

Supplier management segmentation and the implications thereof for the University of Twente

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ABSTRACT

Procurement at universities is increasingly making a move towards professionalization. In this movement it has become apparent that supplier management has to take a more pronounced role within the procurement activities of universities. Research was conducted at the University of Twente (UT), The Netherlands in order to find a meaningful way to segment suppliers and how to manage each segment from the perspective of supplier management. In order to answer these questions, a literature study was conducted which was followed up by qualitative research within the procurement department of the UT. This paper provides a method for segmenting suppliers into four categories and implications on how to manage them. The segmentation process was applied to 60 suppliers at the UT and the management implications were compared to actual situations. The procurement department at the UT can use the segmentation and implications in this paper to implement supplier management within the organization. Additionally, this research can be applied to other universities.

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Keywords

Supplier management, supplier relationship management, public procurement, university, relationship management, scientific research, SRM

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3rd IBA Bachelor Thesis Conference, July 3rd, 2014, Enschede, The Netherlands.

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1. INTRODUCTION

In this paper the author will take a closer look at supplier management within universities. Specifically, how suppliers can be segmented in a meaningful way at the University of Twente (UT).

A strategic goal of the university's procurement department is to move a part of its procurement activities from "contract management" to "supplier management". Contract management is defined by the university as: "periodically monitoring the contractual obligations between the UT and its suppliers are met, and if necessary amend contracts with improvement agreements." Supplier management is viewed by the university as an overarching concept, under which contract management can be utilized. This view is visualized in figure 1.

Figure 1: contract management as a part of supplier management



A university has a large budget and buys a complex portfolio of products and services, such as cleaning and high-tech research equipment. Difficulties in buying include compliance to EU tendering directives (Martin, Hartley & Cox, 1997), lack of technical knowledge on the part of the purchaser, social responsibility in procurement (Pearce, 2006) and potential agency problems with end-users (Soudry, 2007). In 2013 the UT spent €78.5 million¹ on products and services. The primary process within the UT is research and development, in 2013 €14 million was directly related to R&D. There is a distinction between universities and technical universities. Technical universities, such as the UT, buy large amounts of chemicals and technology to support ongoing research efforts.

The last few years there has been a trend in public institutions, such as universities, to outsource support services, according to Bryntse (1996). A high amount of buying in the public sector is concerned with services, it is estimated that 50% of buying is for services. This move to subcontracting has created new challenges, which stem from managing services through contracts. Additionally, there is an increasing realization in public purchasing that market relationships are socially constructed and not just a reflection of the market conditions, which means that greater involvement is required and mutually beneficial relationships should be created (Bovaird, 2006). Additionally, universities can use their buyer power to promote socially desirable buying trends, such as green purchasing (Pearce, 2006).

In a survey conducted by Future Purchasing (2007) on supplier management, respondents across multiple industries identified on average an additional 23% of value available from concentrating on supplier management. According to Gadde & Snehota (2000),

¹ Spend 2013 UT.xlsx

there are two reasons why it is difficult to make good use of suppliers. Firstly, the economic consequences are difficult to assess since supplier relationships are complex in the range of products/services and people involved. Secondly, buyers can only influence suppliers to a limited extent.

But should every supplier be managed to the same degree? Is it realistic to try and impose the same management on all suppliers? Or should supplier management only be applied to a small part of the supplier base? Which part of the university should apply supplier management? Should it be the procurement department or the end-user? In this paper the author will give a theoretical framework for supplier management which combines the existing views in the context of a technical university. The framework will be filled in on a scorecard which can be built upon by the procurement department. The scorecard will be applied to a number of current suppliers of the UT.

2. RESEARCH QUESTION

How can the University of Twente segment its suppliers for supplier management, and how should each segment be managed?

Q1: How should the UT segment its suppliers for supplier management?

Q2: How should each segment be managed?

2.1 Research approach

2.1.1 Goal of the paper

The goal of this paper is to give a segmentation of supplier management and how the UT should manage the different segments.

Supplier management is defined by the author as: *the development, continuation and ending of relationships with current suppliers, aiming to maximize value for both the University of Twente and its supplier.*

2.1.2 Research method

First a literature review will be conducted to assess the current state of research on the topic of supplier management. Relevant literature will be combined to gain a meaningful segmentation of suppliers and a set of recommendations for managing each segment. Afterwards, data from the procurement department on suppliers and purchases will be used to apply the segmentation. Then we can see how this differs from the way suppliers are currently managed and what a better approach would look like. If additional information is required, suppliers and end-users will also be contacted for information.

2.1.3 Analysis

Data for the analysis will be taken from the spend analysis of the UT for the year 2013. A scorecard will be filled in per supplier to find out in which segment a supplier belongs (Appendix 1) Contract information from the UT database DECOS will be cross-referenced with the spend analysis to come to a meaningful segmentation. Afterwards, suppliers from each segment will be reviewed to see how the UT manages them. A comparison will be made between the reality and the suggested management style.

2.2 Scientific relevance

The paper's relevance for science is in advancement of the body of knowledge on the topic of supplier management, specifically for universities and similar institutions. The difference between universities and other institutions is the importance placed on research within the organization. This paper looks to combine the current literature on the topic into a unified framework. The new framework should create clarity from which new observations on supplier management can be made.

2.3 Practical relevance

Relevance for practice is primarily for the University of Twente. The university gets a framework on how to segment and select suppliers for supplier management and what the UT should do with each supplier. This allows the procurement department to identify which suppliers can offer more value than is currently the case. Without a single model combining the multiple views on supplier management, practitioners are forced to take on the multiple conflicting views on the topic. In more general terms the framework could also be applied at other universities or other public institutions with similar characteristics, such as research centers.

3. LITERATURE REVIEW

The literature review will be split in three parts, the first two corresponding with RQ1 and RQ2. The first part will deal with the segmentation of suppliers for supplier management purposes. The second part will deal with how each segment can be managed. The last part will deal with some boundary constraints in supplier management, namely the legal framework and agency theory.

3.1 Supplier management segmentation

3.1.1 High and low involvement relationships

Gadde & Snehota (2000), propose that supplier relationships can either be high or low involvement. There are three dimensions which the authors state are relevant to find out what relationship to have: volume of business, continuity of relationship and the sourcing policy. Some relationships will score high on all dimensions, whereas others may only score high on one or two of the dimensions. If a relationship scores low on all three dimensions, it is considered low involvement. High involvement relationships are costly and resource intensive, because coordination adaptation and interaction cost money. Low involvement relationships are useful as well; these relationships require limited coordination, adaptation and interaction. In general, this is the case when there is a stable context and the relationship details can be standardized. However, there may be hidden costs associated with low involvement (direct procurement costs, transaction costs). Particularly relevant for universities is that if a supplier has low volume, but delivers products or services that have great development potential (for research purposes), a high degree of involvement is perfectly acceptable. Additionally, the authors point out that there is not a single “best” relationship with suppliers and relationships should be periodically reevaluated.

3.1.2 Strategic suppliers

According to Future Purchasing (2007), a think tank specialized in supplier management; most effort should go to suppliers which can create the most value for the firm, not those which have the most to improve.

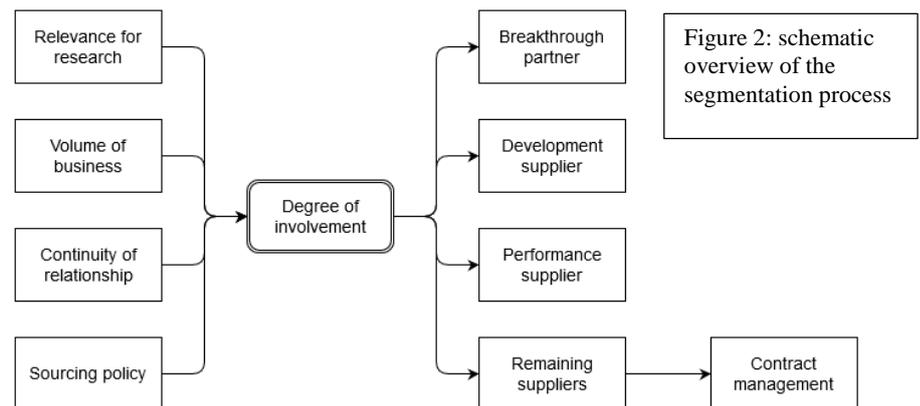
Breakthrough partners are those suppliers which are strategically important and critical to success. There will be few of them typically 5-10 and a high expectation of continuity in the existing relationship. From the perspective of a university, a characteristic of a breakthrough partner is that a supplier is relevant for research. *Development suppliers* usually number 10-40 and are important in the operational context. There is also a high expectation of continuity as well as interdependence and a need for tight integration. The difference between breakthrough

partners and development suppliers is that top level attention and resource allocation should be allocated to those projects which can maximize the value for the UT and the supplier. In the context of universities, it is important to note that this executive attention should also come from the faculties and research groups within the organization, especially when dealing with high-tech suppliers. The segment *performance suppliers* consists of up to 200 additional suppliers that have substantial impact on operational delivery and active performance management drives supplier initiatives. The remaining suppliers are not relevant for supplier management and should instead be managed from the perspective of contract management.

In implementing supplier management, there are two options. Supplier management can be implemented companywide or in a small number of pilot projects in each of the three segments. Future Purchasing indicates that the following five steps are valuable for implementing supplier management. Step 1: program planning and project governance. Step 2: formation of strategic supplier management teams. Step 3: facts and data base lining strategic suppliers. Step 4: creation and approval of relationship strategies. Step 5: supplier engagement, mobilization and work teams.

3.1.3 Segmentation process

Taking into consideration the literature of the preceding paragraphs, the author proposes the following for the university setting.



The theory from Gadde & Snehota (2000) on degree of involvement is used to place suppliers in one of the four segments. In addition to the theory a fourth category is added to reflect the importance of research within the context of technical universities. The segments come from Future Purchasing: breakthrough partner, development partner, performance partner, or remaining suppliers (Future Purchasing, 2007). If a supplier scores high on all three aspects and has relevance for research, it should be placed in the breakthrough partner category. When the supplier scores high on all three aspects but has no relevance for research, it should be put in the development partner category. When a supplier scores high on two out of three aspects, the supplier should be placed in the performance category. The remaining suppliers should be managed from the perspective of contract management. A schematic view of the segmentation process is given in figure 2. It is important to note that “true” supplier management can only be applied to a small amount of suppliers; otherwise the workload for the procurement department will increase exponentially, additionally not all suppliers will create value for the UT through supplier management.

3.2 Managing the segments

In this paragraph suggestions are given on how to manage the different supplier segments. The suggestions take the form of desired behaviors, adapted from Poirier (2002) and Future Purchasing. The desired behavior looks at the buyer and supplier.

3.2.1 Breakthrough partners

Involvement of key players within the university is paramount for this category. A large part of supplier management for this category involves the end user. The procurement department has to lead other stakeholders in managing this segment and define the role of other actors. Long term (2-5 years) plans or strategies should be made with suppliers in this segment and joint performance measurements drawn up, which should be formalized and structured for governance purposes. Performance should be measured on strategic value, financial value, operational effectiveness and relationship value. Importantly, these measures supersede those made in contract management. Both the supplier and the UT have to open up their practices to each other. See the table below for desired behavior in this segment.

	Buyer	Supplier
Value and compensation	Shared benefits from research, Open ended contracts	Value added through expertise; Metrics based agreement
Pricing/volume	Allows fair margins; Collaborates on requirements; Offers right of first refusal	Most favored customer commitment; Supplier shares pricing model to establish profit margin
Risk sharing	Shares documented successes; Makes joint investments	Compensation tied to buying firm's success; Makes joint investments
Information sharing	Allows supplier to participate in strategy development and add value servicing	Shares business strategy and direction; Facilitates sharing of improvement ideas

3.2.2 Development suppliers

The suppliers in this segment should be involved in medium term (max 2 years) plans or strategies. As with the development partner segment, the UT and suppliers should jointly draw up performance metrics. Again, the relationship should be formally governed. The table below indicates the desired behavior.

	Buyer	Supplier
Value and compensation	Direct entry of invoices; 2 – 5 year contracts for multiple transactions	Commit to cost improvements; non-traditional pricing
Pricing/volume	RFP not required; always in bid process	Multi-year options with price guarantees; audit rights to buyer
Risk sharing	Accepts moderate risk balanced with incentives for enhancement	Accept moderate risk with allowed significant incentives
Information sharing	Significant tactical data and some strategy to aid supplier	Shares product strategy and best business process practices

3.2.3 Performance suppliers

Suppliers in this segment should be subject to annual business plans and performance metrics based on financial value and operational performance. There should be a simple but formal governance structure.

	Buyer	Supplier
Value and compensation	Negotiate early payment options; process orders electronically	Offer improvement suggestions; provide no special expertise; electronic purchasing
Pricing/volume	Awards business as backup to preferred supplier; alternate sources may be tested	Contract with fixed term and option to extend; audit rights to buyer
Risk sharing	Accepts modest risk with incentives and penalties	Accepts modest risk with incentives and penalties
Information sharing	Shares operational data to help planning	shares limited tactical data to better enable completed tasks

3.2.4 Remaining suppliers

As can be seen in the table below of desired behavior, the remaining suppliers should only be managed from the perspective of contract management.

	Buyer	Supplier
Value and compensation	Paid according to agreement and conditions; short term transactions	Supplier provides exactly to the contract; agreements are short-term transactions
Pricing/volume	Commits to volume spend; supply not guaranteed	Commit to competitive pricing; supply not guaranteed
Risk sharing	Accepts minimal risk based on contract	Accepts minimal risk based on contract
Information sharing	Shares data as defined in contract	Shares data as defined in contract

3.3 Constraints for supplier management

3.3.1 Agency theory in the procurement department

The concept of agency is very relevant to the situation of a university's procurement department. The broad definition of agency theory is: "An agency relationship has arisen between two (or more) parties when one, designated as the agent, acts for, or on behalf of, or as a representative for the other, designated as the principal, in a particular domain of decision problems." (Ross 1973). In the case of the procurement department, the purchaser acts as agent for the end user (principal). The purchases made through the procurement department are paid from the budgets of the principals. Agency problems arise when a purchaser does not work in the best interests of the end user or appears not to work in the best interests of the end user.

To avoid agency problems with the procurement department there are measures in place. Procedural control decreases the information asymmetry between the purchaser and the end-user. Soudry (2007). Additionally, oversight can be added either externally by audits, or internally by reporting to higher authorities. At the UT this takes the form of operational audits and the purchases via EU tendering are reported to the university board monthly. If an end-user wants to review the process which led to purchase, all documentation is available on request.

3.3.2 Regulatory framework

Public purchasing at the Universities is subject to different sets of regulations and codes of conduct. The efforts within supplier management have to comply with the regulatory framework. The next subsections deal with the most important rules and regulations.

3.3.2.1 EU Tendering directives

All public purchases above specified thresholds have to be published in the official journal of the EU and on TED (Tenders Electronic Daily) (Gelderman, Paul & Brugman, 2006). The tenders cover all public institutions and companies in the utilities sector. The directives contain a number of procedures which have to be followed.

3.3.2.2 Agreement sustainable purchasing

All Dutch universities have signed an agreement detailing that 50% of all purchases should be bought in a sustainable fashion by 2012². Criteria for sustainable purchases are set into the agreement and are monitored by the government department VROM.

3.3.2.3 Code of conduct for supplier contacts

The UT has its own code of conduct for every employee who deals with suppliers³. The code stipulates ethical rules for the following topics: loyalty to the organization, fair treating of suppliers, support fair competition, keeping up the reputation of the profession, etc.

4. SUPPLIER SEGMENTATION

Using the scorecard (appendix 1) the 60 biggest suppliers in terms of money spent at the UT were placed into one of the four categories. Scoring was applied as follows: The scorecard consists of four questions; each positive answer gives one point with a maximum of four. The questions are based on the theory from chapter 3. The reasoning behind the score card is as follows; the scorecard should be simple to apply and understand. Practitioners in the field, specifically the purchasers at the UT should easily be able to implement the scorecard in their management of existing suppliers. First it was assessed if a supplier was relevant for research. All universities and research institutes which are listed as suppliers are considered relevant for research. The core activity of the UT and more general research universities is research, this means that suppliers for research activities can potentially add more to research than is currently the case and these suppliers should be identified. A supplier was considered relevant for research when research equipment, chemicals, lasers or microscopes were bought. Secondly the volume of a supplier was assessed. High volume was defined as everything above or just below €300.000. Anything below the threshold is considered low volume. Supplier relationship management requires more effort from both the UT and the supplier to make it work, which is not justified if the spending volume is too low. Thereafter, the continuity of the relationship was reviewed. High continuity was defined as: supplier has a contract with the UT. When the UT has to deal with this supplier on a regular basis, it is also treated as high continuity. Supplier relationship management requires investment in both the suppliers and the university's organization, which will only pay off if there is the intention to have long-term relationship between the participating parties. This intention to a long-term relationship can be identified by the existence of a contract between the university and the supplier. Finally, sourcing was

taken into account. If a supplier is the single source, then one point was awarded. Single source is a relevant selection criterion, as the relationship with the sole supplier of a commodity has to be continued for as long as a particular commodity is required. Suppliers which supplied gasses or chemicals for research are considered to be functionally single source, as researchers require the exact same composition of gasses/chemicals during the entire research project, making it nearly impossible to switch suppliers. Appendix 2 contains the full scoring chart. The following tables will give a breakdown of the suppliers per category.

Breakthrough partner
PERKINELMER NEDERLAND BV
OMICRON NANO TECHNOLOGY GMBH
STICHTING KATHOLIEKE UNIVERSITEIT (RUNMC)
FISHER SCIENTIFIC
TECHNISCHE UNIVERSITEIT DELFT
APPLIED LASER TECHNOLOGY

Development supplier
ESSENT / ENEXIS
NEDERLANDSE SPOORWEGEN
ENEXIS BV
UNIVERSITAIR MEDISCH CENTRUM UTRECHT
VWR INTERNATIONAL BV
SAXION HOGESCHOOL ENSCHEDE
SIGMA-ALDRICH CHEMIE BV
MEDISCH SPECTRUM TWENTE

Performance supplier
ASITO
ESSENT ENERGIE VERKOOP NEDERLAND BV
SODEXO BV
SCHOLTEN AWATER BV
DALKIA GEBOUWENBEHEER BV
CROON ELEKTROTECHNIEK BV
DRIENERBEEK ONROEREND GOED BV
SURF MARKET
VOSKO NETWORKING BV
MORE
BOUWBEDRIJF SYLVA BV
KRINKELS BV
TGO TECHNISCHE INSTALLATIES
AON CORPORATE SOLUTIONS
KLEIN POELHUIS VOLTMAN BV
XEROX RENTELEASE BV
AHREND BV
SWITCH AUTOMATISERING
BAM INFRATECHNIEK NOORDOOST BV
VERENIGING VAN SAMENWERKENDE NEDERLANDSE UNIVERSITEITEN
UNICA SECURITY
HUMAN CAPITAL CARE ARBOZORG BV
B-LEX IT BV
RANDSTAD UITZENDBUREAU / P/FLEX BV
MICROSYSTEMS GMBH
LOT-QUANTUMDESIGN GMBH
VG SCIENTA LTD

² <http://www.inkoopportal.com/inkoopportal/download/common/convenantduurzaaminkopen1.pdf>

³ http://www.utwente.nl/fb/diensten_abc/per_onderdeel/inkoop/gedragscode_leverancierscontacten/

PANALYTICAL BV
HOEK LOOS / LINDE GAS BENELUX
HYBRISCAN TECHNOLOGIES BV

Remaining suppliers

DUSSELDORP BV
TTOG TECHNOPOLOIS TWENTE ONROEREND GOED BV
ICSC BV / LOGICA
T-MOBILE NETHERLANDS BV
MAAS INTERNATIONAL BV
STICHTING QANU
SURFNET BV
STAPLES
DURA VERMEER BOUW HENGELO BV
INTEREX / HEWLETT-PACKARD
B/CA CCA BELASTINGDIENST
INTEREXCELLENT BV
HODES RENTINVEST BV
PROREST CATERING BV
ORACLE NEDERLAND BV
CENTRAAL BUREAU VOOR STATISTIEK

5. IMPLICATIONS OF SEGMENTATION

The second part of the research deals with the current management of suppliers and if this corresponds with the category a particular supplier is in. Suppliers were selected with the help of employees of the procurement department. The situation is analyzed through interviews with procurement employees. The questions are based on the tables of desired behavior in paragraph 3.2.

5.1 Breakthrough partner

Company: Fisher Scientific
Turnover UT 2013: €304.453
Product category: Chemicals/Disposables/Research equipment

5.1.1 Suggested approach

The UT should share the benefits of its research with Fisher. On the other hand, Fisher should offer its expertise to add value to research at the UT. The UT has to have an indication of the supplier's pricing model to establish what a fair price should be. It is very important that the UT gets Fisher to commit to the UT as a favored customer. The university shares the successes in its research with Fisher when it has relevance to the supplier's business. Fisher should make investments with the UT in relevant research areas. The UT allows Fisher to participate in strategy development and Fisher shares its business strategy. Additionally, the UT and Fisher should facilitate the sharing of ideas. Another task for the university is to formalize contacts between the end user and Fisher. This gives more clarity in the relations between the UT and its supplier. This can take the form of a meeting summary or a similar report. The biggest part of managing Fisher lies with the end user, the procurement department has to lead the end users and provide tools to do so. It is important to document all the proceedings within the relationship with Fisher.

5.1.2 Current situation

Fisher Scientific is one of five suppliers for chemicals, disposables and laboratory/research equipment. The general perception within procurement is that Fisher is a difficult supplier to manage. Fisher and the UT do not share information regarding upcoming plans in a formal manner. The possibility

exists that this occasionally happens between sales people from Fisher and the end users. End users are involved in the quarterly evaluations of the supplier, mostly to put pressure on Fisher. The procurement department does not have accurate internal data regarding what is bought in which quantities at Fisher and is dependent on the supplier for this information. The supplier does not give an indication of its pricing process. The UT does not have preferred customer status with Fisher; conversely the company does have preferred supplier status. The UT does not use expertise from Fisher for its own benefit (e.g. quality control). The current contract does not have bonus or penalty clauses.

5.2 Development supplier

Company: Sigma-Aldrich Chemie BV

Turnover UT 2013: €255.395

Product category: Chemicals

5.2.1 Suggested approach

The UT should directly enter invoices from Sigma Aldrich. The supplier should commit to cost improvements and move away from traditional pricing to performance based pricing. Sigma Aldrich should always be in the bid process for new orders by the UT. Sigma Aldrich should give multiyear price guarantees and give audit rights to the UT. The university should give significant tactical data and some strategy. In practice this means that the UT gives information on upcoming research projects to Sigma Aldrich. The supplier shares its product strategy and best business practices. As with the breakthrough partner, a large part of managing Sigma Aldrich lies with the end user. The procurement department has to lead the end users in managing this segment.

5.2.2 Current situation

Sigma Aldrich is supplier for specific chemicals to the UT. The supplier did not participate in the tender for chemicals, but is required for research purposes. Sigma Aldrich is seen as an arrogant supplier who states that they are indispensable. Ordering is done by the end user or procurement. There is no contract between Sigma Aldrich and the UT. The supplier has price guarantees for a longer time period. The university can request information from the supplier. Since there is no contract, there are no performance incentives. There is no formal sharing by the UT of forecasting or research projects. The possibility exists that this happens informally between salespeople and the end users. Sigma Aldrich indicates what its product strategy is.

5.3 Performance supplier

Company: Switch Automatisering

Turnover UT 2013: €487.582

Product category: Hardware and peripherals

5.3.1 Suggested approach

The UT should implement early payment options for Switch and process orders electronically. Switch should offer improvement suggestions in the ordering process when it finds them. Additionally, switch should offer the possibility to order electronically. Payment should be partly based on performance by Switch. The best option is to use KPI's already formulated in the contract or service level agreement. The contract should be for a fixed time period with the option to extend. The UT has audit rights at Switch. The UT shares operational data to help planning and Switch shares limited tactical data.

5.3.2 Current situation

Switch is the preferred supplier for hardware and peripherals for the UT. There is a web portal for standard products and non-standard products can be ordered through operational

procurement. The supplier can hold mini competitions for the UT with suppliers if a current product reaches end-of-life. Switch shares technology roadmaps from OEM's with the UT. The perception within procurement is that the relation with the supplier is very good. There are monthly evaluation meetings with the supplier. Switch proactively indicates possible improvements to the order process. The supplier offers monthly reports on orders at product level, procurement can ask for additional data. The UT gives a forecast of demand when possible (e.g. replacement in lecture hall).

5.4 Remaining supplier

Company: Staples
Turnover UT 2013: €277.435
Product category: Office utensils

5.4.1 Suggested approach

Suppliers in this category should be managed purely from the perspective of contract management. The only time when the procurement department should be directly involved with the supplier is when problems arise. Ease and simplicity are most important in this contract; therefore, Staples should do the administrative work related to end users.

5.4.2 Current situation

Staples is the main supplier for office utensils at the UT. Contract compliance is very high and the procurement department is content with the way the supplier is managed. There are evaluation meetings once or twice a year. The only issue is that there are many end users, which change regularly. This leads to a large amount of administrative work for procurement. There is also complexity due to the large amount of small orders placed. As an aside, the contract for office utensils is currently being tendered with Staples as one of the possible parties.

5.5 Overall analysis

The small sample described in the previous paragraphs shows how the UT currently manages suppliers in the various segments. The UT manages its suppliers with a varying degree of success as can be seen in the difference in perception on the relationship with the supplier. The UT has difficulty in getting certain large and important suppliers to commit to a closer relationship as is required to implement supplier management, especially in the breakthrough and development segments. In the performance and remaining supplier category the implementation of supplier management is more straightforward with suppliers showing commitment to the UT and its goals for supplier management. The UT still has much work to do in order to get more value from the relationship with its suppliers, especially those suppliers which supply for scientific research. This will probably require top level involvement from the part of the UT as earlier attempts to get these suppliers to commit to the UT have largely failed.

6. CONCLUSION

Supplier management is an essential part in the professionalization of the procurement department at universities. The focus of this paper is on how suppliers can be segmented for supplier management and how each segment is to be managed. For practitioners the segmentation and implications stated in this paper should not come as a surprise; however, this paper gives a structured overview for a very particular situation, namely universities and more specifically technical universities. Existing literature on the topic was analyzed in the context of the UT to create a segmentation process which is relevant for the situation of a technical university. Research is the most important process within the UT; consequently, this is prominent in the supplier segmentation. End users have an important role in managing the two higher segments (breakthrough partner and

development supplier). It is vital that the procurement department creates procedures to formalize end user – supplier relations. It is important to note that the segmentation should not be applied without thought. There are valid reasons for moving suppliers to different categories than the one which comes out of the segmentation, user discretion is advised.

6.1 Implications for further research

The segmentation process can be improved by adding criteria which filter out suppliers which are in the wrong category. This is the case when suppliers are placed in an intensely managed category when there is no more value to be found in expanding the relationship. Further research should also focus on the situation of non-technical universities. There are significant differences between the two types of university; therefore, it would be interesting to see to which extent this study is generalizable to other universities. Additionally, there is a possible similarity between technical universities and research institutes. This should also be explored in further research. Existing research on supplier management stops at the conceptualization of measures for managing suppliers. It is the author's opinion that the body of knowledge would benefit from research into more practical measures for supplier management.

6.2 Implications for practice

This research gives practitioners at the UT and more broadly at technical universities a guide for segmenting suppliers for supplier management purposes. The procurement department at the UT can use the scorecard to assess which suppliers are the most valuable to the UT. Additionally, the paper gives recommendations on how each segment can be managed. The differing and contrary views in existing literature have been combined to give clarity for practice. For the UT 60 suppliers have been segmented and four suppliers have been analyzed to suggest recommendations.

6.3 Limitations

The author has observed a number of limitations in the way this research was conducted. The amount of time available poses a limitation on how much data can be gathered. The choice for using a spend analysis was to get a coherent picture of suppliers in a short time. However, there are a number of disadvantages in using the spend analysis. The spend analysis already places an emphasis on money spent at a particular supplier, which might lead to selection bias. Additionally, it could be that purchases are paid over multiple years which is not visible on the spend analysis. So when using a spend analysis to segment suppliers, this should be taken into account. Regarding the segmentation criteria, it can be argued that more is better. More selection criteria mean a more informed choice of why a supplier should be in a particular segment. However, expansive segmentation criteria can make the segmentation process drawn out and unwieldy, so there is a balance to be struck. The segmentation criteria also have a "bump" effect on suppliers relevant for research. Since these suppliers are usually either single source or functionally single source, they will always be in a high segment. It is questionable if this is a desired outcome for every supplier. In short, when using the scorecard to segment suppliers, common sense should be applied to the results. The scorecard is a tool to structure supplier management, not a definitive answer.

7. ACKNOWLEDGMENTS

I would like to thank all people within the procurement department of the University of Twente for taking the time to answer my questions and help me find the required information. Special thanks go out to Mr. Westhof for championing my research within the procurement department. Finally, I would like to thank Prof. Dr. Telgen for providing me with valuable feedback and aid for my bachelor thesis.

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9. APPENDIX

9.1 Appendix 1 – supplier scorecard

Supplier segmentation scorecard

Relevant for research	Yes/No
Degree of involvement:	
• Volume of business	High/Low
• Continuity of relationship	High/Low
• Single source	Yes/No

Explanation for the scorecard:

If a supplier is relevant for research and has three points in the degree of involvement, then it is a breakthrough partner. If a supplier is not relevant for research, but has three points, it is considered a development supplier. When a supplier has two points, it is considered a performance partner. Suppliers which score one or no points are considered fit for contract management.

- Volume of business:

The volume of business is considered high if the value of goods/services bought is above €300.000. If the value is slightly below €300.000, it will also be counted as high volume.

- Continuity of relationship:

Continuity of the relationship is judged by the existence of a contract. If a contract has to be renewed, the intention to extend this with the current supplier is taken into account. If a supplier is single source it is also assumed that there is a continuity wish in the relationship. Other universities and research institutes are considered long-term partners for the UT, giving high continuity.

- Single source:

Single source will be defined by whether or not the supplier delivers a product which cannot be sourced elsewhere. The suppliers for gasses and chemicals are considered single source, because research projects require the exact same consistency for the duration of the project. This means that it is not possible to switch sources during a project.

9.2 Appendix 2 – supplier segmentation scoring

NR.	Inkooppakketten/leveranciers	Inkoopvolume	Relevance for research	Volume of business	Continuity of relationship	Single source	Points
1	ASITO	€ 2.469.429	X	High	High	No	2
2	ESSENT ENERGIE VERKOOP NEDERLAND BV	€ 2.269.814	X	High	High	No	2
3	SODEXO BV	€ 2.036.712	X	High	High	No	2
4	SCHOLTEN AWATER BV	€ 1.719.140	X	High	High	No	2
5	DALKIA GEBOUWENBEHEER BV	€ 1.662.971	X	High	High	No	2
6	DUSSELDORP BV	€ 1.558.092	X	High	Low	No	1
7	PERKINELMER NEDERLAND BV	€ 1.505.794	V	High	High	Yes	4
8	ESSENT / ENEXIS	€ 1.434.451	X	High	High	Yes	3
9	OROON ELEKTROTECHNIEK BV	€ 1.269.033	X	High	Low	No	2
10	DRIENEBEEK ONROEREND GOED BV	€ 1.140.000	X	High	Low	No	2
11	SURF MARKET	€ 1.121.882	X	High	High	No	2
12	VOSKO NETWORKING BV	€ 924.145	X	High	High	No	2
13	MORE	€ 883.271	X	High	High	No	2
14	BOUWBEDRIJF SYLVIA BV	€ 871.618	X	High	High	No	2
15	KRINKELS BV	€ 855.286	X	High	High	No	2
16	TGO TECHNISCHE INSTALLATES	€ 703.703	X	High	High	No	2
17	OMICRON NANO TECHNOLOGY GMBH	€ 695.975	V	High	High	Yes	4
18	STICHTING KATHOLIEKE UNIVERSITEIT (RUWMC)	€ 629.109	V	High	High	Yes	4
19	AON CORPORATE SOLUTIONS	€ 617.919	X	High	High	No	2
20	KLEIN POELHUIS VOLTMAN BV	€ 615.300	X	High	High	No	2
21	NEDERLANDSE SPOORWEGEN	€ 553.062	X	High	High	Yes	3
22	TTOG TECHNOLOGIE TWENTE ONROEREND GOED BV	€ 538.087	X	High	Low	No	1
23	XEROX RENTLEASE BV	€ 530.418	X	High	High	No	2
24	AHREND BV	€ 520.611	X	High	High	No	2
25	SWITCH AUTOMATISERING	€ 487.582	X	High	High	No	2
26	BAM INFRATECHNIEK NOORDOOST BV	€ 428.186	X	High	High	No	2
27	VERENIGING VAN SAAMENWERKENDE NEDERLANDSE UNIEVERSITEITEN	€ 426.428	X	High	Low	No	1
28	IGSC BV / LOGICA	€ 342.228	X	High	Low	Yes	2
29	UNICA SECURITY	€ 334.045	X	High	High	No	2
30	ENEXIS BV	€ 317.294	X	High	High	Yes	3
31	HUMAN CAPITAL CARE ARBOZORG BV	€ 309.964	X	High	High	No	2
32	B-LEXIT BV	€ 308.962	X	High	High	No	2
33	FISHER SCIENTIFIC	€ 304.453	V	High	High	Yes	4
34	TECHNISCHE UNIVERSITEIT DELFT	€ 303.742	V	High	High	Yes	4
35	RANDSTAD UITZENDBUREAU / P/FLEX BV	€ 303.175	X	High	High	No	2
36	APPLIED LASER TECHNOLOGY	€ 299.006	V	High	High	Yes	4
37	EMOBILE NETHERLANDS BV	€ 294.161	X	Low	High	No	1
38	MICROSYSTEMS GMBH	€ 289.600	V	Low	Low	Yes	2
39	MAAS INTERNATIONAL BV	€ 288.979	X	Low	Low	No	0
40	STICHTING DANU	€ 286.462	X	Low	Low	Yes	1
41	UNIVERSITAIR MEDISCH CENTRUM UTRECHT	€ 285.904	V	Low	High	Yes	3
42	SURFNET BV	€ 285.498	X	Low	High	No	1
43	STAPLES	€ 277.435	X	Low	High	No	1
44	LOT-QUANTUMDESIGN GMBH	€ 272.430	V	Low	Low	Yes	2
45	VWR INTERNATIONAL BV	€ 269.696	V	Low	High	Yes	3
46	SAXON HOGESCHOOL ENSCHEDE	€ 268.265	V	Low	High	Yes	3
47	SIGMA-ALDRICH CHEMIE BV	€ 255.395	V	Low	High	Yes	3
48	DURA VERMEER BOUW HENGLO BV	€ 253.225	X	Low	Low	No	0
49	INTEREX / HEWLETT-PACKARD	€ 241.564	X	Low	High	No	1
50	VG SCIENTIA LTD	€ 240.036	V	Low	Low	Yes	2
51	PANALYTICAL BV	€ 236.292	V	Low	Low	Yes	2
52	HOEK LOOS / LINDE GAS BENELUX	€ 225.172	V	Low	Low	Yes	2
53	BYCA COA BELASTINGDIENST	€ 222.396	X	Low	High	No	1
54	HYBRISCAN TECHNOLOGIES BV	€ 216.000	V	Low	Low	Yes	2
55	INTE REKXCELLENT BV	€ 212.412	X	Low	Low	No	0
56	HODES RENTINVEST BV	€ 211.790	X	Low	Low	No	0
57	MEDISCH SPECTRUM TWENTE	€ 211.125	V	Low	High	Yes	3
58	PROBEST CATERING BV	€ 209.487	X	Low	High	No	1
59	ORACLE NEDERLAND BV	€ 205.982	X	Low	High	No	1
60	CENTRAAL BUREAU VOOR STATISTIEK	€ 200.000	X	Low	Low	Yes	1

Notes:

0 -1 point = red

2 points = yellow

3 points = blue

4 points = green

Additional information → spend 2013