-structured interview approach ensures that the main topics of the study are covered, while at the same time it provides the flexibility that is needed when exploring complex concepts in detail. Besides, it gives the opportunity to ask follow-up questions to get additional information from the interviewee if needed (Symon & Cassell, 2012). In addition, semi-structured interviews enable the researcher to get in-depth knowledge about the interviewee's experiences with the transformation process. An interview guideline is developed to ensure the main topics are covered (Appendix 5). This interview guideline is used in every interview to increase the validity of the data collection (Bleijenbergh, 2015). A short summary of the research objective and the main topics are provided in the email that was sent to the interviewees.

Due to the distance most interviews are conducted via skype and two interviews are conducted face-to-face at the office of Philips where the interviewee is located. Ten interviews are held in the months June and July 2019 and one interview is conducted in August. The interviews are planned to take 45 minutes and are held in Dutch or English, depending on the native language of the interviewee. A pilot interview with one colleague from the CoE team of PS is performed before the other interviews were conducted. In this way, the researcher can process the feedback to ensure the questions are clear and provide the necessary information.

At the start of each interview permission is asked to record the interview to transcribe and analyse it. Besides, a short introduction about the researcher, the topic of the study and explanation of the main concepts are given. In this way, it is ensured that the interviewee and

the interviewer have the same understanding about the concepts. First, some general questions about the interviewee's knowledge about the transformation process and the strategy of their department are asked to get a clear view on their position within the process. To identify the growth trajectory of the department, questions about their points of focus during the transformation process are asked. Besides, to get a view on the position of the department within the transformation interviewees are asked to elaborate on challenges they have faced in the past, are facing and expect to face in the near future. To identify the position within the 3D model typical questions regarding the stages of each dimension of the model are formulated. Besides, several topics Philips wishes to explore are discussed as well, being risk management, standardization practices, deviation between global and local practices, and knowledge management.

3.2.2 Documentation

The documentation used in this study is derived from a database of Philips (See Appendix 6 for an overview). A distinction is made between publicly available sources of information and internal information gathered via intranet. Presentations, webinars, and workshops are the main sources of information. Besides, public sources like blogs, articles, and information about different departments posted on the Philips website are used. Both sources of information are applied to get a better view on what servitization means for Philips and their way of working. Besides, it provides a view on the definition of the main concepts of the study by Philips and how these differ from the in-depth literature study.

3.2.3 Study population and sample

Eleven interviews are conducted with interviewees who work at different markets and business units within Philips (See Appendix 4 for an overview). This study provides different perspectives on the transformation process towards servitization within Philips due to the variety of departments, as viewpoints from portfolio managers operating at a market level up to senior directors operating at a global level are considered. The interviewees are selected in consultation with the supervisor at Philips and the Business Manager. The distinguishing features of interviewees ensure a variety of perspectives are included to increase credibility of the research (Symon & Cassell, 2012). The first criterion is the area of Philips the employees are working in. Philips is divided into business units and markets. Markets tend to react to customer demands faster than businesses. In this way, employees working for markets may have a different point of view about servitization. The second criterion is the maturity of the

department within servitization. Some departments are dealing with the transformation process for a few years and may have managed to reach a high maturity level. While other departments are ‘first dancers’ and are still in their infancy. It is important to consider the different levels of maturity as this shows what aspects are focused on in different moments of the transformation process. Some interviewees are currently working in a department that is relatively new in the servitization process but have previously worked in a more mature department. These interviewees are especially valuable for this study, as they can provide both viewpoints and explain the differences. The third criterion is the country the interviewee is based in, as cultural differences between countries can influence the transformation process. Within the research period the CoE had not yet created strong bonds with businesses and/or markets in South America or Africa. Therefore, these continents could not be included in this study since the researcher was dependent on the network of the supervisor. Moreover, the interviewees have various educational backgrounds and varying professional experiences.

3.4 Data Analysis

In this research the data from the in-depth interviews and documents are analysed. The results from the in-depth interviews are analysed by using a coding process. The eleven interviews are recorded to transcribe them into a text format. After, the data is examined thoroughly, and the codes are assigned to different fragments of texts (Bleijenbergh, 2015). Both an inductive and deductive coding process are used in this research. Inductive or open coding involves using terms found in the data as codes, while deductive coding refers to coding based on the main topics elaborated on in the theoretical framework (Bleijenbergh, 2015).

Before the coding process starts a firm literature analysis (Chapter 2) is done which forms the basis of the a priori themes. The first stage of the coding process is inductive, assigning open codes to the text fragments, developing first-order code. In the second stage the first order quotes are grouped into second-order codes based on literature and the developed code book. Seven main codes can be derived from literature: functional dimension, social dimension, infrastructural dimension, challenges, maturity, Kotter’s model, and growth trajectory. Next to the codes derived from literature the code ‘Others’ is added to include the inductive first-order codes that could not be allocated to other second-order codes. After, all quotes are exported into an Excel format and the first and second-order codes are added to the quotes. In the third stage all quotes are analysed again to see if the previous codes are still justifiable. Besides, per quote a score of relevance on a scale from 1-3 (1 is most relevant) is added. Fourth, the quotes are examined again to add a negative or positive feeling and a

maturity level that suits the quote with a scale from (0-5). This way of analysing forces the researcher to go through the data multiple times in order to improve data validity. Besides, it reduces biases that could exist since only one researcher is analysing the data.

3.5 Quality of research design and research ethics

This section elaborates on the quality of the study by assessing the reliability and validity (§3.5.1). These terms have been associated with quantitative research for ages and gain importance in qualitative research as quality indicators (Anderson, 2010). When the data is being tested on the two concepts the objectivity and as well as credibility of the study are assessed. Validity refers to the fairness of the data and to what extent findings are an accurate representation of the tested subjects. Reliability examines the consistency and reproducibility of the study (Anderson, 2010; Yin, 2014). Besides, §3.5.2 discusses the ethical principles considered.

3.5.1 Reliability and validity

The indicator reliability is used to assess how consistent and repeatable research is (Anderson, 2010; Yin, 2014). If a research is reliable the same results should be found when the study is reproduced under a similar methodology (Joppe as cited in Golfashani, 2003, p. 598). There should be no distortions in the findings. However, when conducting qualitative research, especially a case study, distortions are more likely to occur due to the smaller number of observations (Bleijenbergh, 2015). Several steps are taken to ensure reliability of this research. A clear plan for the case study is made in which interviews, questions and data collection are arranged. Besides, an interview guide that is replicated for all interviews contributes to gathering reliable data in this study (Appendix 5).

The indicator validity consists of two concepts: internal and external validity. The first concept refers to whether the conducted study investigated what ought to be investigated (Bleijenbergh, 2015). To ensure that this study is internally valid several actions have been taken. First, a combination is used in the data collection as both interviews and documentation are used as a source. Second, multiple perspectives are included by interviewing employees from different departments. In this way, patterns of convergence can be sought for in the data to develop a complete interpretation of the data (Mays & Pope, 2000). Third, respondent validation is used to improve the internal validity of the study. The transcripts are shared with interviewees to check the researcher's interpretation. Fourth, Anderson's (2010) technique of constant comparison is used. With this technique every interview is compared with previous

ones so data is treated as a whole, in this way emerging themes in the interviews can be identified. Fifth, a chain of evidence is created by using the theoretical framework as a basis for the interview questions and the coding scheme (Yin, 2014). Moreover, quotes of the interviewees are used in the analysis of the data.

The concept external validity assesses to what extent the findings of a study are generalizable to other settings. A case study is typically hard to generalize since there is only one observation unit, which can cause a bias in the data collection (Eisenhardt, 1989). In this study the interviews are conducted in one firm, which could lower the external validity. However, analytical generalization may still be possible as the theoretical concepts established in this study may be consistent in a different setting (Yin, 2014).

3.5.2 Research ethics

This research was conducted with great care in the most ethical way, as several actions are taken. Firstly, the interviewees are informed about the main objective and topic of the study before they agreed to make an appointment for the interview. Second, privacy of the interviewees is ensured by anonymizing all data, because their position at the case company should not be threatened due to their quotations in the study. Before starting the interview, permission is asked to record the interview with the purpose to transcribe the interview. In addition, a copy of the transcript was sent to the interviewees to verify the content and interpretations of their statements. Furthermore, participation in this research was voluntary and interviewees could withdraw at any moment in time. Every interviewee was asked if they would like to receive the result of the study. On top of that, all interviewees were granted access to the closing presentation at the end of the internship period. During this presentation the results of the study were shared, and recommendations were given about points of attention to get to a higher level in the transformation process.

4. Research Analysis & Results

In previous sections the theoretical framework is delineated, the methodological approach is outlined, and consequently the collected data is analysed. The data is derived from in-depth interviews with members at different levels within Philips to provide diverse perspectives on the transformation process. Before drawing conclusions, this section presents and interprets the results of the interviews.

First, the interviews are analysed using the perspective of the maturity model (§6.1). Second, the analysis is focused on the eight steps of Kotter (1996) and the progression of Philips within these steps (§6.2). Third, the 3D model of Achterbergh and Vriens (2019) is analysed (§6.3). Fourth, the analyses of the three models are compared and conclusions regarding the progression of Philips within the models are drawn (§6.4). All quotes are shown in the native language of the respondent, the quotations are translated to English.

4.1 Status of Philips within the transformation process

Philips is currently at an early stage of the transformation process towards providing solutions. The Centre of Excellence (CoE) functions as the intervention organization that aims to implement Professional Services (PS) within Philips. The CoE attempts to make a diagnosis of the current problems and their causes. In addition, the team struggles to design an organizational structure in which the defined problems are solved. Nevertheless, the implementation of change is completed at a strategic level within Philips. It is now the managers' task to communicate and implement the transformation process to lower levels within the organization. In addition, Philips tries to create readiness and motivation to change among employees by building confidence and removing barriers. A maturity model can be a supportive tool to create motivation, as it visualizes the progression of the organization within the transformation process. In this way, employees get a clear view on the current position of Philips and can determine necessary future steps accordingly. The next section will elaborate on the extent to which the MM is recognized in the transformation process of Philips.

4.2 Maturity Model

First, the general aspects of theories regarding maturity models are analysed. Besides, the opinions of respondents about the general maturity level of their department are investigated. Second, to get a clear overview of Philips' current maturity level within servitization, the different dimensions of the servitization maturity model are looked at in detail.

4.2.1. General aspects Maturity Model

Maturity models describe an evolutionary improvement path from immature ad hoc to disciplined processes. The assessment to evaluate the progress towards providing services is based on the Capability Maturity Model Integration (CMMI). The staged representation of CMMI distinguishes five levels of maturity ranging from 1 (initializing) to 5 (optimizing). Maturity levels need to be followed in a consecutive order and cannot be skipped. However, to assess the current maturity level different dimensions on which the organization will be tested need to be added to the model. This study uses a combination of the dimensions found in maturity models provided by Rapaccini (2013), Gudergan (2020) and Andersen (2015). First, the opinions of respondents regarding the maturity of the general transformation process of Philips are analysed (Table 1). Second, the different dimensions and their sub-elements are investigated to assess the current maturity level of Philips.

Table 1: Quotes general aspects of Maturity Model

Code	Level	Quote	ID	No.
Maturity level	1	We started this transformation uh beginning of this year, so we are in the full transformation process haha, so it is not mature at all. We will probably be in a good shape in not last then another year from now.	1	1.1
Maturity level	3	Als je dan zegt van hoe goed doen we dat en dat is dus veel meer in absolute zin, wij zitten in providing solutions en hoe goed en professioneel zijn wij in het providen van solutions. Dan zeg ik op een schaal van een tot tien, dan zijn wij een drie tot een vier.	3	1.2
Maturity level	3	Ik denk dat we uhm halverwege zijn op zo een maturityschaal van we hebben een idee tot we zijn echt professionals zijn we halverwege.	4	1.3
Maturity level	2	I would say we are at the lower end maybe at one or two, maybe at two, because the team is so new.	5	1.4
Maturity level	4	Wij worden gezien als een team met een geavanceerd skill level dus ik denk dat positief is, in verhouding tot Philips.	6	1.5
Maturity level	2	We have a typically good idea of what we are doing, however we are still relatively small so in that scene we are not mature.	7	1.6
Maturity level	1	Dus dan als je kijkt inderdaad, kijk maar wat jij zegt, zeker vanuit product channel om een service te verkopen daarin zijn we niet mature.	8	1.7
Maturity level	2	Ik dat wij misschien in een level 2 zijn als wij echt de CCMI meting nemen, maar dat is alleen uhm omdat wij al bezig zijn om bepaalde proces componenten te implementeren.	9	1.8
Maturity level	4	I would say probably 4. We are very specific with our practices and policies. Not only do we have the skill set in place for to grow. Uhm, I think we just have a nice foundation overall, a good starting point compared to other markets. Now, I would not say the same or Professional Services, I would not say we are at a four just yet, because there is a lot of work to be done.	10	1.9

Code	Level	Quote	ID	No.
Maturity level	4	We are leveraging our knowledge to have a new service catalogue such as consultancy and education. So, we are transforming ourselves to not only doing the IT services but also giving the consultancy and education internally. And we also engage other departments knowledge. We play with the ecosystem, we play with partners, we offer the solution to the customer, we enrich the portfolio form IT services to warranty and to consultancy and education.	11	1.10

Because the term maturity is subject to various interpretations, the definition of maturity proposed by CMMI is provided to the respondents. After, they are asked to define the maturity level of their department and explain their choice. As stated before, the respondents are scattered around the world, all working in different departments, therefore the chosen maturity levels differ. The quotes show the maturity levels mentioned by respondents range from 1 to 4. The statements show a clear deviation between respondents who know what they are doing and respondents that recognize they are not mature and still have a lot to learn. One respondent pointed out he thinks his department will be more mature within a year even though they just started transforming. Statements like this illustrate that some employees within Philips underestimates the complexity of the transformation process to provide services, e.g.:

“We started this transformation at the beginning of this year, so we are in the full transformation process, so it is not mature at all. [...] We will probably be in a good shape in not last then another year from now.” (1.1)

Concluding, since Philips is a big organization working on a global level, differences in maturity levels are found. Therefore, it is hard to determine the overall position of the organization within the transformation process. Besides, several respondents indicate that there is a need for a plan to implement the necessary organizational changes, for which a MM can be a supporting tool.

4.2.2. Maturity levels

A comprehensive analysis of the quotes regarding the concepts of the maturity dimensions is made. The concepts that are referred to the most by respondents, or provide a new insight are discussed. The model discussed in §2.2.4 will be used to categorize the quotes (See Table 2).

Table 2: Quotes Maturity Model

Dimension	Element	ID	Quote	Open code	Level	No.
Stakeholders	Managers	5	I think that leadership is now starting to see that we have to be in there with service or we could potentially lose a big portion of our market base.	Leadership	2	2.1
Stakeholders	Managers	8	Leadership precies hetzelfde trouwens, ja die roepen wel maar die maken niet echt verandering.	Leadership actions	2	2.2
Stakeholders	Managers	8	Ik merk wel dat vanuit het hoogste leadership wel de push begint te komen, maar er zit natuurlijk nog een hele laag tussen die nog niet willen, of ja misschien hoeven zij ook niet mee	Leaders Commit		2.3
Stakeholders	Employees	6	Alleen ik denk dat Philips vanuit een historie komt waarin het uhm anders ging. Dus Philips moet die ontwikkel stappen nog allemaal door, om nou te zeggen we zijn er? Nee dat zou ik niet durven zeggen.	History of Philips	2	2.6
Stakeholders	Employees	4	Ik merk binnen Philips is dat een mindshift die sommige ook echt niet kunnen maken, omdat ze zo zitten in het product.	Product thinking		2.7
Stakeholders	Customer	8	We hebben nu ook wel eens de neiging om als ik heel eerlijk ben, weer iets te veel pushen en zeggen wij gaan naar solutions en wij gaan naar outcome based. En sommige klanten roepen ook dat ze naar outcome based gaan. Maar is echt zo? Of het is een bust die nu speelt.	Readiness customers		2.8
Stakeholders	Customer	11	How to get customers recognize your value and pay the money. This is the thing that we encounter the most, for example they have to understand the value of services and the need to be willing to pay for it.	Recognize value of services		2.9
Strategy	Vision	7	We do not have a scrutinised strategy to build on.	Strategy	1	2.10
Strategy	Customer Focus	5	Then the other piece was kind of our approach to services. Where do we want to focus first? You know is there a burning platform somewhere? Uhm so that we were not just kind of marching off creating something we thought was great, but that nobody really needed.	Define customer needs		2.11
Strategy	Customer Focus	3	Ook hier worden gewoon 'producten' bedacht, waar ik voor zei zijn hier ook klanten voor? Oh, shit daar hadden we nog niet over nagedacht. Nou oké, dan moet je niet verbaasd zijn dat je dingen bedenkt en daarna merk je dat je er nul omzet mee maakt.	Customer demand	1	2.12
Strategy	Customer Focus	7	A Philips cocreate way, that is we sit together with customers, and we create whatever kind of solution they need. That is what is currently being done a lot. It is also quite tricky to do because the customer in USA or in Europe might all have different ways explaining that. With the small team we have, cocreating on our portfolio with them is just not feasible.	Cocreation	2	2.13

Dimension	Element	ID	Quote	Open code	Level	No.
Resources	Capabilities	10	So, I feel like we have the capabilities there as long as the next set of people we hire in will support that skill set, I think we are in a great place to continue this evolution.	Capabilites available	4	2.14
Resources	Capabilities	11	The skill set competency of services is different, as it keeps changing.	Skill set		2.15
Resources	Capabilities	4	Ja bij een solution is dat, is het de uitvoer dus het produceren van een service ligt bij de markt en niet bij de productdivisie en daar zijn we nog niet uit en dat gaat voor iedereen ingewikkeld zijn.	Service delivery		2.16
Resources	Tools & Methods	1	The biggest challenge is the tool for sure, because we need a tool that is flexible and that can take data not only on Philips' equipment but also from competitor equipment. First, we need a tool that is also easy to manage so with a good interface.	Tool for data	2	2.17
Resources	Tools & Methods	9	We hebben een methodiek gegenereerd om uhm zeker te stellen dat ook solutions fatsoenlijk geïmplementeerd kunnen worden [...] dat is SOLID.	Tool for solutions	3	2.18
Resources	Tools & Methods	5	I do not think we have a platform right now that truly supports knowledge management certainly across global Philips that does not seem to exist.	Knowledge Management		2.19
Organizational approach	Relevance of services	10	I think in the past it was very separate and we often worked in silos, so they developed products and services where sort of an add on. This is the first year I am starting to see a change to that, where you are coming to the table together to look at opportunities to develop at the same time.	Products & service together	4	2.20
Organizational approach	Roles	9	De challenge binnen Philips die wij hebben, want wij zijn natuurlijk vrij silo georiënteerd. Dus wij hebben nog steeds verschillende businesses. [...] iedereen doet eigenlijk echt zijn eigen ding en als je een solution provider wilt zijn dan uhm moet je ook zorg dragen dat deze clusters of deze silo's wegvallen en jij meer richting uhm value teams gaat uhm creëren.	Focused on own silo	3	2.21
Organizational approach	Roles	3	Hoe goed zijn wij als een professioneel bedrijf, dan praten we over een 3 tot 4, en wat daarin een uitdaging is hoe gaan we om met deze verzameling van individuen en hoe maken we daar een geïntegreerd soepel lopend team van.	Division of tasks	2	2.22
Performance Management	Feedback systems	1	We have a business review every month in which we have a look at the performance of everyone in terms of potentiality based on reports and starting from there so we make analysis on what they will achieve. Therefore, we have a specific touch point where we measure the performance of everyone.	Performance Management	4	2.23

Dimension	Element	ID	Quote	Open code	Level	No.
Performance Management	Feedback systems	11	After we deliver, we have to analyze what are the things that we are doing good and what things can be done better. So, like getting the best practices of what we have done and improve our following offering.	Evaluation of actions	4	2.24
Performance Management	Feedback systems	7	So, they do not follow up on how successful the services are that they have introduced and how well they are able to deliver those.	Evaluation	5	2.25
Performance Management	KPI	R8	Ik denk uiteindelijk dat de klant bepaalt of hij de value heeft bereikt en als je daar fatsoenlijke KPI's ontwikkeld van hoe kan ik nu meten dat echt die klant die value heeft.	Develop KPI		2.26

The first dimension of the maturity model investigates the incorporation of stakeholders and looks at leaders, employees, and customers. In general, respondents mention that leaders at a higher level of the organization are aware of the need to integrate services into their current business operations. Nevertheless, one respondent points out that managers do not act upon the changes they wish to see in the organization. On a strategic level Philips has a clear idea about the transformation process, however employees at a lower level are not on the same page, e.g.:

“I notice that the push is starting to come from the highest leaders, but of course there is still a whole layer in between who don't want to yet, or maybe they don't have to join either” (2.3)

Employees have a hard time to alter their mindset and behavior. Most employees are focused on providing products. Next to employees, respondents notice customers also have problems with changing their mindset towards services. They mention that in some cases Philips is able deliver a service, however the customer is not educated enough to see the value of services, to illustrate:

“How to get customers recognize your value and pay the money. This is the thing that we encounter the most, for example they have to understand the value of services and the need to be willing to pay for it.” (2.9)

The second dimension of the MM investigates the strategy of an organization. Respondents at lower levels of the organization experience that Philips lacks a clear plan to implement the transformation process. Besides, most respondents state that Philips needs to realize the importance of customers' needs for the strategy of the transformation process. The organization tends to forget they serve a customer and as a result design service for which there is no demand.

Resources is the third dimension of the MM, consisting of the elements capabilities, tools and methods, and budget. To start, employees acknowledge that the capabilities required to provide products differ from the ones needed to deliver services. When providing services,

the production shifts, as employees within markets are now the one that need to produce a product, being a service. Making this shift and gathering employees with the right capabilities to provide services is hard for Philips, e.g.:

“Yes, with a solution it is the output, so producing a service is up to the market and not to the product division and we are not yet settled on that and that will be complicated for everyone.”
(2.16)

Next, the MM investigates the organizational approach consisting of relevance of services, roles, and process management. As stated before, there is a general awareness among employees regarding the need to provide services. However, it is still a struggle to motivate employees to sell services. Moreover, respondents mention they face difficulties with creating a team that runs smoothly. Nevertheless, at a strategic level the organization has created different teams and units with a specified tasks in the transformation process. Another challenge perceived by respondents regarding roles is the fact that Philips is currently very silo oriented. As a result, teams focus on their own silo, while for a service provider it is important that different teams work together and create a general solution for customers (See quote 2.21).

The last dimension, performance management, consists of feedback systems and KPI's. Some departments within Philips put effort in evaluating how customers experience the services delivered. In this way, they can design new services based on customers' recommendations, describe best practices, and adjust the way of working when needed. However, other departments do not know what value perceived by their customers is, e.g.:

“So, they do not follow up on how successful the services are that they have introduced and how well they are able to deliver those.” (2.25)

To conclude, managers at a strategic level within the organization are aware of the need for servitization. Besides, they have created a vision and plan to transform the organization. Nevertheless, some employees at lower levels within the organization are not aware of the value of services for Philips. They are focused on providing products and struggle to let go of their old way of working. Moreover, customers' mindset must be changed as they mostly have a service-for-free attitude and are unwilling to pay. In addition, it is valuable for Philips to involve customers in the process of creating services. Next, employees acknowledge the capabilities needed to provide services differ from capabilities used to deliver products. However, most departments still struggle to gather employees that possess the right capabilities. Lastly, Philips must focus more on evaluation of their actions to determine their points of improvements.

4.3 Kotter's (1996) eight steps

First, the general aspects Kotter's (1996) eight steps are analysed. After, the different steps are investigated individually in detail.

4.3.1 General aspects of the Kotter's (1996) theory

Kotter's (1996) model is used at the strategic level of an organization to transform by changing the vision of employees and subsequently implementing changes. The model provides a leadership perspective with a top-down approach. The process described by the model is depicted as a linear sequence of steps, consisting of multiple stages (See Appendix 7 for an overview of quotes).

Most respondents specify they focus on changing employees during the transformation process. They mention the human-aspect is especially important when providing services, since these are produced by people instead of machines. Therefore, it is necessary to guide employees through the transformation process. The most important factor according to respondents to focus on when changing employees is their vision regarding services. Currently, some employees still look at services as an add on to products and they try to apply a product way of working to services. One respondent recognized the need to specify the type of employee that must change, instead of striving to change the whole organization:

"I think it is better to identify who should join and who shouldn't go along with the change. Because right now we have the tendency to force everyone to go along in the process. Resulting in a lot of people who think: 'Huh how and why do I go along with the change?' [...] While I think that change is much more from the smaller teams and certainly not for the entire organization." (3.6)

Several respondents experience that Philips has not designed a stepwise strategy to lead the transformation process according to a linear sequence of steps (See quotes 3.10-3.13). Regarding the department's change management style, different viewpoints can be found within Philips. Some respondents explain they follow a top-down approach. While other respondents note that change initiatives are bottom-up. More specifically, one respondent mentions he experienced that a top-down approach creates resistance among employees:

"No, we tried top down, so we started with that, but it didn't work. Many people have said, you are not central, so why do you think you can tell us how we need to run our processes." (3.16)

In sum, respondents indicate their focus during the transformation process is to change employees' view and behaviour regarding services. Besides, the organization managed to create a clear view about the transformation process at a strategic level. However, respondents

operating at lower levels miss guidance and cannot manage to systematically execute plans made by managers. Besides, respondents noticed that employees must be involved in the transformation process to create a willingness to change.

4.3.2 Three phases of the model

To provide a clear overview, the quotes related to Kotter's (1996) eight steps are divided into the three main stages of the model, being: creating a climate for change, engaging & enabling the organization, and implementing & sustaining for change. Next, a theory encoding consisting of the most suitable step out of Kotter's (1996) eight steps is assigned to the quote. After, an open encoding based on the main subject of the quote is added. The most relevant quotes are shown in Table 4.

Table 4: Quotes three phases of Kotter's (1996) change model

Phase	Theory Code	ID	Quote	Open code	No.
Climate for change	Urgency	9	Die bewustwording dat uhm ja dat was eerder misschien niet welwillend, maar ze hebben dat niet gezien	General awareness	4.1
Climate for change	Urgency	5	We recognized the need was there to have solutions that were tight to the projects that were not necessary 100% dependent on the product. We knew we needed those solutions.	General awareness	4.2
Climate for change	Urgency	7	They see there is a necessity but there might be other things on their plate that are more important	No priority	4.3
Climate for change	Urgency	8	Als daar competitie komt van iemand die uit de servicewereld komt, die gewend is met dunnere marges te werken, die dat spel heel goed kan spelen dan ben je uit de markt, dat kun je eigenlijk niet overleven want je marges staan dan heel erg onder druk.	You need to change due to competition	4.4
Climate for change	Urgency	9	Wij hebben heel veel communicatie op de vloer, wij hebben dus uhm heel veel one-on-ones gehouden, ik ben gaan netwerken dus flink met mensen gaan praten en ik heb ze in principe op het thema gesensibiliseerd.	One-on-one communication	4.5
Climate for change	Guiding Coalition	9	Je hebt zeker een hoop mensen die willend zijn dat zijn vaak de visionairs die ook zich constant een beetje ja bezighouden met het thema.	Employees who lead	4.6
Climate for change	Guiding Coalition	9	Op de vloer gewoon een soort kritieke massa creëren zodat op een gegeven moment inderdaad de eerste mensen gaan opstaan dus net als de crazy dancer, ik weet niet of je die kent.	Employees who lead	4.7
Climate for change	Vision for change	8	Maar we hebben nooit een fatsoenlijke market science gedaan, we hebben nooit een volledige strategie uitgewerkt. Shocking maar waar.	Heterogeneity complicates vision	4.8
Engage & enable	Communicate Vision	5	I have seen a lot more conversations around services and solutions certainly this year than I ever had in the past.	Conversations going on	4.9

Phase	Theory Code	ID	Quote	Open code	No.
Engage & enable	Communicate Vision	9	Op een gegeven moment gaan mensen begrijpen, he een solution en ze horen Frans praten dat wij gaan transformeren naar een solution business en opeens denken mensen van he ze praten over solutions, ik moet daar ook wat van weten.	Communication of leaders	4.10
Engage & enable	Communicate Vision	9	Het thema communicatie, dat is voor ons nog steeds een belangrijke KPI [...] En kanalen zijn bijvoorbeeld connected learn, daar geven wij in dertig minuten een soort TED's speech waar mensen kunnen inbellen dus een skype sessie en daarin praten wij over bepaalde thema's.	Multi-channel communication	4.11
Engage & enable	Communicate Vision	10	Thought leaders and innovators that are you know starting to shape their own uhm presence. So, we have a presence now with LinkedIn, social media, uhm they are involved with publishing.	Multi-channel communication	4.12
Engage & enable	Communicate Vision	8	Leadership precies hetzelfde trouwens, ja die roepen wel maar die maken niet echt verandering.	Not working in practice	4.13
Engage & enable	Empower action	8	Ik merk binnen Philips is dat een mindshift die sommige ook echt niet kunnen maken, omdat ze zo zitten in het product.	Resistance to change	4.14
Engage & enable	Empower action	10	But internal to the delivery organization that they can do more than what they are doing today. That is still a work in progress, but I feel like that is part of the challenge; getting them to want to change right.	Willingness to change	4.15
Engage & enable	Empower action	7	I think the biggest challenge is to get the business and the markets to let go of the vertical way of looking at the market.	Resistance to change	4.16
Engage & enable	Short wins	10	The only time people have a vested interest is if they feel valued, so they need to feel valued in what they do so they can speak to it and nurture that relationship.	Employees need to believe in it	4.17
Engage & enable	Short wins	10	So, it is taking that piece so that they believe in it and elevating themselves, because I feel like they are part of that servitization.	Employees need to believe	4.18
Implement & sustain	Institutionalise change	11	After we deliver, we have to analyze what are the things that we are doing good and what things can be done better. So, like getting the best practices of what we have done and improve our following offering.	Evaluate services	4.19
Implement & sustain	Institutionalise change	7	Even though it is somewhere on paper, it is not what people do or live like.	Implement changes	4.20
Implement & sustain	Institutionalise change	10	I think in the past it was very separate and I think we worked often in silos and so they developed products and services where sort of an add on, you know sort of a snap on to whatever products they developed. This is the first year I am starting to see a change to that, where you are coming to the table together to look at opportunities to develop at the same time.	Product & service development	4.21

The goal of the first phase of Kotter's (1996) model is to create a climate for change within the organization by: i) creating a sense of urgency among employees, ii) form a powerful guiding

coalition, and iii) create a vision for change. Most employees understand the definition of a service and realize Philips must change the way they are currently organized, otherwise they will not be able to survive when they need to compete with other service businesses. Despite the awareness regarding the need for servitization, respondents notice that services are not priority for employees. To create urgency Philips communicates the opportunities, threats, and possible scenarios to employees. More specifically, respondents experience that establishing a dialogue between employees and the leaders strengthens employees' knowledge about servitization.

The Centre of Excellence (CoE) is the guiding coalition for Philips regarding implementing Professional Services (PS) on a global level. The team consists of eight people which may slow down the transformation process, as it is hard to reach a large audience with a small team. Besides, as Philips is silo oriented, different guiding coalitions are formed that focus on their own portion of the transformation process. At the same time, at lower levels within the organization people who are willing to change take up servitization, look for opportunities, and lead the change process in their own way. On a strategic level within Philips a vision for change is developed. Nonetheless, respondents point out a clear vision for change and a stepwise plan for transformation are missing.

The second phase of Kotter's (1996) model consists of steps that together have the goal to engage and enable the organization to change by i) communicating the vision to employees, ii) amplifying action by removing barriers to change, and iii) creating achievable short wins to build confidence. Respondents recognize the importance of communicating the vision for the change process. Philips uses a multichannel approach to communicate frequently and powerfully to their employees to ensure they understand the vision and way of working for services. Next to talking about the change, respondents point out it is important for managers to embed the new vision within everything they do. This is a point of improvement for Philips, as one respondent noticed managers are currently not acting upon the new strategy:

"Leadership is exactly the same, yes they do shout about it, but they don't really change." (4.13)

After, managers need to enable employees to implement the changes by removing obstacles. According to respondents the biggest barrier to change for Philips is its' culture that is based on product norms and values. Respondents point out that Philips is not able to implement a new mindset, because employees revert to prior habits (See quotes 4.16-4.17).

The next step according to Kotter (1996) is to create achievable quick wins to build confidence. None of the respondents bring up the importance of short-term goals. However, some do notice it is necessary to ensure employees have confidence in their ability to change.

They acknowledge that employees need to feel valued by seeing the difference their actions make.

The third phase of the model refers to implementing and sustaining the change. Kotter (1996) states it is important to not declare victory too soon. Rather, the organization needs to continuously improve itself by analysing their success stories and failures. Respondents acknowledge the need to evaluate their actions and determine best practices and points of improvement. However, the most evaluation practices are focused on providing solutions to customers and do not look at the success of changes within for example the structure of the organization. Ultimately, to make change last, new modes of behaviour need to become institutionalized in the firm's culture. Respondents find it difficult to implement changes related to providing services, e.g.:

“Even though it is somewhere on paper, it is not what people do or live like.” (4.20)

Concluding, Philips managed to create a general urgency to change among employees. Employees realize the way they are currently organized needs to change. Departments develop their own vision and strategy for the transformation process, which they communicate to employees in a multichannel way. Besides, respondents indicate they have a clear view of the barriers that restrain employees to change. In addition, respondents acknowledge they must build confidence among employees to prevent them from reverting to old habits. Lastly, Philips managed to evaluate their actions and some departments write down their best practices.

However, points of improvement can be found as managers do not embed the desired changes in their actions, while they should lead by example. Besides, respondents notice that employees find it difficult to change the manner of work and revert to a product way of working. This might be caused by the fact that respondents experience a vision for change is missing. Besides, they notice a lack of recognition and rewards to make change happen.

4.4 Analysis 3D-Model

First, the general aspects of the theory proposed by Achterbergh and Vriens (2019) are analysed. After, the analysis investigates the three dimensions of the 3D model individually to achieve results on a more detailed level.

4.4.1. General aspects 3D Model

The model developed by Achterbergh and Vriens (2019) provides a social perspective and has the aim to support organizations in understanding and implementing episodic interventions in their structure. The authors state that episodic interventions are not planned but should be seen

as experiments that require flexibility in design. In addition, episodic interventions are comprehensive as they aim to change a large part of the organization. Finally, episodic interventions are implemented by a separate intervention organization with a temporary nature. (See Appendix 7 for an overview of quotes).

As stated before, most departments' goal is to change people. Besides, respondents recognize the need to change a large part of Philip's structure. To illustrate, respondents state that to successfully integrate solutions internal systems must be redesigned and the backend of employees must be motivated to change as well. According to Achterbergh & Vriens (2019) interventions require continuous adjustments, therefore Philips must be aware of and up to date about its progression within the transformation process. Besides, the experimental nature of change is referred to by some respondents. They point out the prevailing view of employees at Philips is that there is no room for failure in their work environment. Employees do not get a change to make mistakes and learn from each other's, e.g.:

“A very interesting thing about change and innovation is that it can work, and it can't work, which is painful. I think that is insufficiently recognized within Philips.” (5.9)

In sum, Philips follows a social perspective as they focus on changing employees when they implement the transformation process. Besides, there is a general awareness about the need to change a large part of the organization to be able to provide services. Moreover, several departments state a clear strategy is missing, which in theory provides employees room to experiment. However, employees look at the missing strategy in a negative way. Finally, a separate intervention organization with a temporary nature is created in the form of the CoE.

4.3.2. Functional dimension

The functional dimension is the first dimension described by Achterbergh and Vriens (2019). The goal of this dimension is to transform the object of intervention (structure) such that the organization can function well. This goal can be realized by means of four activities: diagnosis, design, implementation, and evaluation. The quotes relating to the functional dimension are coded based on these activities, after an open encoding is assigned to every quote. The most relevant quotes are shown in Table 5.

Table 5: Most important quotes regarding the functional dimension

Code	ID	Quote	Open code	No.
Diagnosis	6	Daar zit eigenlijk het probleem, want als je aan de voorkant dingen wil veranderen en je gaat meebewegen, maar de achterkant gaat niet goed mee dan krijg je uiteindelijk een klant die niet krijgt wat hij verwacht.	Backoffice	6.1
Diagnosis	4	Ja bij een solution is dat, is het de uitvoer dus het produceren van een service ligt bij de markt en niet bij de productdivisie en daar zijn we nog niet uit en dat gaat voor iedereen ingewikkeld zijn.	New way of organizing	6.2
Diagnosis	3	Dat ze eigenlijk de product en productiemaniër van managen toepassen op een consultancywereld en dat een klein beetje bijstellen her en der, maar niet echt qua instelling en mindset wijzigen.	Change in mindset	6.3
Diagnosis	9	Iedereen heeft zo zijn eigen veld en dat beperkt je in principe in jouw value creation omdat je alleen maar in jouw monitoring beeld kijkt en daar solutions bouwt in plaats van Philips brede solutions.	Silo oriented	6.4
Diagnosis	9	De challenge binnen Philips die wij hebben, want wij zijn natuurlijk vrij silo georiënteerd. [...] Iedereen doet eigenlijk echt zijn eigen ding en als je een solution provider wilt zijn dan uhm moet je ook zorg dragen dat deze clusters of deze silo's wegvallen.	Silo oriented	6.5
Diagnosis	4	Die hele gescheiden discussie en het hele cleane wat natuurlijk komt uit de tijd dat Philips een vele grotere holding was, met lighting en consumer electronics dan moest je wel je productontwikkeling etc. loskoppelen van de verkooporganisaties.	Silo oriented	6.6
Design	9	Je gaat uhm eigenlijk weg van jouw silo model. Wat je gaat doen is om meer een dynamisch model, dus eigenlijk een driedimensionaal model, ontwikkelen waar je afhankelijk van de demand of de opportunity de juiste skill sets bij elkaar gaat halen.	Dynamic structure	6.7
Design	3	You need to have a few basic things. So, the service development, service management, product management. You must have a boss who says what we do and what we don't do. That other part is what type of customers do you want to serve.	Elements in structure	6.8
Implementation	8	Er is bewust gekozen voor een hybride model, dus door het in de huidige business te organiseren. Uhm, wat kan, maar dat gaat natuurlijk veel trager en heeft een aantal hele specifieke risico's die je niet hebt als je zegt we gaan on top off.	Hybrid model	6.9
Implementation	7	We do not have a stepwise way of working currently where we say this is where you start with to build your PS organization, this is what you do then, this is what you do then.	No strategy	6.10
Implementation	6	Heel veel van dit soort solutions die kloppen wel op een niveau van een visie/gedachte, maar die kloppen nog niet met het verschil maken in de werkelijkheid.	Implement solution	6.11
Implementation	7	What is happening at the same time uhm is that people are organizing themselves, they are not waiting for us to come forth.	Market does own thing	6.12
Implementation	9	De markt is vrij sterk zij bepalen in welke richting zij opgaan en wat ik zie is dat als het niet snel genoeg gaat, dan gaat de markt eigen uhm ideeën omzetten.	Market does own thing	6.13

Code	ID	Quote	Open code	No.
Implementation	2	The transformation is based on a question form the customer. Often markets are already managing the processes they are developing for them themselves, sometimes they only need a little support or some tips on how to change what they are doing in order to optimize it.	Market does own thing	6.14
Implementation	7	The implementation of it in markets is also very different. If we compare for instance greater china and NAM. [...] The one in US is basically already have quite a large business and therefore already is organized in a certain structure, that structure is in that sense in our way.	Market does own thing	6.15
Evaluation	5	They had done an assessment and then just repeated that this year in terms of what did Philips have in place, did we act on some of the recommendation that they had made in the past in terms of when you are trying to build a PS business this are things you need to think about.	Assessment to evaluate	6.16
Evaluation	7	So, they do not follow up on how successful the services are that they have introduced and how well they are able to deliver those.	Feedback	6.17
Evaluation	1	We have a business review every month in which we have a look on the performance of everyone in terms of potentiality based on reports and starting from there so we make analysis on what they will achieve. Therefore, we have a specific touch point where we measure the performance of everyone.	Review performance	6.18

The first activity, diagnosis, refers to identification of the organization’s problematic behaviour, the causes, and the parameters that need to be changed to be able to realize the goal of the intervention. Respondents can list problems that currently hold back Philips in the transformation process. Nonetheless, respondents do not use gap analysis to determine the norm and actual values of important variables. In addition, respondents do not mention which parameters should be adjusted. Therefore, the problems mentioned by respondents are discussed to get an overview of the current situation within Philips. The past couple of years Philips focused on production of products, hence their systems, culture, and structure are organized with the aim to efficiently deliver products. However, providing services requires a structure that allows an agile and flexible way of working. Currently, the configuration of the Philips’ organizational structure is based on different silos, resulting in employees ‘thinking in their own boxes’, as described by:

“The challenge that we have within Philips because we are naturally quite silo oriented. [...] Everyone does their own thing, while if you want to be a solution provider then uhm you also must make sure that these clusters or these silos disappear.” (6.5)

Second, design activities focus on invention of a new structure with low parameter values. When asked about the ideal structure for Philips to provide solutions one respondent pointed out the need for a more dynamic model (See quote 6.7). Third, implementation activities refer

to transformation of the organizational structure. Philips decided to organize the transformation process in a hybrid way. Meaning that they do not transform the whole organization at once, rather business units start the transformation process at different moments in time. The managers defined executable portions of the structure that can be changed independently. In this way, some business units are still run according to the old structure and as such form a stable unit in the transformation process. According to respondents, Philips has not developed a plan that describes the sequence in which the portions need to be executed. This could be one of the reasons why it is hard for Philips to implement changes.

Finally, evaluation involves an assessment to determine whether the desired changes in the structure are successful, by checking if the problematic parameter values are no longer high values. Respondents recognize that is important to evaluate the way the business is organized and perceived by customers, to improve their future way of working. However, most evaluation and feedback practices are focused on the performance of single employees.

To conclude, respondents do not mention that current problems, their causes, and the variables that require changes are identified by Philips. However, respondents can list problems which they think are limiting the transformation process. According to them, the biggest problem is the organizational structure, which is designed to produce products. To specify, the structure consists of different silos causing employees to focus on one silo instead of looking at possibilities to combine silos to create a service. To solve this problem, Philips is currently transforming their structure in a hybrid way. Moreover, some departments are aware of the need to evaluate changes to check if they are successful. However, most respondents mention that changes are not yet implemented within the daily routines of employees.

4.4.3. Social dimension

The second dimension described by Achterbergh and Vriens (2019) provides a social perspective to change. The social dimension has the goal to ensure employees integrate new interaction (premises) into their daily operations. Servitization practices should focus on motivation, adoption, and integration. To provide an overview, the quotes related to the social dimension are divided into the three main stages (Code level 1). After, the quotes are assigned an open encoding based on the main subject of the quote (See Table 7).

Table 7: Quotes social dimension

Code	ID	Quote	Open code	No.
Motivation	7	We started by setting up a centre of excellence, there was nothing before that really focused on PS. There were all kinds of different businesses and markets doing PS, but they were not organised in a central organization.	Motivation for episodic intervention	7.1
Motivation	8	Philips het product business is, zo zijn we georganiseerd [...] Daarom zijn we apart gezet om eens goed te kijken wat is er nou allemaal goed is in de markten	Motivation for episodic intervention	7.2
Motivation	10	The delivery organization, they can do more than what they are doing today. That is still a work in progress, but I feel like that is part of the challenge; getting them to want to change right.	Motivation for change	7.3
Adoption	7	The culture at Philips so far has always been that compliance to standards is relatively low.	Compliance to standards	7.4
Adoption	3	This means that that one consultant has to convince that other insights are better and that we will also sell it that way.	Confidence to act	7.5
Adoption	3	Dat is een typisch iets en zeker consultants, en in een bepaalde zin services, vergt een andere manier van aansturen dan mensen in de productie en mensen in de productomgeving. [...] Hoe ga je dan om met dat soort professionals? Hoe zorg je dat ze toch in hun waarde gelaten worden?	Learning	7.6
Adoption	8	A very interesting thing about change and innovation is that it can work, and it can't work, which is painful. I think that is insufficiently recognized within Philips	Learning	7.7
Adoption	1	I try to coach the people, pass the information and the training during this specific call and I try to give them most of the tools that can help them to make a good proposal to the customer.	Provide tools to learn	7.8
Adoption	9	De grote vraag van waar vind ik nou deze informatie en hoe kan ik nou makkelijk deze kennis bereiken. Dat is dus ook nog een uitdaging.	Provide tools to learn	7.9
Adoption	4	Ten eerste moeten we het bewustzijn dat services ontwerpen een kunstje is wat je echt goed moet kunnen en dat daar andere technologieën ingezet moeten worden.	Translate to organizational structure	7.10
Adoption	3	Dus er is een soort van Philips niveau van hoe je dit soort service ontwikkelingsprocessen moeten verlopen en dat hebben wij opgepakt en dat zijn we samen met collega's van X aan het verbijzonderen naar de X wereld.	Translate to structure	7.11
Adoption	7	This is the standard and please comply with it. For service organizations that are not really mature that is a tricky ask I would say. We have to come up again with a Philipsfied version of that.	Translate to structure	7.12
Integration	1	We have a business review every month in which we have a look on the performance of everyone in terms of potentiality based on reports and starting from there so we make analysis on what they will achieve. Therefore, we have a specific touch point where we measure the performance of everyone.	Feedback	7.13
Integration	9	You have addressed those kinds of themes and then suddenly you see those things in a standard approach	Standard approach	7.14
Integration	7	Even though it is somewhere on paper, it is not what people do or live like.	In practice	7.15

Code	ID	Quote	Open code	No.
Integration	1	I think they are not so confident with all the possibilities they have with the portfolio. [...] I personally take the change to coach this guy in order to let them understand all the possibilities that the portfolio has to offer.	Problems with implementation	7.16

The first social goal, motivation, consists of two subgoals that are based on steps of Kotter's (1996) model, being: creating urgency and a shared vision. The quotes regarding these subgoals can be found in par. 6.2.2, to avoid overlap this paragraph will only look at the new insights provided by the 3D model. As stated before, respondents acknowledge the need for a comprehensive change within Philips' to successfully implement services. Besides, respondents notice that an intervention organization is required to make change happen.

The second goal adoption aims to get employees willing to adopt new interaction premises. The overall experience of respondents is that Philips' compliance towards standards is relatively low (See quotes 7.4 & 7.10-7.12). Therefore, when employees invent new ways of working, they must be creative as models need to be adjusted to fit into Philips' structure. Besides, to support employees to experiment with designing new (interaction) premises, employees need to have access to the necessary sources of information.

The final social goal is integration which aims to ensure employees implement the new way of working into their daily operations and as such create an improved organizational structure. Achterbergh and Vriens (2019) state that employees must actively shape their new tasks and understand what it means to perform them in the structure. A respondent of a more mature department noticed that when managers talk about the vision and employees get the change to spruce about the topic, employees implement changes more easily:

"You have addressed those kinds of themes and then suddenly you see those things in a standard approach." (7.14)

Nevertheless, respondents notice that salespeople have difficulty with shaping their own tasks as they are not yet confident to work with a portfolio that contains services, to illustrate:

"I think they are not so confident with all the possibilities that they honestly have with the portfolio. [...] I personally take the change to coach this guy in order to let them understand all the possibilities that the portfolio has to offer." (7.16)

In short, Philips managed to create urgency to change among employees. Besides, a vision for change is created and communicated. However, Philips' compliance to standards is low, hence industry standards must be adjusted to fit into their current business approach. Moreover, the current working environment restrains people to learn from their own and each other's mistakes, while this is an important aspect of adoption.

4.4.4. Infrastructural

According to Achterbergh and Vriens (2019) episodic interventions require an intervention organization that has its own infrastructural dimension consisting of: i) an intervention structure, ii) intervention technology and iii) human resources.

Table 8: Quotes infrastructural dimension

Theory Code	ID	Quote	Open code	No.
Intervention Structure	3	Wat daarin een uitdaging is hoe gaan we om met deze verzameling van individuen en hoe maken we daar een geïntegreerd soepel lopend team van.	Division of tasks	8.1
Intervention Structure	8	Philips het product business is, zo zijn we georganiseerd en zo gaat het horizontaal en over alles heen. Daarom zijn we apart gezet om eens goed te kijken wat is er nou allemaal goed is in de markten.	Separate structure	8.2
Intervention technology	9	Wij hebben heel veel communicatie op de vloer, wij hebben dus uhm heel veel one-on-ones gehouden, ik ben gaan netwerken dus flink met mensen gaan praten en ik heb ze in principe op het thema gesensibiliseerd.	Communication	8.3
Intervention technology	1	I try to coach the people, pass the information and the training during this specific call and I try to give them most of the tools that can help them to make a good proposal to the customer.	Training	8.4
Intervention technology	10	A delivery book on how to deliver the service. In this how to book it is great to put articles and our best practices and benchmarking and we share that with customers uhm as much as we can.	Delivery book to share practices	8.5
Intervention technology	3	Ook heel vaak wat je ziet het is een serie van eenmalige activiteiten. [...] Omdat er niemand is die het onderhoudt ben je over drie jaar weer terug bij af, dan is het niet bijgehouden en dan is het dus werkt het niet meer en dus begint men een nieuwe eenmalige poging.	Knowledge Management	8.6
Intervention technology	5	I do not think we have a platform right now that truly supports knowledge management certainly across global Philips that does not seem to exist.	Knowledge Management	8.7
Intervention technology	10	So, we do share uhm some best practices and benchmarking on our team site. So, there is Microsoft Teams or SharePoint.	Knowledge Management	8.8
Intervention technology	9	We hebben een methodiek gegenereerd om uhm zeker te stellen dat ook solutions fatsoenlijk geïmplementeerd kunnen worden, misschien heb je het al gehoord dat is de SOLID.	Tools	8.9
HR	10	So, I feel like we have the capabilities there as long as the next set of people we hire in will support that skill set, I think we are in a great place to continue this evolution.	Capabilities	8.10
HR	11	The skill set competency of services is different, as it keeps changing.	Capabilities	8.11
HR	7	We thought we would eventually have a team of ten at the end of this year, most probably this will be half of that size if we even make that.	Head count	8.12
HR	7	Currently, we still struggle with getting the resources in. We thought we would eventually have a team of ten at the end of this year, most probably this will be half of that size if we even make that.	Head count	8.13

Theory Code	ID	Quote	Open code	No.
HR	5	We were sending them to some different consulting classes, trying to kind of update their knowledge on how you approach creating solutions that may or may not be product dependent, right.	Update knowledge	8.14
Incentives	3	De verkopers worden sterk door bonussen geregeerd en de bonus is vaak een percentage van de omzet.	Motivation to sell services	8.15
Incentives	9	Incentives drive the personal commitment of employees, that's just the way it is. [...] So, I'm going to do everything for that turnover or where I basically put the bonus on it, that's what they're going to focus on.”	Motivation to sell services	8.16
Incentives	3	Als je die nog steeds op de producten wijze laat plaatsvinden, dan moet je niet verbaasd zijn dat je weinig of geen solutions verkoopt	Motivation to sell services	8.17
Incentives	11	We put the service target on top of their current target, so that they have to make sure that they are not only selling equipment, but they also have to sell the service.	Targets	8.18
Incentives	10	The pre-sales team get incentivised for our services so when they are putting together a deal strategy it becomes now a personal uhm not necessarily what is best for the customer but what is best for their pocketbooks.	Focus on revenues	8.19

The intervention structure refers to the grouping of operational and regulatory intervention activities into a network of tasks. As stated before, respondents mention that Philips does not follow a step-by-step plan (See quotes 1.14-1.17). Besides, a respondent notices his department is having a problem with dividing tasks and creating a team that runs smoothly:

“It is a challenge to determine how do we deal with this collection of individuals and how we turn it into an integrated, smoothly running team.” (8.1)

The intervention technology are the tools, techniques and technology that support human resources in performing their intervention tasks. The main intervention technique used by Philips is communication, for example via providing a dialogue with employees. Besides, the organization sets up trainings in which employees get familiar with the portfolio and learn to provide services. Some respondents mention the need for a toolkit that can be used to develop and deliver services. Moreover, statements 8.7-8.9 illustrate the need to update Philips’ knowledge management, as this tool can support activities related to diagnosis, design, and motivation. Currently, some departments manage to share their knowledge via for example Microsoft Teams or Sharepoint. However, these platforms are not updated on a regular base and are therefore not accurate. Besides, the excess of different initiatives for knowledge management that are set up within Philips results in employees that do not know which one to use and how to apply it in a proper way.

Human resources (HR) refer to people who perform the intervention tasks, their knowledge, skills, and motivation. The CoE is one of the teams with the job to perform

intervention tasks. However, the CoE faces problems with head count and gathering the right capabilities, as the team is small compared to their field of work. Contrary, other departments notice they currently possess the right capabilities, as long as HR ensures the newly hired employees complement this. Moreover, respondents acknowledge it is important to update the knowledge of their employees by providing them the opportunity to attend consulting classes in which they learn how to deliver and create solutions.

Most respondents point out the incentives need to be changed, as they are mainly focused on products. Currently, most departments within Philips have based their incentives on revenues, since services are a smaller part of the deal products will overrule. As a result, employees tend to focus on selling products to ensure their performance reaches the required target. Respondents recognize incentives are a tool that can be used to direct people's effort and commitment and should therefore be used to boost services, e.g.:

"Incentives drive the personal commitment of employees, that's just the way it is. [...] So, I'm going to do everything for that turnover or where I basically put the bonus on it, that's what they're going to focus on." (8.16)

Employees can thus be directed to sell services when targets are properly placed. However, one respondent noticed that this could result in sales employees to focus on selling their own services instead of creating the ideal combination for the customer.

Concluding, respondents notice there is a general awareness within Philips about the importance to invest in employees' knowledge and keeping this up to date with trainings and workshops. However, current incentives of Philips are not focused on services, nor do they encourage employees to provide services. Further, respondents recognize the CoE as a team that functions as an intervention organization with the goal to implement PS within Philips. Likewise, different respondents operate in a team that performs intervention tasks. Some respondents are content with the capabilities accessible in their department. Nevertheless, other respondents experience difficulties in collecting the right tools, capabilities, and information for their department.

4.4.5. Conclusion 3D-model

The 3D-model created by Achterbergh and Vriens (2019) provides three dimensions which organizations can use as a basis to facilitate transformation processes. The model does not provide a path that prescribes in what way the transformation process evolves and needs to be guided through the three dimensions and their sub elements. However, the Achterbergh and Vriens (2019) describe some enablers to implement the required changes. For example, they

mention it is important to involve employees in the intervention organization to increase their motivation to change.

Respondents noticed it is impossible to plan an entire transformation process in advance. Managers at a strategic level created a plan and vision for the transformation, however employees at lower levels do not act upon the plans as they are not enabled to make the plans their own. The authors confirm this conclusion, as they state episodic interventions have an experimental character. The implementation process must be emergent and allow employees to experiment. Therefore, Philips must focus on the three main dimensions. During the intervention a continuous assessment of progress towards the functional and social goals should be made. Depending on this assessment revisions of the goals or changes in the intervention infrastructure may be needed.

Currently, the three dimensions are present within Philips. Nevertheless, the dimensions are not linked and the goals are not adjusted based on progress on the other dimensions. More specifically, the connection lacks between the plan and design on a strategic level and the implementation at an operational level within the organization. Therefore, it is important for Philips to initiate practices that enable employees to make the strategic plan operational. Philips puts effort in educating employees via trainings to let them adopt changes. However, the current working environment does not provide room for employees to experiment with new ways of working. While for a successful transformation it is important to enable employees to look for opportunities, experiment with designing solutions and create a plan. In this way, they will be motivated to change via an episodic change, as they are able to experience why change is needed and what the effect is of their efforts to change. In addition, access to information and suitable intervention technology and tools are missing. Therefore, the next step in the transformation process for Philips is to focus on integration and implementation.

4.5. Comparison three change models

This section summarizes to what extent the different models are recognized within the transformation process of Philips. Table 9 provides an overview of the change models and their sub elements. Besides, the evaluation of the elements shows to what extent the elements are recognized. A minus indicates that the organization is dealing with this aspect, however it is not yet on the desired level. When the evaluation cell contains N.A., this means that this element of the change model is not recognized within Philips. Moreover, this section will look into the theoretical challenges of each model.

Table 9: Overview three models

Theory	Code	Element	Keywords	Evaluation	
MM	Culture	Commitment of leaders	Actions of leaders	+	
		Employees	Product driven	+	
		Customers	Readiness to change; value of services	-	
	Strategy	Vision	No stepwise plan	N.A.	
		Customer focus	Cocreation; customer demands	-	
	Resources	Capabilities	Different skill set, delivery	+/-	
		Tools & Methods	Tool for solutions and knowledge management	-	
	Organizational approach	Relevance of services	Co-development; silo oriented.	+	
		Roles	Division of tasks	-	
	Performance Management	Feedback systems	Performance management	-	
KPI		Develop KPI	N.A.		
Kotter	Vision of people		Product driven	+	
	Linear process		No stepwise plan	-	
	Top-down			+/-	
	Climate for change	Urgency		General awareness	+
		Guiding coalition		Employee's lead	+
		Create Vision			-
	Engage & enable	Communicate Vision		Multichannel; leaders; dialogue	+
		Empower action		Mindshift hard; willingness to change	-
		Short wins		Confidence among employees	N.A.
	Implement & sustain	Build on the change			N.A.
Institutionalise change			Evaluate services provided; changes not implemented	-	
3D model	Social interactions		Focus on people	+	
	Comprehensive change		Change whole organization	+	
	Functional dimension	Diagnosis		Silo structure	N.A.
		Design		Dynamic model	+/-
		Implementation		Markets do own thing; hybrid way	-
		Evaluation		Assess delivered services	N.A.
	Social dimension	Motivation		For episodic intervention & change	+
		Adoption		Experiment: tools to learn; translate to Philips	-
		Integration		Not implemented	N.A.
	Infrastructural dimension	Intervention structure		Division of tasks	-
Intervention technology			Communication; Knowledge Management	+/-	
HR			Incentives; head count; capabilities	-	

4.5.1 Maturity Model

The maturity model (MM) is primarily a tool to determine the status of Philips within the transformation process. The five dimensions proposed by the MM are recognized within the transformation process of Philips. First, the cultural dimension investigates the mindset and readiness of leaders, employees, and customers. The sub element leader is positively recognized within Philips, meaning the element is present and already at the level necessary to successfully transform. The sub elements customers and employees are recognized as well, but still need some improvement. Philips acknowledges customers are an important aspect of the transformation process. However, customers might not be ready to recognize the value of services and are therefore not willing to pay.

Second, the strategy dimension consists of vision and cultural focus which are both points of improvement for Philips. Employees mention a clear strategy is missing and as a result they have no confidence to change their behaviour. Besides, the organization is currently not actively working on co-creation with their customers, while this is important when providing services.

Third, the MM investigates the resources available within an organization. Both the importance of capabilities and tools and methods are recognized by Philips. The evaluation regarding capabilities is neutral, as some respondents mention the right capabilities are available while others note a different skill set is needed. Tools and methods are a point of improvement for Philips. The important parts to focus on are to create a tool for knowledge management, data to evaluate services, and a tool to standardize development of services.

Fourth, the organizational approach consists of the relevance of services and roles of employees. Philips is aware of the relevance of services and mentions the importance to create a general awareness among employees. However, some departments struggle to create a smoothly running team.

Fifth, the MM investigates performance management of organizations to support servitization. The element feedback system is recognized as an important aspect within the transformation process. Philips must change the way their incentives and performance management are built. Currently, both are focused on revenues and as services are mainly a smaller part of a sale, employees are more incentivized to sell products. Incentives could be a tool for Philips to encourage employees to take that next step to add services in their customized offerings. Besides, the element of KPIs is not widely supported by Philips.

4.5.2 Kotter's eight steps

The model proposed by Kotter (1996) is divided into three main stages. To start, the stage creating a climate for change consists of the steps creating urgency, forming a guiding coalition and creation of a vision for change. The first two steps are present within Philips and turn out to be valuable for the transformation process. There is a general awareness regarding the need to change among employees. The guiding coalition of Philips can mainly be found in a group of employees that are willing to change and take up trends easily. Nevertheless, the vision of change is still a point of improvement. As respondents experience a corporate strategy and vision are missing.

The second phase, engage and enable, starts with communicating the vision. Since employees mention a vision is lacking, it is important for Philips to focus on the transfer of the strategy created at higher levels to employees at the work floor, as the vision is one of the base elements according to Kotter (1996). Nevertheless, the evaluation of this step is positive as respondents acknowledge the importance of communication. Important aspects for communication are applying a multichannel approach, using managers to propagate the vision, and opening the dialogue with employees. The next step is to empower employees to act according to the desired changes. Philips is actively working on achieving this step. The main restraints for employees to change is their inability to shift their mindset about services. According to Kotter (1996) a way empower action is by creating short wins. No quotes are found that support this step within Philips.

Lastly, the third phase focuses on implementation by building on the change and institutionalizing the changes. Quotes regarding this phase are scarce, which can be explained by the fact that Philips is at the start of the transformation process. Therefore, the absence of quotes regarding this phase does not mean the importance of the steps is not recognized by Philips.

4.5.3. The 3D model by Achterbergh & Vriens

The 3D model of Achterbergh & Vriens (2019) is divided into three dimensions. First, the functional dimension of the 3D model consists of four goals which can be seen as stages an organization needs to pass to achieve the main goal of the dimension. The first stage, diagnosis, is not recognized in the quotes analysed. Respondents do not mention the organization has experienced a phase in which they identified current problems, the causes, and points of focus. An explanation for the lack of diagnosis can be that the respondents may not have been part of these activities as they may took place at higher levels within the organization. Nonetheless,

current problems could be derived from the interviews. The main problems of Philips are the organizational structure based on silos and the culture with a product focus. The second stage entails designing a new structure without problematic variables, only few quotes regarding these activities are found. The lack of quotes indicates Philips' current problem, and therefore point of focus as employees are not able to understand nor describe the desired structure of Philips. The third stage is implementation, which is recognized by Philips as they attempt to implement changes by transforming in a hybrid way. The last phase evaluation is recognized in the interviews, nevertheless evaluation practices focus on customers' satisfaction with delivered services and performance management.

The social dimension consists of three different stages that need to be passed in consecutive order. First, the motivation stage is widely recognized among Philips. Second, employees they must be empowered to adopt changes. This stage is problematic for Philips as their current working environment does not enable employees to make mistakes. While this is important for employees to learn how to transform. Besides, some departments do not have access to the right tools and information to make the changes even if they wanted to. Third, Philips has not yet entered the integration stage.

The infrastructural dimension is not based on different stages, rather it consists of different elements that need to be present in the intervention organization. To start, an intervention structure should be available. The few quotes that recognize this element refer to difficulties with the division of tasks and creating a team that is separate from the organizational structure. Philips recognizes the importance of an intervention technology. Communication and trainings are important tools for Philips to support employees to change and in this way perform intervention tasks. The last element described is human resources, which is widely recognized within Philips. Important aspects of this element are the incentives, head count and capabilities.

4.5.4 To what extent do the models support Philips in solving their problems?

Philips wants to determine their status quo and the progression within the transformation towards delivering services. The three theories are all recognized by Philips in their comprehensive transformation process towards providing services.

First, the MM is a model and tool that provides direct feedback on the progression within servitization. The proposed dimensions can be seen as elements that need to be present, supporting Philips in testing which elements are present. By assessing the dimensions on the five maturity levels, the organization can determine the dimensions that need more attention. Therefore, a MM can be used as a tool to show employees the pain points and as such

communicate the urgency to change. However, the model has some theoretical challenges. It does not provide a stepwise plan to implement changes, nor does it describe how Philips can design and implement the transformation process. Besides, the model is not detailed enough to show how an organization can achieve a next level of maturity.

Second, the model proposed by Kotter (1996) presents a stepwise plan Philips can use to implement changes. The author proposes three different stages that need to be followed in a consecutive order. The clear division of steps is helpful for organizations to guide their transformation process. Besides, the model focuses on changing employees to successfully transform the organization. However, the model is mainly focused on the design of the transformation process at a strategic level and provides a top-down approach to change management. As such, the model does not provide employees room to participate in the design of the transformation process. Besides, the model only partly answers the question of Philips on how to design and implement the transformation process, as it mainly concentrates on the social aspect of changes. Philips struggles with their current structure that needs to be redesigned to provide services, Kotter (1996) does not investigate this aspect of change.

Third, a more complete view on change is provided by the 3D model. This model provides more handles to understand the transformation process, by combining the social aspect with a functional and infrastructural dimension. The 3D model looks at different dimensions and their coherence, which is helpful for Philips to determine the underlying problems they face. The analysis shows that bottom-up change processes need more room to develop. The 3D model offers different ways to facilitate this, for instance via enabling employees to experiment, involving them in the intervention organization, and providing the opportunity to perform diagnosis and design activities. Nevertheless, the 3D model does not provide a clear view on the progress within the transformation process. Besides, the theoretical basis of the model is comprehensive and could therefore be difficult for practitioners to understand. Moreover, it does not prescribe how an organization needs to move along the different dimension for successful servitization.

Complex organizations like Philips prefer a model that shows them which steps they need take; the MM and Kotter (1996) meet this demand. However, as stated by Achterbergh & Vriens (2019) a complex transformation process cannot be planned, therefore the organization needs to be agile and flexible about their design and development. Continuous assessment of the progress on the three dimensions and adjust when needed is a more suitable way to implement servitization than by sticking to a stepwise plan.

Next to results relating to the three change models discussed, other challenges that are worth mentioning are found in the analysis of the interviews. First, respondents encounter problems with the service development within Philips. Employees underestimate the time it takes to create a well-designed service as they want to see results fast. Second, customers must be involved in the development process to create services that meet their needs. Third, respondents mention they wish to scale services and therefore need to standardize service design and delivery. Currently, Philips' compliance to standards is low and employees do not share best practices, nor do they re-use practices. Respondents point out the need to create standard building blocks of services which salespeople can combine to create a customized solution for the customer. In this way, the building blocks can be scaled, while individual offers can still be customized, e.g.:

“Our future challenge is really getting all the markets to work according to the standards, that is the biggest challenge. Markets do not like working to standards, they like working according to opportunities, which I understand. But we must help them work according to the standards, while chasing opportunities.” (R7)

Another problem mentioned by respondents is the lack of evidence, factsheets, and proof points to show customers the value Philips' services can offer. To create a reputation in the health care industry it is important to be able to express in numbers the difference you can make, as the industry is focused on scientific evidence. In line with the inability to express the value of their services, Philips has trouble to price their services, e.g.:

“So, first we are not able to tell the customer 'As Philips we can do this, and we can do it better than you do yourself, therefore we can bear the risks better. That does come with a value, and it is logical that we as Philips ask something extra for that. Yes, we are not there yet.” (R8)

Lastly, before Philips can communicate the value of services to their customers, they need to ensure salespeople understand the value. Respondents notice that salespeople are excited to work with services. However, they find it difficult to understand and express value of services as these are less tangible.

Concluding, the results of the interviews are interpreted and ascertained through analysis to what extent the three change models are recognized by Philips within their transformation process towards providing services. Besides, it is determined to what extent the models support Philips in determining their status quo and the progression within the transformation. The next section will draw conclusions and the contributions of the model to help organizations understand the transformation process and determine their progress will be discussed.

5. Conclusion and Discussion

In this chapter, the research question is briefly answered in the research conclusion (§5.1), building upon the research results as presented in the previous section. In the discussion (§5.2), the academic and practical contributions of this study are discussed. Next, the limitations of the research (§5.3), and the suggestions for further research (§5.4) are presented.

5.1 Summary of the research

In this study a research regarding the progression of organizations within servitization is conducted. A comparison is made between the theories about Maturity Models, Kotter's (1996) eight steps model and the 3D model of Achterbergh and Vriens (2019) to answer the research question *“To what extent can the MM, Kotter's (1996) eight steps and the 3D model support the servitization process in a large-scale organization?”*.

The results confirmed that the three change models investigated directly or indirectly provide a way to determine progression within the transformation process. First, it is indicated that a maturity model (MM) is most clear in showing progress. A MM supports the organization to determine its current position within the transformation process and as such directly provides feedback regarding the progression. Besides, the assessment of the different dimensions on the maturity levels directly shows which dimensions need more attention to reach the desired stage. Second, it turns out that Kotter's eight steps (1996) model is mainly used at the strategic level of an organization. Furthermore, the eight steps model provides stages, supporting the organization in leading the transformation process and determining which steps need to be taken. Third, the results show that the 3D-model proposed by Achterbergh and Vriens (2019) is more detailed as it looks at different aspects of change. This model provides guidance when implementing changes via an experimental approach. However, it was found that the 3D model does not provide a clear view on the progress within the transformation process.

The application of the models on the transformation process of Philips showed another ongoing struggle of change management in general. Philips faces difficulty to transfer what is developed on a strategic level to what is experienced and adopted by employees at an operational level within the organization. Employees' lack of motivation to change may be related to inability of the organization to operationalize the transformation process. Theories about MM solve this problem by using the MM as a tool to support managers in identifying and communicating the main actions that need to be taken. Kotter (1996) tackles this problem via a top-down approach to change, concentrating on the role of leaders within the change processes. His model leaves no room for employees to provide input, share ideas or experiment

with designing a solution. Contrary, Achterbergh and Vriens (2019) state that it is important to involve employees in the design and implementation of a transformation process instead of forcing them to act upon policies made by managers. More specifically, they must be enabled to experiment and discover how their job best fits the new strategy and vice versa. The 3D model offers different ways to facilitate this, for example via enabling employees to experiment, involve them in the intervention organization and provide the opportunity to perform diagnosis and design activities.

The results showed there is a need of Philips for a clear vision and plan regarding the transformation process. However, the problems found indicate that to successfully implement changes, an organization needs to be engaged at different levels within the organization. Moreover, it can be argued that a complex transformation process like servitization cannot be planned. In addition, the results show that it is important for Philips to focus on the three dimensions proposed by the 3D model when determining their servitization strategy. The goals and interpretation of the dimensions must be continuously adjusted based on evaluations of the progress of the organization. Therefore, the organization needs to be agile.

Moreover, it was found that Philips acknowledges the importance of communication within the transformation process. In addition, there is a need to develop a knowledge management platform to support employees to share their knowledge regarding best practices and mistakes made. In this way, employees can learn from each other, and standard approach can be implemented more easily. Besides, to motivate employees to sell services, respondents mention the incentives and performance systems need to be adjusted to fit service values. In addition, employees must feel valued to take that extra mile to join the transformation process. Lastly, the organization needs to focus on the availability of capabilities, tools, and methods.

5.2 Discussion and implications

In this paragraph, first the contributions this study made to existing research are discussed (§5.2.1), after the practical contributions and implications (§5.2.2) are elaborated on.

5.2.1. Theoretical implications

This research contributes to theory in multiple ways. First, the study provides a comparison of three well known change management models in the context of servitization. In addition, the study shows the applicability of the change models in a large multinational that is operating in a complex environment. The organization is in the middle of the implementation process of servitization which provides useful insights in the applicability of the models and the

challenges an organization faces during this process. During the transformation process fundamental change processes will take place in several levels within the organization, at different moments in time, which all need to be coordinated and balanced. Therefore, Philips provides an interesting research setting.

Besides, this study extends the literature on servitization by investigating the process of organizational change. Most studies regarding servitization focus on the context and content of change (Baines et al., 2017; Martinez et al., 2017). This study provides insights on how to implement and organize the transformation process of a manufacturing firm towards providing solutions. More specifically, it discusses three models that support an organization in getting a clear view on its progress within the transformation process.

Moreover, the results of the study suggest that it is challenging for organizations to find a match between the development of the strategy at a macro level and the transfer to the operational level of the organization. The MM solves this problem by providing a tool to support communication of the progress between the two levels. Besides, Kotter's model (1996) focuses on the contribution of leaders in the development and communication of the vision. In addition, the 3D model mentions the need to enable employees to experiment with the set up and design of the transformation process. This experimental approach to servitization is proposed by Kowalkowski et al. (2017b) as well. These authors state the transformation process consists of tentative steps of trial and error, as organizations are unable to predict relevant service offerings in later periods. The fact that Philips struggles to transfer plans to an operational level, shows the implementation process of changes related to servitization are comprehensive and complex in a large organization. This study forms a starting point for more empirical research regarding the operationalization of a servitization strategy.

5.2.2. Practical implications and recommendations

This study provides insights in the change process, the important activities, pitfalls, and points of focus for organizations during servitization. The findings can be used as a guidance for organizations that want to transform to provide services. First, the results show it is effective to use the three dimensions proposed by the 3D model of Achterbergh and Vriens (2019) as a basis when managing the transformation process. However, the attitude towards the dimensions needs to be flexible, as organizations must continuously monitor their improvement and need to be able to adjust when necessary.

Second, the developed maturity model (MM) focused on servitization is helpful for organizations to determine their status within the transformation process. Besides, it displays

which aspects need more attention for the organization to become more mature. Moreover, the MM is an important communication tool to show employees the urgency to change. Nevertheless, the MM lacks the ability to measure the engagement of employees and how they perceive the changes. While this study showed this is an important aspect of implementing changes.

In general, most organizations tend to focus on developing a strategy, vision, and plan on a strategic level. However, the results of this study indicate that to successfully transform an organization, it is important to concentrate on the transition of the strategic plans to an operational level within the organization. Employees are the ones that must carry out the new way of working and implement changes. Therefore, organizations must check and evaluate if employees have access to the necessary information, possess the right attitude towards change, and are able to change their behaviour. Some useful practices noticed by interviewees are a monthly business review, assessing performance based on potentiality, analysing the change process, and using incentives based on providing services.

In addition, the results of this study provide tools to empower engagement of employees. First, to ensure changes are implemented an organization must enable employees to make the changes their own. Organizations need to create an environment in which there is room to experiment. Employees must be involved in the intervention organization and get the opportunity to perform diagnosis and design activities. In this way, employees get the opportunity to discover their new jobs within the new strategy amplifying their willingness to change. Second, the results of this study showed that communication is a crucial aspect to change employees. The results indicate that communication via multiple channels contributes to creating urgency and willingness to change among employees. Managers must carry out the strategy and take every opportunity to talk about it.

Besides, it is important to create a tool for knowledge management via which employees can easily get access to the necessary information and can update their knowledge. In this way, the organization empowers them to change. Moreover, it is crucial to show employees the important value they play in the transformation process to create confidence. In addition, if employees are able to understand the value of servitization they can also communicate the added value of the organization's services to consumers.

Finally, to provide services on a large scale it is efficient to focus on creation of standard building blocks. In this way, every sales employee or consultant has the same starting point but by combining different building blocks is still able to create a customized. In addition, next to

changing and training their employees' behaviour, it is important for organizations to focus on educating their customers, as they also need to be able to join the transformation.

5.3 Limitations of the research

Regardless of the results of this study, it is important to acknowledge and recognize the theoretical and methodological limitations of this research. First, this study investigates to what extent three change models support organizational transformation within servitization by ascertaining their presence in the transformation process of Philips. At the time of the interviews Philips was operating at the start of the implementation process of servitization. This phase is interesting to investigate as is a chaotic period that is accompanied with a lot of conflicting processes. Nevertheless, this phase of transformation is also a limitation of the study, as the findings are focused on the start of the implementation process.

Besides, the geographical scope of the sample is another limitation this study. Interviews are conducted with respondents working at departments spread all over the world. Notwithstanding the fact that this was a deliberate choice to gather a comprehensive view on servitization within Philips, the cultural norms and values of employees can impact the findings. The problem of engagement of employees can be influenced by how a national culture looks at change. For example, employees working in China are more willing to follow leaders, prefer a top-down approach, and might therefore perceive less problems with engaging employees during the transformation process.

A methodological limitation of a case study is the limited generalization of the findings. In this study, eleven interviews are conducted which provides a limited view on the change process of a large-scale organization like Philips. However, due to time constraints it was not possible to conduct more interviews. To increase generalization interviews were conducted in a variety of departments that differed in their location, knowledge about servitization, and progress within the transformation process. In this way, the study provides a comprehensive view on the transformation process towards providing services. In addition, to increase the reliability the controllability of the data collection is maximized by attaching an interview guide, summaries of the interviews, an overview of the quotations and codes in the appendices.

Moreover, the analysis of the interviews and especially the ranking of the quotes to the maturity levels is sensitive to subjectivity of the researcher. To limit this bias, respondents are asked to check the transcriptions to verify the interpretation. Besides, the coding process regarding the assessment of maturity levels is done via open and theoretical encoding to analyse the data from different perspectives. Notably, the limitations show that this research provides

a limited basis to draw final conclusions. It is recognized that the generalizability of this study is restricted, however this research forms a neat basis for further research.

5.4 Directions for future research

After performing this research several recommendations for further research became clear. First, this research was limited to one organization that was at the start of the implementation of servitization. Future research could extend this study by applying the three change models to the transformation process of different organizations. A larger sample provides the opportunity to test the assumptions made in this study. Besides, studying multiple cases is a stronger basis for theory development as similarities and differences can be found and compared (Eisenhardt, 1989). Besides, a more longitudinal research design for studying the servitization process could provide useful insights on how an organization moves through the stages provided by the three change models, as partitioners wish to understand how an organization meanders through the transformation process. Investigating organizations that have successfully implemented a servitization strategy could provide new useful insights regarding the applicability of the change models. Hence, to substantiate the outcomes, it is suggested to replicate this research at multiple organizations at different phases of servitization.

Moreover, this research is conducted at a large-scale organization operating at a global level, which may have an impact on the results. When conducting the study at small and medium-sized enterprises (SME), different results might emerge. Smaller organization could have a more hybrid situation regarding strategy development and implementation. Therefore, they could face less problems with engagement of employees and transferring plans at a strategic level to the operational level, as the same employees are involved in both processes. Therefore, conducting this study at SMEs could provide new perceptions to the perceived problems.

Moreover, this research uses a firm level perspective when investigating servitization. The results show that Philips struggles to transfer knowledge to employees at an operational level and to ensure they are engaged to the change process. A firm level perspective might be limited to solve this problem, as it does not investigated processes at an employee level. Therefore, it might be useful to apply an employee level perspective like the ability, motivation and opportunity (AMO) framework or Job Demands-Resource model. Adding this view to the study might provide new insights on how to engage employees.

Finally, literature regarding strategic implementation and participation could provide interesting insights to combine with the three change models. Studies regarding participation

of employees in strategic change might provide useful tipping points to solve the problem regarding operationalization of servitization strategy. Besides, it may declare why organizations have difficulties implementing a servitization strategy. Consequently, future research should focus on the operationalization of a servitization strategy during the transformation process.

5.5 Ethical considerations and reflection

During the research process several actions are taken to ensure the trustworthiness of the study. First, the theoretical references of this research are based on scientific articles gathered by a thorough literature study. Besides, the reference list is verified to ensure all articles used in the study are referenced. Moreover, as a researcher I did my utmost to prevent misinterpretation of the data and results. Second, to guard the confidentiality and anonymity of the respondents all data is anonymized. The respondents' name, function, and other traceable information has been omitted from the transcripts. Besides, the confidentiality of the quotes is checked by the interviewees to ensure that no confidential information is included in this study. Besides, all records of the interviews are deleted after finishing the study. In this way, it is ensured the respondents felt comfortable to express their honest opinion regarding the current situation of the organization. Third, the informed consent is an important ethical aspect of qualitative research. The interviewees are informed about the aim of the study and the main concepts are explained before the interview started. In addition, participation within this study was voluntary, and interviewees were giving the opportunity to withdraw at any moment in time. A more extensive description of the research ethics can be found in § 3.5.2.

Finally, some final remarks on the process can be made by reflecting upon my role as a researcher. Writing this master thesis was demanding for me and I experienced a lot of ups and downs during the process. It was challenging to meet conflicting demands of on the one hand Philips, which was more focused on practical recommendations, while on the other hand the need to provide new scientific insights and contribution to scientific literature. Due to this challenge the main subject and research question of my study have changed a couple of times. However, looking back at the past years, I am satisfied with and proud of the result.

References

- Achterbergh, J., & Vriens, D. (2019). *Organizational development: Designing episodic interventions*. Routledge, 2019.
- Adrodegari, F., & Saccani, N. (2020). A maturity model for the servitization of product-centric companies. *Journal of Manufacturing Technology Management*.
- Alghisi, A., & Saccani, N. (2015). Internal and external alignment in the servitization journey—overcoming the challenges. *Production Planning & Control*, 26(14-15), 1219-1232.
- Alvarez, R. L., Martins, M. R., & Silva, M. T. (2015). Applying the maturity model concept to the servitization process of consumer durables companies in Brazil. *Journal of Manufacturing Technology Management*, 26(8), 1086-1106.
- Anderson, C. (2010). Presenting and evaluating qualitative research. *American journal of pharmaceutical education*, 74(8), 141.
- Andersen, T. C. K., Madsen, M. E. E., & Goduscheit, R. C. (2020). Key Dimensions of Assessing Servitization Towards a conceptual maturity model. CINet Conference.
- Appelbaum, S. H., Habashy, S., Malo, J. L., & Shafiq, H. (2012). Back to the future: revisiting Kotter's 1996 change model. *Journal of Management development*, 31(8), 764-782.
- Baines, T. S., Lightfoot, H. W., Benedettini, O., & Kay, J. M. (2009a). The servitization of manufacturing: A review of literature and reflection on future challenges. *Journal of Manufacturing Technology Management*, 20(5), 547-567.
- Baines, T. S., Lightfoot, H., Peppard, J., Johnson, M., Tiwari, A., Shehab, E., & Swink, M. (2009b). Towards an operations strategy for product-centric servitization. *International Journal of Operations & Production Management*, 29(5), 494-519.
- Baines, T., Lightfoot, H., & Smart, P. (2011b). Servitization within manufacturing: Exploring the provision of advanced services and their impact on vertical integration. *Journal of manufacturing technology management*, 22(7), 947-954.
- Baines, T., & W. Lightfoot, H. (2013). Servitization of the manufacturing firm: Exploring the operations practices and technologies that deliver advanced services. *International Journal of Operations & Production Management*, 34(1), 2-35.
- Baines, T., & Lightfoot, H. W. (2014). Servitization of the manufacturing firm: Exploring the operations practices and technologies that deliver advanced services. *International Journal of Operations and Production Management*. 34(1), 2-35.
- Baines, T., Ziaee Bigdeli, A., Bustinza, O. F., Shi, V. G., Baldwin, J., & Ridgway, K. (2017). Servitization: revisiting the state-of-the-art and research priorities. *International Journal of*

- Operations & Production Management*, 37(2), 256-278.
- Baines, T., Bigdeli, A. Z., Sousa, R., & Schroeder, A. (2020). Framing the servitization transformation process: A model to understand and facilitate the servitization journey. *International Journal of Production Economics*, 221, 107463.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, 17(1), 99-120.
- Becker, J., Knackstedt, R., & Poppelbuß, J. (2009). Developing maturity models for IT management – A procedure model and its application. *Business and Information Systems Engineering*, 1(3), 213–222.
- Berg, P., Leinonen, M., Leivo, V., & Pihlajamaa, J. (2002). Assessment of quality and maturity level of R&D. *International Journal of Production Economics*, 78, 29–35
- Bleijenbergh, I. (2015). Kwalitatief onderzoek in organisaties. *Den Haag: Boom Lemma Uitgevers*.
- Brax, S. (2005). A manufacturer becoming service provider—challenges and a paradox. *Manufacturing Service Quality: An International Journal*, 15(2), 142–155.
- Bustinza, O. F., Vendrell-Herrero, F., & Baines, T. (2017). Service implementation in manufacturing: An organisational transformation perspective. *Int. J. Production Economics* 192 (2017) 1–8.
- By, R. T. (2005). Organisational change management: A critical review. *Journal of change management*, 5(4), 369-380.
- De Bruin, T., Rosemann, M., Freeze, R., & Kaulkarni, U. (2005). Understanding the main phases of developing a maturity assessment model. In *Australasian Conference on Information Systems (ACIS)*. Australasian Chapter of the Association for Information Systems.
- Eisenhardt, K. M. (1989). Building Theories from Case Study Research. (A. M. Huberman & M. B. Miles, Eds.). *Academy of Management Review*, 14(4), 532–550.
- Fang, E., Palmatier, R. W., & Steenkamp, J. B. E. (2008). Effect of service transition strategies on firm value. *Journal of marketing*, 72(5), 1-14.
- Gebauer, H., Fleisch, E., & Friedli, T. (2005). Overcoming the service paradox in manufacturing companies. *European management journal*, 23(1), 14-26.
- Gebauer, H., & Friedli, T. (2005). Behavioral implications of the transition process from products to services. *Journal of Business & Industrial Marketing*.
- Gebauer, H. & Fleisch, E. (2007). An investigation of the relationship between behavioural processes, motivation, investments in the service business and service revenue, *Industrial*

- Marketing Management*, 36, 337-48.
- Goedkoop, M. J., Van Halen, C. J., Te Riele, H. R., & Rommens, P. J. (1999). Product service systems, ecological and economic basics. *Report for Dutch Ministries of environment (VROM) and economic affairs*, 36(1), 1-122.
- Gudergan, G., Buschmeyer, A., Krechting, D., & Feige, B. (2015). Evaluating the readiness to transform towards a product-service system provider by a capability maturity modelling approach. *Procedia Cirp*, 30, 384-389.
- Kindström, D., & Kowalkowski, C. (2015). Service driven business model innovation: organizing the shift from a product-based to a service-centric business model. *Business Model Innovation: The Organizational Dimension*, Oxford University Press, UK, 1-38.
- Kotter, J. P. (1996). Leading Change: Why transformation efforts fail. *The Journal of Product Innovation Management*, 2(13), 170-178.
- Kowalkowski, C., Kindström, D., Alejandro, T. B., Brege, S., & Biggemann, S. (2012). Service infusion as agile incrementalism in action. *Journal of Business Research*, 65(6), 765-772.
- Kowalkowski, C., Gebauer, H., & Oliva, R. (2017). Service growth in product firms: Past, present, and future. *Industrial marketing management*, 60, 82-88.
- Lasrado, L. A., Vatrapu, R., & Andersen, K. N. (2015). Maturity models development in is research: a literature review, *Proceedings of IRIS 38*.
- Lewin, K. (1947), "Frontiers in group dynamics II. Channels of group life; social planning and action research", *Human Relations*, 1(2), 143-53.
- Li, H., Ji, Y., Gu, X., Bao, Z., & Qi, G. (2014). A universal enterprise manufacturing services maturity model: a case study in a Chinese company. *International Journal of Computer Integrated Manufacturing*, 27(5), 434-449.
- Lockamy, III A., & McCormack, K. (2004). The development of a supply chain management process maturity model using the concepts of business process orientation. *Supply Chain Management: An International Journal*, 9(4), 272-278.
- Lütjen, H., Tietze, F., & Schultz, C. (2017). Service transitions of product-centric firms: An explorative study of service transition stages and barriers in Germany's energy market. *International Journal of Production Economics*, 192, 106-119.
- Martinez, V., Bastl, M., Kingston, J., & Evans, S. (2010). Challenges in transforming manufacturing organisations into product-service providers. *Journal of manufacturing technology management*, 21(4), 449-469.
- Martinez, V., Neely, A., Velu, C., Leinster-Evans, S., & Bisessar, D. (2017). Exploring the journey to services. *International Journal of Production Economics*, 192, 66-80.

- Mathieu, V. (2001). Product services: From a service supporting the product to a service supporting the client. *Journal of Business & Industrial Marketing*, 16(1), 39–61.
- Mays, N., & Pope, C. (2000). Assessing quality in qualitative research. *British Medical Journal*, 320(7226), 50-52.
- Neely, A. (2008). Exploring the financial consequences of the servitization of manufacturing. *Operations management research*, 1(2), 103-118.
- Oliva, R., & Kallenberg, R. (2003). Managing the transition from products to services. *International journal of service industry management*, 14(2), 160-172.
- Paulk, M.C., Curtis, B., Chrissis, M.B., & Weber, C.V. (1993). The capability maturity model for software, Version 1.1. *Pittsburgh, PA: Software Engineering Institute (SEI)*, 10(4), 18-27.
- Philips, R. (2015). Philips' Annual Report 2015. Retrieved August 28 2019, from <https://www.results.philips.com/publications/ar15#/>
- Philips, R. (2019). Royal Philips Company Profile. Retrieved August 28 2019, from <https://www.philips.com/a-w/about/company.html>
- Pistoni, A., & Songini, L. (Eds.). (2017). *Servitization Strategy and Managerial Control*. Emerald Publishing Limited.
- Pöppelbuß, J., & Röglinger, M. (2011). What makes a useful maturity model? A framework of general design principles for maturity models and its demonstration in business process management. *ECIS 2011 Proceedings*, 28.
- Pollack, J., & Pollack, R. (2015). Using Kotter's eight stage process to manage an organisational change program: Presentation and practice. *Systemic Practice and Action Research*, 28(1), 51-66.
- Raddats, C., & Kowalkowski, C. (2014). A reconceptualization of manufacturers' service strategies. *Journal of Business-to-business Marketing*, 21(1), 19-34.
- Rapaccini, M., Saccani, N., Pezzotta, G., Burger, T. and Ganz, W. (2013), "Service development in product-service systems: a maturity model", *Service Industries Journal*, 33(3), 300-319.
- Reinartz, W., & Ulaga, W. (2008). How to sell services more profitably. *Harvard business review*, 86(5), 90.
- Röglinger, M., Pöppelbuß, J., & Becker, J. (2012). Maturity models in business process management. *Business process management journal*.
- Storbacka, K. (2011). A solution business model: capabilities and management practices for integrated solutions. *Industrial Marketing Management*, 40(5), 699–711.

- Symon, G., & Cassell, C. (Eds.). (2012). *Qualitative organizational research: core methods and current challenges*. Sage.
- Tukker, A. (2004). Eight types of product–service system: eight ways to sustainability? Experiences from SusProNet. *Business strategy and the environment*, 13(4), 246-260.
- Turunen, T. 2011. Users as a development driver in manufacturing: The case of “reverse” servitization. In *User-based innovation in services*, ed. J. Sundbo and M. Toivonen, 177–99. Cheltenham, UK: Edward Elgar.
- Vandermerwe, S., and Rada, J. (1988). Servitization of Business: Adding Value by Adding Services, *European Management Journal*, 6(4), 314-324.
- Visnjic, I., & Van Looy, B. (2013). Servitization: Disentangling the impact of service business model innovation on manufacturing firm performance. *Journal of Operations Management*, 31(4), 169-180.
- Visnjic, I., Wiengarten, F., & Neely, A. (2016). Only the brave: Product innovation, service business model innovation, and their impact on performance. *Journal of Product Innovation Management*, 33(1), 36-52.
- Yin, R. K. (2014). *Case Study Research: Design and Methods*. Thousand Oaks, California: Sage Publications.

Appendices

Appendix 1: Overview Challenges Servitization

Challenge	Description	Solution	Reference
Service strategy	The value proposition changes from being a unidirectional value delivery to value co-creation.	An increased awareness and commitment of the top management is needed to boost the service awareness and attitude of employees and to adequately invest in the service business. A service transition strategy may involve sacrificing the level of resource inputs to the core product and manufacturing competencies, in favour of developing the service business	Alghisi & Saccani (2015),
Internal organization	Creating the right organizational infrastructure that supports services. Due to differences between services and products changes in organizational language, values and design are necessary. Formal allocation of work roles and the adoption of a management mechanism to control internal activities and support the implementation of business strategy.	A firm-wide initiative is needed, it cannot be delegated to a single department. The internal organization should be aligned with the servitization strategy.	Alghisi & Saccani (2015), Brax (2005), Kindstrom (2010), Martinez et al. (2010), Storbacka (2011).
Product-service culture	Change organizational culture to become service oriented. Focus on mindset of customers, managers, and employees.	Increase information exchange with customers and develop service oriented relational capabilities to gather an understanding of customers' needs. Work with all actors in the manufacturer's network.	Alghisi & Saccani (2015), Baines & Lightfoot (2013), Lütjen, Tietze, & Schultz, (2017), Neely (2008), Storbacka (2011).
Customer management	Collaborative management. Customer orientation and long-term relationships based on value co-creation are needed to provide services that meet the customer's demands. Customers also need to change their mindset, to better understand the value of servitised offerings and to move from the ownership to the access paradigm.	Increase information exchange with customers and develop service oriented relational capabilities to gather an understanding of customers' needs. Work with all actors in the network.	Alghisi & Saccani (2015), Baines & Lightfoot (2013), Lütjen, Tietze, & Schultz (2017), Neely (2008), Storbacka (2011).
Service delivery & development	Service development process lacks. Product based metrics are not suitable for product-service provision. Modularisation and standardisation allow firms to build service offerings that are scalable, so that individual solutions can be provided to customers based on the configuration of standard 'building blocks.	Gather service design capabilities to successfully implement a service transition strategy.	Alghisi & Saccani (2015); Gebauer et al. (2005); Kindström & Kowalkowski (2014); Lütjen, Tietze, & Schultz (2017); Neely (2008).
Knowledge Management	Organizations struggle to create knowledge management systems that enable them to use data from their installed base and share knowledge between different departments and employees.	In the case of formal interactions within or across teams, while rewards could be made partly contingent on knowledge sharing behaviours, rewards based on collective performance are also effective in creating a feeling of cooperation, ownership, and commitment among employees. In addition, we propose that team-based rewards and companywide incentives (profit sharing, gainsharing, and employee stock options) would be particularly instrumental in enhancing knowledge sharing within teams and across work units, respectively.	Baines et al., 2010; Van Wijk, Jansen, & Lyles, 2008

Appendix 2: Overview Maturity Models Servitization

Author	Topic	Focus	Maturity description	Dimensions & elements
Adrodegari et al. (2020)	MM for servitization of product-centric companies	Bi-dimensional, business model component	Assessing and positioning companies in the servitization journey	1. Organizational approach; 2. Management of processes; 3. Performance Management systems; 4. Tools; 5. Capabilities
Andersen (2020)	Assessment of maturity of manufacturing organizations	A holistic approach of the servitization transformation via causality effects	Manufacturing companies move from product manufacturer towards the solution provider along a defined and structured transformation path	1. Organizational governance; 2. Strategi Management; 3. Value function activities; 4. Market reach; 5. Digital integration; 6. Service integration
Alvarez et al. (2015)	MM for servitization process	Process. The relationships among players in the value chain	The capacity of maintaining organizational relationships among players in the value chain describes the organizational maturity needed to advance towards the next phase	The model is based on the relationships maintained, as described by four category levels: 1. Market 2. Network; 3. Internal; 4. Customer
Gudergan et al. (2015)	Change readiness & success factors of transformation process	Change readiness for upcoming transformation projects	Maturity levels indicate the process capability and additionally contain key process areas in which the importance of setting goals that were discussed earlier are set and achieved.	1. Strategy, 2. Design, 3. Delivery, 4. Leadership & Communication
Rapaccini et al. (2013)	New service development	New service development	MMs can be viewed as staged roadmaps for assessing the capabilities of an organization with respect to a definite management domain, to set out directions for improvement	1. Organizational approach: Internal relevance of NSD, Roles, Management practices 2. Use of specific resources, skills, and tools: Budget, Tools & methods, Skills 3. Involvement of customers, suppliers, and other stakeholders 4. Performance management systems: Feedback system, KPI's

Appendix 3: Maturity Model – Extensive version

Maturity Level		1. Initial stage	2. Repeatable	3. Defined	4. Managed	5. Optimized
Dimension	Element					
Stakeholders	Managers	Leaders are not aware of the importance of services and why change is needed.	Leaders are aware of the importance of services and start to develop a servitization strategy. Communicate strategy to middle management.	Leaders act according to the new strategy. The vision is communicated to employees. Attempt to remove barriers to change via training and performance systems. Guiding coalition of employees is created.	Leaders support employees in the change process and evaluate their progress. Leaders must provide employees with easy access to the necessary information about the transformation process.	Leaders are role models and try to make change last. New ways of working are integrated into daily routines.
	Employees	Employees are not aware of the importance and definition of services. Besides, they are not willing to change their behavior.	Readiness for change is created, by showing employees the gap between status quo and target state. Employees are aware of the service strategy and the impact on their ways of working.	Employees understand the status quo and future target. Confidence is gathered via trainings and by showing the important piece employees play in the process. Sales employees are trained and are now able to see the value of providing solutions.	Employees have full understanding of the value of services. Role models are used to show the new alternative behaviour. Sales employees can communicate the value of solutions and integrate services into the offerings they propose to customers.	Employees act upon the new way of working and implemented the changes in their day-to-day activities. They can communicate the value of solutions to customers.
	Customers	Customers are not ready to see the value of services and are not willing to pay.	Customers are educated and trained to see the value of services.	Standardized programs on how to communicate the value of services. Training and education programs are available.	Customers see the value of services and are willing to pay. Training and education programs are available.	Customers are trained on a regular basis to stay up to date.
Strategy	Vision	No service strategy defined, projects are run as ad hoc and chaotic initiatives.	Service strategy is defined and contains a service business vision about future progress of the organization.	Service strategy is part of the business strategy. Clear and tangible goals are set. Common understanding among all stakeholders.	Strategy is the basis of decision making in the organisation. Process of transformation is designed by analysing current and future potentials.	Feedback from operation to adapt strategy and stay up to date.
	Customer Focus	Customers are not involved, organisation does not or only on a rarely basis use customers' needs as a basis for innovation. No measurements to see if customers' needs are met.	There is a common understanding for the need to focus on customers and co-creation. Customers are involved ad hoc in the definition of requirements. No formal guideline on how to measure if customers' needs are met.	Organisation understands and documents customer needs. Tools and metrics are developed to measure customer satisfaction. The needs are updated and used for innovation purposes.	Ability to verify that customer needs are met. Measurement system is a standard framework that is re-used. Co-creation of new services with customers. Standardized processes to keep customer needs and expectations up to date.	Customer needs are fully understood, documented, and continuously updated. The needs are the basis for the innovation. Customers are involved as co-designers. Firm is continuously improving their processes based on the measurement of meeting customer needs.

Resources	Capabilities	No availability of the right capabilities to provide services.	The capabilities required for providing solutions are understood. Assessments to test current skills, however results are not used to improve the skill set.	Standard assessments to test current skills are integrated into the design of trainings and webcasts. Key service capabilities are defined and communicated.	Standard assessments to test and improve the current skill set via training and webcasts. More advanced capabilities are available.	Standard assessment results are used to continuously improve trainings for employees and to determine what capabilities will be needed in the future > HR selection based on these criteria.
	Budget	Services are not seen as requiring budget	Minimal budget for ad hoc projects	Specific budget (allocated yearly)	Specific budget allocated according to mid-term plans	Budget consistent with the objective to achieve the best performance for new service development (NSD)
	Tools & methods	No tools nor specific resources to support projects available.	No standard approach (ad hoc, project-defined). General purpose tools	Some methods derived from product development. General purpose tools	NSD methods/framework in place, development process formalized. Specific supporting tools	Development process formalized. Best-of-breed tools, continuous improvement of methods. Customization of existing methods to specific company needs.
Organizational Approach	Project Management	No formal procedures, chaotic and non- systematic approach	Basic project management, still chaotic. Some policy statements have been made.	There is a systematic approach. The organization is aware of the process, but some activities are still incomplete or inconsistent	A systematic approach with formal procedures shared internal. Tasks, responsibilities, and authorizations are defined and communicated. Comprehensive management reports are made and discussed.	Procedures are integrated with other key processes and lead to a continuous improvement. Quality management activities are formalized in the procedure.
	Relevance of services	No relevance, focus on NSD	Focus on NSD, service elements added as occasional	Focus on NPD + supplementary services	Focus on integrated development of products and services	Focus on developing customer solutions or PSSs
	Roles	No formal or informal roles	Project-based team, extemporaneous, ad hoc identification of participant	Project-based recognized team	Project-based recognized team. Formal role responsible of specific service category	Project-based recognized team. Formal role responsible for specific service category. Roles dedicated also to strategic planning based on service portfolio analysis.
Performance Management	Feedback systems	No feedbacks are collected; corrective actions are based on subjective intuitions rather than on objective data analysis	Feedbacks are poorly used. Corrective and preventive actions are performed according to internal procedures.	Feedbacks are achieved and discussed. There is consistent use of monitoring systems for assessing the new services.	Feedbacks are systematically used to identify the weaknesses of the new services. Improvements and innovations are performed in a systematic way.	Feedbacks are systematically used, to identify NSD process weaknesses and to improve management system. Continuous improvement and innovation are carried out.
	Key Performance Indicators	No measures in place	Few and ad hoc measures, mainly related to costs and productivity to point out cost-savings opportunities	Standard KPIs dashboard. Cost and time measures are mainly considered	Balanced measures, considering internal, external, customer and financial orientation	Balanced measures for new services, considering internal, external, customer and financial orientation

Appendix 4: Overview Interviewees

Number	Department	Area	Country
1	Philips product portfolio	Market/Global	Italy
2	Clinical Services	Global	Global
3	HTS	Global	Netherlands
4	Philips Innovation Services	Business Unit	Netherlands
5	Monitoring Analytics & Therapeutic Care (MA&TC)	Market/Business Unit	NAM
6	Strategic Business Architects global community of practice	Europe, the Middle East, Africa & Latin America	Netherlands
7	PS	Global	Netherlands
8	MTS	Global	Netherlands
9	MA&TC	Business unit & Global	Netherlands
10	Patient Care and Monitoring Solutions	Market	NAM
11	Professional Services (PS)	Market	China

Appendix 5: Interview Guide

1. Introduction

My name is Sophie Schouten, I am currently writing my thesis for my master's in Business Administration at Radboud University Nijmegen, in this regard I got the chance to do an internship at Philips Innovation Management (PS).

The study of my thesis investigates what growth trajectory firms use in practice when they are transforming their organisation from delivering products towards providing services/solutions. Besides, I will build a MM that will function as an assessment tool to determine the current position of departments within this transformation process.

The result of the prescribed transformation process is referred to as 'servitization' in literature, which is the delivery of integrated customer-focused offerings of combinations of products and services. Your answers to the questions will be anonymous. To help with transcribing and my analysis, I would like to ask your permission to record the interview. You will not be quoted and the company/department will not be identifiable in the report.

This interview will take approximately 45 minutes.

1. Exploratory questions about the interviewee (3 minutes)

- Who are you and what is your position in the organisation?
- For how long have you been involved in [functional department]?

2. Servitization General (25 minutes)

- What is the relevance of services within [department of interviewee]?
- What is your department's strategy regarding providing services?
 - o How is it ensured that this strategy is aligned with the overall strategy of Philips?
- Are you familiar with the transformation process of Philips?
 - o How are you involved in the transformation process?
(Focus on activities/practices)

I will now ask some questions regarding the transformation process of your department and the challenges you have faced within this process.

Transformation process

- Can you tell me more about the transformation process of your department?

- o What was the first thing you were focusing on when starting the transformation process?
- o Which practices did you use first? Structure, people, financial tools?
- What is the current position of your department in the transformation process towards providing solutions?

Challenges

- What challenges has your department faced in the past during the transition towards providing solutions?
- What practices enabled your department to overcome these challenges?
- What challenges is your department currently coping with during the transition towards providing solutions?
- What challenges do you think the department will face in the future during the transition towards providing solutions?
- What practices do you expect to enable your department to overcome these challenges?

3. Functional Dimension

(10 minutes)

Design

- How are stakeholders (customers) involved in the servitization process/practices?
 - o Customer orientation, relationship-based value creation
- Which standardized procedures/methods are used to deliver services?
 - o Efficient project delivery practices based on proper defined statements of work.
- Which activities are locally managed and which are globally managed?
- How is it ensured that the portfolio, catalogue, and MAG-codes are aligned?
- How does your company manage its service offerings?
 - o Portfolio management plan/strategy/tool

Risk management

- How are risks being managed?
 - o Reduction, sharing/transfer, and risk retention

Evaluation

- How are servitization practices monitored and evaluated?

4. Social Dimension

(7.5 minutes)

Motivation

- How do you create urgency among individuals?
- What is the change/service vision of your department?
- How do you ensure this is aligned with and part of the business strategy?

Adoption

- How do you communicate the vision to the employees?
 - o Newsletter, presentation, meetings, webcast, masterclass, training etc.

Performance Management & Rewards

- What does your performance management look like?
- What are employees assessed on? Number of sold products/solutions?

5. Infrastructural Dimension

(7.5 minutes)

- How do you lead the change?
 - o For instance, is there one leader, or a guiding coalition?
 - o Change agents?
 - o Bottom up or top down?

6. Closure

(5 minutes)

Check if all relevant questions have been answered. Thank you for your time and the information you provided me.

- Do you have any relevant information which could be relevant, but I did not ask for?

Provide the interviewee a short summary and repeat the appointments made.

- Can I come back to you if any points may not be clear on closer observation?

Appendix 6: Overview of documentation data

1. Enhancing LSPs value propositions through healthcare informatics.
This document discusses how information technology contributes to workflow optimization, patient satisfaction and clinical excellence and how solutions are co-created with clinical partners. This document is published in March 2018.
2. Our journey in health technology.
This document presents the technological history of Philips within the healthcare domain as well as the opportunities that are identified for the application of different technologies within the healthcare domain. This document is published in August 2018.
3. Solutions at Philips.
This document discusses the transition towards becoming a solution provider. This document is published in January 2018.
4. Our transformation journey explained.
This document describes how Philips is co- evolving with competition and the changing healthcare environment. This document also describes the roadmap for Philips to win in the market, for example through value- added integrated solutions. This document is published in November 2018.
5. Frequently Asked Questions
November 9th 2017.
Why are we transforming into a product and solutions company?
6. Philips Service thinking by Geert Buijk
April 2nd 2019.
7. The five key principles of #servicethinking
Published: June 7th 2019.
8. Our Service & Solutions Delivery
Published on April 15th 2019.
9. Why servitization is key to the solutions business model?
Published on May 10th 2019.
10. What is 'servitization' and why is it important?
Published in May 2019.
11. Philips Services & Solutions Delivery
Published in April 2019.

Appendix 7: General aspects of change models

Table 3: General aspects of Kotter's (1996) eight steps

Theory coding	ID	Quote	Open code	No.
Change vision of employees	5.54	Getting them to understand you do not have to think that way, we are not leading with the product.	Product driven	3.1
Change vision of employees	10.69	So, uhm I find it very interesting the way that people are starting to think about it. So, little by little I wanted to change the way people are thinking about services. Uhm, but even within Philips in the culture that we have here, it is very much product driven.	Product driven	3.2
Change vision of employees	10	We are not going to be able to sell anything if we do not change the way we look at things and the approach.	Look at things	3.3
Change vision of employees	3	Dat ze eigenlijk de product en productiemanager van managen toepassen op een consultancy wereld en dat een klein beetje bijstellen her en der, maar niet echt qua instelling en mindset wijzigen.	Product driven	3.4
Change vision of employees	8	Ik merk binnen Philips is dat een mindshift die sommige ook echt niet kunnen maken, omdat ze zo zitten in het product.	Product driven	3.5
Focus on people	8	Maar ik denk dat we beter kunnen identificeren wie moet wel mee wie moet niet mee in de verandering. Nu heb je af en toe de neiging van ja iederéén moet mee in de verandering. Dan zijn er heel veel mensen die zeggen huh hoezo moet ik mee in de verandering.	Define who needs to change	3.6
Focus on people	11	We are managing more on dealing with process and human rather than the product itself.	People and process	3.7
Focus on people	3	Het product is de mens, dus je moet ook het stukje menselijk aspect erbij doen, dus iemand moet dan ook door een verandering geleid worden	Focus on people	3.8
Focus on people	1	Yes, we are focused on changing people for sure	Focus on people	3.9
Linear process	8	Maar we hebben nooit een fatsoenlijke market science gedaan, we hebben nooit een volledige strategie uitgewerkt.	No strategy developed	3.10
Linear process	7	We do not have a stepwise way of working currently, where we say this is where you start with to build your PS organisation, this is what you do then, this is what you do then.	No plan	3.11
Linear process	7	We do not have a scrutinised strategy to build on.	No strategy	3.12
Linear process	4	Zeg twee jaar geleden is er gezegd, oké er moeten nu ook echt solutions komen. Hoe moeten wij dat dan opbouwen en vormgeven [...] maar het is niet uhm er is niet iemand naar de tekentafel gegaan die Philips solutions heeft uitgetekend en is het daarna gaan uitrollen.	No plan	3.13
Strategic level	8	Ik merk ook wel dat vanuit het hoogste leadership wel de push begint te komen, maar er zit natuurlijk nog een hele laag tussen die nog niet willen, ofja misschien hoeven zij ook niet mee.	Define who needs to change	3.14
Top-down	4	Er was ook vraag uit de markt, ondernemende Philips mensen hebben ook dat soort dingen opgepakt.	Demand from market	3.15
Top-down	9	Nee, wij hebben geprobeerd top down dus wij zijn daar mee begonnen, maar dat werkte niet.	Top-down does not work	3.16

Theory coding	ID	Quote	Open code	No.
Top-down	8	Ik zie bottom up gelukkig, maar dat komt omdat de klanten gewoon vragen, uit enthousiasme zijn er een paar gekken in de markt, die het oppakken dus dat is het bottom up en vanuit de klant gedreven	Bottom-up via customers	3.17
Top-down	11	I think for China is top/bottom: instructions coming from the management and then the working has to come up with the ideas of how to fix this.	Top-Bottom in China	3.18
Top-down	3	You need to have a boss that tells you what to do and what not.	Top-down	3.19
Top-down	7	Change management is operationalized top down, so starting from you going all the way down to the employees? You might say it that way, but they will not see it coming from us so to say.	Top-down	3.20

Table 5: General aspects of 3D model

Theory Code	ID	Quote	Open Code	No.
Focus on people	11	We are managing more on dealing with process and human rather than the product itself.	People and process	5.1
Focus on people	3	Het product is de mens, dus je moet ook het stukje menselijk aspect erbij doen, dus iemand moet dan ook door een verandering geleid worden	Focus on people	5.2
Focus on people	1	Yes, we are focused on changing people for sure	Change people	5.3
Comprehensive change	6	Als je het goed wilt doen dan moet dat hele businessmodel tot op het niveau van financieel moet mee. En dat zie ik in de praktijk toch vaak niet goed gaan.	Change whole organization	5.4
Comprehensive change	6	Alleen hoe je dieper je in Philips komt naar de backhand toe, [...] Mensen die relatief ver afzitten van de stem van de klant, als je het goed wilt doen dan moet alles meebewegen.	Change Backoffice	5.5
Comprehensive change	4	Misschien heeft Philips in dat opzicht wat meer ruimte en mogelijkheden omdat we dat natuurlijk een beetje business voor business kunnen doen. Dan kun je een business door dit proces laten gaan en als zij vervolgens in het positieve deel belanden.	Change process per business	5.6
Adjustments	11	So, we always adjust ourselves and look backwards to see how good or how bad we have done for every quarter to reduce our risk for future.	Evaluate actions	5.7
Experimentation	8	We willen transformatieve zijn, ja dan na 2 jaar blijkt het allemaal niet zo snel en niet zo makkelijk te gaan. En dan zeggen we dankjewel mensen en sorry, dan stoppen we ermee en die mensen moeten dan ineens iets anders gaan zoeken terwijl we wel roepen we hebben mensen nodig die entrepreneurial zijn en risico nemen.	Taking risks	5.8
Experimentation	8	Een heel interessant ding aan verandering en innovatie is ook dat het kan lukken en ook niet kan lukken, wat pijnlijk is etc. En dat wordt onvoldoende erkend binnen Philips, vind ik.	Acknowledge mistakes	5.9
Separate organization	7	We started by setting up a centre of excellence, there was nothing before that really focused on PS.	Center of Excellence	5.10