# Implementing TPM at Aviko Rixona: an institutional work perspective

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# Abstract

This study examines how institutional work was applied to make Total Productive Maintenance practices legitimate within Aviko Rixona Venray. Aviko Rixona is an food production company specialized in the manufacturing of dehydrated potato granules and potato flakes. The institutional work performed by the change agents was investigated using a single case study with qualitative semi-structured interviews. This research shows the development of the institutional work that took place during the implementation process. This institutional work led to changes in the legitimacy of TPM practices. The findings show that by using a broader set of institutional work and increasing its intensity, some TPM practices have ultimately gained greater legitimacy throughout the organization. Ultimately, one could speak of partial legitimacy of TPM practices within the organization, due to the institutional work that took place. This study mainly advances the literature on institutional work by paying attention to institutional work in the micro-institutional context such as companies and by paying attention to the full spectrum of institutional work. In addition, this research provides a more nuanced view on legitimacy by distinguishing between two legitimacy concepts, namely fragmented and partial legitimacy.

*Keywords*: Aviko Rixona, institutional work, Total Productive Maintenance (TPM), implementation process, legitimacy.

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# Chapter 1 – Introduction

In the past three decades, organizations in the manufacturing industry have undergone a remarkable degree of change concerning radical changes in management approaches, product and process technologies, customer expectations, attitude of suppliers and competitive behaviour (Ahuja, Khamba, and Choudhary, 2006). In today's very dynamic and rapidly changing environment, the global competition among organizations has led to higher demands on the organizations (Oke, 2005). The worldwide marketplace has witnessed an increased pressure from customers and competitors in manufacturing as well as service sector (Basu, 2001; George, 2002). If organizations want to become or remain leaders in the industry and want to survive in today's highly competitive business environment, they need to improve at a faster rate than their competitors (Ahuja and Khamba, 2008). One of those organizations that want to change and improve to stay ahead of the competition is Aviko Rixona. Aviko Rixona, an Aviko company, is specialized in the production of food ingredients and natural foods and is part of Royal Cosun. Over the last 60 years, Aviko Rixona has become a leading manufacturer of dehydrated potato granules and potato flakes. They produce these products and semi-finished products with eleven production lines. The products are supplied to industries in more than 60 countries on all five continents. Aviko Rixona has a turnover of 80 million euros and produces about 80,000 tonnes per year. The organization employs over 170 employees who are committed to Operational Excellence, which means that they concentrate on constantly improving the performance of the production processes. Aviko Rixona has two branches, one in Warffum and one in Venray. This research report only concerns Aviko Rixona Venray, henceforward referred to as Aviko Rixona.

Aviko Rixona is continuously looking for ways in which they can enhance their process because they strive to develop and innovate in order to increase the efficiency and effectiveness of the organization as a whole. Organizations often see new management models as a tool that can help to achieve such high levels of efficiency and effectiveness. In 2009, Aviko Rixona introduced one of such management models, the so-called Total Productive Maintenance (TPM) (Nakajima, 1988) and until now, they still work with certain TPM principles. Nakajima (1989) defined TPM as an innovative approach to maintenance that optimizes equipment effectiveness, eliminates breakdowns and promotes autonomous maintenance by operators through day-to-day activities involving total workforce. The TPM initiative is targeted to improve the competitiveness of organizations, and it includes a

structured approach to transforming the mind-set of employees, thereby making a visible change in the work culture of an organization. TPM attempts to engage all levels and functions in an organization to maximize the overall effectiveness of production equipment. This practice seeks to optimize the effectiveness of processes and equipment by reducing mistakes and accidents (Shirose, 1995). The implementation of such a management model has led to significant organizational changes at Aviko Rixona regarding the infrastructure and social practices within the organization. Therefore in this study, the implementation of TPM is seen as significant organizational change. Chapter 2 further elaborates on TPM and its implementation process.

Significant organizational change can mean that institutions change. In this research, institutions will be regarded as institutionalized practices within the organization. Institutionalized practices can be defined based on Scott (2001) as practices that are multifaceted, durable social structures made of symbolic elements, social activities, and material and human resources. Institutionalized practices are seen as a set of legitimate practices. The organization, Aviko Rixona, is seen as the micro-institutional context in which the institutionalization of practices takes place. Van Dijk et al. (2011) stated that organizations involve formal structures and procedures to accomplish organizational aims and are also infused with values and certain interests. Moreover, organizations embody understandings of social reality, organizational purpose, identity and norms that are reproduced by organizational members. According to the 'pillar' framework of Scott (2001), institutions consist of three pillars: regulative elements, normative elements and cultural-cognitive elements. In this study, it is considered that the micro-institutional context also consists of these three pillars (see chapter 2). These institutional elements align the behaviour of organizational agents to create enduring social structures and systems. Research in institutional theory argues that the institutional context can no longer be seen as monolithic, closed systems. Instead, institutional contexts are characterized by fragmentation and internal inconsistencies in their regulative, normative and cultural-cognitive elements, which make them sensitive to social agents' change efforts (Van Dijk et al., 2011). Aviko Rixona is an established company that can be seen as a micro institutional context that both enables and constrains its members' behaviour. Institutional forces constrain change agents in established companies to what is legitimate within existing institutions and structures, thereby inhibiting significant organizational change. Dougherty and Heller (1994) found that change agents in established firms often faced legitimacy crises concerning connections of novel products to

firm strategies and structures and collaboration among departments. Dougherty and Heller (1994) talk about product innovations and Van Dijk et al. (2011) talk about radical technological innovation, which in this study are both seen as significant organizational change. It is also possible that there arise legitimacy crises in other forms of organizational change, such as the implementation of TPM. Organizational changes that lack legitimacy may fail to acquire resources and be abandoned altogether. Such crises of legitimacy illustrate the constraining influence of the micro-institutional context. Yet successful organizational changes do occur within established firms (Van Dijk et al., 2011).

A perspective that has looked at the change of the institutional context is the 'institutional work' perspective as induced by Lawrence and Suddaby (2006). Institutional work is defined as: "The purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions" (Lawrence and Suddaby, 2006, p. 215). In this research, institutional work means the following; the purposive action of individuals and organizations aimed at creating  and disrupting institutionalized practices. The focus is on institutionalizing new practices (creating), whereby it sometimes automatically leads to situations in which old practices are de-institutionalized (disrupting). In this study, the implementation of TPM is considered as the institutional work that took place. The interplay of institutional work by groups of actors could cause organizational changes in the micro-institutional context. A change in the micro-institutional context is, for example, the introduction of an innovation within the Aviko Rixona organization. An innovation cannot simply be dropped. As a result, all kinds of organizational aspects change, certainly if that innovation has a significant effect on the organization. Chapter two deals extensively with the concept of institutional work.

This research concerns Aviko Rixona in Venray, the Netherlands. Aviko Rixona can be seen as a micro-institutional context. The organization started implementing the TPM program in 2009. Innovating actors may find themselves pitted against existing institutional structures because innovations often lack legitimacy. Suchman defines legitimacy as: "A generalized perception or assumption that actions are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions" (1995, p. 574). There are indications that legitimacy was lacking in the early stages of the TPM implementation within Aviko Rixona. Examples of the lack of legitimacy are statements such as: "We have always done it this way, why should that be changed?" and "Why should the Japanese come and tell us how things should be done here". These statements are known to

the researcher because he did an internship during the time of this change process. By looking at the change from an institutional work perspective, it will be examined what institutional work took place within Aviko Rixona to legitimize TPM practices. The institutional work is used to embed the innovation within the organization. In order for Aviko Rixona to stay market leader, it is necessary and unavoidable that they will face coming organizational changes. The purpose of this research is to arrive at results that may allow Aviko Rixona to learn and to create a sound basis for future strategic actions concerning organizational change. With the research results from this study, it is intended that coming related organizational changes will be executed more analytically, potentially leading to a smoother legitimizing of practices. These results can be obtained by investigating a significant change process that took place, namely the implementation of TPM. There will be an evaluation of what institutional work took place and how this enabled or constrained the change process. The main focus is on the contribution made by the change agents in legitimizing TPM. Besides, there is attention to the role of the change recipients in the institutional work that took place. To achieve the objective it is investigated how the institutional work took place and what effect it has on the legitimacy of TPM practices, resulting in the following main question:

*"How was institutional work used to legitimize Total Productive Maintenance practices within Aviko Rixona Venray?"*

The theoretical relevance of this study is twofold. Firstly, it is striking that much research has been done on institutional fields at the macro level and that less attention has been paid to a micro-institutional context like firms (Van Dijk et al., 2011). If we only look at the macro-institutional context, then we do not acknowledge the organization itself is also an institutional context, which results in less nuanced statements in that theoretical field about organizations. At a macro-institutional context, many different stakeholders are often taken into account and this research focuses on one important stakeholder: the customer. By zooming in at a micro-institutional context on one important stakeholder it is possible to get a more detailed perspective on the actual institutional work carried out by the end-user. Hence there is a need for studies that take the firm as level of analysis, which is done in this research. Secondly, there is limited attention to the full spectrum of institutional work. Despite a range of studies that have explored a wide variety of strategies for institutional work, there has remained a focus on symbolic forms of institutional work, at the expense of understanding the role of relational and material forms (Hampel, Lawrence and Tracey, 2015). It is possible that in certain contexts, the different forms of institutional work reinforce each other and if these

forms are not examined, then it is impossible to observe this effect. This study will, therefore, also look at the role of material and relational forms in addition to the symbolic forms of institutional work.

The practical relevance of this study is that it can create new insights into the TPM implementation process, which then, in turn, can be applied to other related organizational changes at Aviko Rixona. When the new way of working does not fit into the current norms and values, it means that the way of working has limited legitimacy and therefore possibly will be not extensively used, making the associated change process less successful. So getting more insight into the influence of institutional work on the legitimizing of practices is that this better understanding, in the end, can lead to a smoother implementation of practices. The implementation of TPM is used as a source of information for optimizing future significant and related changes within Aviko Rixona. So it is intended that future organizational changes benefit from these research results.

This research is divided into several chapters. In chapter two, the theoretical background is explained by examining TPM, the micro-institutional context and institutional work. Chapter three is devoted to methodology. Subsequently, the results are described in chapter four. In chapter five, the conclusion is described, and attention is paid to the discussion. The report is concluded with a literature list and appendices.

# Chapter 2 – Theoretical background

*In this chapter, the relevant theory concerning this study is discussed. In section 2.1, the concept of TPM is explained. Subsequently, section 2.2 will present the implementation of TPM. In section 2.3, the micro-institutional context will be described. Section 2.4 elaborates on the institutional work, especially symbolic, material and relational work. Finally, section 2.5 integrates the micro-institutional context and the institutional work.*

## 2.1    Total Productive Maintenance

Aviko Rixona has started implementing TPM since 2009. In 1971, the Japanese developed and presented the concept of TPM. Nakajima (1988) stated that TPM is a maintenance system which comprises the entire life of equipment in every department including planning, manufacturing, and maintenance. TPM consists of eight basic practices and is often called the pillars of TPM. The core TPM initiatives are classified into eight TPM pillars or activities for accomplishing the manufacturing performance improvements include autonomous maintenance; focused maintenance; planned maintenance; quality maintenance; education and training; office TPM; development management; and safety, health and environment (Ireland and Dale, 2001; Shamsuddin, Hassan and Taha, 2005; Rodrigues and Hatakeyama, 2006). A synergetic connection is assumed between all organizational functions, but especially between production and maintenance, for continuous improvement of output quality, operational efficiency, capacity assurance and safety (Chan et al., 2005). TPM is team-based productive maintenance and involves every level and function in the organization, from top executives to the production floor operators, to ensure adequate equipment operation (Chan et al., 2005). Because workers from all departments and levels are involved, TPM is also called Productive Maintenance with total participation. This practice seeks to optimize the overall effectiveness of processes and production equipment by reducing mistakes and accidents (Shirose, 1995). Bhadury (2000) adds that TPM is an innovative approach to maintenance that optimizes equipment effectiveness, eliminates breakdowns and promotes autonomous maintenance by operators through day-to-day activities involving the total workforce to reduce lifecycle costs. Moreover, TPM aims to maximize overall effectiveness, and it engages every single employee through motivation management involving small group activities (Chan et al., 2005).

Furthermore, in the last decades, there is an increasing customer focus on product quality, product delivery time and cost of the product (Ahuja and Khamba, 2008). Because of this development, companies introduce practices as TPM to improve and increase both quality and productivity continuously. Therefore TPM initiative can increase manufacturing performance and is targeted to enhance the competitiveness of organizations (Leachman, Pegels and Shin 2005). TPM includes a structured approach to changing the mindset of employees, thereby creating a visible change in the work culture of an organization (Ahuja and Khamba, 2008). The implementation of TPM will be discussed in section 2.2.

## 2.2 Total Productive Maintenance implementation

Several departments of an organization implement TPM, and it affects every single employee, from top directors to employees on the shop floor. The foundation program of TPM is 5S and is a well-organized method of housekeeping to obtain an orderly environment in the workplace involving the employees with an engagement to implement and practice housekeeping sincerely. When the workplace is unorganized, problems cannot be clearly seen. Cleaning and organizing the workplace assists the organization in revealing problems. Making problems noticeable is the beginning of improvement (Wakjira and Singh, 2012).

So after the 5S program is initiated, the TPM implementation starts. Chan et al. (2005) have mapped out the TPM implementation process based on a case study in an electronics manufacturing company. The company in this case study is a multinational company, which is a leading company active in the design and manufacturing of semiconductor devices, advanced telecommunications and electronics equipment. In this case study, Chan et al. (2005) show that TPM is implemented in four phases which are the; introduction-preparatory stage, start of introduction, introduction execution stage and the establishment phase. These four phases can be subdivided into twelve steps. Figure 1 on the next page defines all steps briefly.

The introduction-preparatory stage is composed of five steps, which focus on preparing and creating TPM structural environment as well as the targets of TPM and master plan for TPM implementation (Chan et al., 2005). For the introduction stage, only one step was involved: TPM kick-off. This step was meant to announce the detailed preparation of TPM implementation formally and also to announce the start of the execution stage. The introduction-execution stage consists several activities, which focuses on the development of

an improved system for production efficiency enhancement. Finally, in the establishment stage, there is a complete implementation of TPM, and the organization is assessed whether they perform well enough for a TPM award.

Twelve steps for the TPM implementation programme

*Introduction-preparatory stage*
   *Step 1*: The top person's declaration of the resolve to introduce TPM
   The declaration is made in an internal TPM lecture meeting, and should be printed in an internal bulletin or newsletter
   *Step 2*: TPM introduction education and campaign
   Managerial staff: Staff of the same echelon are scheduled together for training
   General employee: Slide-show meetings
   *Step 3*: Formation of TPM promotion organisations and formal organisational models
   Committees, specialised subcommittees, promotion secretariat
   Formal organisation models
   *Step 4*: Setting of basic TPM principles and targets
   Benchmarks and targets; prediction of effects
   *Step 5*: Preparation of a master plan for implementation of TPM
   From preparation for introduction to undergoing examinations

*Start of Introduction*
   *Step 6*: Kickoff TPM
   From preparation for introduction to undergoing examinations

*Introduction-execution stage*
   *Step 7*: Establishment of a system for improving the efficiency of the production department
     *Step 7.1*: Kobetsu-Kaizen
     Project-team activities and workshop small-group activities
     *Step 7.2*: Jishu Hozen
     Step method, diagnosis, approval certificates
     *Step 7.3*: Planned maintenance
     Corrective maintenance, periodic maintenance, predictive maintenance
     *Step 7.4*: Operation/maintenance skill development
     Collective education of leaders and education concerning transmission of education to members
   *Step 8*: Establishment of initial phase management systems for new products and new equipment
   Development of easy-to-manufacture products and easy-to-use equipment
   *Step 9*: Establishment of quality maintenance systems
   Creation of conditions in which defects do not occur, and the maintenance/management of those conditions
   *Step 10*: Creation of systems for improvement of the efficiency of administrative/indirect departments
   Production support, improvement of the efficiency of related sectors, and improvement of efficiency of equipment
   *Step 11*: Creation of systems for the control of safety health, and the environment
   Creation of systems for zero accidents and zero pollution cases

*Establishment stage*
   *Step 12*: Complete implementation of TPM and level improvement
   Undergoing examinations for the receipt of PM awards
   Setting sight on higher targets

**Figure 1: Twelve steps for the TPM implementation programme (Chan et al., 2005)**

Wakjira and Singh (2012) describe the TPM implementation process in a similar way. They also define four implementation stages, namely the preparatory stage; the introduction stage; the TPM implementation stage and the institutionalizing stage. Furthermore, Wakjira and Singh (2012) describe five implementation activities. The first activity is called 'the master plan'. In this activity, the TPM team, along with manufacturing and maintenance management determines the scope and focus of the TPM program. The second activity is

about autonomous maintenance in which the TPM team is trained in using the TPM methods and tools and visual controls. 'Planned maintenance' is the third activity. The maintenance staff collects and analyses data to determine usage-based maintenance requirements. Thereafter, the fourth activity is about maintenance reduction, which is achieved through proactive maintenance schedules. Lastly, activity five is called 'holding the gains', and in this activity, incorporation of the new TPM practices into the organization's standard working procedures takes place (Wakjira and Singh, 2012). As described, various TPM practices arise from the TPM implementation process. The intention is to institutionalize these TPM practices, but during this change process it can occur that the TPM practices have limited legitimacy within the organization. It is a major challenge for organizations to delegitimize old practices and to legitimize new TPM practices. The following sections further elaborate on how institutional work can lead to institutionalized practices in the organization.

## 2.3    Micro-institutional context

Based on Hampel et al. (2015), there are various hierarchical levels of institutional contexts. There is a distinction in focussing on institutionalization of practices across different levels such as societies, fields, organizations, groups and individuals. This research aims attention at institutional work on the micro-institutional context, specifically the organization Aviko Rixona Venray. Organizations are entities driven by emotions, traditions, customs, values and norms and has prevailing rules, norms and values. Organizations, such as Aviko Rixona, can be viewed as a micro-institutional context that involves formal structures and procedures to achieve organizational goals, and are also infused with values and vested interests (Van Dijk et al., 2011). Moreover, these micro-institutional contexts embody understandings of social reality, organizational purpose, identity and norms that are reproduced by corporate members (Van Dijk et al., 2011). According to the 'pillar' framework of Scott (2001), institutions consist of three pillars. In this study, it is considered that the micro-institutional context also consists of these three pillars. The first pillar is the 'regulative elements' regarding the establishment of rules, inspection of conformity to them, and sanctions to influence behaviour. The second pillar is the 'normative elements' that introduce a prescriptive, evaluative and obligatory dimension in social life. It can be seen as a social obligation or norm, and the related effect is shame/disgrace or pride/honour. The third pillar is the 'cultural-cognitive elements' these are shared conceptions that constitute social reality and which shape meanings (Scott, 2001). These institutional elements can create enduring social structures and systems. Institutional elements can limit change agents in established companies, because

practices may have been introduced that have limited legitimacy, thereby inhibiting significant organizational changes. The idea is that institutional elements interact with parties and that these interactions of parties change or re-enforce these elements. So to facilitate organizational change, deinstitutionalization and re-institutionalization must take place. Oliver defines deinstitutionalization as: "the process by which the legitimacy of an established or institutionalized organizational practice erodes or discontinues." (1992, p.564). For Scott deinstitutionalization is the "process by which institutions weaken and disappear" (2001, p.182). Although institutionalized practices are durable social structures, they can change over time due to deliberate production of new rules, the behaviour of relevant parties in the field, structure and agency and institutional work (Van Dijk et al., 2011). Institutional work plays a crucial role in the process of deinstitutionalizing established practices and institutionalizing new practices, which will be discussed in section 2.4.

## 2.4    Institutional work

As stated by Lawrence and Suddaby, institutional work is defined as: "The purposive action of individuals and organizations aimed at creating, maintaining and disrupting institutions" (2006, p. 215). In this research, institutional work means the following; the purposive action of individuals and organizations aimed at creating and disrupting institutionalized practices. In this study, the implementation of TPM is seen as institutional work. Based on Lawrence, Suddaby and Leca (2011, p.53) institutional work would involve physical or mental effort aimed at affecting the institutionalization of practices and the micro-institutional context.

Based on Lawrence and Suddaby (2006), there are three types of institutional work, namely, work aimed at creating institutionalized practices, work aimed at maintaining institutionalized practices and work aimed at disrupting institutionalized practices. This distinguishing is focussed on the intended outcome of the institutional work. In this research, the focus is on creating and disrupting institutionalized practices. When looking at the means that are used to accomplish certain institutional goals, another distinguishing can be made. Hampel et al. (2015) distinguish between three types of institutional work. First, 'symbolic work' where, as the name suggests, the use of symbols is central. This symbolic work may include signs, identities and language to affect the institutional context. The second type is centred around physical elements and is called 'material work', which consists of objects or places to affect the institutional context. The third type is 'relational work' and aims attention to building interactions so that institutional ends will be advanced (Hampel et al., 2015).

These three types of institutional work of Hampel et al. (2015) will be used in this research and will be explained in more detail in the following section.

### 2.4.1 Symbolic work

Most research concerning institutional work is about symbolic work. According to Hampel et al. (2015), two elements are central to the institutional work theory regarding symbolic work. These two elements are narratives and identities. First, Hampel et al. (2015) stated that narratives arise through the formation and adjustment of certain stories. These adapted stories can have significant effects on the creation of legitimate practices, as they become powerful symbols that can be used by people within the micro-institutional context to justify actions or to achieve specific goals. Rhetoric plays an essential role within narratives and is the use of convincing language (Hampel et al., 2015). The different actors in the institutional context can make use of narratives and rhetoric in various way. According to Hampel et al. (2015), a distinction can be made between two ways of using narratives and rhetoric. The first approach is that actors can use 'meta-narratives', which are narratives that are broadly known throughout society and which resonate with numerous audiences. An example of a meta-narrative is the successful implementation of TPM at Toyota, which is widely known. Hampel et al. (2015) stated that meta-narratives were embedded in routines to influence and recruit new members. Change agents could use these meta-narratives to recruit new members and thus facilitate organizational change. The second approach is to form new stories that contain widely accepted terminology and rhetoric rather than particular societal meta-narratives (Hampel et al., 2015). For instance the use of terminology like 'optimizing' and 'efficiency', which are regarded as positive in a manufacturing context. With these new stories, actors can create legitimacy for their actions to achieve certain goals within the micro-institutional context (Hampel et al., 2015).

The second element that is central to the institutional work theory regarding symbolic work is 'identity' (Hampel et al., 2015). Albert and Whetten (1985) stated: "Identity is a self-reflective statement of who we are". Identity can be used by actors to influence the micro-institutional context. Furthermore, actors construct and reconstruct identities because then these modified identities fit better within the institutional context in which they operate and thus gain more legitimacy for their actions — for example, changing the organizations' core values so that it fits better with TPM's way of thinking. Actors can, therefore, change the institutional context through their identity and can adapt their identity to fit better within the institutional context.

The third element of symbolic work that has been added to this research is 'visuals', which are the employment of image-based symbols (Meyer et al., 2013) to influence the institutionalization of practices. Visuals can be used by actors to influence members during the implementation of TPM. Messages can be transmitted in the form of visuals regarding the TPM implementation. Symbolic work that little is known about is audio and sonic (Hampel et al., 2015). So symbolic work is not only limited to visuals but can also be the use of audio. Although visuals can say a lot more than words, audio can also play a role in influencing the institutional contexts – for example, chants which can be used for demonstrations or protests regarding institutional contexts or audio to stimulate certain behaviour.

### 2.4.2 Material work

Compared to symbolic work, relatively little is known about the material work. Material work includes everything related to the physical elements of the institutional context. Stated by Hampel et al. (2015) material work has two causes for use. Firstly, actors can get information from the physical elements of an institutional context. Based on these elements, they can interpret the environment and then assess how they can respond appropriately to this environment — for example, the use of formats to make proposals for improvement to the management. Secondly, actors can use physical elements such as computers, buildings, and materials by utilizing those to achieve their institutional work — for example, providing employees with an iPad.

### 2.4.3 Relational work

The last form of institutional work is relational work (Hampel et al., 2015). This type of work examines the interactions between actors and describes the effect that these interactions can have on the institutional context. According to Hampel et al. (2015), relational work can be seen in two different ways. First, relational work can be used to recruit followers for the cause of the actors. Through relational work, actors can build networks and in this way, influence others' initiatives or initiate initiatives themselves (Hampel et al., 2015). Relational work can be used to involve and entangle others in their institutionalization of practices, for instance, by using forcible behaviour (Hampel et al., 2015).

Secondly, relational work can be used by actors to collaborate with other parties in the institutional context. So this form of relational work focusses on the collaboration among actors rather of seeing it as an opportunity to gain followers. By working together, actors can form large networks that make it possible to influence institutional contexts. Factors that play

a role in the cooperation between actors are status, social position and alignment of mutual goals (Hampel et al., 2015). These factors could affect the success of the collaboration. For example, when the actors have a common goal like increasing efficiency, it is easier to work together toward that goal. In conclusion, the three types of institutional work, as described above, provide insight into institutional dynamics and make it possible to identify how the institutional context is influenced and how new TPM practices are institutionalized.

## 2.5    All integrated

As already stated in the introductory chapter, this study aims at answering the following research question: "*How was institutional work used to legitimize Total Productive Maintenance practices within Aviko Rixona Venray?*". The conceptual model below (figure 2) is used to visualize and clarify the research question. This conceptual model includes the most relevant theoretical variables and their proposed relationship in the context of this study.
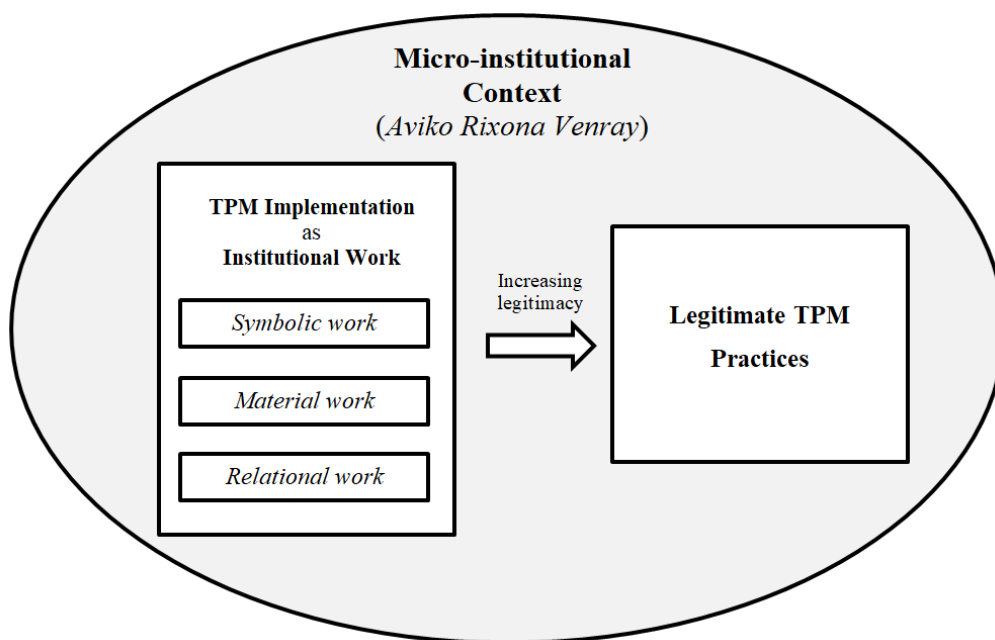


**Figure 2: Conceptual Model**

Organizations can be viewed as a micro-institutional context. Aviko Rixona Venray is such a micro-institutional context. In this study, the implementation of TPM is seen as institutional work. This institutional work can increase the legitimacy of TPM practices. As mentioned earlier in chapter 1, there are indications that legitimacy was lacking in the early stages of the TPM implementation within Aviko Rixona. In this study, it is investigated how

institutional work has been used to increase the legitimacy of TPM practices. So gaining more insight into the influence of institutional work on the legitimacy of TPM practices is that this better understanding can, ultimately, lead to a more efficient process of future related implementation processes.

# Chapter 3 – Methodology

*In this chapter the research methodology will be explained. Firstly, section 3.1 discusses the research design and the data collection technique. Subsequently, section 3.2 discusses the operationalization of the study. Section 3.3 describes the data analysis technique that will be used. Section 3.4 deals with the quality of the research regarding the reliability and validity. Finally, section 3.5 focuses on the research ethics that have been taken into account in this research.*

## 3.1    Research design and data collection technique

The research that is conducted is of a qualitative nature. According to Bleijenbergh (2015) a qualitative research approach can be defined as all types of research that are aimed at the collecting and interpreting of material that in the end make it possible to make statements about a social phenomenon in its real life context. The empirical material in qualitative research can, for example, consist of transcripts of interviews, field reports of observations and documents. Collecting these texts is relatively labour-intensive. A qualitative study, therefore, has relatively fewer observation units than a quantitative study. Although the intensity of data collection takes a relatively large amount of time, it also provides rich material. This rich material makes it possible to gain insight into a specific (social) phenomenon in its real-life context (Bleijenbergh, 2015). In addition, according to Bleijenbergh (2015), qualitative research makes it possible to make statements about processes over time. Bleijenbergh (2015) stated that a qualitative research approach can be used to expand existing theories. As discussed in chapter 1,  much research has been done on institutional fields at the macro level and that less attention has been paid to micro-institutional context like firms (Van Dijk et al., 2011). Current research into institutional conditions is primarily limited to the macro level of institutional fields. Furthermore, there is limited attention to the full spectrum of institutional work. Despite a range of studies that have explored a wide variety of strategies for institutional work, there has remained a focus on symbolic forms of institutional work, at the expense of understanding the role of relational and material forms (Hampel, Lawrence & Tracey, 2015). This research starts with a set of concepts that are already used in the institutional work literature, but this current knowledge will be expanded by this study. For example, by looking at the application of institutional

work in the micro-institutional context or by looking at the three different forms of institutional work and how they interact with each other.

This research is a case study and is the study of some carriers of a social phenomenon in the natural environment, during a specific period, with the aid of various data sources, to be able to make statements regarding the patterns and processes underlying the phenomenon (Swanborn, 2013, p. 27). A combination of data collection methods is used, namely semi-structured interviews and the collection of documents. In particular, a single case study is conducted. A single case study is aimed at studying a single carrier of a social phenomenon. A single organization is being investigated, namely Aviko Rixona Venray. The phenomenon that is investigated is the implementation of TPM, which takes place over a period of ten years and makes it possible to conduct historical research into this process. The analysis emphasizes the last five years of implementation. The specific characteristics of this organization are central to the research. Yin (2009) stated that case studies are often very helpful in answering 'how-questions'. Therefore, a case study can be considered suitable for the main question of this research.

In order to obtain relevant data, ten interviews were held within Aviko Rixona. These interviews are semi-structured, and a general interview schedule with predefined formulated questions was used. It was possible to act on the respondent's answers and deviate from these questions, for example, by asking for clarification. This opportunity for clarification made it possible to obtain more detailed information. The structure of the semi-structured interviews is based on the three different types of institutional work; symbolic work, material work and relational work (Hampel et al., 2015). This will be further elaborated in section 3.2.

To be able to investigate the phenomenon extensively, the interviews were conducted with respondents from different levels with different specialisms within the organization. The selected respondents are from a strategic, tactical and operational level. With interviewing executives, managers, team leaders and operators, it was possible getting information from the change agents and the change recipients to highlight various perspectives of the change process. These different perspectives ensure that the insight into the implementation process is as accurate as possible. Since the research is generally retrospective, respondents were deliberately selected who have been working at Aviko Rixona Venray for more than ten years and some respondents who have been working at Aviko Rixona for at least the last five years of the implementation, so that they can provide the necessary historical information. Ten

respondents were interviewed in total, which yielded rich information. With this extensive information, it was possible to answer the main question. Furthermore, internal databases were consulted to gather more information concerning the TPM implementation process within Aviko Rixona. Documents that were collected include strategic texts, annual reports and websites from Royal Cosun (2019), Aviko (2019), and Aviko Rixona (2016).

## 3.2 Operationalization

An interview schedule with predefined formulated questions was used to conduct the semi-structured interviews. By means of the interview schedule, it was possible to map events and sequences of events during the implementation. The interview schedule is shown in chapter 7, appendix A. The structure of the semi-structured interviews is based on the concept of institutional work and consists of three different types of institutional work; symbolic work, material work, relational work (Hampel et al., 2015). These types are further operationalized into measurable dimensions, which are shown in figure 3 below.

| Concept | Conceptual definition | Dimensions | | Operational definition | Indicators |
|---------|----------------------|-----------|--|------------------------|------------|
| **Symbolic work** | The use of symbols to influence the institutionalization of practices | *Narratives* | *Meta Narratives* | Stories that are broadly known throughout society and which resonate with numerous audiences | To what extent certain (success) stories were used during the TPM implementation |
| | | | *Terminology* | Forming stories that contain widely accepted terminology and rhetoric such as 'optimizing' | To what extent certain (positive) terms are used that are characteristic of the TPM implementation |
| | | *Identity* | | How actors construct and reconstruct identities | How actors try to influence the organizational identity |
| | | | | | How actors try to influence the identity of TPM |
| | | *Visuals* | | The employment of image-based symbols | How and what visuals are used during the implementation of TPM to influence its members |
| **Material work** | The use of tangible objects to influence the institutionalization of practices, the manipulation of physical aspects of the micro-institutional context, and how materiality shapes institutional work | *Material objects* | | The use of tangible objects to legitimize the implementation of TPM. | What tangible objects are used to affect the TPM implementation. For instance: buildings, places, technical equipment or courses |
| **Relational work** | The interactions between actors which describes the effect that these interactions can have on the institutionalization of practices | *Recruit followers* | | How actors gain followers for their cause | How change agents use their existing network to involve others in the TPM implementation |
| | | *Collaboration* | | How actors collaborate with other parties in the micro-institutional context to achieve certain goals | What intra-organizational collaborations were developed within Aviko Rixona (in the context of TPM implementation) |

**Figure 3: Operationalization scheme**

In the end it was determined how they tried to make TPM legitimate. This is done by determining whether the TPM practices are desirable, proper, or appropriate within the socially constructed system of norms, values, beliefs and definitions.

## 3.3    Data analysis technique

After the ten semi-structured interviews were conducted, the interviews were transcribed. After the empirical material was written out, the data was analysed, which is a process in which texts are interpreted from an empirical question. This analysis was done by labelling fragments of these texts in several phases with concepts and assigning meaning to them. The terms used to label fragments are called codes. These codes help to establish a connection between what has been empirically observed and general statements that can be made on that basis. The coding of text fragments serves to select the relevant pieces from a large amount of text material and to create relationships between concepts (Bleijenbergh, 2015). The operationalization is based on scientific literature. The indicators were used to link codes to the interview transcripts. Thereafter these codes were ordered into coding schemes that display an information overview, and this overview enabled an analysis of the information obtained (Bleijenbergh, 2015). During the investigation, it became known that the idea of legitimacy is not monolithic, but that it contains various aspects. Based on the analysis, additional insights have arisen inductively concerning the concept of legitimacy. This research points to a more nuanced perspective of legitimacy in the context of organizations. The additional concepts that this research introduces are fragmented legitimacy and partial legitimacy and are further explained in chapter four. These  concepts were also used as codes (see chapter 7, appendix B) .

## 3.4    Quality of research

The data was collected using two methods, namely semi-structured interviews and the collection of documents. Combining data collection methods and involving different respondents is called triangulation (Bleijenbergh, 2015). This triangulation makes it possible to investigate an organizational phenomenon in-depth, which increases the quality of the research results. Qualitative research of high quality should be valid and reliable at the same time (Bleijenbergh, 2015). Validity can be distinguished in internal and external validity. The internal validity of this study is assured because this study uses and builds upon current theoretical concepts that are established in the existing scientific literature. The internal validity is also addressed by consulting several respondents from different layers within the organization and by conducting all interviews under the same circumstances and maintaining a similar format for all interviews. The chance of socially-desirable or context-specific answers are reduced by these conditions and therefore provide a fairer picture of the

phenomenon. Regarding external validity, Yin (2010) distinguishes two forms of generalizability, namely statistical and analytical generalizability. There is no statistical generalizability in this study because it is not possible to draw a direct conclusion about a population based on the results in this sample. However, there is a certain degree of analytical generalizability. In this form of generalization, a generally valid statement is made on a theoretical level based on observations and the analysis thereof. Based on these analyses it is possible to make statements about other cases, but these statements then have the character of hypotheses and not descriptions. Additional forms of legitimacy (partial and fragmented) were abstracted in this study and it is suggested that they may also be present in other cases and not only in this particular case .

This study is reliable because the steps taken in this study are clearly and fully described, making the study repeatable (Bleijenbergh, 2015). The interviews were recorded and transcribed. These transcriptions are shown in chapter 7, Appendix C. Furthermore, the interviews were coded and explicitly analysed. Besides, the coding is displayed in chapter 7 Appendix B, resulting in transparency. The interview questions are structured in such a way that information is obtained concerning the main concepts. Furthermore, the research is reviewable for other parties. Additionally, the used data sources are verifiable, because they were noted according to the APA standards both in the text and in the reference list.

## 3.5    Research ethics

According to Resnik (2011), it is essential that certain research ethics are taken into account during qualitative research. When conducting qualitative research, there is a chance of violating the privacy of the respondents concerned, because of the sensitive data that can be collected and analysed. It was asked in advance if the respondent wanted to remain anonymous to protect the individual respondent against the risk of privacy violation (Resnik, 2011). Only two operators indicated that they wanted to remain anonymous in this investigation, so these two names are not mentioned. In addition, it was asked whether the respondent allows making use of his answers for this research. All respondents gave permission for their answers to be used in this study.

Furthermore, the treatment of participants during the research is of great importance. It is vital that the respondent cannot experience physical pain or embarrassment as a result of this research (Bell and Bryman, 2007). The experience of physical pain is prevented by

explaining the rights of the respondent promptly during the study. Each respondent is presented with an informed consent prior to the interview, stating what the data collection will be used for and whether they want to cooperate in this. The respondents had the freedom to withdraw from the research at any time. It was asked whether the respondents would give the researcher permission using their answers; if so, they will be kept informed of the final results of the report.

Besides, the research design ensured that the results were not distorted by the way questions were asked. The results are objectively and accurately reported. During this research, it is ensured that research results were not exaggerated or taken out of context to manipulate the reader. Objectivity is guaranteed at all times (Resnik, 2011).

# Chapter 4 – Results

*In this chapter, the results of the research are mapped. First, the implementation process is discussed where attention is paid to legitimacy, change agents and important events during the implementation process. Secondly, it is discussed how the three forms of institutional work were applied. These forms include symbolic work, material work and relational work. Third, the relationship between institutional work and legitimacy of TPM practices is described.*

## 4.1 Implementation process

The analysis shows that the implementation process can be divided into three important periods, namely: 2009 to 2014, 2015 to 2016 and 2017 to 2019. It appears that until 2015, several aspects of TPM were introduced in only some parts of the organization. Subsequently, a richer set of institutional work took place between 2015 and 2016, and all aspects of TPM were introduced with the aim of achieving the TPM award at the end of 2016. The interviews show that from 2017 onwards, the TPM aspects that were not experienced as fitting have disappeared and those that were experienced as fitting have been integrated.

### 4.1.1 Legitimacy

The interviews show that the legitimacy of TPM changed during the time of the implementation process. Figure 4 shows the legitimacy during the different periods.
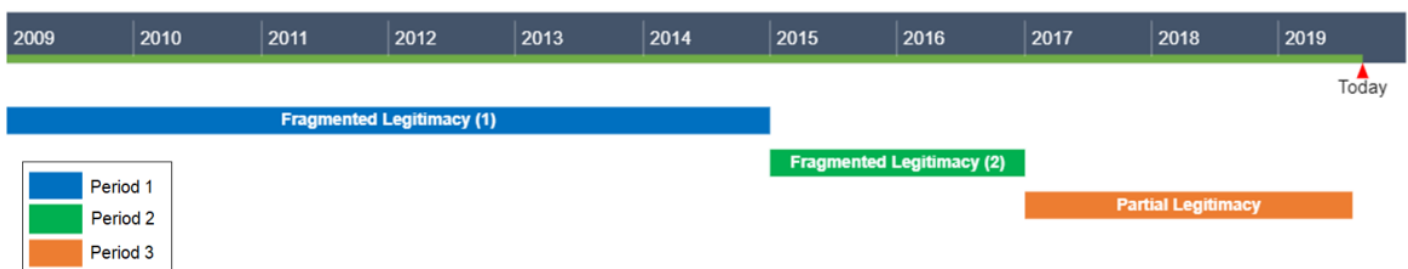


**Figure 4: Legitimacy per Period**

The analysis shows that one could speak of fragmented legitimacy (1) between 2009 and 2014 (Figure 4). What is meant in this thesis with fragmented legitimacy is that TPM is only accepted and appreciated in certain parts of the organization. This division is apparent, among other things, from the following statement by one of the respondents:

> *"Opinions about TPM were somewhat divided. You can see that everywhere but also in my department. Some think; we start again with something else, we have already had this and this and this and now we are going to do this"* (M. Ottenheim).

An example of a TPM practice that had fragmented legitimacy is the use of visualization concerning the use of improvement boards. The production staff accepted this TPM practice, but the office staff did not. This is evident from the following statement by one of the respondents:

> *"When the first improvement teams worked here, they first had to use a board. This works very well for factory operators, who are not so good with computers. But if I put a group of supply chain together and I say that they are not allowed to use a computer, but that they must put everything on a board. Well, they prefer using a computer"* (G. Van der Steen).

Relatively little institutional work took place during this first period. The interviews subsequently show that the intensity of the implementation process was increased in the period 2015 to 2016, where a richer set of institutional work took place. During this period, the entire organization became familiar with TPM, but it appears that not all aspects of TPM were considered legitimate at this time and there was still fragmented legitimacy (2) (Figure 4). Throughout this second period, change agents more enforced the use of TPM and relatively more institutional work took place than during the first period. This is evident from the following statement by one of the team leaders:

> *"People felt obligated at some point, people no longer saw it as a tool for themselves, but as an obligation imposed from the office. At a certain moment it was announced that those Japanese were coming again and then everything was prepared again. The presentation was practised the day before and also the attitude of presenting, and it seemed more like a show, while TPM was meant for ourselves"* (S. Erol).

In both period one and period two, not all TPM practices were legitimate in all parts of the organization and are therefore both considered having fragmented legitimacy. The difference with period one is that in period two relatively more institutional work took place and the use of TPM was enforced more by the change agents, which increased the awareness of TPM in the organization. The analysis shows that after receiving the award at the end of 2016, fragmented legitimacy had come to an end. Period two has made TPM known in the

organization and from 2017 only certain TPM elements that perceived as fitting with the organization were used. This is evident from the following statement by one of the respondents:

*"Tagging has just continued, improvement proposals have just continued. They are accepted in the organization. So yes many things just continued, but some things didn't"* (G. Van Ijzendoorn).

The interviews, therefore, show that from 2017 one could speak of partial legitimacy (Figure 4). What is meant by partial legitimacy in this thesis is that certain TPM practices are legitimate throughout the organization. Examples of TPM practices that are accepted throughout the organization from period three onwards are the TPM pillars, tags, 5S and the improvement proposals.

### 4.1.2 Change Agents

The interviews show that three different change agent roles can be named during the implementation process. First, the role of managing director, this person was the initiator and responsible for the TPM implementation process. This role remained unchanged throughout the process. Second, the role of TPM coordinator. In total there were four different coordinators in the period 2009 to 2014 and one coordinator in the period 2015 to 2016. From 2017 this role disappeared. The TPM coordinator was responsible for the introduction of all individual TPM elements and their mutual coherence. Thirdly, the role of TPM promoter, this role originated in 2010 and was intended to make the translation from the office to the workplace. This role also remained unchanged during the implementation process. The three change agents are seen as the people who performed the institutional work.

### 4.1.3 Events in the Process

The interviews show that the TPM implementation process consisted of five important events. First in 2009; the kick-off of the TPM program. Secondly, in 2015; the appointment of a qualified TPM coordinator as a full-time equivalent whereby the managing director sent out a certain signal, which is considered a turning point in the implementation process. Third in 2015; organizational changes where a steering group was set up by the TPM coordinator to create synergy between the eight TPM pillars. Fourth in 2016; achievement of TPM award, which is considered an important milestone. Fifth in 2017; the strict Japanese methodology was no longer followed, and TPM is being used in a way that fits the organization. Figure 5

shows these five important events during the implementation process. Each event is then explained further.



**Figure 5: Five most Important Events**

Firstly, the official implementation of TPM started in 2009. Before deciding to use TPM as an improvement program, the managing director considered alternative improvement programs such as LEAN and Six Sigma. Since the parent company Royal Cosun had chosen TPM, Aviko Rixona also turned to these practices. The implementation officially started in 2009. The program was announced in a big way through a kick-off with former professional footballer Hans van Breukelen as chairman. A big bang was created through this TPM kick-off, which generated sky-high expectations. In the first phase of the implementation process, the managing director started with workshops for management. During these workshops, management made a playful introduction to TPM and awareness was created. During these workshops, the management members had to build a boat together in which elimination of losses was central. One of the respondents indicates the following:

"*In the end, it turned out to be a lot faster, because you really start to think about the order, one arranges that and the other arranges that. Well, that was a very nice game, and playfully you find out that you can do much more in that factory*" (O. Van der Gronden).

From the moment that there was awareness among management, the eight TPM pillars were set up; this was deliberately done one by one to keep it manageable. The responses to the first phase of the implementation process were varied. According to the respondents, TPM was seen as another new project among employees, since a number of continuous improvement programs had already been used in the past. Furthermore, TPM was seen by the operational layer as something that entailed extra work while they were promised that it would lead to less work. So it appears that it is not clearly communicated that TPM required investments in both resources and time.

Secondly, in 2015, the managing director appointed a TPM coordinator with suitable qualifications and know-how. Four people tried to fill this position in the period before 2015. These were people who had become superfluous and subsequently moved on internally from production or staff positions. These people had secondary vocational education or unskilled level. Several respondents, including the managing director, indicated that the program was not proceeding as desired and with the appointment of a qualified person as TPM coordinator, this led to a turning point. This appointment provided a better signal that the TPM program is an essential component for the success of the organization.

Until the appointment of the TPM coordinator in 2015, the TPM program did not get off the ground optimally, while it started six years ago at the time. One of the TPM practices introduced until then were the eight TPM pillars. According to the respondents, these pillars were all separate TPM elements at that time without any synergy. It is the link between these elements that make it a TPM program. There were two separate worlds, the organizational hierarchy on the one hand and the TPM pillar structure on the other. From 2015, an attempt was made to bring these two worlds together using organizational changes, which is seen as the third important event. At the time, the managing director adjusted the organization chart and substantively changed certain functions. Besides, the TPM coordinator did set up a steering committee. This steering group consisted of all department managers in which each person has two roles, namely pillar leader and department manager. Until the introduction of this steering group, it was clear to each pillar leader what the content of his own pillar was, but they had little insight into the mutual relationships between these pillars. One program cannot exist without the other, and therefore there was a lack of synergy between these eight pillars. Another problem that played a role for 2015 was the lack of a clear link between the TPM program and the company results. An attempt was made to solve this problem with the introduction of the steering committee. The progress of the TPM program was discussed in this steering group, and new KPIs were determined based on the TPM program. This modification made the result of the TPM program measurable.

After the managing director indicated in 2015 that TPM is an essential part of the organization, an intensive period started towards the TPM award. This intensive period led to the fourth important event; achieving the TPM award. At that time, the award preparation led to a focus on TPM throughout the factory. The award was won in 2016, and this appeared to be an important milestone for the organization. Respondents indicated that this award had both a positive and negative impact on the organization. On the one hand, performing the

award trajectory led to a focus throughout the organization. On the other hand, the trajectory led to a negative image of TPM. Almost all respondents indicated that they considered the award a show and that there was window dressing.

The last important event in the implementation process took place after receiving the TPM award. Respondents indicated that the Japanese and Dutch culture differed significantly, so it was decided to let go of the strict Japanese methodology and only use the elements of TPM that were considered useful and that contributed to achieving the organizational objectives. In short, these five important events played a major role in the implementation process. The following section discusses how institutional work took place during the implementation period.

## 4.2    Institutional work

During the implementation process, institutional work was used to gain more acceptance and appreciation for TPM practices. Institutional work can be divided into three forms, namely symbolic work, material work and relational work. This section explains how these forms of institutional work were applied.

### 4.2.1   Symbolic Work

The symbolic work can be divided into three different forms. Firstly the use of narratives, secondly the use of the identity of the organization and the identity of TPM and thirdly the use of visuals. These forms will be further explained in this section.

*Narratives*

The narratives consist of the use of both meta-narratives and terminology. Regarding the meta-narratives, the change agents used both internal and external TPM success stories during the implementation process. The analysis shows that these success stories were mainly used in the period 2009 to 2016. External success stories are the stories that originate outside the Royal Cosun Group (parent company). The change agents used the most famous example of a successful TPM implementation, namely Toyota. They cited this example at the TPM kick-off in 2009. However, the reactions to this story were not always positive, which is apparent from one of the respondents' statements:

*"Of course it was told that Toyota uses TPM throughout the factory and that everything is perfect. Yes, but you are going to compare a car factory with a food factory, yes, people know that too. So yes that example did not work"* (S. Erol).

In addition, it appeared that the change agents used success stories that arose as a result of various company visits. Companies were visited in Germany, Italy and the Netherlands, among others. Small groups were selected to observe how these companies applied specific elements of TPM, after which these groups enthusiastically spread these stories within Aviko Rixona.

The interviews show that the change agents did use internal success stories in addition to the external success stories. These internal success stories were stories that originated within the Royal Cosun group. There were several platforms within Royal Cosun, including a TPM platform. In this platform, all TPM successes were shared between all subsidiaries, and these successes were communicated within Aviko Rixona. In addition, there was an election of the TPM improvement team of the year within Royal Cosun. When an Aviko Rixona improvement team won such prizes, this success was shared by the change agents within the organization. Also, success stories were used that were created within Aviko Rixona itself. For example, a TPM pilot was carried out in the factory in 2009, and the success of this pilot was subsequently used as a success story. This is confirmed from the following statement:

*"At that time we started, for example, making the factory leak-free, so where is a lot of dust. At one point we had bunker room three as a pilot and we started to make it completely leak-free. We succeeded and of course we showed that extensively"* (G. Van der Steen).

Other examples of internal success stories that the change agents used are the thousandth safety tag and the 5S project "niet lullen maar poetsen". With the 5S project, all old equipment was removed from the factory in a structured way, and this project led to awareness of TPM. In summary, the use of meta-narratives had a positive effect on the TPM implementation. The internal and external success stories, excluding the Toyota story, raised awareness and thereby contributed to the acceptance of TPM practices.

The interviews show that the change agents did also use a certain terminology in addition to the use of meta-narratives. TPM is known as a methodology that includes certain terms. The change agents introduced these Japanese terms from the start of the

implementation process in 2009. According to one of the respondents, the use of these terms led to two things in the organization. First, the organization was consistent in the language used and when the terms are used often enough, they are automatically incorporated. Secondly, the terms were linked to certain aspects within the organization, and a certain feeling was created for each term. An example of a typical term that was used consistently is 'tagging'. Tagging means finding points for improvement in the factory in terms of safety, quality and output. In addition, the term 'genba' was used as a synonym for the workplace, the term 'kaizen' for improvement teams and the term '5S' for a clean workplace. According to one of the respondents, it is important to use terms such as '5S' consistently. It is stated that the employees embraced the 5S concept, and when this term was mentioned, everyone immediately knew that it was about cleaning. It is further indicated that the above-mentioned terms were embedded in the organization where the meanings of these terms were known internally and where they were often not understood by outsiders. The terms mentioned above were therefore recognizable for the TPM program and were seen as icons of TPM, which is evident from the following statement:

> *"... are all sorts of names of certain parts of the program that have become very recognizable. They have become icons of the improvement program". (N. Dijks)*

In addition, the change agents also used many general terms in their communication during the implementation process, for example; eliminate, efficiency, continuous improvement, result orientation, ownership, safety and losses. These terms are related to the TPM methodology. Safety was not a priority at the start of the implementation process. The repeated use of this term led to more attention for safety, which shows that the consistent use of terms can lead to more acceptance of TPM practices.

*Identity*

With regard to identity, there are three important aspects in the implementation process, namely the identity adjustment, TPM employee of the month and culture program. Firstly, the organization's identity adjustment. The interviews show that with the start of the TPM improvement program in 2009, the managing director tried to adjust the identity of the organization. Since 2009, the organization has been striving for operational excellence, and focusses on continuous improvement whereby all losses within the organization must be eliminated. As a result, the targets per year must be higher than the year before. In addition, they have been striving since 2009 to be the world market leader in their area. By embracing

this new identity, an attempt was made to better align with the TPM philosophy and consequently gain more acceptance for TPM practices.

The second important aspect regarding identity is the introduction of the TPM employee of the month. The interviews show that the culture of Aviko Rixona was seen as a culture where changes were not easily absorbed. A frequently heard statement is "I have done this for years". In addition, it is indicated that it is difficult to give compliments. According to one of the respondents, giving positive feedback can be seen as a competence, and this person stated that the management members did not have this competence. In 2015, the TPM coordinator tried to encourage giving compliments by introducing TPM employee of the month and 'the thumb'. Respondents indicated that receiving the TPM employee of the month was also difficult and that getting compliments was not in the genes of the company. In addition, there was the thumb, and this thumb was a physical image that can be given to colleagues as a symbol of appreciation for good work. However, it appeared that giving the thumb was also experienced as difficult, as the following statement shows:

> *"But you notice that it is not in the genes of the company here. People find it very difficult to give the thumb and say that someone's input is top when they have done a project together. No, that happens rarely. People still find that very difficult. You see that such initiatives really have to be imposed from above"* (G. Van der Steen).

Thirdly, the new cultural program is an important aspect concerning identity. The interviews show that the managing director, in consultation with the TPM coordinator, drew up a new culture program in 2017 to, among other things, better align the organization's culture with the TPM methodology. The following core values were central to this culture program: result orientation, reliability, customer focus, collaboration and continuous improvement. Not all of these core values revolved around TPM since only a few valuable aspects of TPM have been used since 2017. According to the respondents, continuous improvement is a value that is tailored to the TPM program. The interviews show that these core values were considered as a fundamental condition for the proper application of TPM. The culture of the organization was adjusted so that it better aligned with the TPM philosophy. In addition, the interviews show that since 2017, the organization's core values have been interwoven into performance reviews, asking how these core values are reflected in daily work.

Furthermore, it appeared that the respondents believed that the TPM philosophy fits the organization's identity. As a production company, you have to be profitable and in times when things did not go well with Aviko Rixona, TPM, with a more efficient way of working, ensured that the company has gone from loss to profit in recent years. In addition, it is stated that continuous improvement, the philosophy of TPM, is the foundation of the right to exist of Aviko Rixona. Without continuous improvement, the continuity of the organization is endangered. One of the respondents indicated that TPM and production are linked to each other and cannot be viewed separately. It appears that TPM is a mind-set that includes tools and Aviko Rixona as an organization that supports that mind-set. In addition, the respondents see a lot of improvement potential in the organization, where TPM can be used to achieve this potential.

*Visuals*

The interviews show that the change agents made use of visualization during the implementation process. It is indicated that employees were visually overloaded during the implementation so that they could no longer ignore TPM. The change agents used visualization in several ways, namely the use of metaphors, 'lichtkrant' and videos. First, the interviews show that from 2015 the TPM coordinator made more use of visualization in the form of metaphors to encourage people improving continuously. An example of using metaphors is that they wanted to reach Autonomous Maintenance step four under the guise of 'building bridges'. They used visualization by attaching a sticker of a bridge, consisting of four parts, on a machine. With each improvement step, a part of the bridge was completed until the entire bridge was stuck together. Respondents indicated that this type of visualization helped people to see that TPM leads to improvement.

Secondly, the interviews show that the change agents introduced the so-called 'lichtkrant' in 2015. This 'lichtkrant' is a digital newspaper displayed on different screens throughout the organization. All kinds of events were shown in this newspaper, including the TPM employee of the month. With this newspaper, attention was paid to the person who has worked best in the domain of TPM. Also, accidents were displayed in this digital newspaper. In addition, from 2015 there is a digital sign at the parking lot stating the number of days without an accident. In this way the company shows that they pay attention to safety, which is also an important part of TPM.

Thirdly, the interviews show that the TPM coordinator and TPM promoter have been using videos since 2015. On the one hand, it appeared that the change agents used videos to create work instructions. For example, the change agents filmed employees during the conversion of a machine. One of the respondents indicated that this helped in the acceptance of TPM because by showing their working method on video, they became aware of their own inefficient behaviour and realized that it could be done more efficiently. On the other hand, it appeared that the change agents used videos for creating online TPM modules, also intending to transfer TPM knowledge to the new generation. With regard to visualization, it is indicated that employees used the TPM methodology better through symbolism. Forms of visualization can be seen throughout the factory, and these forms appeared to be landmarks of the TPM methodology, as the following statement shows:

*"You have many different landmarks that people immediately think of; hey, that's TPM. Yes, that is the power of the program. It is just so visually overloaded that they can no longer ignore it"* (M. Ottenheim).

Also, because TPM is visually focused, a form of symbolic work also took place that is interwoven in the TPM methodology itself. Examples of this symbolic work that took place are the use of models (e.g. PDCA circle and figure of eight), physical models as a simplified representation of reality, visual work instructions and foam boards and 5S shadow boards. This symbolic work also contributed to the acceptance and appreciation of TPM. Below in figure 6, the different forms of symbolic work are shown schematically in a timeline.
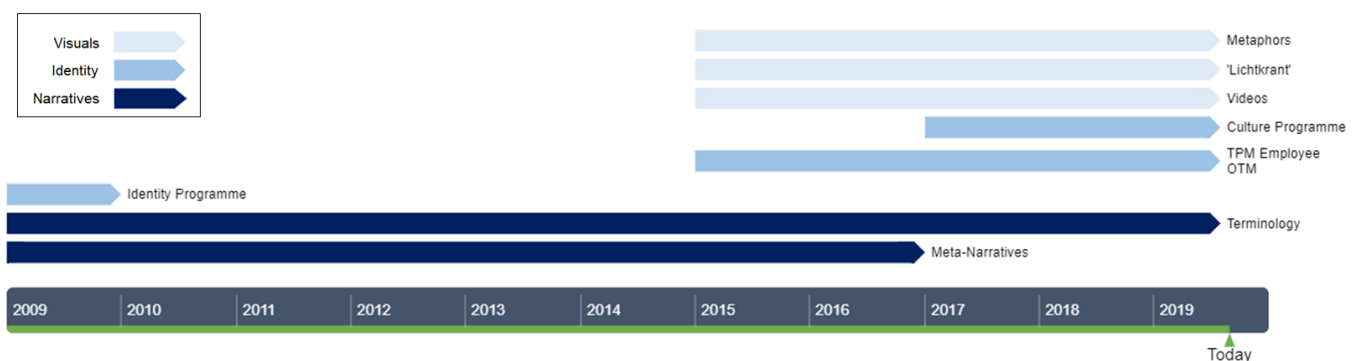


**Figure 6: Symbolic Work**

### 4.2.2 Material work

The interviews showed that material work was used in various ways, namely modifications to the building, making formats available and exhibiting the number of tags and the award achieved. These forms of material work will be discussed in this section.

During the TPM implementation, the managing director and TPM coordinator used many different physical objects to support TPM practices. Firstly, the interviews showed that the change agents have ensured that the building was adapted to facilitate the TPM methodology. In 2013, the managing director decided to have the daily operational consultation take place in the factory itself rather than in the office. This change is in line with the TPM philosophy, namely as many activities as possible to the workplace. The change agents built a meeting room in the factory, called 'Kern'. Respondents indicated that there were whiteboards, called DMS boards, to support TPM. Operators wrote down their daily results on these DMS boards, and these results were then discussed and linked to the organization's KPIs. According to the respondents, this working method helped operators to become aware of how their actions contributed to the business results. In addition, the interviews show that the building was further modified in 2015 to facilitate TPM, what appears from a statement by one of the respondents:

> *"And then the dojo. A learning organization that wants to improve continuously must be continuously learning, so we have set up a place where that is possible"* (J. Van der Horst).

This statement shows that a particular learning space was created for employees to learn and execute TPM practices. This learning space was called the 'dojo'. In this room, there were models, drawings and photos of machines. Besides, there was a projector and boards were used on the wall for analysis and solving problems.

Secondly, the respondents indicated another form of material work took place, namely making different formats available. The employees of Aviko Rixona used different formats, such as formats for tags, improvement proposals and TPM models. These formats are standards that can be taken directly from folders. In 2009, the TPM coordinator consciously chose to use paper formats so that they were always available and accessible in the office, in the hallways, meeting rooms and the dojo. One of the respondents indicated that if the formats

do not have to be digitally looked up, and the standards are accessible throughout the entire building, a certain usage barrier will be removed.

Thirdly, the interviews show that keeping track of the number of tags submitted is another example of material work used during the implementation process. For example, more than 12.000 tags have been reported since the start of the implementation. These 12.000 tags mean that 12.000 wastes were found by employees, which contributes to the continuous improvement of the factory. The TPM coordinator indicated the following:

> *"Also, there is a plexiglass pedestal, and all the tags that have been reported are put in that pedestal. Then you literally see that the glass pedestal is filling up and then you actually see the progress of the improvement program"* (G. Van der Steen).

This statement shows that the TPM coordinator put down a pedestal of plexiglass in 2015, where all the tags submitted were collected. This glass pedestal was deliberately placed at the entrance of the main building so that employees and customers see this pedestal overflowing over time. According to this respondent, this is a way to make the progress of the improvement program tangible, and it shows the employees that the TPM program leads to improvement.

Fourth, the interviews showed that the actual TPM award, in the form of a golden tile, was also a form of material work used during the TPM implementation. In the interview, the TPM coordinator indicated that he deliberately placed the golden tile prominently on a pedestal at the main entrance in 2017, so that everyone can see it upon arrival. In addition, it appeared that the TPM employee of the month is also a form of material work that was used. The winner of this election received a Fitbit watch as a gift. Respondents indicated that in this way, attention was paid to the health of the employee. Besides, the TPM employee of the month received a personal letter from their managers and HR, stating the reason for this election. The TPM employee of the month was also mentioned in the digital newspaper, and an award ceremony then took place.

Finally, the interviews show that material work has also taken place that is interwoven in the TPM methodology itself. Examples of this material work that took place is the use of the folder where the complete TPM methodology is written out, formats for tags and improvement proposals and cleaning and inspection lists. The use of these materials has also

contributed to the acceptance and appreciation of TPM. Below in figure 7, the different forms of material work are shown schematically in a timeline.
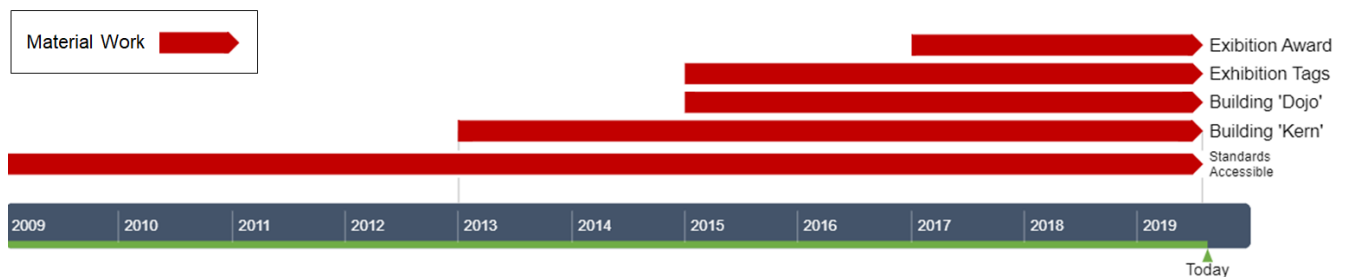


**Figure 7: Material Work**

### 4.2.3 Relational work

Relational work can be divided into two different forms, namely, recruit followers and collaboration. These two forms are further explained in this section.

*Recruit followers*

The change agents tried in different ways to get followers for the TPM methodology. Namely with the kick-off, TPM networks, TPM contests, training and events, and the TPM employee of the month. Firstly, a kick-off of the implementation process took place in 2009. The managing director organized this kick-off in a big way with a well-known football player, Hans van Breukelen, as chairman of the day. According to the managing director, this day was used to introduce everyone to TPM, and an attempt was made to create enthusiasm. According to the respondents, it was managed to get the employees enthusiastic in the beginning. However, by not living up to the sky-high expectations, this enthusiasm turned into cynicism over the years.

Secondly, the interviews show that the managing director and TPM coordinator used existing TPM networks from Royal Cosun for recruiting TPM followers. Since 2009, there were various TPM networks within Royal Cosun, including the TPM coordinator days. On these days, all Royal Cosun TPM coordinators came together to discuss developments regarding TPM and to share best practices. Also, there were pillar days where all pillar leaders came together to talk about their specific TPM component. There were also special TPM pillar training courses where pillar members from Aviko Rixona were trained using TPM practices. Besides, there was the kaizen team of the year election, in which Aviko Rixona was

taking part. In 2015, the Aviko Rixona team achieved second place, and this success story was used by the TPM coordinator to gain more followers.

Thirdly, the interviews show that the TPM coordinator started in 2015 with 5S contests and tag contests, whereby prizes were awarded to the best performing TPM teams. However, it is indicated that the tag contests missed their goal. These contests resulted in the writing of useless tags; this shows the means passed its goal. Also, it appeared that the TPM coordinator and the TPM promoter started in 2015 with TPM training and courses, which mostly took place in the dojo. The TPM training sessions and courses that were executed included pillar training and safety training. TPM activities were explained and practised in these parts of training, which increased the acceptance of the program. It also appeared that the TPM coordinator started organizing TPM events in 2015. These events were held twice a year, during which the factory was shut down, and the entire organization came together to pay attention to specific TPM themes. Respondents indicated that these events were created to increase the synergy between departments and to ensure a focus on specific TPM activities. The following statement shows that these events led to more acceptance of TPM:

> *"Because it was not just a presentation, but they really had to work themselves and search for leakage spots and make improvement proposals. So first explain how such a system works. So really very pragmatic with the people on the floor. A number of people are cleaning and screening for losses. I think it was a very powerful tool that we used at the time"* (M. Ottenheim).

This acceptance for TPM practices arose because the employees did not only had to listen to a presentation but also started working in groups on TPM activities, such as searching for leakage spots in the factory. However, the interviews show that these TPM events were not always used correctly. For example, a TPM event in which the management announced that all improvement proposals under the thousand euros would be implemented anyway. However, management did not adhere to this agreement, with the result that the enthusiasm of the employees faded away.

Finally, the TPM coordinator indicated that he created enthusiasm through the introduction of the TPM employee of the month. He gave the following example:

> *"Every month we highlight an employee who has made a very positive contribution to the TPM program. Then at the end of the year, we have twelve people, from those twelve people we will select people who will go to Japan"* (G. Van der Steen).

From this statement, it appears that, as a reward for achieving the award in 2016 plus the good effort concerning TPM, four people were drawn to attend the award ceremony in Japan. These four people were chosen from the twelve TPM employees of the month of that particular year. The TPM coordinator indicated that in this way he encouraged and rewarded the application of TPM practices.

### Collaboration

The change agents tried in various ways to improve collaboration, namely with collaboration sessions, organizational changes and linking the KPIs. Firstly, in 2015, the managing director and TPM coordinator organized collaboration sessions between different departments. Respondents indicated that personality analyses were conducted during these sessions to understand each other better and improve collaboration so that the TPM goal of continuous improvement could be achieved. Respondents indicated that collaboration needed to be enhanced to achieve their TPM goals. Partly because of this, since the start of the culture program in 2017, collaboration has been a core value within Aviko Rixona.

Secondly, organizational changes were made in 2015 at the initiative of the TPM coordinator. The following statement from the TPM coordinator shows that the pillar leaders were not fully aware of the mutual relationship between the pillars before 2015.

> *"The pillars had a relatively good idea of what their own program should be, but the relationship between one pillar and the other was absolutely unclear. So that was a bit of synergy that was missing"* (G. Van der Steen).

The TPM coordinator indicated that due to organizational changes, he ensured that there was more synergy between the pillars. The organizational changes that were made include changing the organization chart and introducing the steering committee. The steering committee consists of all pillar leaders and, according to the TPM coordinator, this committee ensured that the pillar leaders became aware of each other's TPM activities and objectives. This development led to the relationship between safety, quality, production and technology becoming clear, which was not explicitly understood before. However, it was stated that the employees did not always knew the difference between the role of the pillar and the

department. The pillar leadership had no hierarchical leadership and therefore no operational responsibility. It was therefore sometimes unclear to employees whether these people spoke as departmental or pillar leaders, or whether they should do something with the decision or whether it was just advice.

Thirdly, the interviews show that the TPM coordinator tried to connect the various layers in the organization by means of numerical control on the company's KPIs. It appeared that before 2015, there was no link between the strategic objectives and the operational objectives, so it was questioned whether everyone had the same interpretation of the objectives at that time. From the interviews, it appeared that from 2015, the TPM coordinator started to translate the strategic objectives into department objectives, then into team objectives and ultimately into objectives for operators. It appeared that this was done through the DMS board, where the operators link their daily results to the business objectives. Respondents indicated that in this way awareness was created among employees with regard to their individual contribution to business objectives.

Furthermore, there was relational work that was interwoven in the TPM methodology itself. An example of this relational work that took place is the use of multidisciplinary teams (kaizen teams), which has improved the synergy between the departments. Below in figure 8, the different forms of material work are shown schematically in a timeline.
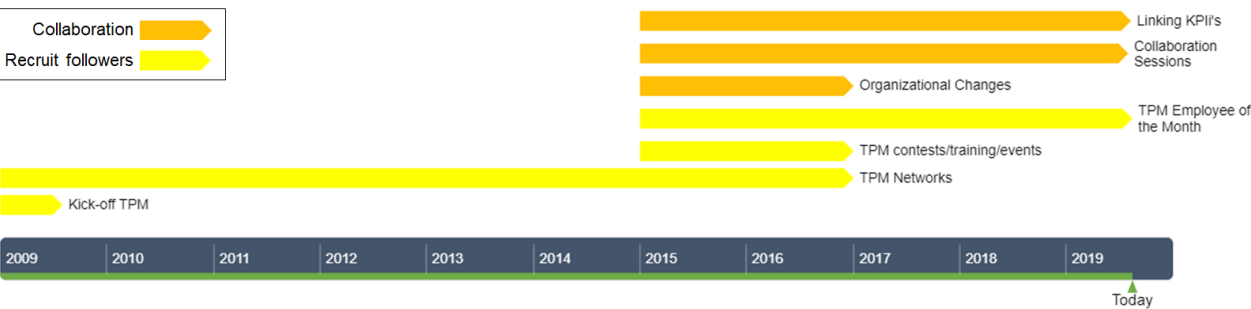


**Figure 8: Relational Work**

## 4.3  Institutional Work and Legitimacy

The application of institutional work changed during the implementation process. In period one, the change agents chose first to integrate TPM practices into certain parts of the organization, as is apparent from the following statement by the TPM coordinator, among others:

*"You start at the genba, so in the workplace and from there you start involving more and more departments. So you actually start with production, then with technical service, then you expand to quality, logistics, office, supply chain, sales and so on until you have actually incorporated the entire company into your improvement program"* (G. Van der Steen).

This statement shows that the institutional work in period one took place in certain parts of the organization. In period one, therefore, one could speak of fragmented legitimacy (figure 9), which means that certain TPM practices were accepted in certain parts of the organization. The TPM implementation, therefore, originated during this period but was not fully implemented properly. This is evident from the following statement, among other things.

*"When I came here, they had been doing it for seven years. We were at step four, but steps one, two and three were not implemented in such a way that you actually got wings. So it collapsed again"* (M. Helms).

In period two, just as in period one, there was fragmented legitimacy (figure 9). The difference between these two periods is that a relatively higher intensity of institutional work took place in period two compared to period one. This difference can also be seen in figures 6, 7 and 8, where it can be noticed that many forms of institutional work started in 2015. The entire organization was forced to apply TPM practices during this period, what is evident from the following statement, among other things:

*"If you try to push a circle in a square and hit hard enough, yes someday it will go through, but how much pain did it cost?"* (G. Van der Steen).

This statement shows that the TPM practices were pushed through in period two. The intensive institutional work of period two ensured that the entire organization became familiar with TPM and at the end of period two the TPM award was achieved. In this period awareness was created but it did not boost legitimacy of the TPM practices.

Subsequently, in period three, one could speak of partial legitimacy of TPM practices. Partial legitimacy means that certain TPM practices are legitimate throughout the organization. This partial legitimacy is because certain TPM aspects that were experienced as fitting with the organization were emphasized in this period, and the TPM aspects that were

not experienced as fitting were not emphasized anymore. The partial legitimacy of TPM can be seen, among other things, from the following comment:

> *"Tagging has just continued, improvement proposals have just continued. They are accepted in the organization. So yes many things just continued, but some things didn't"* (G. Van Ijzendoorn).

From the beginning of period three, the intensity of institutional work has been reduced drastically. Figures 6, 7 and 8 show that only two forms of institutional work were initiated in period three. Furthermore, these figures show that many activities that started in period one or two continue in period three. For example, the adaptation of the building in period two (material work). This adapted building is still in use in period three, but it is not seen as extra institutional work that took place.
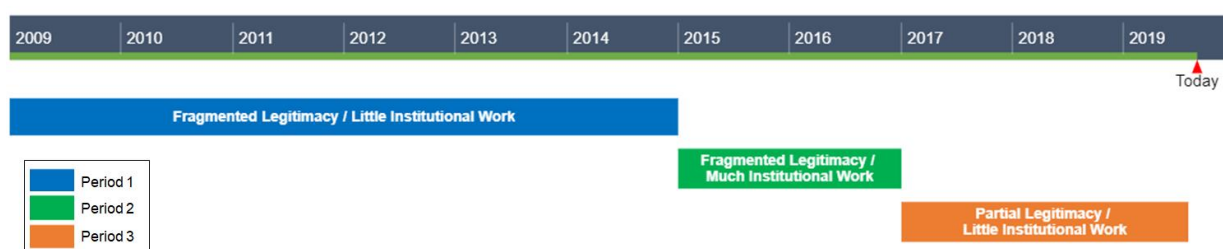


**Figure 9: Legitimacy and Institutional Work**

The development of the institutional work that took place during the implementation process has, therefore led to changes in the legitimacy of TPM practices. In the first period, one could speak of fragmented legitimacy of TPM, where relatively little institutional work took place. Because a broader set of institutional work took place in period two, the awareness of TPM increased, but there was still fragmented legitimacy. Subsequently, in period three it was determined which TPM practices fit the organization and which did not. The practices that fitted were emphasized in the institutional work performed, which ultimately led to partial legitimacy of some TPM practices across the organization.

# Chapter 5 – Conclusion and Discussion

*In this chapter, the conclusion and discussion is central. In section 5.1, the conclusion is described. Subsequently, section 5.2 will present the theoretical implications. In section 5.3 the practical contribution and the direction for further research will be discussed. Finally, section 5.4 elaborates on the methodological limitation.*

## 5.1    Conclusion

This research started with the following research question: *How was institutional work used to legitimize Total Productive Maintenance practices within Aviko Rixona Venray?* It was investigated how institutional work was used and what effect it had on the legitimacy of TPM practices. The institutional work performed by the change agents was investigated by means of qualitative semi-structured interviews. This research shows that the development of the institutional work that took place during the implementation process led to changes in the legitimacy of TPM practices. In the first period, the institutional work only took place in certain parts of the organization, which led to a certain fragmented legitimacy of TPM practices. Subsequently, a richer set of institutional work took place in the second period, where the intensity of the institutional work was also increased. This development in the application of institutional work led to more awareness of TPM throughout the organization. However, there was still  a certain fragmented legitimacy in this period. In this second period, employees experienced which TPM practices fit the organization and which did not. Subsequently, the intensity of the institutional work was reduced in period three, and only the TPM practices that matched the organization remained. Therefore, from period three onwards, one could speak of partial legitimacy of TPM within Aviko Rixona. These findings show that by using a broader set of institutional work and increasing its intensity, some TPM practices have ultimately gained greater legitimacy throughout the organization. In short, the institutional work has, over time, led to a partial legitimacy of TPM within the organization.

## 5.2    Theoretical Implications and Directions for Further Research

In this section, the theoretical implications are discussed and it provides directions for further theoretical research. This study contributes to the expansion of the literature on institutional work in two main ways:

Firstly, much research has been done in the current literature on institutional work at the macro level, and little attention is paid to the micro-institutional context such as companies (Van Dijk et al., 2011). Studies of institutional work at the macro-institutional context pay much attention to differentiation of stakeholders. This differentiation at the macro-institutional context can be noticed in the article by Maguire and Hardy (2009), where they distinguish between different heterogeneous groups, such as scientists and activists, in using institutional work. Concerning legitimizing TPM practices, stakeholders such as academics, consultants, certification organisations, developers and customers (companies) can be recognised at the macro-institutional context. So at a macro-institutional context, many different stakeholders are often taken into account and therefore this research focuses on one important stakeholder: the customer who is the end-user. By zooming in at a micro-institutional context on one important stakeholder it is possible to get a more detailed perspective on the actual institutional work carried out by the end-user instead of the group who developed it. If this zoomed-in perspective is missing, we may miss out on customer activities that are important to make TPM practices legitimate. So by zooming in on the customer, a more complete picture can be given of what is actually needed to have TPM practices on the floor used by the end user. Further research will increase the knowledge about institutional work within the micro-institutional context.

Secondly, there is limited attention to the full spectrum of institutional work. In the existing theory on the application of institutional work, particular attention is paid to symbolic forms of institutional work, which is at the expense of insight into the role of relational and material forms of institutional work (Hampel, Lawrence & Tracey, 2015). In addition to the focus on symbolic work, this research is also interested in relational and material work. This research shows that the collective application of these three forms can influence the legitimacy of new practices. In addition, it is also noticeable that there is a dynamic between the different forms of institutional work. It appears that it is possible that forms of institutional work can both reinforce and hinder each other. An example of strengthening relational work, and in particular the recruitment of followers, through material work is the following: the factory was adapted during the implementation process, where the learning space called the dojo was created (material work) and this learning space was used for giving TPM training and courses to recruit TPM followers (relational work). In this example, material work supported the application of relational work. Besides, it is also possible that forms of institutional work hinder each other. For example, relational work that hindered symbolic

work in this case: In 2009, the kick-off of the implementation process (relational work) was introduced in a big way, with sky-high expectations. Because these expectations turned out to be unrealistic, the enthusiasm turned into cynicism over the years. As a result, there was less credibility with regard to the TPM success stories of the change agents (symbolic work). These examples show that when the three forms of institutional work are investigated together, there are mutual effects that were previously not explicitly identified. It is, therefore, obvious that the various forms of institutional work can both reinforce and hinder each other. Consequently, it makes sense to include different forms of institutional work in follow-up studies and to zoom in deeper into the nature of this dynamic.

Thirdly, additional insights have been obtained inductively into the concept of legitimacy. It is stated by Suchman (1995) that many researchers use the term 'legitimacy', but few define it. As discussed in Chapter 1, Suchman defines legitimacy as: "A generalized perception or assumption that actions are desirable, clean, or appropriate within some socially constructed system of norms, values, beliefs and definitions" (1995, p. 574). Within this definition, he distinguishes three main forms of legitimacy, namely: pragmatic legitimacy (rests on audience self-interest), moral legitimacy (rests on the judgment of the right thing to do) and cognitive legitimacy (rests on cognition). The research carried out points to a more nuanced perspective to this, in the context of organizations. In this case it appeared difficult to determine whether TPM as a whole could be considered legitimate. The concepts that this study introduces are; fragmented legitimacy and partial legitimacy. Fragmented legitimacy means that certain practices are accepted in certain parts of the organization. Partial legitimacy means that certain practices are legitimate throughout the organization, whereby it is determined which practices fit the organization and which do not. The three forms of legitimacy of Suchman (1995) can be related to the two concepts of legitimacy from this study. The three forms of legitimacy of Suchman (1995), however, have a different level than the two nuanced concepts from this study. On the one hand, the forms of legitimacy of Suchman (1995) indicate how legitimacy is obtained. On the other hand, the two concepts from this study indicate to what extent parts of the phenomenon is partially or fragmented legitimate within the organization. Both forms of legitimacy may be used side by side. For example, moral legitimacy can occur both partially and fragmented within the organization. Furthermore, Suchman (1995) indicates that his three forms of legitimacy, as mentioned above, can merge, for example from pragmatic to moral to cognitive. Cognitive legitimacy can be manipulated less than pragmatic legitimacy but is more profound and self-sustaining.

Suchman (1995) indicates that these forms of legitimacy, however, do not have a strict hierarchy. The research that has been carried out has created the idea that there can be a hierarchy between legitimacy, namely that partial legitimacy builds on fragmented legitimacy. It has been suggested that partial legitimacy can mainly be achieved if a burst of institutional work has taken place in order to gain awareness of the phenomenon to be implemented. This indicates that the traditional concept of whether or not there is legitimacy is relatively limited. Based on this research, two more nuanced concepts of legitimacy were introduced. With the help of these concepts, it is possible to better explain the legitimacy of practices within an implementation process in follow-up studies.

## 5.3    Contribution to Practice and Directions for Further Research

This section discusses the contribution to practice and suggestions are discussed as to how this contribution can be expanded. The contribution to practice is threefold:

First, Aviko Rixona may learn from this TPM implementation process itself. This research showed that the implementation process has not been very efficient. A total of four TPM coordinators were needed to get the program moving. In the end, it took ten years to arrive at a version of TPM that fits the organization. There are two ways distinguished in which Aviko Rixona can learn from this implementation process. Firstly, with the help of the findings in this study, they may be able to shape future TPM interventions better. An example of this is the following: In the future, Aviko Rixona may undergo changes, and when that happens the TPM practices that are perceived as appropriate may also change. In this case, they can see how institutional work has previously been used to come to fitting TPM practices. Aviko Rixona can, therefore, make use of the insights into the TPM implementation process, allowing the organization to adapt faster to changes in their environment. Secondly, Aviko Rixona can also learn from this research in another way. Based on the insight into the implementation process, future related implementation processes could run more efficiently. By future related implementation processes are meant management practices that focus on process optimization. This related implementation processes could include management practices such as Lean Six Sigma, Balanced Scorecard, Scrum and Agile. An example of how related future implementation processes can benefit from this research is the following: with a kick-off (relational work) realistic goals must be set towards employees in order to create legitimacy for certain practices. For Aviko Rixona, it is interesting to do a similar investigation of the site in Warffum, where a similar TPM implementation process has taken

place. With such a comparative study it is possible to notice similarities and differences and to obtain more robust findings.

Secondly, there is a general contribution to other related companies. In this case, 'other' refers to companies in the food industry that want to implement a management practice focused on process optimization. These companies can use the information regarding the application of institutional work in relation to legitimizing certain management practices in their implementation process. For example, it seems advisable to have a range of institutional work take place in order to create awareness of the phenomenon to be implemented and ultimately to retain an appropriate set of practices. As the research only concerns Aviko Rixona Venray, it would be interesting to do similar research in the future within other related companies that have implemented a process optimization program. Such a comparative case study can lead to interesting outcomes where similarities and differences can be found. This further research can lead to more robust findings concerning institutional work in relation to the legitimacy of TPM practices and other related management practices.

Thirdly, it was extensively described how institutional work was applied to make TPM practices legitimate and it would also be interesting for Aviko Rixona to investigate the extent to which TPM delivers what it promises economically. It is therefore interesting also looking at the economic effects of institutional work that has taken place and the practices that have been implemented.

## 5.4    Methodological Limitation

This section discusses the methodological limitation of this study that should be addressed in future research. The research methodology used provided an extensive understanding of the institutional work that has taken place during the TPM implementation process. During this investigation, people were interviewed who had worked at Aviko Rixona for more than ten years. Despite obtaining comprehensive information from these individuals, the implementation process could be mapped even more in detail through ethnographic research. In this way, the researcher himself can be part of the entire period of the implementation process, and it is possible to experience the developments for yourself. Unfortunately, ethnographic research was not possible due to time constraints.

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# Chapter 7 - Appendix

Appendix A  – Interview Scheme

| Domain | Constructs | Labels | Interview Questions |
|---|---|---|---|
| **Introduction** | | | |
| | | Introduction | Can you describe your position during the implementation of TPM? |
| | | | Has a role change occurred during the process? |
| | | | What were your expectations regarding the implementation of TBM? Have these expectations been met? |
| | | Events | What do you think are the five most important events of the implementation. (Pinpointing on time in the process) |
| **Main** | | | |
| *Symbolic work* | Narratives | Meta-narratives | How have you explained to your colleagues what TPM entails? |
| | | | To what extent have certain (success) stories been used during the implementation? |
| | | | To what extent has TPM become more accepted and appreciated by these stories? |
| | | Terminology | To what extent have certain (positive) terms been used that are characteristic of the TPM implementation? If so, has this been used deliberately? |
| | | | To what extent has the use of these terms ensured that TPM has become more accepted and appreciated within Aviko? |
| | Identity | Identity | What do you think everyone thinks is important within Aviko Rixona? |
| | | | Has this changed since the arrival of TPM? If so how? |
| | | | How does TPM connect with what is important to everyone? How is this ensured? |
| | | | Do you think TPM fits Aviko Rixona? Why or not? |
| | Visuals | Visuals | (→Give definition of visuals) Which images are characteristic of the implementation of TPM? Why were these images used? |
| | | | Can you give examples in which ways messages have been consciously conveyed in the form of images? |
| | | | What is the effect of using these images? |
| | | | To what extent has TPM become more accepted and appreciated by these images? |
| *Material work* | Material objects | Material objects | Which tangible objects were used during the implementation of TPM? (Eg: buildings, places (dojo), technical materials, courses, formats, awards) |
| | | | How have these materials contributed to the implementation of TPM? |
| | | | To what extent has TPM become more accepted and appreciated through the use of these materials? |

| Relational work | Recruit followers | Recruit followers | In what way were people excited about TPM implementation? (for example, informing, rewarding or compelling?) To what extent does this fits Aviko Rixona? |
| --- | --- | --- | --- |
| | | | To what extent have existing networks / teams been used to recruit proponents for the TPM implementation? |
| | | | To what extent have new networks been created through the implementation of TPM? |
| | | | To what extent has the use of these networks led to more acceptance and appreciation for TPM? |
| | Collaboration | Collaboration | How would you describe the cooperation between the strategic, tactical and operational layer during the TPM implementation? |
| | | | What kind of collaboration was this? (eg: sharing best practices) |
| | | | What were the expectations / objectives of this collaboration? Did everyone have the same goals? Have these expectations been met? |
| | | | To what extent has TPM become more accepted and appreciated by this method of collaboration? |

**Closing**

| | | Evaluation TPM Implementation | Are you satisfied with the implementation of TPM? What would you have done differently afterwards during this process? |
| --- | --- | --- | --- |
| | | | How would you shape future implementations? |
| | | | Can you briefly summarize how it has been ensured that TPM has become more accepted and appreciated within Aviko Rixona? |
| | | Ethics | Do you wish to receive feedback from this conversation? |
| | | | Can your name be mentioned in the survey or would you like to remain anonymous? |
| | | | Do you want to be kept informed of the results of this research? |

**End**

| | | Thanks for cooperation | Thanks for your cooperation. Do you have any questions? |
| --- | --- | --- | --- |

## Appendix B – Coding Scheme

| Themes | Constructs | Codes | Example Quotes |
|--------|-----------|-------|----------------|
| Introduction | | Introduction | *"Well, I already knew TPM from my previous work. I was familiar with TPM at my previous employer for a year. Only I had no active role in it. I was not a pillar leader at the time. The then operations manager, who then carried out this TPM project-wise during the entire award process. He also made a new layout for the pillars, and he made me a QM pillar leader"* (M. Ottenheim). |
| | | Events | *"Yes if you look at the entire TPM program then the official implementation here in Venray started somewhere around 2009 I think. Then the program was announced big, with a kick-off at the time, whereby the factory was stopped. All people were together for a whole day as the official start of the TPM program.* <br> *... Second important event, I think, was that a full-time equivalent was put on the program. ... After that, the period towards the award is, of course, an important milestone. That has been a very intensive time for the company, which was also a hard deadline, so actually a GO or NO GO, so you make it or you don't make it. So that has been an important milestone. ... And finally, the period after that. Until the award, we followed the Japanese methodology very strictly, where there was no room for personal interpretation. And after the award, we started to think about how we would like to organize our improvement program ourselves"* (G. Van der Steen). |
| Symbolic work | Narratives | Meta-narratives | *"I started looking at other companies with some employees. I have been to some companies in Italy and observed how they set it up there and how they succeed there. ... And that's how we did it, showing that kind of success stories"* (O. Van der Gronden). |
| | | Terminology | *"Yes, efficiency is a term we use, more output, and we look at KPIs, and we look at the results, so the focus on results is important"* (O. Van der Gronden). |
| | Identity | Identity | *"We started a culture program about two or three years ago to see who we are as Aviko Rixona and which core values are important to us, so which cultural values. Agreement is agreement, reliability, that has become one of them.... Doing TPM well, those core values are simply needed. That is simply an essential condition to be able to do TPM properly, I think"* (M. Ottenheim). |
| | Visuals | Visuals | *"We have also made our own films, for example from SMET, which is the conversion of machines. I first made a film of how we do it at the moment and how would we do it if we applied SMET. Then you just see that people walk much more focused to the position. ... And if you visualize it, people will get it sooner"* (G. van Ijzendoorn) |
| Material work | Material objects | Material objects | *What we also have is two meeting rooms, one for production and one for the packaging department. So where we do the morning meetings through the DMS board, the daily management system ... And then the dojo. A learning organization that wants to improve continuously must be continuously learning, so we have set up a place where that is possible"* (J. Van der Horst). |
| Relational work | Recruit followers | Recruit followers | *"Yes and of course we have had events, so go through the factory and watch everything you see. Yes, those are the things that are there, the things that you use to explain the effect of TPM and the possibilities of TPM. ... Yes twice a year, we still had it last Christmas. That was also in the context of doing more fun things together. But in between TPM is intertwined"* (M. Helms) |
| | Collaboration | Collaboration | *"I think it has become more open and transparent, but we still have the problem of 'them' from the factory and 'we' from the office. At the office we have set up a number of sessions here, Michael did that. In particular, the commerce and supply chain and cooperation and how you look at each other and we draw a disc analysis for each character. There have been a number of* |

| | | | |
|---|---|---|---|
| | | | *sessions with a facilitator as well. How do you work together and that has ensured that we get that openness again, that transparency"* (O. Van der Gronden) |
| Closing | | Evaluation TPM implementation | *"I am satisfied with the TPM events and the efforts we put into the award. But a little less happy with the award process itself because it involves a lot of polishing work, it is a show"* (M. Ottenheim)<br><br>*"Yes, in the end, it can always be better. It could always have been better, but at the time getting that award, the investment program, was a very important milestone that we had to pass. At the end that contributed yes"* (N. Dijks) |
| | | Ethics | *"Yes, I am curious about the results. Of course you also did a lot during the award year. ... Yes, that's no problem, you can use my name in the report. Especially if it adds something"* (G. van Ijzendoorn). |
| Other | Legitimacy | Fragmented legitimacy (1) | *"When I came here, they had been doing it for seven years. We were at step four, but steps one, two and three were not implemented in such a way that you actually got wings. So it collapsed again"* (M. Helms)<br><br>*"You start at the genba, so in the workplace and from there you start involving more and more departments. So you actually start with production, then with technical service, then you expand to quality, logistics, office, supply chain, sales and so on until you have actually incorporated the entire company into your improvement program".* (G. Van der Steen) |
| | | Fragmented legitimacy (2) | *"The Japanese were of course there, all of which contributed to the awareness that we are working on a system"* (O. Van der Gronden)<br><br>*"And then we actually recognized a kind of pattern. What did we see; first enthusiasm then it drops, and if it were announced that someone would be coming from Japan in three or four weeks, everything would be picked up again very quickly. Everything was perfectly arranged, the boards that we have, everything. And the people then saw that it seems as if we are preparing a show. Some had good faith in TPM and others less because of this"* (S. Erol) |
| | | Partial legitimacy | *"Look at the strengths of the program, look at the company, the phase that a company is in and then choose from what is relevant to your company"* (G. Van der Steen)<br><br>*"It is of course that you have to select the things that are useful for yourself. TPM can, of course, be made very large or small, by picking out the essential things that you can use and then getting started with it. It must work for you"* (M. Ottenheim) |

Appendix C  – Transcripts

For transcripts see separate file