UNIVERSITY OF SOPRON
ALEXANDRE LAMFALUSSY FACULTY OF ECONOMICS
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Thesis Book

Analyzing the Contribution of Supplier Management for Increasing the Company Value

Dipl.-Wirtschaftsing. (FH) Gerhard Lechner, M.B.A.

University of Sopron

Faculty of Economics

PhD-Program: Business Economics and Management

Supervisor: Prof. Dr. habil. Markus Mau

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1. Introduction

Increasing the value of the company is one of the main tasks of the management in order to survive in the market in the long term. Due in part to the very high proportion of value added by suppliers outside the company, especially in the case of manufacturing companies, the development of the company value is strongly influenced by these.

Companies use suppliers to best serve shorter-term innovation cycles and fast-moving markets, as well as volatile market demands. In this way, suppliers influence the company and product strategy and, in addition, are closely or even partially involved in procedures and processes.

This research thesis deals with the relationship between supplier management activities and the impact on the development of company value in manufacturing companies.

The objective to be achieved with the preparation of this thesis is the determination of empirically verified findings, which provide information about the effects and framework conditions the company value can be increased come from **supplier management**. The high proportion of value added that is provided externally by suppliers in the manufacturing industry underpins the importance of this task in practice.

In particular, results on the following subject blocks are to be found out:

- Cost-benefit ratio of supplier management activities,
- Scope of internal and external value added activities,
- Reasons and value added from cooperation with suppliers,
- Critical success factors of supplier management,
- Limits and difficulties of supplier management,
- Findings on cooperation with small, non-replaceable suppliers,
- Effects of close customer-supplier relationships,
- Quantifiable contributions of the suppliers to the company value increase,
- Framework conditions for and / or opposing effects from supplier integration,
- Influences from Industry 4.0 / Purchasing 4.0,

- Supplier reduction or optimization vs. sourcing strategies as well
- Importance of material group management.

2. Research questions and hypotheses

To obtain the findings, the following **four research questions** are asked:

1. *What benefits and value added come from the suppliers in detail in order to sustainably increase the value of the company?*
2. *What are the critical success factors of supplier management that contribute to the generation of value added?*
3. *What limits and framework conditions can lead to difficulties to supplier management, which influence or even block the procedures for increasing company value?*
4. *What value contributions from supplier management can be determined as quantified as possible?*

Furthermore, the empirical research will investigate the questions of how to cooperate with small, non-replaceable suppliers or close business relationships, and how to shape supplier base and material group management.

In addition, **six hypotheses** are formulated. With the results of the written survey and the findings from expert interviews these are to be reviewed.

Hypothesis 1: *If significant material cost advantages can be realized with suppliers, purchasing will neglect delivery performance, quality or innovation capacity.*

This hypothesis is based on the assumption that purchasing is very one-dimensionally focused on direct cost reductions and neglects other effects.

Hypothesis 2: *The more Industry 4.0 moves into the companies and purchasing departments, the faster it is possible to implement value added by purchasing from supplier management activities to increase company value.*

From Industry 4.0 opportunities can arise that influence supplier management and even change sustainably. It is therefore assumed that effects, i. e. value

contributions of purchasing, materialize faster from supplier management activities in connection with Industry 4.0.

Hypothesis 3: *The more committed suppliers themselves act or are allowed to act in a business relationship, the lower are the opposing effects on the part of the customer companies.*

It is assumed that there is a connection between the commitment of the suppliers and the extent of the opposing effects due to expenses in the context of supplier management.

Hypothesis 4: *The closer the relationship with a supplier is, the lower is the readiness to change of the customer or the purchasing because of the advantages offered by competitors or the occurrence of disruptions caused by the supplier.*

Differences in customer-supplier relationships result from personal contacts or long-term cooperation and are based on trust and involve a higher intensity. The assumption is that the 'tightness' of this connection can affect readiness to change and may influence necessary activities.

Hypothesis 5: *If suppliers are small and, moreover, difficult to replace, purchasing and / or the customer company implement special measures to control such suppliers as part of supplier management.*

Collaboration with relatively small suppliers, which are important and inherently irreplaceable solely for the own company due to specific competences, can cause essential problems if at a negative development of the relationship a change of the supplier is not possible and an 'agreement' with the supplier is necessary. For this reason, it is assumed that special control measures are defined for such suppliers.

Hypothesis 6: *The larger the number of suppliers at a company are, the more important it is for these companies or purchasing departments to push supplier reduction activities.*

This hypothesis is based on the assumption that companies fundamentally deal with supplier reduction and implement reduction activities. The importance of this topic depends on the number of existing suppliers.

3. Procedure of the empirical investigation

The empirical study is carried out by applying a total of two research methods - a quantitative and a qualitative method. By means of a written survey, a sample of 68 experienced purchasing representatives from companies in the manufacturing industry is first made in order to obtain reliable and quantifiable results. Subsequently, the results of the written survey are verified in the context of 13 expert interviews and additional insights gained through the use of a partially standardized interview guide.

With this **two-step approach**, the extensive findings that are important for the success of the research project can be identified. Because of the combination of both possibilities, the density of information is much higher than it would be if considered separately.

The structured and standardized questionnaire is used as a priority survey method. It consists of a total of twelve subject areas, which contain two to six sub-items depending on the area. The scale used in the questionnaire is based on the '**Likert method**'.

In the expert interviews, after the discussion of the individually completed questionnaires and the presentation of the first results on the topics of savings, opposing effects, supplier reduction and sourcing strategies, the experts are asked **nine questions** in the form of a guided interview.

The evaluation of the written survey will be done in Excel. The expert interviews are evaluated by means of a **summary qualitative content analysis**.

4. Research results and review of the hypotheses

4.1 Findings from the written survey and the expert interviews

The **findings of the written survey** underpin the importance and influence of supplier management in order to generate sustainable contributions to increasing the value of the company. By means of the survey, it was possible in particular to clarify

- how the cooperation with the suppliers is organized,
- which effects can be generated from the collaboration,
- how effects and activities influence each other,
- what effects and opportunities are coming from Industry 4.0,
- how the readiness to change behaves in close relationships,
- what importance optimizing the number of suppliers has and
- how to deal with small, non-replaceable suppliers.

Purchasing as the main interface to the suppliers is responsible that the defined suppliers can meet the diverse challenges of the own company. It was shown that the perception of **price and cost responsibility** comes first. From a good savings result thus essentially depends on the reputation and the reason for being of the purchasing. Suppliers are, however, also confronted with high demands with regard to the **quality of the products** as well as the **delivery performance** (time-related).

The cooperation with suppliers is focused on purchasing and technology. This is another reason why cost and product optimization issues are the focus and obviously the **most significant challenge** when working with suppliers. Here, the biggest contributions to company value enhancement continue to be made and demanded by management. For this purpose, a close exchange is necessary, which builds on the previous developments of **Industry 4.0**.

The suppliers must be reliable and sufficiently qualified to be able to contribute effectively. It is already an important differentiating factor whether complex products are handled with a supplier or whether suppliers are only used for simple services due to the cost structure. Likewise, communication with suppliers is increasingly focused on this. Classification thus continues to progress.

The purchasing department must know the capabilities of the respective suppliers very well or assess them correctly in order to adequately cover the requirements of the own company. That is why '**preferred suppliers**' are defined, with whom can be worked together for many years and without great surprises. The **number of suppliers** can be reduced and optimized on this basis, depending on the sourcing strategy used.

However, the survey has also shown that supplier reduction has the character of a 'side strategy' that may be lived if it can be implemented without much effort in bundling. It is obviously more important for purchasing that targeted use of sourcing strategies enables cost optimization to be achieved, where purchasing is primarily measured, and **alternative suppliers** are available.

With the **expert interviews** not only the questionnaires could be verified, but also additional information could be gained. Overall, the interviews helped to underpin the importance of supplier management. In particular, valuable, complementary findings with regard to

- the generation of value added from supplier management activities,
- the quantification of value contributions,
- the correlation between costs, quality, assurance of supply and innovation,
- the classification of opposing effects as well as
- the importance of material group management

could be found out.

It was also recognized in the expert interviews that the main motivation for working with suppliers is to achieve **improved cost positions**. However, it is just as important for purchasing to be able to show that contributions to the company result are realized that go beyond direct cost reductions, as this is the only way to show that purchasing has a holistic interest. The **profit contributions** that are made by the purchasing department beyond the direct cost reductions, e. g. improvements in quality and delivery performance which have a monetary impact on the company's result, could therefore be identified.

A supplier must implement an **attractive overall package** in order to be able to supply a company sustainably. That is, a low purchase price cannot compensate for poor quality or inadequate delivery performance. However, the ability of suppliers to innovate is clearly in the background compared to the other three parameters.

The benefits and value added of working with suppliers exceed the extra effort, i. e. the **opposing effects**, obviously significant. It is therefore still very interesting

for companies in the manufacturing industry to entrust suppliers with tasks in order to avoid higher structural costs on the one hand and to generate additional value added on the other hand.

Material group management has become widespread and has been implemented in almost all companies in the manufacturing industry. In this way, the purchasing strategy can be broken down to the respective material group and implemented purposefully in the sense of increasing company value.

4.2 Review of the hypotheses

Subsequently, the results of the **review of the hypotheses** will be discussed as a further focus of this section. It is determined whether the established hypotheses can be confirmed or have to be rejected.

Hypothesis 1: *If significant material cost advantages can be realized with suppliers, purchasing will neglect delivery performance, quality or innovation capacity.*

Review: At 92.6%, securing the price level is seen as a critical success factor for supplier management. The parameters **delivery performance** and **quality performance** (93.9%) are rated as further success factors either higher, equal or only marginally lower. The parameter **supplier know-how / speed of innovation** follows with some distance. The framework conditions for generating value added to increase company value depend in particular on the reliability or dependability of the suppliers with regard to **deliveries** and **quality** (93.9%), followed by the **suppliers' existing know-how** (88.1%) and can therefore not be neglected. It can therefore be derived that ensuring delivery and quality performance as well as generating supplier innovations is very important for purchasing, as this is the only way to create the basis for achieving cost advantages and thus sustainable contributions to increasing the company's results.

Hypothesis 1 is thus rejected.

Hypothesis 2: *The more Industry 4.0 moves into the companies and purchasing departments, the faster it is possible to implement value added by purchasing from supplier management activities to increase company value.*

Review: The optimization of the ordering system including reduction of stocks and inventory costs (75.8%), the acceleration of the information flow with suppliers (74.2%) and in-house (71.2%) as well as the reduction of process costs in the own company (71.2%) are seen as the most important **benefits of Industry 4.0 activities**. As a result, the **value added** comes primarily from shorter processing times and faster revenue generation (59.1%) as well as from indirect cost reductions (56.1%), i. e. from process optimizations and innovations or productivity increases. Due to the significant acceleration of the information flow, in particular between the own company and the suppliers, it is expected that the speed of innovation will increase further. The developments and opportunities from Industry 4.0 will have a major impact on the entire company, provided the companies are able to take advantage of them. Effects in terms of improving product quality and optimizing cooperation with customers can therefore also be expected. However, the feedback also shows that the multitude of chances and opportunities in companies in the manufacturing industry by Industry 4.0, e. g. with regard to Big Data or Artificial Intelligence, are far from fully recognized or implemented. Nevertheless, overall it can be derived that value added by purchasing due to Industry 4.0 will arrive faster in the own company.

Hypothesis 2 can thus be confirmed.

Hypothesis 3: *The more committed suppliers themselves act or are allowed to act in a business relationship, the lower are the opposing effects on the part of the customer companies.*

Review: Opposing effects from supplier management activities arise in particular due to expenses for development and support of suppliers, which, however, is only evaluated at 43.3% each. Higher travel or management costs as well as higher quality costs due to outsourced production are of even less importance; other points as well. This is mainly due to the fact that 'internal' suppliers have to be looked after and / or visited in the same way in order to ensure the necessary delivery and quality performance and therefore incur corresponding costs in the own company. In supplier management, however, additional **difficulties** may arise if the market position of suppliers is very dominant (80.6%), if there is no sufficient readiness of suppliers to cooperate (67.2%) or because of determinations for sourcing strategies

(62.1%), which restricts a flexible approach for strategic reasons. It is also important at this point to consider the influencing factors 'lack of capacity' and 'lack of know-how' on the part of suppliers and in-house (60.3% and 55.9%). All in all, however, it can only be concluded that the opposing effects clearly lag behind the benefits and value added that can be generated from a supplier relationship. But it cannot be found out that the opposing effects on the part of the customer company are lower if suppliers are allowed to engage or contribute more enthusiastically.

Hypothesis 3 is therefore rejected.

Hypothesis 4: *The closer the relationship with a supplier is, the lower is the readiness to change of the customer or the purchasing because of the advantages offered by competitors or the occurrence of disruptions caused by the supplier.*

Review: In total, 92.7% of companies confirm to work with at least one such supplier, i. e. almost all companies are confronted with this question. The decisive parameters are **purchasing costs, quality and logistics**. At significant purchasing cost benefits of 20% or more, at least 9 out of 10 companies would switch suppliers. In the case of performance disruptions such as quality or logistics problems of the current supplier, which occur regularly and have a large impact, at least 9 out of 10 companies also consider switching. As with any business relationship, a close relationship also takes into account the past. Nevertheless, the performance must be repeatedly provided and proven. However, significant differences in prices and, in particular, significant quality and logistics problems are rationally decided independently of relationships. Nevertheless, it can be stated that the tolerance threshold for close relationships in relation to a change is somewhat higher, but the **overall cost perspective** ultimately outweighs. Thus, it cannot be proven that the readiness to change is less in the case of performance problems in close business relationships.

The hypothesis 4 is therefore also rejected.

Hypothesis 5: *If suppliers are small and, moreover, difficult to replace, purchasing and / or the customer company implement special measures to control such suppliers as part of supplier management.*

Review: A large proportion of companies (73.5%) work with at least one such supplier. The problems that are seen at this point are in particular that supplier problems can quickly reach the customer (80.0%) as well as that the volume share of the small supplier is very high and thus a correspondingly high supply risk is latent (68.0%). For this reason, 86.0% of the companies involved implement **special measures**; however, 14.0% of companies refrain from doing so. First and foremost, the supplier is controlled more closely (76.7%) and more intensively supported (72.1%). Likewise, the connection between the respective management is intensified or expanded (60.5%). In addition, risk management may ask the purchasing department to search for and develop a second source. Overall, it can be derived from these findings that for small, non-replaceable or difficult-to-replace suppliers special measures are implemented by the majority of the affected customer companies, but not by all.

The hypothesis 5 can thus not be fully confirmed and is therefore rejected.

Hypothesis 6: *The larger the number of suppliers at a company are, the more important it is for these companies or purchasing departments to push supplier reduction activities.*

Review: 19.0% of participants stated that **supplier reduction** is of high to very high importance; 39.7% rate the importance as medium and 41.4% as low to very low. The average is 4.79, which is slightly below the mean of 5.5. It has also been noted that supplier reduction or optimization is classified as a 'side strategy'. It is more important, obviously, that with the existing supplier base, the requirements of the own company, in particular with regard to product and production cost savings (by far the most important quantifiable value contribution with 89.7%) as well as delivery and quality performance of the suppliers (with 93.9% the most important framework condition for value contributions) are met as best as possible. This is also underpinned by the use of preferred sourcing strategies such as global sourcing and regional sourcing. The optimization approaches with regard to the number of suppliers are pursued in the context of **material group management** - but not as a primary objective. After all, 54.8% of the companies nevertheless state that corresponding optimization activities have already been started or agreed. Increased cooperation with preferred suppliers (88.2%), common parts and

platform strategies (70.6%) and the promotion of C-parts management (67.6%) are the most important. With regard to the future supplier base, it was stated that the number of suppliers should be reduced by a total of 27.4% and thus the purchasing volume should be further bundled. However, results regarding the importance of this topic depending on the size of the current supplier base of a company could not be found out. Based on these findings, it cannot be derived that reduction activities are more important for a company with a large number of suppliers.

Therefore, the hypothesis 6 must also be rejected.

5. New scientific findings

Several new scientific findings were found during the investigation:

- **Profit contribution from purchasing:** From the feedback on employee capacities and overall profit contributions, it was possible to calculate for the manufacturing sector that the average profit contribution per purchasing employee is approx. € 95,000 per year and the average profit contribution per purchaser per year is approx. € 204,000. The relative contribution of purchasing per year - that is the contribution of purchasing in relation to the cost of materials - is averaged 3.8%. Such analysis results or correspondingly performed analyzes with regard to the quantifiability of these values cannot be found in the relevant literature.

  These value contributions can be taken as a guide by purchasing departments in manufacturing companies and can be used as a quantitative argument for adjusting employee capacities in purchasing. Of course, these results need to be reviewed regularly due to the changing cost structure.

- **Proportion of purchased value added:** In the case of high external value added by suppliers, the importance of purchasing is equally high. The sample shows an average, external value added share of 64.3%. In the literature it is only mentioned in general that in many industries, depending on the product price, 50% or more of the costs are the responsibility of the purchasing department.

The high importance of suppliers due to the high external value added share for the manufacturing industry is thus underpinned. As a result, supplier management as a purchasing tool to increase company value, especially in this industry, is very important.

- **Critical success factors of supplier management:** The factors quality performance, price level and delivery performance were rated equally high. For this reason, it can be derived that purchasing does not only deal with questions about direct cost optimization in a one-dimensional manner, but that the topics 'good quality' and 'high delivery reliability' are also of fundamental importance with regard to generating value added.

  As a result, a supplier in the manufacturing sector must perform well in all three categories in order to be a supplier to a company (see also the results of the review of hypotheses 1 and 4). Only the **readiness to change** in a lack of innovations is weaker.

- **Development of the intensity of cooperation:** Cooperation with suppliers in five years is considered to be even closer and more intense than today.

  From this it can be derived that a very high proportion of value added in the manufacturing industry will continue to be provided externally by suppliers and correspondingly high value contributions are expected from suppliers. Strategic competitive advantages can be achieved from cooperation with suppliers, which will continue to be of great importance in the future and will be used even more intensively with the corresponding added value.

- **Neglect of opposing effects:** These effects have little significance in the manufacturing sector, because they would also accrue or be incurred when procured from internal suppliers. In this respect, these effects are considered negligible. In addition, the benefit of working with suppliers clearly exceeds the effort.

  Nevertheless, there may be **difficulties** with supplier management (e. g. due to a dominant market position of a supplier or in the case of a deliberate decision

for single sourcing), which may not be able to be solved in the short term with existing suppliers (see also the results of the hypothesis test 3).

- **Importance of forward sourcing:** The early involvement of suppliers, possibly already in the product development phase, has no high importance in the manufacturing industry.

  This does not coincide with the literature with regard to the realization of large potential savings as a future opportunity with a focus on the product development phase.

The engagement of the questionnaire and interview participants was very high overall. Nevertheless, the questions about the purchasing contribution and budget were not answered by all participants due to the sensitivity. Nevertheless, the questions were asked because otherwise these insights could not be obtained or otherwise obtained. However, these questions had no fundamental effect on the number of returns or the answer to further questions.

6. Conclusions and further research needs

Supplier management, which builds on many best practices, is essential to companies regardless of the economic situation. Equally important is the challenging task for the purchasing department to continuously contribute to increasing the **value of the company**. The responsibility for the largest cost block in manufacturing companies is not only responsible at purchasing, but also requires strategically oriented management activities both internally and externally in order to be able to create targeted value added.

Due to the rapid speed of change, which is now also heavily influenced by developments in **Industry 4.0 / Purchasing 4.0**, additional opportunities arise for companies to further optimize the cost situation in terms of an overall cost perspective and, moreover, to market faster with the own products. It is to be expected that the future digital possibilities will influence even more the strategic procedures and decisions of the companies. Therefore, these should be considered in the forefront with regard to further change processes in purchasing and procurement.

The **transformation process** in Industrie 4.0 / Purchasing 4.0 alone, due to the progressive developments in this field, is expected to result in new tasks and activities that will permanently change the requirements for the qualification of employees in purchasing and procurement. Because of the present skills shortage, it is essential for companies to be able to prepare for this at an early stage in order to initiate qualification measures themselves if necessary and not have to compete in the market for the required, scarcely available employees. In particular, therefore, **further research** is needed with regard to the future development of the depth of value added of companies, the change of core competences in the companies and the thereby necessary competence and staff development. A strong influence can come mainly from disruptive innovations.

Suppliers will continue to be the **most important product for purchasing** in the future. Therefore, the selection, definition and further development of suppliers will remain a critical and decisive process for companies under the leadership of purchasing. In this respect, it may be appropriate to investigate, if necessary, different behavior patterns and influencing factors of companies according to specific criteria in order to gain additional insights that may have an impact on supplier management. In particular, the combination or transferability of the knowledge gained to other industry sectors with divergent requirements or framework conditions with regard to future research needs may lead to new approaches.

Since the dealing of purchasing with direct costs will obviously continue to be the **most important challenge** in the future, it was not to be expected that the early integration of purchasing or suppliers into the product development process and the possibilities of forward sourcing would not be used to any appreciable extent. The results of the empirical study do not coincide with the literature at this point, so that there is also a need for further research or a later review is indicated.

Furthermore, it is suggested that the issue of **interdisciplinarity** should be further explored in order to clarify the question as to what extent purchasing should integrate additional internal functions in order to achieve the best possible results for the own company. In particular, sales and marketing should be considered, which know the market, the customers as well as the expectations of both of them

best and whose information and insights in the sense of a well-prepared, agile and ultimately successful supply chain also include the involvement of selected suppliers.

In addition, it is also important to gain further insights into new ways of optimizing the number of suppliers in the future, as this topic has not gained any strategic importance, at least for the time being, but is still the responsibility of the purchasing department. Here, it is important to develop simple solutions that can be used efficiently and without difficulties, so that easily achievable results with a manageable effort with monetary effects can be reached.

This thesis was created with a focus on the **manufacturing industry**. It makes sense to carry out similar surveys for other industry segments in order to be able to make comparisons between several industries if necessary and to transfer the findings, in particular with regard to processes and procedures, in the sense of best practice.

7. Own publications

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