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Benjamin Maier [1]

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FORMATION QUALITY OF A STRATEGIC ALLIANCE – THE DEVELOPMENT OF A SCORING MODEL TAKES INTO ACCOUNT THE SPECIFIC CHARACTERISTIC OF THE RECYCLING INDUSTRY

Abstract: *The purpose of this paper ist to develop a scoring model that takes into account the specific criteria of the recycling industry.First of all the specific criteria have to be identified and afterwards weighted. In order for being able to identify the specific criteria, different methodology first have to be applied. For this the method of descriptive statistics, inference statistics and the systematic literature research are used. The identified criteria are summarized in a survey. Various companies of the recycling and disposal industry receive the survey and weight the criteria according to their subjective assessment. Through the individual subjective evaluations of the criteria, a weighted average and thus a scoring model can be created. The contribution of this paper is to offer the recycling companies the possibility to identifiy and select the optimal strategic partner based on objective criteria. As a result, the quality of the choice of a partner and the quality of service for the customer can be improved, which means that the paper also has a practical benefit.*

Keywords: *Strategic alliance, Scoring model, Cooperativ competition, Changing customer needs*

1. Introduction

Society and governments are demanding more and more sustainability and growing environmental awareness. The recycling activities of the recycling companies must be expanded and improved due to ever increasing legal requirements and restrictions. With all the discussions around the topics of environment, sustainability and recycling, it is often forgotten that all the additional requirements and restrictions in the area of the environment are associated with high costs and must only be paid by the recycling companies. The manufacturing companies are also faced with increasing legal requirements regarding the sorting and the further use of their production waste. As a result of that, the requirements and restrictions of the manufacturing companies on the recycling companies have also changed significantly.

So far, the manufacturing company has generally been disposed of by two companies. The metal scrap was disposed of by a recycling company, whereas the waste was disposed of by a disposal company. Due to the above mentioned increasing legal requirements and for reasons of process optimization, many manufacturing companies want the disposal from a single source.

[1] Corresponding author: Benjamin Maier
Email: Benjamin.maier87@googlemail.com

As a result of the changing customer requirements, the already strong competition in this industry mean, that the recycling companies are now also competing with the disposal companies. There are various ways of reacting to these changing requirements. One possibility is certainly the formation of a strategic alliance between recycling and disposal company. Therefore a cooparative competition can be used to satisfy the changing customer needs and even to improve the quality of service.

Taking into account the economic and scientific context, the paper deals with the subject of microeconomics. Regarding the different forms of competition it can be ascertained, that the recycling companies are listed as a polypoly.

But who is the optimal strategic partner and how can this partner be chosen? The paper should answer this question by developing a scoring model, taking into account the specific characteristic of the recycling industry. The following hypothesis should also be examined:

Hypothese 1:

- The smaller the company, the more important is the geographic availability

Hypothese 2:

-The greater the professional experience, the more important is the loyalty of the strategic partner

Hypothese 3:

-The younger the respondent, the more important is to have the same corporate culture

2. Literature Review

Books are used as literature, dealing with the subjects of recycling, environmental, scarcity of resources, strategic alliances between recycling and disposal companies and increasing competition in the recycling industry.

Kraner, Cord-Landwehr (2010) deal with the topic of the implementation and design of environmental management systems in companies. It is part of the internal waste management, which deals with generation, collection and avoidance of waste. Their result is that it is particularly suitable for companies, which have to fulfill environmental regulations and are exposed to increased competitive pressure. Therefore the method of descriptive statistics was used.

Engelfried (2011) attempts to identify methods for implementing environmental management approaches. Their focus and result is to implement an environmental management system in the corporate strategy. Therefore they used the method of descriptive statistics.

Hennecke (1999) wanted to create incentives systems for companies, for developing environmental management system. The results consist in the demonstration of economic benefits, which are associated with the implementation of environmental management systems. The descriptive statistics was used.

Haas (2010) deals with brand portfolios which then could be used as a management tool. The conception of a planning process for the formulation of portfolio strategies should also be shown. The result is a contribution to closing the gap between practical prosecutions when planning portfolio adjustments and the previously inadequate planning concepts of marketing science. It should also be shown, which portfolio strategy should be chosen by the company.

Becke et al. (2000) deals with the creation of a handbook for the development of a systematic environmental management in companies. It should also provide a starting point for the design of an integrated employee-oriented management system. The results are the creation of a handbook and showing the different phases in setting up an environmental management system and demonstrating the advantages of

environmental protection and an environmental management system. Therefore Becke et al. (2002) used the method of descriptive statistics.

D´heur (2014) approach is based on the understanding that sustainability is only established in the core business of a company if it is also taken into account in the products and value chain at the same time. In order to face the negative consequences of unrestrained economic activity and the resulting framework conditions, sustainable value creation offers an offensive concept that enables profitable growth in economic, ecological and social dimensions. The result sit the formation of a corresponding management approach. Therefore the method of descriptive statistics was used.

Schmid (2009) approach deals with the formation and control of return processes of products and the materials contained therein, into the economic cycle. The result is the development and adaptation of coordination mechanisms for recycling networks. The result is the development and adaptation of coordination mechanisms for recycling networks. Advantageous planning in the sense of an economically efficient allocation of material flows should be made possible. Therefore the method of descriptive statistics was used.

Niederprüm, Werner (2010) describe the importance of a material flow management and the development of IT tools, which should support this. The processes of introducing the IT System and its procedure, goals and requirements are also described. The result is the development of a handbook for the implementation of IT based material flow management systems. Therefore described statistics were used.

The bvse e.V. (2016) provide insights into the growing competition between recycling companies.

Ebinger (2001) demonstrates which forms of cooperation between companies are possible and what causes lead to the formation of cooperations. It is also shown how the design fields of the various phases in the formation of actor cooperations look like. The result is the development of a PROSA (Product Sustainability Assessment). The method of descriptive statistics was used.

Kotler et al. (2011) deal with the integration of recycling into the marketing mix or into the marketing strategy. This is intended to work out the sustainability of companies and their environment. The method of descriptive statistics was used.

Also data from the Federal Statistical Office, Google Scholar and the Ebsco database as well as announcements from manufacturing companies and municipalities are used in the paper.

3. Methods

3.1 Empirical Research of the competition environment for recycling companies

The evaluation of tenders from manufacturing companies and municipalities provide information about which aspects are important to them when working with recycling companies. These aspects become part of the scoring model and then also represent the requirements for the strategic partner.

Secondary research was chosen as the data collection method. Secondary research has advantages over primary research in that it can be performed quickly, is inexpensive, and provides relevant results. The author used both internal and external sources of information for data collection. The internal sources are mainly announcements from private companies, the content of which cannot be published due to confidentiality agreements. The external information sources were mainly used to procure announcements from municipalities, compare www.service.bund.de

The scope of the data collected is a partial survey. 30 announcements from private

companies and 100 announcements from municipalities were examined and evaluated. The focus of the investigation of the tenders lies in the most important requirements for the recycling companies and whether there is a difference between the manufacturing companies and the municipalities.

3.2 Qualitative analysis for identification of key factors for strategic alliances within the recycling industry

As a further method a systematic literature research is chosen to identify critical success factors of strategic alliances in the recycling industry. The systematic literature research should answer the question of which factors contribute to the success of a strategic alliance or are decisive. These success factors, in turn, place demands on the strategic partner.

The systematic literature search was carried out with the help of the EBSCO Discovery Service Database of the University of Brno. When searching the database, German and English articles were included in the result list. The articles published between 2012 and 2017 and available in the EBSCO library were also taken into account. The search terms for the systematic literature search are shown in the table 1.

The inclusion and exclusion criteria used to study the studies are shown in the table 2.

Table 1. Search terms in EBSCO (own description)

Search	Search Terms
1	"recycling" and "strategic alliance*" and "factors of success"
2	„recycling" and „joint venture" and „factors of success"
3	„recycling" and „stake" and „factors of success"
4	„waste management" and „stake" and „factors of success"
5	„recycling cooperation*" and „factors of success"

Table 2. Inclusion and exclusion criteria for literature research (own description)

Inclusion Criteria	Exclusion Criteria
Recycling Company	No Recycling Company
The recycling companies are linked by a form of cooperation	The recycling companies have no form of cooperation
Mention of success factors in relation to the form of cooperation between the recycling companies	No mention of success factors in relation to the form of cooperation between the recycling companies

The abstracts and titles of the studies identified in EBSCO using the search criteria mentioned above were checked against the inclusion and exclusion criteria and excluded from further consideration, if they have proven to be irrelevant to the further question. Only the studies whose abstracts and titles met all three inclusion criteria were included in the closer examination (full text analysis). The full texts of the studies included were then checked again for the inclusion and exclusion criteria.

3.3 Expert interviews and recycling survey

The reason for choosing the expert interview lies in its flexibility and controllability of the respective survey situation. The expert interview is also suitable for obtaining information on new and complex topics.

Subjective information and perceptions of the experts can be collected, questioned and checked for plausibility.

Before an expert is selected, the term "expert" should first be clarified or described. Experts are usually people who have knowledge that others do not have or are difficult to access. This knowledge can be acquired in the course of training and professional activity. This is not due to personality traits but refers to specific areas.

The questionnaire was usually sent to the experts two weeks before the interview. At the interview appointment, the questionnaire was again presented to the respondents. Furthermore, the respondents were advised that the results will be published as part of the dissertation and not anonymized.

Since this is a qualitative expert interview, the answers of the experts were noted by the author. By asking the author specifically, further information could be obtained. After the expert interview ended, the results or answers were read out or shown to the experts so that they could confirm the correctness of the answers. Due to the qualitative investigation method, misinterpretations of answers can be excluded, since these were clarified by the author during questions during the interview. Since this is a qualitative survey method, the answers of each expert are reproduced as text. Afterwards, common perspectives and answers will be discussed.

When creating the scoring model to identify the optimal strategic partner and to design the recycling survey, the specific target criteria must first be defined and identified. These target criteria were identified in the previous chapters and by using the other methodology. All of these target criteria are now categorized accordingly and listed in the table 3.

After the target criteria for a strategic partner have been identified in the course of the thesis, they should be weighted according to their importance. The subjective weighting of the criteria is to be largely obscured by means of a survey. Regarding the answer options for weighting the different criteria, there were five different answer options for the respondents. These were "I disagree", "I agree less", "I partially agree", "I largely agree", "I fully agree". The different answer options were given a different weighting in order to be able to form an arithmetic average and thus for being able to form a scoring model after the survey. The points scale was awarded from 1 to 5. The answer possibility "I disagree" got one point whereas the answer possibility "I fully agree" got five point and so on. A corresponding scoring model can then be created. The subjective weighting is to be largely obscured by means of a survey.

Since no relevant information can be used to weight the specific target criteria of the recycling industry, primary research in the form of the survey is chosen as the method of collecting information. In primary research, the quantitative and qualitative methods can be distinguished from one another. The written survey will be assigned to the quantitative methods.

Furthermore, the scope of the survey for the subsequent empirical investigation must be determined. The full and partial surveys can be distinguished from one another. The full survey includes all the relevant elements, also called the population. Since a full survey is usually not possible due to cost and time reasons, it is often limited to a partial survey. In the partial survey, only a few elements of the population are selected. This is then called a random sample. The empirical survey carried out as part of the thesis is a partial survey.

The written survey takes the form of a questionnaire via the XING internet platform. The author of the paper is a member of the garbage / waste / disposal group on this internet platform. This group has 3,374 members (as of 2019-05-08). The members are all from recycling and waste disposal companies and are therefore ideally suited for the survey. 103 member of the

garbage / waste / disposal group took part in the survey. This corresponds to a response rate of 3,05%. The data is collected and analyzed anonymously due to the European data protection regulation.

Table 3. Overview of the criteria for the recycling survey (own description)

Organizational target criteria
-The strategic partner has certifications
-The strategic partner has references
-The strategic partner has extensive know-how and can advise the point of origin
-The strategic partner has the opportunity to provide extensive services
-The strategic partner must be able to offer customers fixed prices as well as prices linked to indices
-The strategic partner must have flexible container logistics and short response times
-The strategic partner has a modern fleet
-The management of the strategic partner must have experience in forming strategic alliances
-The strategic partners have to implement a common information and innovation management as well as a common project and process management
-The strategic partner must have sufficient financial resources
-The strategic partner's corporate strength must match their own company
-The resources of the strategic partner must complement each other with their own
-The geographic availability of the strategic partner is given
Strategic fit
-The strategic partner and you have a common goal definition for the strategic alliance
-The strategic partner and you have a common plan for the strategic alliance
-The strategic partner and you create a common business plan for the strategic alliance
-The strategic partner has compatible business areas
Fundamental fit
-The strategic partner and you identify yourself with the strategic alliance
-The strategic partner has a high level of professionalism
Cultural fit
-The strategic partner and you have shared values and norms
-The strategic partner and you have the same management style
-The strategic partner and you have the same corporate culture
-The strategic partner has an open and direct communication
-The strategic partner has a high quality awareness
General requirements
-The strategic partner is trustworthy
-The strategic partner is reliable
-The strategic partner behaves loyally

The figures below give an overview of the collected data. There are data about the age of the respondents, their professional experience, gender and the size of their company were collected and analyzed.

The figure 1 shows the age of the respondents. The majority of the respondents are between 29 and 49 years old.

The figure 2 shows the professional experience p.a. of the respondents. The majority of the respondents have a professional experience between one and fourteen years.

The figure 3 shows the proportion of the gender of the respondents. More than two-thirds of the respondents are male.

The figure 4 shows the company size of the companies in which the respondents are employed. The majority of the respondents are employed in companies with fifty-one or more empyoyees. Almost the same percentage of employees work in companies with 0-10 respectively 11-50 employees.

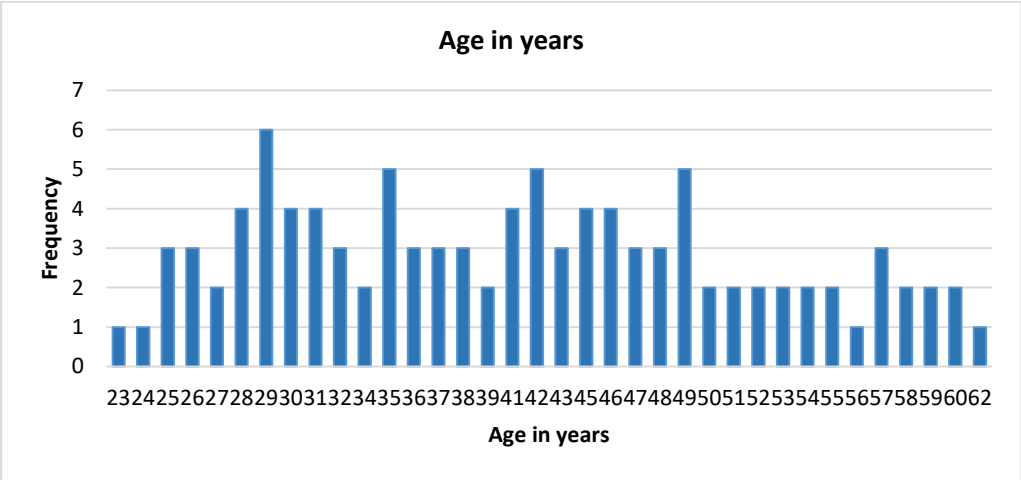

Figure 1. Age in Years of the respondents
Source: Own description

Figure 2. Professional Experience p.a. of the respondents
Source: Own description

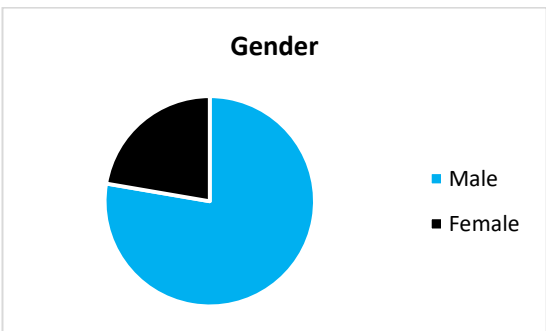

Figure 3. Gender of the respondents
Source: Own description

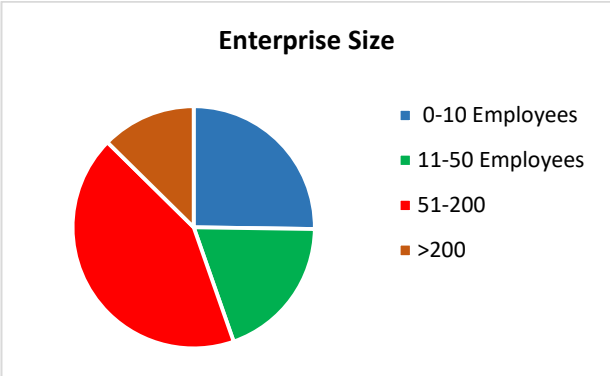

Figure 4. Eterprise size of the respondents
Source: Own description

4. Achieved Results and Findings

4.1 Findings of the examination of announcements from industrial customer and municipalities

The most important and most frequently mentioned aspects within the tenders were identified and evaluated, as these in turn represent the requirements for the strategic partner.

Table 4. Tender period of private companies and municipalities (own description)

Tender Period	
Announcement	**Average Years**
Private Companies	3,13
Municipalities	1,75

The examination of the criterion "Announcement Period" shows that private companies and municipalities differ considerably from each other. In the private sector, 73.33% conclude their recycling or disposal contracts for a period of 3 years or more. None of the private companies conclude their recycling or disposal contract for a period of 1 year. The average announcement period for private companies is 3.13 years.

If, on the other hand, one considers the duration of the announcement period of municipalities, it becomes clear that 52% of the municipalities only announcement their recycling or disposal contracts for a period of 1 year. Only 21% place their announcements for a period of 3 years or longer. The average announcement period for municiplaities is 1.75 years.

It becomes clear that the average award period for private companies is 1.38 years longer than for municipalities. Likewise, the duration of the announcement of 3 years or longer is 52.33% longer for private companies than for municipalities In addition, 52% of the municipalities do their recycling. or waste disposal contracts only for 1 year, while none of the companies in the private sector chose this duration. The examination of the criterion "Announcement Period" has shown that the announcements of public companies differ significantly from municipalities.

The short announcement period on the part of the municipalities makes it difficult for medium-sized recycling companies to participate in these announcements and is therefore almost exclusively reserved for corporations with the corresponding capital resources.

This aspect can lead to distortions of competition. The short announcement periods make it impossible for the medium-sized recycling companies to even amortize the investments made or required to carry out the orders. This, in turn, can mean that

the medium-sized recycling companies do not receive any financial resources from the banks for the investments, as there is no planning certainty due to the short allocation periods.

Table 5. Pricing decision of private companies and municipalities (own description)

Pricing Desicion		
Announcement	**Linking Recycling Prices to Indices**	**Fixed Recycling Prices over the tender period**
Private Companies	86.67%	13,33 %
Municipalities	5,00 %	95,00 %

The examination of the criteria "pricing decision" shows that private companies and municipalities differ significantly from each other.

86.67% of the private companies have linked their recycling prices to a designated index. Only 13.33% of the private companies have designed their announcements in such a way that they demand a fixed price for their materials over the contract period.

The municipalities have an almost opposite scenario. Here 95% of the municipalities demand a fixed price for their recycling or disposal materials over the entire contract period. Only 5% of the municipalities have linked their recycling prices to an index.

The raw materials are characterized by very high price volatility. The design of the announcement by demanding fixed prices means that the recycling companies bear the sole risk of price fluctuations. This makes it difficult for recycling companies to take part in the announcements of municipalities because they bear the sole risk and cannot secure it themselves.

The private companies, on the other hand, almost exclusively call for the recycling materials to be linked to the indices provided for this purpose. As a result, both the private sector and the recycling companies participate equally in rising and falling raw material markets. This results in a balanced risk distribution for both, which enables recycling companies to make transparent and reliable announcement calculations.

Table 6. Demand for certifications of private companies and municipalities (own description)

Demand for certifications	
Announcement	**Quantity**
Private Companies	100 %
Municipalities	100 %

The examination of the criteria "certifications" shows that private companies and municipalities do not differ from each other. Both require the existence of certifications in advance, which allows the recycling companies to carry out the orders accordingly.

Table 7. Demand for mentioning references of private companies and municipalities (own description)

Demand for certifications		
Announce-ment	**Refer-ences required**	**Refer-ences not required**
Private Companies	46,67 %	53,33 %
Municipalities	7,00 %	93,00 %

The examination of the criteria "references" shows that private and public law companies differ significantly from each other. In the private sector, 46.67%, and thus almost half of the companies examined, required that references be given. Only 7% of the municipalities require references to be mentioned. The recycling companies should therefore have appropriate references in order to have the best chances in the announcements of private companies. With the help of references, the recycling companies can show that they already have experience in carrying out corresponding orders. This allows them to reassure the customer and build trust in advance.

Table 8. Requirements for waste disposal logistics (own description)

Requirements for waste disposal logistics		
Announce-ment	**Container exchange on demand**	**Container exchange in fixed tourni**
Private Companies	76,67 %	23,33 %
Municipalities	5,00 %	95,00 %

The examination of the criteria "Waste Disposal Logistics" shows that private companies and municipalities differ significantly from each other. For 76.67% of the private companies examined, the recycling materials are picked up on demand. The recycling companies usually have a reaction time of 24h or 48h to pick up the materials. On the other hand, only 23.33% of the companies surveyed demand that they be picked up in fixed turns. 95% of the municipalities only ask for collection in fixed turni. Only 5% of the municipalities request pick-up on demand.

The collection and container exchange from private companies requires a high degree of flexibility and responsiveness of the vehicle fleet and logistics on the part of the recycling companies, while the collection from the municipalities can be planned in advance.

The pick-up by call does require a high level of responsiveness of the logistics, but has the advantage that the containers are usually completely filled and can therefore be picked up in a freight-optimized manner due to the higher weight. Pick-ups using a fixed turni can be planned logistically better, but do not take into account the productivity of the company. As a result, the filling levels of the containers are not always optimal, which results in higher freight costs, which in turn have to be taken into account in the calculation by the recycling companies.

4.2 Critical factors of success for strategic alliancs based on systematic literature research

The data analysis of this method and the resulting results are shown in the table 9.

Table 9. Literature research and selection process (own description)

Search Terms / Parameter	**Search 1 ("recycling" and "strategic alliance*" and "factors of success")**	**Search 2 („recycling" and „joint venture" and „factors of success")**	**Search 3 („recycling" and „stake" and „factors of success")**	**Search 4 („waste management" and „stake" and „factors of success")**	**Search 5 („recycling cooperation*" and „factors of success")**
Number of hits	67	78	163	94	0
Excluded due to: -Duplicates -Double published studies -Not available	32	51	108	74	0
Potentially suitable studies	35	27	55	20	0
Excluded due to unfulfilled inclusion criteria	35	27	55	20	0
Identified relevant studies	**0**	**0**	**0**	**0**	**0**

The result of the systematic literature search is that no studies are subjected to a qualitative analysis, since all relevant studies do not already meet the previously defined inclusion criteria. Thus, no success factors for strategic alliances in the recycling industry can be identified. Nevertheless, the systematic literature search provides the important finding that there are considerable research gaps in this research area.

Since the systematic literature search did not provide any results with regard to success factors of strategic alliances in the recycling industry, the search term "success factors of strategic alliances" was used generally and the search was expanded to "Google Books". The following literature was identified (table 10).

Table 10. Overview of the authors on success factors of strategic alliances (own description)

Author	Publication Date	Title
Heck, Arno	1999	Strategische Allianzen
Tjaden, Gregor	2003	Erfolgsfaktoren virtueller Unternehmen
Arndt, Holger	2015	Logistikmanagement
Salomon, Richard	2013	Nachhaltiges Gelingen strategischer Allianzen

The success factors identified by the authors mentioned above are shown below:

Heck (1999) points out that the management of a company is a key success factor in the success of a strategic alliance. The management must have extensive experience as well as a high availability in time and be able to concentrate on the strategic alliance project. These aspects are met far too rarely. In addition, management and employees must be motivated to support this change process permanently.

Another critical success factor is the decision in which business areas a strategic alliance should be formed. In addition, the areas of responsibility must be clearly delineated and the strategic and operational goals of the strategic alliance formulated and elaborated. Creating and formulating business plans is just as necessary as integrating customers and business partners into the strategic alliance. In summary, the factors of information and communication can be identified as further success factors of a strategic alliance.

To achieve operational success, additional requirements and factors must be taken into account. This includes the design of the strategic alliance, the flexibility for innovations and change processes as well as the culture of open communication, the implementation of a project due diligence (includes management, structure and process organization aspects, the feasibility of the strategic alliance, taking organizational-operational aspects into account to answer), the implementation of information and innovation management as well as process and project management.

Furthermore, patience and perseverance as well as a high level of professionalism in the formation of strategic alliances represent further success factors. Errors in the planning and preparation of such projects have a lasting effect on the phases of management and implementation and can prevent the achievement of the planned goals. Accordingly, such a project must be operated with the highest level of professionalism. This in turn requires the full and early involvement of the employees who will later be responsible for the implementation and execution.

Another critical success factor is the trustworthiness of the future partner. If the company has no experience from a past collaboration, appropriate information about the potential partner can be obtained from databases, chambers of commerce, the Internet and other publications. It should also be checked whether the potential partner has sufficient financial resources or whether its

efficiency and profitability are already limited. In addition to the partner selection, the business areas on which you want to work together should also be defined. The rules of the game of cooperation, confidentiality as well as the design and configuration of the strategic alliance must be set out in writing in advance. The general conditions must also be clarified, based on which sizes the success of the alliance is measured, who receives which responsibility and competencies and who performs which management function. A realistic assessment of capital and resource use is also required.

The corporate strength of the partners is another critical success factor. If the balance of power is unbalanced, there is a risk that the strong partner will have an undesirable dominance over the weak partner. However, two weak partners do not lead to success either, since this constellation often lacks clout and dynamism. However, these aspects are crucial in order to achieve the corporate goals and the desired competitive position. An alliance of two or more strong partners therefore promises the most success.

Tjaden (2003) sees the quality of the alliance partner as an important success factor of a strategic alliance. The quality of the partner can be seen in its willingness to cooperate and learn, in the cooperation experience and in its reliability. In addition, the partners must fit together. Factors here are a cultural "fit" or a small cultural distance, a compatibility of the principles, experiences, values as well as the hopes for the future. The partners must also have a similarly high level of professionalism.

Further success factors are the coordination of goals and the definition of clear rules of the game. The partners must have compatible goals and derive the respective requirements for the respective partner. In order for a permanent "win-win" situation to arise, the modes of cooperation (exit regulations, ownership of rights, confidentiality clauses, responsibilities, framework of cooperation, etc.) must be contractually agreed. Responsibilities must be clearly defined and interface losses between the partners should be avoided as far as possible. In addition, clearly defined goals, independence and competence of the partners, building trust and the existence of a coordinator and system leader form the resilient basis for successful cooperation. The strategic partners must build social relationships among themselves and become familiar with the partner's resources and skills.

Arndt (2015) sees a number of critical success factors that are crucial for the success of a strategic alliance. The factors values, goals, competence and attitude are decisive for the success of a strategic alliance. The partners must define the goal and purpose of the alliance. The goals should be specifically formulated, relevant to action and not too numerous. The goals of each partner must also be identical and not conflicting. The most important success factor of a strategic alliance is mutual trust. A lack of trust in the strategic partner means that the employees are not willing to pass on sensitive data, weight their own interests more than the overall goals and show no commitment to the strategic alliance. In a trustful cooperation, on the other hand, the partners allow each other an insight into the business processes and coordinate them in order to achieve mutual optimal success. In order to build mutual trust, it is important that the strategic partnership is balanced and that nobody feels treated unfairly. The mutual interaction should be characterized by fairness. Overall optimizations should always be aimed at, from which bilateral win-win situations can be achieved. In order to build trust among the employees, they should be convinced of the advantages of a cooperation and be further trained with regard to their ability to cooperate. Regular contacts and mutual visits promote interpersonal relationships and strengthen mutual trust. Ultimately, the "human" factor determines the success or failure of a strategic alliance.

For Salomon (2013), a large number of success factors are responsible for the success of a strategic alliance. These success factors include a high level of capital, a high cultural and strategic fit, a functioning alliance management, a stable political and legal environment, opportunism and a high level of technological know-how. Each company has to analyze these success factors for itself, so that a comprehensive coverage of the companies among each other and the formal strategic success requirements of the of the experts interviewed:

future alliance can be determined. This makes it possible to check in advance whether the formation of an alliance is promising or sensible.

4.3 Opinions of experts in the recycling industry

When choosing the experts, the author chose managers of large companies with many years of industry experience. The table 11 gives an overview.

Table 11. Overview of the expert interviews (own description)

Company	Contact	Position	Requested	Approved	Declined	Realized
Alba Group	Drs. Schweitzer	CEO	X		X	
IMT GmbH	Mr. Hammer	COO	X	X		X
ELG Haniel GmbH	Mr. Wierscholowski	CEO	X	X		X
Thommen AG	Mr. Huber	CEO	X	X		X
TSR Recycling GmbH & Co.KG	Mr. Althoff	CEO	X	X		X
Scholz Recycling GmbH	Mr. Scaldelai	Area Manager	X	X		X
Loacker Recycling GmbH	Mr. Loacker	CEO	X	X		X

Summary of the expert opinions:
All the experts who were asked, except for the alba group, took part in the expert interview. All experts are aware of the future challenges related to changing customer requirements, increasing competition and legal requirements and restrictions. That is why the experts are consistently positive about the formation of strategic alliances

4.4 Results of the Recycling Survey

The results of the survey are shown in the table 12 (see Appendix). The table is structured in such a way that the questions are categorized in organzinational parameters, parameters for strategic fit, parameters for fundamental fit, parameters for cultural fit, parameters for social skills. In addition, it is shown the questions of the survey and their average weighting, which results from the evaluation of the participants. This now makes it clear, which aspects are more or less important for the surveyed and which aspects are important for a strategic alliance.

4.5 Results of the correlations

Hypothesis 1 was about the fact that the smaller the company, the more important ist the geographical availability of the strategic partner. For this purpose, a correlation was carried out among the data of question 13 from the questionnaire and the data of the company size of the respondents. Regarding the hypothesis 2, a further correlation was carried out among the data of question 27 from the questionnaire and the data from the professional experience of the respondents. Likewise, with regard to hypothesis 3, a further correlation was carried out among the data of question 22 from the questionnaire and the data of the age of the respondents.

The table 13 shows the corresponding correlations to the above hypothesis.

Table 13. Correlations analysis (own description)

Correlations							
		Age in years	Professional experience p.a.	Enterprise size	Q 13	Q 27	Q 22
Age in years	Pearson-Correlation	--					
	N	103					
Professional experience p.a.	Pearson-Correlation	,880**	--				
	Sig. (2-sided)	,000					
	N	103	103				
Enterprise size	Pearson-Correlation	-,083	-,038	--			
	Sig. (2-sided)	,403	,704				
	N	103	103	103			
Q 13	Pearson-Correlation	-,025	-,060	-,397**	--		
	Sig. (2-sided)	,803	,546	,000			
	N	103	103	103	103		
Q 27	Pearson-Correlation	,494**	,453**	-,225*	,055	--	
	Sig. (2-sided)	,000	,000	,022	,579		
	N	103	103	103	103	103	
Q 22	Pearson-Correlation	-,181	-,147	,073	,120	-,206*	--
	Sig. (2-sided)	,067	,140	,466	,226	,037	
	N	103	103	103	103	103	103
**. The correlation is significant at the level of 0,01 (2-sided).							
*. The correlation is significant at the level of 0,05 (2-sided).							

Considering the data against the background of hypothesis one, it can be seen, that the enterprise size and geographic availability have a high negative correlation and are highly significant. This means that the hypothesis tends to be considered correct. It can therefore be assumed that the smaller the company, the greater the importance of geographical proximity. The hypothesis can be regarded as more accurate.

Considering the hypothesis two, the data of the table show, that there is a high correlation and are also significant. As a result, it can be assumed, that the greater the professional experience of the respondents, the greater the importance of the loyalty of the strategic partner. Therefore the hypothesis can be regarded as more accurate. Looking at the hypothesis three against the background of the data in the above mentioned table, it can be stated that there is only a less negative correlation and with ,067 rather no significance. Thererfore it can be assumed, that the hypothesis isn´t correct respectively that there is no connection between the age of the respondents and the aspect of the common corporate culture. In addition, a regression analysis was carried out on the data relating to hypothesis two, which is shown in table 14.

Table 14. Regression analysis (own description)

Included/Removed variables[a]			
Model	Included variable	Removed variable	Method
1	Company size, professional experience p.a.[b]	.	inclusion
a. dependent variable: Q27			
b. all desired variables have been entered.			

Model summary[b]					
Model	R	R-Square	Corrected R-Square	Standard error of the estimator	Durbin-Watson-statistics
1	,498[a]	,248	,233	,604	1,314
a. predictors : (Constant), Enterprise size, professional experience p.a.					
b. dependent variable: Q27					

ANOVA[a]						
Model		Sum of squares	df	Average of squares	F	Sig.
1	Regression	12,030	2	6,015	16,508	,000[b]
	Non-standard residues	36,436	100	,364		
	Total	48,466	102			
a. dependent variable : Q27						
b. predictors : (Constant), Enterprise size, professional experience p.a						

Looking at the R-Square area of the table, a high regression correlation can be determined and there is also a high significance. Therefore hypothesis two can be confirmed.

5. Discussion

The starting point for the topic of the paper was the author's experience and observation that manufacturing companies want a waste disposal from a single source. The wish of the manufacturing companies for a waste disposal from a single source is underpinned by legal restrictions and requirements that are placed on their disposal. In consideration of that, one can discuss whether a survey of manufacturing companies regarding their wish “disposal from a single source” could have been carried out. But from an economic point of view and from the point of view of rationalization measures to reduce transaction costs, it can be assumed that disposal from a single source is economically more advantageous. Regarding the literature review, books are used as literature, dealing with the subjects of environmental, scarcity of resources, strategic alliances, recycling and disposal companies or other types of cooperation. Also data from the Federal Statistical Office, Google Scholar and the Ebsco database as well as announcements from manufacturing companies were used in the thesis.

Not every source has provided the hoped for knowledge. Especially the searching for books and also the Scholar and Ebsco database did not deliver the desired results. As a result, the author was forced to look for general literature on the subject of the environment, scarcity of raw materials and then to approach the question of strategic alliances in recycling companies. This approach can be questioned critically and whether the use of other or additional databases would have provided better results.

The used literature of Kraner, Cord-Landwehr (2010), Engelfried (2011), Hennecke (1999), Haas (2010), Becke et al. (2000), D´heur (2014), Schmid (2009),

Niederprüm, Werner (2010), ebinger (2001) and Kotler et al. (2011) mainly dealt with the topics of strategic alliances, brand portfolios and environmental management systems. None of those and no other books could be identified that dealt with strategic alliances among recycling companies.

the systematic literature research has also shown that no literature deals with these two topics at the same time. Also none of the examined literature dealt with success factors of strategic alliances in recycling companies. This can be critically questioned, since strategic alliances and recycling becoming an increasingly important role in the economy and in society.

Therefore the paper makes an important scientific contribution, as the success factors of strategic alliances in recycling companies were identified within the paper. The success factors are also weighted to their importance.

The scoring model was ultimately developed from the knowledge gained previously and the weighting of the factors from the survey. It can be critically discussed, that the weighting of the individual factors / aspects became objectifiable by the large number of survey participants. However, the evaluation between the individual potential strategic partners must be carried out by the respective manager, which in turn is mostly based on his or her subjective findings. As a result, the scoring model cannot be designed completely objectively. The advantage that the scoring model offers is not only based on the better traceability and transparency of decision-making. It also lies in the fact that the arguments and criteria that ultimately determine a decision are carefully examined. This often leads to new insights during the decision-making process. The targets are also concretized and formulated operationally, which in turn leads to disclosure of the preference structure. Together with the concentration on aspects, that are important for the decision maker, this leads to an increased enforceability and acceptability of the decision made. Concentrating on the really decisive factors creates clarity. Based on the numerical representations, comparability is also established that is not possible without this method. In this way, "gut decisions" are significantly reduced.

Against the background of this paper, it should be noted that strategic alliances are becoming increasingly important in business. This is hardly surprising, as alliances are used in addition to time and cost management to expand knowledge and open up new markets.

With the scoring model, almost all criteria were made objective. Decision-making can be made better with a scoring model than without a corresponding tool. Daily work then shows whether the strategic partner selected with the help of the scoring model is actually the optimal partner. Ultimately, however, the tool can increase the likelihood of choosing the optimal partner but it is no guarantee that the strategic alliance will also work.

6. Conclusion

The starting point of the paper is that the author has recognized that the requirements of the manufacturing companies on the recycling companies, especially the "disposal from a single source", have changed. The requirements of the manufacturing companies are in turn reinforced by legal restrictions and conditions that these in turn have to fulfill.

The main expert objective of the thesis was to provide the managers of the recycling and disposal companies with a tool, for being able to compare the potential strategic partners on the basis of objective criteria. For this purpose, a scoring model with all relevant criteria and the corresponding weightings should be created in the course of the paper.

The scientific objective of the paper was to provide an important scientific contribution in the recycling sector by developing a tool

for the identification of the optimal strategic partner by means of scientific criteria using equally scientific methodology. This should enable the decision-makers to select the optimal strategic partner based on objective criteria to strengthen the quality of the partnership. In addition, the hypotheses mentioned in chapter one should be examined to see if they apply. The correlation analyzes showed that hypotheses one and two could be verified. Hypothesis three could be refuted by the correlation analysis. With regard to hypothesis two, a regression analysis was also carried out. The regression analysis confirmed the result of the correlation analysis. In this respect, this study can be seen as a starting point for furtherinquiries into the quality of the initial partnership between companies.

In summary, it can be stated that the goals, defined at the beginning of the paper, were achieved through the development of the scoring model and the analysis of the hypotheses. For the decision-maker the scoring model is a guide to identify the optimal strategic partner and create the optimal quality partnership. Also the success factors of strategic alliances in the recycling industry were identified and weighted according to their importance. The analysis of the hypotheses showed that there is a strong correlation among enterprise size and geaographical availability. And there is also a strong correlation among professional experience and loyalty of the strategic partner. However there is no correlation between the age of the persons and the need of corporate culture.

The future challenges and problems of manufacturing companies as well as recycling companies were also schown. The methods used within the paper and their results can of course always be questioned critically. It can still be questioned whether it would have made sense to question the manufacturing companies as well. It can also be questioned critically whether the decision-makers can use the factors of the scoring model to evaluate the various possible strategic partners completely objectively. This would require that each factor of the scoring model can be assigned a corresponding key figure. this is particularly difficult with the factors trustworthy, reliable and loyally. These factors must be assessed rather subjectively.

It still can be ascertained, that with the tool and the help of the scoring model, recycling companies will in future have the opportunity to select the optimal strategic partner with the help of objective criteria. The scoring model can be used individually from each company.

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Benjamin Maier
Mendel University,
Brno
benjamin.maier87@googlemail.com
ORCID 0000-0002-2006-6168

Appendix

Table 12. Scoring Model (own description)

	Question	Weighting Average
Organizational Parameters	Q1: The strategic partner has certifications	3,66
	Q2: The strategic partner has references	2,54
	Q3: The strategic partner has know-how	3,53
	Q4: The strategic partner provides extensive services	3,59
	Q5: The strategic partner offers default and linked prices	3,85
	Q6: The strategic partner has flexible container logistics	4,36
	Q7: The strategic partner has a modern fleet	2,68
	Q8: The strategic partner has experiences in stratec alliances	2,28
	Q9: The strategic partner implement information and innovation management	2,17
	Q10: The strategic partner has liquid funds	2,99
	Q11: The strategic partner´s strengths fits with the own	2,40
	Q12: the strategic partner´s resources complement each other	3,58
	Q13: The strategic partner is geographically available	2,04
Parame-ters for strategic fit	Q14: The strategic partner have common goals	4,12
	Q15: The strategic partner have a joint planning	4,07
	Q16: The strategic partners create a common business plan	2,30
	Q17: The strategic partners complement each other	4,20
Parame-ters for fundamental fit	Q18: The strategic partner identifies with the strategic alliance	4,37
	Q19: The strategic partner ha a high level of professionalism	3,86
Parameters for cultural fit	Q20: The strategic partner has common values and norms	2,65
	Q21: The strategic partner has the same management style	2,13
	Q22: The strategic partner has the same corporate culture	2,14
	Q23: The strategic partner has an open and direct communication	3,41
	Q24: The strategic partner ha a high level of quality awareness	4,05
Parame-ers for social skills	Q25: The strategic partner is trustworthy	4,55
	Q26: The strategic partner is reliable	4,42
	Q27: The strategic partner behaves loyally	4,61