Design of a Supplier Management System

Monitoring of Suppliers' Status and of Their Products

Bachelor-Thesis

zur Erlangung des akademischen Grades „Bachelor of Science (B.Sc.)“ im Studiengang Wirtschaftsingenieur der Fakultät für Elektrotechnik und Informatik, Fakultät für Maschinenbau und der Wirtschaftswissenschaftlichen Fakultät der Leibniz Universität Hannover

Name: **Timm Thunemann** [redacted]

[redacted]

Prüfer: **Prof. Dr. Michael H. Breitner**

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Table of Contents

1. Introduction

“If you can't explain it simply, you don't understand it well enough.”

Albert Einstein (1879-1955)

The success of an international corporation is not only measured by its own processes, employees and management decisions, but also needs a good supplier network and supplier management to create values and quality. In the time of globalization, fluctuating number of suppliers[1] and just in time production lead to an increased complexity of the supply structure. To keep a stable success and high quality standard it is necessary to handle the complexity as simple as possible and have a direct and strong connection to each supplier.

This challenge should be known by the management of all producing corporations with a large supplier network. Global player like Toyota, General Motors (GM) and PSA Peugeot-Citroën already did much to integrate and develop their suppliers to pass the challenge but not all of them are successful with it [14]. There are many reasons why for example Toyota is so successful with its supplier network. Supplier selection, supplier development, supplier education and interaction with the suppliers are main points and many studies like “The Machine That Changed the World” from James P. Womack, Daniel T. Jones and Daniel Roos already dealt with these topics [15]. This thesis focuses on the direct contact and interaction between the corporation and its suppliers. The desire is to keep it as simple and as successful as possible regarding the current circumstances in the analysed corporation ContiTech Power Transmission Group.

The management of the ContiTech and also its eight subsidiary companies called Business Units (BU), of which the Power Transmission Group is one part, are aware of the importance of this topic. To pass current and future challenges a supplier management system is needed which fulfills the complex requirements but is easy to handle to be a matching system. The Power Transmission Group (PTG) has nine plants around the world and a huge number of suppliers who also have their plants all over the world. The products get more complex, the quality standards rise up and just in time delivery gets more and more important. So it is

[1] To create a better reading, in this thesis “supplier” is used in the meaning of “supplier corporation” and written with “it” to make clear the corporation is meant.

necessary to have a direct contact with every supplier to improve existing products and develop new successful ones. A supplier management system became more and more an option to fulfill these requirements. Over the last years the ContiTech management decided to establish an own corporate system by instructing each BU to create one within its corporation. Considerations and a first draft which is seen in Figure 1-1 were done and lead to the suggestion that a matching solution could be an online portal system with internal (for ContiTech BU departments) and external (for suppliers) access. This thesis analysis the current supplier related processes and circumstances within PTG to define a catalogue of requirements as well as offering opportunities how and why the intended solution could be an online portal system. An overview about the Continental corporation and its history is given in the beginning of chapter 2. *Analysis of the Current State*.

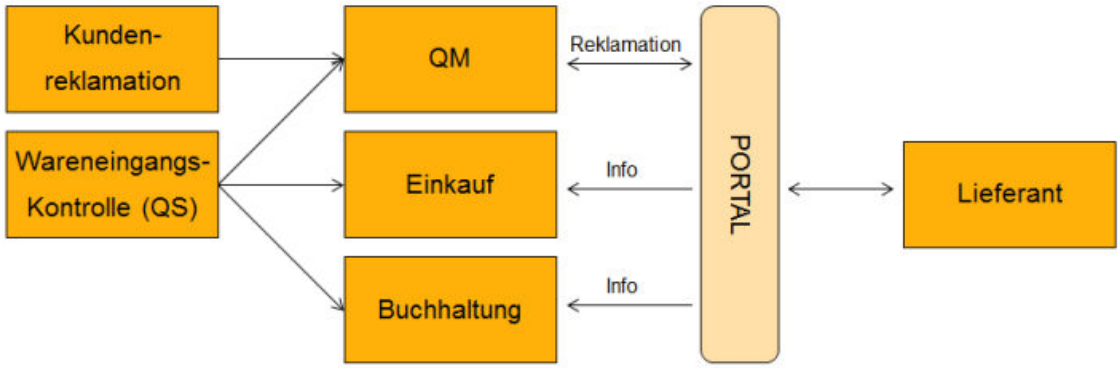

Figure 1-1 - Internal PTG Draft for Communication with Suppliers [29]

This Bachelor Thesis is written within the quality management headquarters in Hannover-Vahrenwald which is in charge of defining and establishing a supplier management system for PTG. At the moment such an intended system already exists but not by PTG as the editor. It is used in various implementation solutions by nearly every big automotive corporation like BMW, Daimler, Ford or General Motors to lead, evaluate, contact and complain to their suppliers. PTG is one of these suppliers and uses these systems to get the provided data and react to received complaints. With this knowledge from the supplier's point of view this thesis wants to define a similar system which matches with the circumstances of PTG and additionally offers the opportunity to control and operate internal PTG processes. To get to know which requirements are needed and useful the current strong supplier related processes of goods ordering, received goods checking, goods complaining and supplier auditing are followed and described in chapters

2.3 *Current Processes* to 2.3.4 *Audit Process*. The specific steps, the involved persons as well as the used programs and documents are shown to get a deep and wide overview on the procedures.

On this basis chapter 3. *Discussion and Evaluation* discusses and evaluates the processes step by step to their effectiveness and benefits. On the one hand it is shown how the weaknesses of the current processes can be solved. On the other hand how these solutions reach and describe the desired supplier management system together with the current processes' strength. While considering the processes to their effectiveness and describing solutions of the weaknesses there is always the point of view to define the requirements for a matching system. There are maybe other options to handle and solve the weaknesses and to optimize the processes than the solutions given in this thesis. Therefore in chapter 3.5 *Further Options and Suggestions* the author reflects his given suggestions about the intended system.

In the end of this thesis in chapter 4. *Conclusion and Forecast* the desired conditions are given by naming the focussed requirements for a matching system. This conclusion shall be a basis for further projects to realize the intended supplier management system. To give a forecast about the further project the next necessary steps and analysis for a successful implementation are named.

To get to know what the matching system shall look like detailed information from the current processes within the PTG are needed. The first step to implement a successful supplier management system will be done with this thesis: have a close look only on the supplier related processes. These processes are analysed to get information about their effectiveness and weaknesses. After the analysis opportunities are shown for improvements through combination and implementation with the intended system. The following chapter explains the current situation of the Continental corporation and describes the supplier related processes in detail.

4. Conclusion and Forecast

This thesis wants to answer the questions “Is an online portal a matching system for PTG?” and “Can the requirements for an online portal be combined with the current supplier related processes?”. To be able to answer these questions in the last chapters the supplier related processes are described and their current pros and cons are named. Furthermore suggestions are made for improving and combining the processes with an online portal system to become more effective. Now in this chapter a summary of the results and a final recommendation for a matching system are given. Additionally a forecast is done to show the next necessary steps for implement the online portal successfully.

While this thesis is written first improvements in the process procedures started, for example a data base of complaint contacts for torsional dampers or revising the complaint sheet. Furthermore some sub-processes were revised and new defined like the goods checking process for purchase goods. But these are only first steps, a matching supplier system is needed to establish further success for the PTG and ContiTech. Using a portal based solution, the processes can be more effective and the information basis about delivery and new parts development status within PTG clearer.

But is an online portal really a matching system for PTG? Yes it is because PTG as a supplier already uses online portals from the automotive corporations so the advantages from the suppliers’ point of view are known. For example these advantages are a direct and effective way to get to know about complaints from the automotive manufactures and answer them. A current overview how the customers evaluate PTG as a supplier can be seen within the portals at every time and is updated automatically. Furthermore there is the opportunity to use this kind of supplier management systems not only for complaints and direct contact but also for providing samples of new or changed supply products (cf. chapter 3.5). These points concern the interaction between supplier and customer. But is an online portal system able to be combined with internal PTG sub-processes? Yes it is able to be combined and as shown in chapter 3 these sub-processes can be more effective and efficient. The intended improvements allow faster process procedures through automatically sent email alerts (cf. chapter 3.3), a better complaint

information basis (cf. chapter 3.4) and saving effort and costs through less supplier audits (cf. chapter 3.1).

In this thesis the most supplier related processes are described and evaluated as well as suggestions are given to define requirements for a matching system. Chapter 3 describes the requirements in detail and shows how the combination of a matching system with the current process procedures and circumstances within the PTG can be done. But defining these requirements are only the first step to a running and implemented system, further steps have to be done. To do the next step the PTG management has to define those of the options suggested and explained in this thesis which should definitely be part of the future system. To be aware that all needed opportunities are given in the final online portal an enquiry with the heads of all supplier related departments like R&D, material development, quality management, distribution and further more shall be done. After the selection of all necessary requirements a closer look to the definition of the specific topics like complaints, contact data and part submission warrant has to be done. To do these tasks, groups have to be created for defining which different data from the suppliers are needed within the system and which parts of the system the suppliers should get access to. To regulate the access for the different supplier users and also the internal employees of PTG a role concept shall be defined. For this it is necessary to consult the ContiTech IT department or an external IT corporation. Through a role concept the portal is easy to handle and it is guaranteed that every user gets access only to his allowed options. But defining the content, the role concept, the needed data and the specific required data for the different sheets is only one part that has to be done. There are three further important tasks to focus on.

One of these three tasks is to create a detailed supplier evaluation. The basis is already available because in SAP the key figures are defined and able to be filled in with data by employee. Now it is the task of a further thesis or project team to redefine and update the key figures and individual weight. Furthermore employees have to be appointed by the PTG management who shall fill in the key figures' data and analyse the supplier evaluation results. A second step is to define the users within the supplier corporations and within PTG who shall get access to the online portal. The suppliers have to be committed by the purchasing and material devel-

opment departments to register their contact persons for the requested topics like complaints or part submission warrant. The announcement for the new supplier management system can be done in the regular meetings between PTG material development and supplier's employees or while proceedings between purchasing and supplier. There shall also be a manual for using the portal which shall be created by the IT company which the future portal solution is bought from. But not only the suppliers' employees have to get to know about handling the supplier management system but also the PTG users have to be trained for this. So it is necessary to define which employees shall get access to the online portal and which parts of the system they are able to use and put data into. For this it is necessary that the PTG management defines a responsible person or team who trains the PTG employees as well as attends the portal implementation. The third point to focus on is the needed resources for the implementation and running of the system. It is necessary to have an IT system that is able to run the online portal and has enough resources e.g. for the supplier data and the database. Furthermore there are employees needed to supervise the system and train the PTG users.

How much financial resources for the implementation in all nine PTG plants are needed and what the timeline for this could be cannot be analysed and said in this thesis. To give an established answer to that it is necessary to do the tasks mentioned above in further projects. On the basis of these results the PTG management shall appoint a financial budget for the project. This thesis is a first step on the timeline of the system implementation by analysing and describing the current circumstances within PTG. Furthermore it shows the possible options and need requirements for creating a system matching to the current procedures. And it also suggests how the current processes can be changed and become more effective using such an intended supplier management system. To go ahead it is necessary to track the above named points in further bachelor or master theses and project teams. After the supplier management system intended in this thesis is completely implemented and the first positive results are seen there is the possibility to implement this system in the other BUs as well. For this it is necessary to do considerations like this thesis and the above named following steps for every BU. In the end every BU can use the same system and a supplier management system for the whole ContiTech can be implemented.