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Financial incentives for grant procurement success in the internal allocation models of Dutch universities







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Renate Sellink October 2009 Master thesis Business Administration Financial Management track

> Committee: Dr B.W.A. Jongbloed Prof N.P. Mol Ir E. Prins





Preface

This report forms the completion of my study Business Administration at the University of Twente. In March 2009 I started with my master assignment at PNO consultants. After a few months when the research questions where formulated and the theoretical background present, I started with the interviews at the three universities. During the summer months I worked out all the information and without major problems I could finalize my thesis in September. I would like to thank the people who supported me during this interesting and instructive period.

First I want to thank Ben Jongbloed, my first supervisor. We had a meeting every month in which he guided me to take the right decisions. He presented new ideas and helped me with contact information at the University of Delft. Ben, thank you for supervising me during this assignment. I want to thank Nico Mol for reading my thesis critically and asking challenging questions to make me think outside the box.

I want to thank the colleagues at PNO consultants who were interested in my assignment and gave me practical information but also new ideas for my thesis. Most of all I want to thank Erik Prins, my supervisor at PNO consultants. I appreciate the freedom he provided during the whole process. When I asked for feedback he was always willing to read my thesis, asked me challenging questions and thought about possible answers. This helped to include new subjects into the assignment. Further I want to thank the interviewees at the universities of Twente, Eindhoven and Delft for their information and cooperation.

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Renate Sellink Enschede, October 2009







Summary

The three objectives of Dutch universities are Education, Research and Valorization. Because of this variety of teaching, research and "community service" outputs, universities can be considered as multiproduct firms. This variety of tasks and large sizes of universities makes them difficult to manage. Especially the research domain with different financing streams is complex. This research domain is the focus of this study about financial incentives at Dutch universities.

Research activities in Dutch universities are financed with three different resources:

- 1. The first money stream budget is received directly from the Ministry of Education, Culture and Science. It is based on the allocation of lump-sum over the Dutch universities.
- 2. The second money stream consists of research grants from the Netherlands organization for scientific research (NWO).
- 3. The third money stream contains everything not received from the Ministry or from NWO. These are for example grants from profit organizations and grants from the European Union.

The second and third money stream are external financing streams and have to be earned in a competing environment. Researchers can submit research proposals which are evaluated by the grant provider, who decides whether the researcher/research group receives a grant for a research project. This process of identifying, applying and complying is called grant procurement. Universities become more dependent on the external financing streams because the declining first money stream is not enough to finance all research ambitions of the universities. Successful grant procurement results in more budget which contributes to the goal of providing high quality research. It gives faculties more financial independency and researchers more credibility and prestige. The three Dutch universities of technology in Twente (UT), Eindhoven (TU/e) and Delft (TUD), will be analyzed to explore how they motivate faculties and research groups to collect external grants. The central research question is:

How do Dutch universities make use of their internal allocation model to encourage faculties and their researchers to engage in the procurement of grants for research, what are the underlying reasons and what differences do we observe?

Performance management can be useful to motivate researchers and research groups to perform in the desired direction. It provides guidelines for employees about which tasks the organization values and it gives an organization measurement outcomes on which they can react. A good performance management system sets performance indicators that are linked to organizational goals. The financial allocation model of universities can be used as a performance management tool. It divides the first money stream budget partly by the use of performance measurement. Looking at the three Dutch universities of technology it can be stated that they are using their allocation model as a performance management tool. They use financial incentives which are based on performance measures to allocate a major part of the first money stream budget.





The three universities use three financial incentives to stimulate successful grant procurement:

- 1. Faculties can keep all revenues from second and third money stream
- 2. Premium on promotions and designercertificates
- 3. Premium on work for third parties

The first and second incentives are used comparable in the three universities. The third indicator, premium on work for third parties is used differently in the allocation models. The TUD uses a fixed percentage of 10% bonus on every euro earned in second and third money stream, which makes this budget independent from other indicators in the allocation model. At the UT, the size of this incentive depends on (1) established full time equivalent in second and third money stream, (2) the budget for this indicator and (3) a correction for the relative premiums of a year earlier. At the TU/e, this indicator is a balancing item in the allocation model, which makes the budget highly dependent on the other indicators.

It is shown that all three universities use a different allocation model. One level lower in the organization, the faculties have their own allocation model to divide the first money stream over their capacity groups. The faculty allocation models of the faculty of Applied Science at the three universities are based on the central models, but adjust to fit the incentives to the internal and external operational situation of the faculty.

In 2007 the minister of Education, Culture and Science, Ronald Plasterk, decided to transfer 100 million euro from the first money stream to the second money stream to stimulate excellent research. From 2008 till 2011 25 million a year is transferred. Universities argue that this 'Plasterk deduction' makes it difficult to finance the premium work for third parties. The reason is that second money stream grants only finance a percentage of the total costs; the other part has to be financed with first money stream budget. It is difficult to co-finance a growing second money stream with a declining first money stream. As a result the three universities in this study had to decline the incentive 'work for third parties'. The UT is the first university in this study to replace the premium 'work for third parties' with a strategic budget for its institutes. It wants to use future performance indicators which are linked to the strategic plans of the university and to plans of the institute. It is an example of future performance management. All other measures in both university and faculty allocation models are based on past performance.

Allocation models change often, depending on the external financial situation and partly on strategic plans. Because faculties and institutes demand a stable budget, universities try to change the allocation model not too often. Because of a changing environment, adjustments have to be made every few years. There are differences in how universities reward successful grant procurement. The TUD uses the most differentiated model while the TU/e uses a simple allocation model with a lot of fixed amounts. How these different models affect the motivation of researchers is not tested. Further research could investigate whether incentives in allocation models affect the motivation of researchers and research groups.



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List of abbreviations

AP	Faculty of Applied Physics at the University of Technology Eindhoven
AS	Faculty of Applied Sciences at the University of Technology Delft
СРВ	Netherlands Bureau for Economic Policy Analysis (in Dutch: Centraal Planbureau)
ECTS	European Credit Transfer and Accumulation System
EZ	Ministry of Economic Affairs (in Dutch: Economische zaken)
FP7	7 th Framework Program from the European Union
Fte	Full-time equivalent
m€	one million euro
NWO	Netherlands Organisation for Scientific Research
OC&W	Ministry of Education, Culture and Science (in Dutch: Onderwijs, Cultuur en Wetenschappen)
S&T	Faculty of Science and Technology at the University of Twente
TUD:	University of Technology Delft
TU/e:	University of Technology Eindhoven
UT	University of Twente
VSNU	Association of Universities in the Netherlands





1. Introduction

This chapter contains an introduction in which information about this study is presented. It starts with background information about financing streams for research activities at universities and how these are managed. Further the research motive, research questions and research strategy are presented.

1.1 Allocation of financial resources for research

Behavior of researchers and research institutions is partly based on financing opportunities. According to Versleijen et al. (2007), financing is an important instrument for research and science policy. In 2006 the Netherlands spend 1,67% of the gross domestic product of 529 billion euro on Research & Development activities (Kwikkers et al., 2009, p. 119), which is 8,84 billion euro (www.minfin.nl). Major part of this money goes to universities, which are the main research deliverers.

The research budget of a university is received from different sources, each with their own regulations, which can make the management of these different money streams complex. Regardless the budget from the Ministry of Education, Culture and Science, research grants are an important source to finance research activities. When managing a university, it is important to use the different sources in the best way to enhance performance and achieve strategic goals. How universities use these money streams to enhance performance will be discussed in this study. The three Dutch universities of Technology (Twente, Eindhoven and Delft) are used for empirical information.

1.2 Financing universities

During the last thirty years financing possibilities in the research domain have become more diverse and complex. Universities were mainly public financed institutions. They received a lump-sum (definite amount) from the Dutch government and could spend this on research and education activities with tight regulations from the government. 'In 1985, the white paper Higher Education: Autonomy and Quality introduced the concept of 'steering from a distance' and argued that the national government should fulfill a facilitating role instead of trying to plan the system from the top by detailed regulation' (Jongbloed, 2005. P. 9). The government wanted to enhance quality by introducing demand driven funding for universities and a lump-sum based on research performance. Since 2004 a reform is realized including a more market driven approach. Universities experience a lot of autonomy and freedom to organize their activities, but the lump-sum from the government is no longer sufficient to finance all activities. Therefore universities have to compete in collecting national and international grants.

1.2.1 Financing streams for research at universities

Currently three types of financing streams can be distinguished at Dutch universities. The definitions from the book of Kwikkers et al (2009, p. 58) are used in this explanation.

The first stream is the basic financing that universities receive directly from the government, mainly from the Ministry of Education, Culture and Science (further OC&W, Onderwijs, Cultuur en Wetenschap). It is based on the allocation of lump-sum (definite amount) over the Dutch universities.





The second stream consists of national grants for research where universities can compete for. These grants are publicly financed and may contain personal grants for one researcher or grants for research projects. The Netherlands Organisation for Scientific Research (further NWO) evaluates the national proposals and allocate these grants to the universities. In 2006 this second money stream contained 11% of the total research budget of universities. It contains about 120 different grants (www.NWO.nl).

The third money stream consist of money received with contract research, contract education or advising tasks for all kind of organizations, profit and non-profit. Everything not financed through the first money stream and not allocated by NWO is considered as third money stream. For example most of the international earnings are part of the third money stream. This can be international grants from the European Union and other international financing. Further, earnings from own capital (dividend), sale of study material and renting of facilities are also part of the third money stream.

In figure 1.1 the ministry of OC&W present these different money streams (Kwikkers et al., 2009). Based on information from annual reports the same figure is made for the Universities of Twente, Eindhoven and Delft, which can be found in appendix 1. The red percentages in figure 1.1 show the proportions within these three universities.



Figure 1.1: Financing streams WO (source: OCW 2007, From Kwikkers et al, 2009, p. 30. Edited by R. Sellink, 2009)

Universities receive the first money stream central in their organization, together with tuition fees. The Executive Board has freedom to allocate this money to the different units and faculties. The other money streams are earned directly by the faculties, institutes or researchers. Sometimes a fraction is deducted and goes to the central organization.

1.2.2 Increasing competition

Because faculties have to compete in collecting second and third money stream it is important to motivate employees to collect this money. 'Competition between universities increases because public research funding is now increasingly allocated through competitive processes, rather than long-term institutional block-grants' (Heinze, Shapira, Rogers & Senker, 2009, p. 1). Gibbons et al. (1994) argued

UNIVERSITY OF TWENTE.

that we are moving from discipline-based science in which topics are chosen largely independently of societal needs to a more responsive, interrelated science in which the direction of research is more demand-driven. As a consequence, research is more often facilitated by inter-sectoral knowledge flows which blur the boundaries of the university and private sectors. According to Kwikkers et al. (2009), this privatization is subject of discussion in the Netherlands but not yet widely adopted.

After 2008, the budget of NWO (second money stream) increases because 100 million euro from the first money stream will flow gradually to the second money stream. This change makes performance on grant procurement in universities even more important. 'Not all researchers see it as part of their responsibility to seek funds from different sources; creating a new, more enterprising orientation towards researching is a challenge faced in many traditional institutions' (Connell, 2004, p. 43). 'Whereas university authorities once left academic researchers to get on -or not get on- with their research, now the research production of an institution is crucial to its competitiveness and standing in the hierarchy of universities; it is an increasingly important part of the overall resources which individual institutions have at their disposal' (Connell, 2004, p. 15).

1.3 Performance management in the public sector

Pollit and Bouckaert (as cited in Bouckaert & Halligan, 2008), define performance-based public management as: 'taking/allocating responsibility for the performance of a system and being accountable for its results'. Performance management is based on private-sector perspectives but is now also embedded in public organizations, like universities. 'The idea is that these professional organizations provide products and services and that their performance –their output- can be measured' (de Bruijn, 2007). Performance at universities is difficult to measure, because of the variety of tasks and the focus on quality. Quality gives a better indication of performance at universities than quantity, but is difficult to set performance indicators for. Despite this difficulty the role of performance management in the public sector has increased during the last fifteen years. Some state that performance management is crucial; according to the refrain of Thomas, 2003:1 'If you can't measure it, you can't manage it'.

1.3.1 Incentives in the allocation model

Universities can use incentives and compensations in their internal allocation model to stimulate researchers in collecting public funding. The allocation model is a financial budget plan that distributes the first money stream over the faculties. According to Jongbloed 'it is a largely formula-based sets of rules, norms and criteria that determine the distribution of funds from a higher to a lower hierarchical level. If the unit of analysis is the university, the resource allocation mechanism (or: budgeting model) determines the distribution of funds from the central administration to the academic units (i.e. faculties, departments, research units) and support units' (Jongbloed, 1998, p. 3). The allocation model is based on different factors, like amount of students, quantity and quality of publications, ECTS, amount of PhD students and professors. When faculties receive this budget they use their own allocation model to distribute the money to the next level of research units. This multi-level characteristic makes it difficult for central management to steer their scientific staff because every allocation model includes its own incentives and faculties have freedom in dividing their own budget.





Besides this difficulty with making incentives work in a multi-layered organization, it is questionable what the function of incentives is at universities. Especially for high educated employees, financial incentives are not the only important motivation. Some authors state that non-financial incentives, like autonomy and reputation will also influence the behavior of researchers. Research from the CPB (2003) refers to research from Coupe: "The incentives in the academic world are almost exclusively of the 'career-concerns'-type. Better work doesn't lead to immediate pay-rises but rather to increased chances on future pay-rises, promotions, tenure or prizes." (Coupe 2003, p. 4).

1.4 Research motive

The Executive Board is the highest organ at a university. It consists of members who are elected by the Supervisory Board which is the organ that controls the Executive Board on behalf of the ministry of OC&W. The Executive Board manages the university. Because the first money stream (together with tuition fees) is the only money stream that universities receive central in their organization, the Executive Board only has influence on the allocation of this money stream. Some universities however, generate extra budget by annexing a fraction of second and/or third money stream income for the central budget. But at every university the first money stream is the largest money stream with which universities can influence behavior of faculties, using incentives in the allocation model. The research from the CPB (2003) found that allocation models used in Dutch universities differ in the weightings of these different performance management factors. Little is known about reasoning behind the weightings and current differences between universities. This study will focus on the financial incentives that universities use in their allocation model to stimulate the procurement of research grants.

1.4.1 PNO Consultants

PNO consultants is a grant consultancy organization that is interested in this research, and facilitates the researcher. This company assists organizations with identifying, applying and complying public funding for their activities. One division of PNO consultants assists public organizations, like universities. Because they have contacts with different employees at different positions in universities, they can help contacting the right persons at the universities.

1.5 Research questions

The main research question is:

How do Dutch universities make use of their internal allocation model to encourage faculties and their researchers to engage in the procurement of grants for research, what are the underlying reasons and what differences do we observe?

1.5.1 Sub questions

To answer the main research question some sub questions are formulated:

- 1. What is the importance of grant procurement for universities, faculties and researchers?
- 2. What is written in literature about performance management and the role of financial incentives to achieve organizational goals?
- 3. Which financial incentives do universities use in their allocation model to stimulate faculties in obtaining research grants and what are the motives?

- 4. Which financial incentives do faculties use in their allocation model to stimulate their researchers in obtaining research grants and what are the motives?
- 5. What are the differences between universities in the role of the allocation model as a performance management tool in the planning & control cycle?

1.6 Research strategy

Because of time limitation it is not possible to analyze all Dutch universities in this research. Therefore a sample of three universities will be used. For a good comparison of universities and faculties the three Dutch universities of technology are chosen. These are:

- University of Twente
- University of Eindhoven
- University of Delft

The research goals and objectives of these universities are comparable. They focus on innovation in technology and have three comparable faculties. It is expected that these universities are situated in the same grant related environment and often compete for the same research grants. Despite the competition, currently the three universities collaborate in the 3TU.Federation which maximizes innovation by combining and concentrating the strengths in research, education and knowledge transfers (www.3TU.nl). Because of these comparable objectives and collaboration these universities are suitable for this research. In every university the faculty of Applied Sciences is chosen to describe the faculty allocation model.

1.6.1 Case study

This research will be a combination of three case studies. 'The chief purpose of case studies may be descriptive.... but the in-depth study of a particular case can yield explanatory insights' (Babbie, 2007). The research population are financial offices of the universities and financial offices within faculties. Employees from the central financial office construct the institutional allocation model from orders of the Executive Board. Because faculties use their own allocation model to allocate this money to their departments and researchers, it is also important to collect information at this decentralized level by interviewing faculty controllers/representatives.

1.6.2 Research methods

Different methods will be used to answer the research questions. These methods will be explained:

1. What is the importance of grant procurement for universities, faculties and researchers?

Literature about the trends in money streams indicates that successful grant procurement is important for universities, but how important it is in achieving organizational goals is not clear. This sub question gives an expectation, based on theoretical information, about the importance of this activity. External publications from universities can also be used, like strategic policy plans, and annual reports. These can be found on the internet. Financial numbers can indicate how important grant procurement is in financial aspects, while literature about possible results of receiving grants can indicate how it affects employees and organizations in non-financial terms.





2. What is written in literature about performance management and the role of financial incentives in the Planning & Control cycle, to achieve organizational goals?

Literature can provide information about why universities should encourage researchers and how they can do this. Literature about management at universities, non-profit organizations, performance indicators, intrinsic motivation and reward systems will be used. Books can be found in the library of University Twente and other libraries. Articles will be found in scientific journals like Jstor, Scopus, Picarta and Web of Science, using the keywords mentioned above.

3. Which financial incentives do universities use in their allocation model to stimulate faculties in obtaining research grants and what are the motives?

The third and fourth question contain the empirical part of this research. To collect quantitative data about the financial incentives at the three universities, the central allocation model will be analyzed. To collect more background information, interviews will be held with controllers and/or policy coordinators at the universities. Because a university consists of different management levels the allocation of money also flows through different levels. This model distributes the money to different faculties, but these faculties have their own allocation model to distribute this money to their researchers. This allocation may contain other incentives than the central model. Therefore the fourth sub question is formulated:

<u>4. Which financial incentives do faculties use in their allocation model to stimulate their researchers in obtaining research grants and what are the motives?</u>

To find out how faculties distribute this budget to their departments, interviews will be held with faculty controllers/representatives. The allocation model itself will provide quantitative information about the allocation of financial resources. To understand the motives for this allocation qualitative information is needed which will be collected with the interviews.

The last question combines the information of the former questions and compares financial performance management of the three universities:

5.What are the differences between universities in the role of the allocation model as a performance management tool in the planning & control cycle?

Data from sub questions three and four gives insight in the use of performance management at the universities and how important the allocation model is in the planning and control cycle.

This chapter has given information about the subject of this study. Because of a growing competition in earning second and third money streams, a successful procurement of grants becomes more and more important. Comparing universities in their incentive system can help understand the choices that universities make to achieve their organizational goals. The importance of this study is explained; the next chapter will continue with answering the first sub question.



2. Importance of grant procurement

This chapter starts with the first sub question: What is the importance of grant procurement for universities, faculties and researchers? The advantages and disadvantages of successful grant procurement for different layers in the organization are explained. To indicate the complexity of grant procurement, the different conditions of grants will first be outlined.

2.1 Differences in grant procurement conditions

As explained before, there are many different grants available for universities. These grant possibilities all have their specific conditions and cover different costs. In a research project costs are divided in direct and indirect costs. A study by Ernst & Young (2004) defined direct costs as direct personnel costs and costs for equipment, materials and traveling costs for the project. Indirect costs exist of costs for supporting staff, housing, exploitation of equipment and costs for central services. Based on information from different universities, researchers from Ernst & Young found that 57% of all costs consist of direct costs and 43% of indirect costs. In this study it is not relevant to name all grants with their different conditions, but the grants that universities receive are often divided in three groups:

The first group consist of NWO grants, also called second money stream. NWO is the Netherlands Organisation for Scientific Research. On behalf of the ministries of OC&W and EZ (Economic Affairs) it funds thousands of top researchers at universities and institutes and steers the course of Dutch science by means of subsidies and research programs (www.nwo.nl). NWO subsidies mostly cover direct research costs, and sometimes just up to a maximum of 75%. Universities have to co-finance a major amount of the first money stream to get second money stream research financed. This is called the matching principle. Most NWO subsidies are focused on fundamental research.

The second group is the 7th framework program (FP7) from the European Union. This is the largest international grant program of the world, and is part of the third money stream. It started in 2007 and ends in 2013. A total of 50 billion euro will be spent to stimulate innovation and collaboration between universities and industry worldwide (www.senternovem.nl). The financial conditions of a grant can differ, depending on the type of organization. Universities receive usually 75% of the integral (full) costs.

Subsidies from external profit and non-profit organizations is the third grant source, and is also part of the third money stream. There is not one financial condition for these contracts because it depends on the client and the negotiating skills of the researcher (or the person who negotiates with the external party), the significance of the project for the external organization and the university and on the reputation of the university (Ernst & Young Accountants, 2004). Sometimes the total costs can be financed which leads to less pressure on the first money stream, compared to the NWO grants. In contrast to NWO grants, the third money stream projects are often very commercial, because profit organizations want to earn money with a research project as soon as possible. This can make third money stream less attractive to fundamental scientists.





2.2 Goal congruence

To measure the right performance, and to use the right incentives it is important to know what the objectives and goals of the university are. There should be a match between objectives and measures because the nature of change must be consistent with the organizational key goals and objectives expressing required and desired outcomes. Besides, actions that employees take in accordance with their perceived self-interest should also be in the best interest of the organization. This consistency is called goal congruence. 'There is a significant danger of distortion of focus and action if the key measures and targets in performance measurement systems do not capture the essence of primary values and objectives' (Sanderson 2001: 309 cited by Bouckaert & Halligan, 2008, p. 63). Research has shown that one major cause for failure of incentive plans is the lack of clear goals. So, before determining what the incentives for successful grant procurement are, the importance of grant procurement in achieving organizational goals will be discussed at the three different levels of the university: central governance, faculty governance and scientific staff.

2.3 Universities

Logically every university has different specific goals. 'Unlike private, profit-seeking firms, the goals of universities are often more difficult to define' (Cyrenne & Grant, 2009, p. 237). However, the universities' Mission Statements are more or less the same: provide high quality education and research. Cooperation with public and private partners is something almost every university mentions in its mission statement. Focus on innovative research and a stronger international orientation is another example. Taken together the three policy objectives of Dutch universities are research, education and valorization (www.vsnu.nl). Cyrenne and Grant (2009) claim that research about the importance of a variety of objectives and processes at Canadian universities in 1982 resulted in the most important objective: enhance institutional reputation. 'Enhanced reputation may assist in attracting higher-quality student applicants, more research funding or greater government funding, and it assumes magnified importance with the greater reliance on private fund raising' (Cyrenne & Grant, 2009, p. 238). This can be seen as a correlation. Performance on research, education and valorization can lead to better circumstances to perform well on research, education and valorization.

2.3.1 Advantage of successful grant procurement

All universities compete with each other to become the best Dutch university on research, education and valorization. The first money stream is not enough to finance all ambitions of a university, which makes it necessary for universities to collect second and third money stream income. Cyrenne and Grant (2009) found in their research about university decision making and prestige that increase in the amount of sponsored research per faculty member enhance their reputation. Universities consists of staff and line units, wherein staff units assist line units. So, when line units collect money for their own activities, it gives universities more freedom to invest their first money stream budget in supporting activities. If universities had only first money stream income, major part would go to direct costs of research activities. Second and third money stream income compensate part of these costs.

2.3.2 Disadvantage of successful grant procurement

Despite these benefits there is also a drawback for collecting more research grants. Universities are obliged to match second money stream with first money stream sources because research grants only compensate a part of the total research costs. The Advisory Counsel for Science and Technology published a study by Ernst & Young in 2004 that calculated that for every euro earned in second or third money stream the university had to pay 0,84 euro (www.awt.nl). This number differs per grant but gives an indication of the matching problem. This matching sometimes counts for half of the research budget of a university. There are discussions about abolition of these matching requirements but it is still present for most grants.

2.4 Faculties

The faculty objective is to provide excellent research and education to the community to achieve the same goal as universities: good reputation. Faculties can earn own budget by proposing research ideas to the NWO and compete with other faculties for research grants.

2.4.1 Advantages of successful grant procurement

When faculties are able to finance their own activities they get more autonomy. Receiving second and third money stream grants gives faculties financial freedom which makes them more and more independent departments of a university. Faculty research output and outcome will be graded by the university, but research input and research activity is its own responsibility. More budget will give them more abilities to perform better on the output and outcome performance measures.

2.4.2 Disadvantages of successful grant procurement

High accountability of research activities must be present to justify the spending of NWO grants to particular activities, as NWO wants the money to be spent only on pure research activities. This accountability can be a constraint for faculties because registration of activities is time consuming and scientists are not fond of this activity. 'Faculties are constantly interacting with the world beyond and have been under increasing government and university pressure to satisfy external expectations' (Coccia, 2009, p. 35). This pressure to deliver good performance results in a growth of administrative burden; preparing grant/project applications, managing grants and recruiting alumni etc.

2.5 Scientific staff

Goals of scientists are more diverse compared to university or faculty goals. It is assumed that every scientist likes to do research and wants to be a good researcher, but tasks of scientific staff are diverse, including teaching and supporting PhD students. Some scientists have higher personal goals on research than others. Some scientists like teaching more and value excellent teaching skills as their personal goal.

2.5.1 Advantages of successful grant procurement.

Every scientist wants to collect research grants because more money leads to more research results which leads to a better reputation and credibility. Successful grant procurement indicates that the research is of good quality because the NWO uses peer reviews to judge proposals and reward only good quality research proposals with a grant (Kwikkers et al., 2009). Credibility and reputation are





important outcomes because they indicate good quality and positively influence the career of scientists. This relation between grant procurement and credibility is reflected in the PhD dissertation of Leisyte who refers to the credibility cycle of Latour and Woolgar (1979). Latour and Woolgar studied a biomedical laboratory in the United States in order to conceptualize the strategies and activities of researchers. This resulted in the credibility cycle in figure 3.1. Research input (equipment, data, knowledge) is turned into research output (articles, books) which will be read and cited by peers, resulting in credibility and more money and other resources. With these resources the researcher can start another round of data collection. The research loop tends to be continuous, in which prestige recognition and resource play a major role (Leisyte, 2007).



Source: Latour and Woolgar (1979), Wouters (1999, p. 205).

Figure 2.1. Credibility cycle

2.5.2 Disadvantage of successful grant procurement

Not every researcher is able to acquire grant applications, because he or she is not always an administrative or communication expert. Researchers with good persuasiveness might get more research grants compared to researchers without these skills. Another disadvantage is that different research specialisms have different chances and necessities to collect research grants. A researcher in theology has less chance to collect research grants than a researcher in applied science. This is not really a disadvantage for a researcher but it makes comparability between researchers difficult and is an important aspect in rewarding successful grant procurement.

2.6 Financial importance

The trend in money streams gives another indication about the importance of successful grant procurement. Figure 2.2 Shows the proportions of the three money streams for the Universities, Eindhoven and Delft together in the period 2003-2007. It is based on numbers from the annual reports of 2007. In appendix 2 the figures for each university are presented separately. Figure 2.3 shows that the



first money stream has grown with 5% over the last five years, the second money stream with 29% and the third money stream has grown even with 43%.

Figure 2.2 Trends in money stream 3TU. Federation (annual reports UT, TU/e and TUD $% \left(T_{\rm T}^{\rm T}\right) =0$

Figure 2.3 Growth percentages of money streams for 3TU.Federation

2.6.1 Plasterk Deduction

From 2008 till 2011 the first money stream from the Ministry of OC&W will decline with m€ 100 (m€ 25 every year) because the ministry of OC&W wants universities to be more competitive. This first money stream flows to NWO and becomes part of the second money stream, but only for the Innovational Research Incentives Scheme (in Dutch: Vernieuwingsimpuls). These are personal subsidies that have to stimulate talented researchers in fundamental research. Universities call this distribution from the first money stream to the second money stream the Plasterk deduction (in Dutch the 'Plasterk korting', named after the minister of OC&W). It increases competition with the goal to enhance guality and efficiency at universities. However, this financial reduction of the first money stream gives universities less freedom to organize their activities. As explained before, the first money stream has to be used to finance overhead costs in second and third money stream projects. When the first money stream declines and the second money stream grows universities have to use more of the declining first money stream income to co-finance a growing second money stream. Minister Plasterk made a concession by financing 100% of the project costs instead of 67% for the Research Incentives Scheme (www.NWO.nl). This results in less costs for universities, but they argue that there are still a lot of overhead costs to be paid. Universities argue that the Innovational Research Incentives Scheme will cost them too much from the first money stream and name it therefore the Plasterk deduction.

2.7 Grant procurement as a performance indicator

Although it is expected that successful grant procurement is important for universities, faculties and scientists and can function as a performance indicator, little is mentioned in the publicly available strategic plans of universities about this topic. This could imply that universities consider their influence on the success of grant procurement is low, or that faculties and scientists have enough motivation and knowledge about the importance of grant procurement which makes it not necessary to mention. When a topic is not in the strategic plans it does not necessarily mean that it is not important, but it can function as a supporting goal to achieve the organizational goals.





Strategic plans of universities include the goal of high quality research. Successful grant procurement can help achieve this goal and could be a performance indicator if differences between faculties and scientists in their chance of receiving a grant are taken into account. Research skills of a scientist will be the most important factor (at least it should be) that influences the chance of successful grant procurement. Good research influences the reputation of a researcher, which will influence his chance on receiving a research grant, but there are also other factors. If one researcher gets support from experienced colleagues and another researcher does not, it is not fair to reward both researchers equally for successful grant procurement. Commercial skills and faculty policy are also factors that can influence the chance of successful grant procurement. If the chances of every researcher are known and taken into account then successful grant procurement could be a performance indicator for the long term goal of high quality research.

This chapter presented information about advantages and disadvantages of successful grant procurement in different layers of the organization. Information is given about three grant providing groups with their own regulations on accountability and financing conditions. Further, the non financial and financial importance of successful grant procurement is presented. It is shown that every layer in the organization experience benefits and constraints in grant procurement activities. Whether the benefits outweigh the constraints will be described in chapter six where different expectations from theory are discussed, using empirical information.

3. Performance management and incentives

This chapter provides an overview of what is written in literature about performance management and the role of incentives, focusing on financial incentives. Public organizations differ from private organizations in how they manage and measure performance. This chapter explains these differences. First the motives of individual employees are explained. The role of financial incentives will be discussed in the performance management context, ending with the broad context of management control systems used to implement organizational goals.

3.1 Motivation

The underlying factor for studies about performance management is motivation theory. 'Motivation theory looks at factors that influence an individual's willingness to exert effort to achieve the organization's goals, conditioned by this effort's ability to satisfy individual needs' (DeCenso & Robbins, 1994). There are many different definitions of motivation in literature. In his book 'Motivatie en belonen' Vinke used the following definitions (1996, p. 24): 'Motivation is the intra- and inter individual variability in behavior not due solely to individual differences in ability or to overwhelming environmental demands that coerce or force action' (Vroom, 1964 p. 8). Another definition: 'The concept we use when we describe the forces acting on or within an organism to initiate and direct behavior,... also used to explain differences in the intensity of behavior' Petri (1981 p. 3). Motivation influences the way employees perform. Some employees are intrinsically motivated and some employees need many extrinsic motivators to perform in a desired way for the organization.

3.1.1 Motivation of scientific staff

Looking at scientists we can state that they are highly skilled and have high expectations about their jobs. A study from the CPB (2003) found that scientists themselves state that intrinsic motivation is the most important reason to become a scientist. However they were not able to confirm these statements. Later study by Cook, Ley, Crawford and Warner (2009) about motivators and inhibitors for university faculty in distance and e-learning, found that intrinsic motivators, like the desire to help and teach, are key drivers of faculty participation. However, second-generation adopters of distance e-learning are more motivated by extrinsic incentives, such as technology support, salary increase, course release etc. This indicates that motivation differs among scientists and is difficult to define.

3.1.2 Group influence

One of the main reasons that individual motivation is difficult to measure is that motivation is often influenced by groups. For scientists their group is a research group or teaching colleagues, also called 'peers'. 'When people work in groups, their motivation to exert effort sometimes decreases.... However, under a few, constrained conditions, the opposite occurs—group members exert greater effort than individual performers' (Gockel et al., 2008, p. 1316). It is known that competition with other research groups may heighten group solidarity and cohesiveness, cause members to evaluate their groups products more favorably and alter the group's status structure and division of labor (Leventhal, cited by





Austin and Worchel, 1979). It is expected that scientists are highly influenced by colleagues, because many research and educational tasks have to be performed in cooperation. Good performance of one scientist can motivate other scientists to perform even better. The reward for performance should be comparable, because if group members think they are not treated fairly compared to other group members, their motivation might decline. Based on these findings about motivation it can be argued that extrinsic motivators should be present as they motivate scientists, especially the younger generation, and do no harm to intrinsic motivated scientists. However this conclusion is not totally supported in literature, as explained below.

3.1.3 Motivation crowding out

According to empirical evidence, extrinsic incentives sometimes do crowd out intrinsic motivation and therefore reduce the effort of workers. Research by James (2005) state that motivation crowding out (MCO) occurs because many rewards are perceived as controlling. This results in individuals having greater satisfaction but not being intrinsically motivated. James suggests that 'an agent's effort supply curve might be s-shaped in the sense that small incentives increase effort because they are not perceived as controlling, larger compensation reduces effort because of its negative effect on intrinsic motivation, but further increases in compensation increase effort in the standard economic sense'.

(James, 2003, p. 536). There is no explanation for this motivation crowding out effect. 'Models presume that something happens to some agents when extrinsic incentives are introduced, thus causing MCO, but what that "something" is and why it occurs has not been made theoretically explicit' (James, 2003, p. 653). This theory can be used in performance management to avoid a reduction of intrinsic motivation. In the next section, performance and the use of performance management to influence motivation will be discussed.



3.2 Performance

There are many different definitions of performance, depending on the disciplines. 'For example, psychology, social sciences or managerial sciences use different definitions depending more on individual, societal, or organizational and system performance' (Bouckaert and Halligan, 2008). According to Bovaird (1996, p. 147) performance must be seen as a set of information about achievement of varying significance to different stakeholders. Stakeholders are persons or organizations who affect or can be affected by an organization's action. For universities this can be the government, private organizations, Supervisory Board, other universities and students. Performance is in the eye of the beholder.

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'Measuring performance is systematically collecting data by observing and registering performance related issues for some performance related purpose' (Bouckaert & Halligan, 2008). Performance measurement is one aspect of performance management. Bouckaert and Halligan (2008, p. 2) refer to the definition of performance-based public management as 'taking/allocating responsibility for the performance of a system and being accountable for its results' (Pollit & Bouckaert, 2004). It is a managerial activity which costs money and effort. Besides this, it will affect the behavior of individuals and organizations which makes it very complex.

3.2.1 Financial/non financial performance measurement

Performance can be measured with financial or non-financial data. Traditionally, organizations have relied almost exclusively on financial measures, like budgets, turnover, profits, shareholder value etc, because these results are easy to measure. Anthony and Young name in their book 'Management control in nonprofit organizations' (1994) the advantages of profit measures:

- It provides a single criterion to use in evaluating proposed courses of action;
- It permits a quantitative analysis of those proposals;
- It provides a broad measure of performance;
- It facilitates decentralization and it permits comparisons of performance among entities that are performing dissimilar functions.

Disadvantages of accounting-based measures are that they are historical and backward-looking, and may reward excessive short-term or incorrect behavior like data-manipulation and gamesmanship. 'Gamesmanship means that employees, often managers, make their performance reports look good even when they know the actions they are taking have no economic value to the company and can even be harmful' (Merchant & van der Stede, 2007 p. 10). This behavior causes management frustration and resistance; 'as a result, these measures are generally incongruent with the strategic goals of the organization' (Atkinson et al., 1997; Merchant, 1990, as cited in Verbeeten & Boons, 2009). Verbeeten and Boons (2009) state that non-financial measurements can help companies to improve the alignment between their strategic objectives and their performance measurement system, but are more difficult to measure and make the measurement system complex. A combination of financial and non-financial performance measurement is the optimal situation, but is often also the most difficult.

3.2.2 Strategic performance management

There are many benefits of introducing strategic performance management, also at universities. Atkinson (1997, p. 561) gives four examples:

- 1. It provides a systematic way to focus and co-ordinate the efforts of employees.
- 2. It forces the Executive Board to define the strategic objectives in a way that is meaningful to employees, thus making statements of university objectives more precise.
- 3. It provides a basis for accountability or compensation in providing the managers a focus on performance measures.
- 4. By systematically collecting data about performance drivers a university can learn whether the beliefs about objectives like employee satisfaction really affect performance, or the other way around.





When performance management is not present in an organization it is difficult to manage employees in the desired way. According to Atkinson (1997, p. 553) the process of strategic performance measurement has four steps – identifying:

- 1. The organization's primary objectives as established by its owners or principals
- 2. The role the organization's stakeholders play as the organization pursues its primary objectives
- 3. What each stakeholder requires in exchange for undertaking its role in supporting the organization's strategy
- 4. How to measure the organization objectives and stakeholder roles.

As with performance measurements, strategic objectives can be entirely financial, entirely social, or a combination of both. These multiple objectives may conflict and decision-makers could make trade-offs among the objectives.

There are several levels on which performance can be measured. This will give problems while setting the performance indicators, because what goals are more important, short term or long term? Businesses must deliver financial performance on the short term but should also invest in innovations that result in long term growth. 'As a result, there is often a tension between short-term financial performance and long term growth in most firms' (Verbeeten & Boons, 2009, p. 114). Besides this long and short term tension there is also a tension between strategic performance and operational performance. 'At higher organizational levels, most of the key results linked to rewards are defined in financial terms.... Lower-level managers, on the other hand, are typically evaluated in terms of operational data that are more controllable at the local level' (Merchant & van der Stede, 2007, p. 30). This means that at middle organizational level, managers have to translate financial goals into operational goals.

3.2.3 Performance in the public sector

'Costs of performance measurement systems are unconditional, tangible and immediate. In contrast, their benefits are conditional, intangible, and scheduled for the future' (Bouckaert & Halligan, 2008 p. 27). The benefits depend on data transformation into information and the use of it in policy and management cycles. Anthony & Young name in their book 'Management control in nonprofit organization' (1994, p. 52) the following differences between profit and nonprofit organizations:

- Absence of a profit measure
- Different tax and legal considerations
- A tendency to be service organizations
- Greater constraints on goals and strategies
- Less dependence on clients for financial support
- The dominance of professionals
- Differences in governance
- Importance of political influences
- A tradition of inadequate management control

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The scarcity of financial measures at non-profit organizations makes it difficult to implement performance measurement; but these financial performance measurements, like economic value added and shareholder value are also less relevant in public organizations. 'The difficulty with public organizations is that public performance has to take multiple values into account and is achieved in co-production'(de Bruijn, 2007 p. 7). This is the reason why it is difficult to fit standardized performance models like the balanced scorecard and Total Quality Management in public organizations. 'The criteria employed may not cover elements of organizational performance that are important to public services' (Talbot, 1999, p. 22).

3.2.4 Performance in universities

In universities the role of faculties is diverse. They must attract students, provide these students good education and deliver excellent research output. 'Faculty employees engage in a variety of behaviors which are both less obviously related to these objectives and almost unheard of among employees of non-educational firms' (Cunningham, 2008, p. 1). This variety and complexity of tasks gives faculties independency and responsibility, and makes it difficult to manage and measure their activities.

Despite the difficulties there are performance indicators available at universities (CPB, 2003; Ernst & Young, 2004). For performance on education, universities use the number of students in a faculty, number of ECTS, and the percentage of graduated students. For valorization, universities look at the financial income from contracted work, carried out for private and public clients. The number of publications and promotions are often performance indicators for the research domain. These are examples of output indicators. Performance can also be measured with input indicators like first year students or amount of second and third money stream income. An important disadvantage is that many of these indicators are results of processes in early years and give no indication for current performance. Despite this, the careers of scientific staff depend highly on their performance.

3.2.5 Performance management tools for research

The allocation model is an example of a financial performance management tool in universities. Despite this, there are other tools to motivate researchers in their performance and to provide guidelines about what is expected of them. Universities use job profiles for every function in the organization. The profiles are drawn up by the association of the fourteen universities in the Netherlands (VSNU). It provides a classification of 150 common functions at universities, based on the role and responsibilities. Job profiles show employees what the relationship between functions is and what every function demands. Based on these job profiles employees have a yearly interview with their manager in which the progress and performance of the employee is discussed.

Another performance management tool used in universities is the tenure track. Careers of scientists start with PhD research. These are often research projects financed by second money stream, which means that contracts are temporarily and end when the scientist receives his doctoral degree. After their promotion scientists are free to find a position, which is sometimes again a temporary contract for the period of a research project. This use of temporary contracts makes a scientific career uncertain with the result that many young- and midcareer doctoral employees leave for the private sector that offers more stability.





The tenure track should decline this uncertainty. It is an agreement between a scientist and a university in which a temporary contract (from two till six years) will be followed by a fixed contract if the scientist performs according to certain expectations (Fruijtier & Brok, 2007). This is a good combination between mobility and stability for scientists because both parties can decide at certain moments whether to continue or to quit, based on the performance and career expectations of the scientist.

Besides the tenure track there is also a new experiment with function contracts, which is included in the current collective agreement (www.vsnu.nl). By offering scientists contracts based on performance and/or function results instead of attending hours, scientists have full freedom to plan their tasks as long as their performance reaches the agreements. This performance is evaluated every year. Function contracts give scientists more freedom to combine their work with other tasks.

Another performance management tool are the external visitations. Every six years, research and teaching visitations from the VSNU (Association of Universities in the Netherlands) are held to measure the quality of research and education at universities. Universities want faculties to use these outcomes as input for their strategy on research groups. These performance management tools are not only used to measure performance, but also to reward good performance with incentives.

3.3 Incentives

'Every experienced executive knows the importance of rewarding good performance' (Locke, 2004). 'A lack of adaptability and few incentives have been suggested as possible reasons for the X-inefficiency of an organization' (Kuo & Ho, 2008). According to Anthony and Young (1994) individuals are influenced by both positive and negative incentives. These and many other authors state that external motivation should be present in organizations to motivate employees externally and make performance management work.

3.3.1 Incentives at universities

It is difficult to design an incentive system that works sufficient. Locke (2004) refers to an article in the Wall Street Journal of 2004. It reported that 83% of the companies with a pay-for-performance system said that their incentive plan was only somewhat successful or not working at all. Many organizations never seem to get their incentive plan right. 'A poorly devised bonus system can create "tunnel vision"- a focus only on what gets rewarded to the neglect of other important outcomes' (Locke, 2004, p. 130). Bad incentive plans encourage people to do the wrong things in the wrong way, and they lead to cynicism, anger and indifference.

It is widely accepted in literature that academics respond to non pecuniary incentives, such as peer recognition and advancement of science (Dasgupta and David, 1987, as cited by Lach and Schankerman, 2008, p. 404). 'Financial incentives tend to be less effective with professional people. This is both because professionals usually consider their current compensation to be adequate and because their primary satisfaction ordinarily comes from their work' (Anthony & Young, 1994 p. 65). This raises the question whether it is beneficial to introduce financial systems to highly intrinsically motivated employees. The earlier mentioned study from the CPB (2003) found that every Dutch university uses financial incentives in its allocation model. This indicates that extrinsic financial rewards are believed to

motivate researchers, and the Motivation Crowding Out effect theory (James, 2005) is not seen as realistic or not fully compatible for universities.

3.3.2 Using incentives to manage performance

As is shown, there is a growing interest in the public sector for performance management, because managers understand that public servants also need control on their performance. But as stated before, performance is difficult to measure at universities and managers should be aware that performance is not the only factor in achieving organizational goals. 'Using performance as the main criteria for decisions and oversight can undermine other values in budgeting and policy processes' (Paul Posner, as cited in Bouckaert, 2008, p. 167). Therefore it is important to look at performance management in the broader scope of management control and to find how management control supports performance management. The next section will focus on this management control process.

3.4 Management control

'Management control is a critical function in organizations. Management control failures may lead to large financial losses, reputation damage, and possibly even to organizational failure' (Merchant & van der Stede, 2007, p. 3). An organization needs control systems to manage performance. As stated before, performance indicators and incentives can be linked to organizational goals. Management control systems provide this link. The function of management control is to influence behavior in a desired way which will increase the probability that the organization will achieve its goals. This is also called goal congruence, which is discussed in chapter 2.2. Examples of management control systems are planning processes, computer passwords and segregation of employees duties. Taking the function of management control into account it can be stated that the internal allocation model of a university is also a control system because management tries to influence behavior of the faculties with this allocation model (CPB, 2003).

3.4.1 Management control Structure

Universities consist of many responsibility centers. Faculties for example are responsibility centers within a university. 'A responsibility center is a group of people working toward some organizational objective' (Anthony & Young, 1994, p. 6). 'The term responsibility center denotes the apportioning of responsibility for a particular set of outputs and/or inputs to an individual (commonly a manager)' (Merchant & van der Stede, 2007, p. 270). Faculties consist of different smaller responsibility centers like research units in which activities are highly interwoven, internally but also with other faculties. This network of responsibility centers is called the management control structure. The management control function plans and coordinates the work of all responsibility centers in an organization.

3.4.2 Management control cycle

'The management control process takes place in the context of an organization's goals and the broad strategies senior management has chosen for achieving them' (Anthony & Young, 1994, p. 18). The formal management control process has four principal phases:





(1)Programming, (2)Budget preparation, (3)Operating and measurement, (4)Reporting and evaluation. They occur in a regular basis and constitute a closed loop as indicated in the model of Anthony & Young (1994, p. 19)



In the programming phase (1), senior management decides which programs the organization will undertake within the context of the goals and strategies that emerged from the strategic planning activity. Some organizations make a long-range plan while other organizations do not have a formal mechanism to describe their overall future programs.

During the budget preparation phase (2), plans made in program terms are translated into responsibility terms. 'These plans and budgets become targets that affect managers motivation because the targets are linked to performance evaluation and, in turn, various organizational incentives' (Merchant & van der Stede, 2007, p. 329). Every organization makes different budget decisions, based on different factors and the influence of the responsibility center managers in this phase differs per organization. The end product is a statement of the expected output (performance) and the input (resources) to be used to achieve this performance

During the phase of operating and measurement (3), managers supervise and help the accounting staff to keep records of actual resources consumed and actual output achieved. These records will be used for future programming and to measure the performance of responsibility centers.

The reporting and evaluation phase (4) closes the loop of the management control process. Records from the operating and measurement phase enable managers to compare planned outputs and inputs with actual results. This evaluation will lead back to the revision of the program, revision of the budget or to a modification in operations.

3.4.3 Management control cycle in the public sector

Anthony & Young (1994) state that 'the basic concepts of management control are the same in both forprofit and nonprofit organizations, but, because of the special characteristics of nonprofit organizations,

the way managers apply these concepts will differ in some important respects'. Output of profit organizations is often measured by using financial terms (revenue, profit, Economic Value Added). These measures are usually not present in the public sector. However, measurement is not impossible. A short indication of management control systems at universities is given below.

3.4.4 Management control cycle at universities

'At universities, both research, teaching and learning are assessed by a variety of measures including various forms of external review, benchmarking and performance indicators' (Bleiklie & Kogan, 2007, p. 480). Management control systems help to guide the management of performance at universities. Universities make strategic plans for a period of five years. These strategic plans are publicly available and describe the goals which the university wants to achieve over the period.

The second phase, budget preparation is the phase where the division in the allocation model is designed. It is expected that this allocation model reflects the priorities of the strategic plan. Whether the budget preparation phase is really based on the strategic goals is not yet clear. This is a question that will be answered during the empirical research.

The operation and measurement phase will both be accomplished inside and outside the university. Financial performance can easily be measured by the university itself, but non-financial measures are more difficult as they are often intangible. The last phase, reporting and evaluation, is the result of the measurements. End products in this phase are annual reports and evaluation of actual performance. This last phase is the input for revision of the other phases.

3.5 Expectations

To see whether there is a link between the theoretical information in chapter two and three, and the situation in practice, six expectations can be written down. They will be tested with empirical research in the three universities of technology. Interviews with university and faculty controllers provide the empirical information that is needed.

Expectation one: The advantages of successful grant procurement outweigh the disadvantages.

The importance of successful grant procurement for universities, faculties and scientific staff is discussed in chapter two. The advantages and disadvantages of successful grant procurement will be discussed within the three universities of technology. Based on literature and the fact that every university competes for second and third money stream, it is expected that the advantages outweigh the disadvantages.

Expectation two: Universities use financial external motivators for their scientific staff.

The different theories about motivation do no answer the question whether scientists need external motivators or not. Former studies found that most universities do use external motivators. Expected is that the Universities of Twente, Eindhoven and Delft use both financial and non-financial motivators. As this research focuses on financial incentives, only these incentives will be discussed in the empirical research.





Expectation three: The internal allocation models of universities include financial incentives to stimulate successful grant procurement.

The second chapter shows the importance of successful grant procurement for universities, faculties and scientists. Because of this importance it is expected that the Executive Board anticipate and use its most important financial tool, the internal allocation model, to stimulate their faculties.

Expectation four: The faculty allocation model includes the same financial incentives as the central allocation model

Because faculties have their own financial allocation model the Executive Board cannot directly control the effect of the central allocation model on scientists. Therefore both the central allocation model and the faculty model will be analyzed to see whether the incentives used in the central model are also used in the faculty model. To make incentives useful it is important that they are accepted by all layers in the organization. Therefore it is expected that faculties use the same incentives as the central management.

Expectation five: Universities use non-financial performance management tools to steer their faculties

Performance management includes both non-financial and financial incentives. A combination of both is most beneficial for an organization. It is expected that universities use both methods and try to influence behavior of faculties and scientific staff also with non-financial tools like job certainty, visitations and supporting activities.

Expectation six: the incentives in the internal allocation model are linked with strategic goals of the universities.

Theory indicates that performance indicators should be linked with strategic goals. It forces the Executive Board to define the strategic objectives, like being successful in grant procurement, in a way that is meaningful to the employees, thus making statements of university objectives more precisely. The allocation model can be a tool to implement strategic goals top-down by linking performance measures to it. Because the allocation model is such an important tool in universities it is expected that it will be used also for this purpose.

This chapter provided information about different elements that are part of the management control function at universities. It started with motivation of employees which leads to performance outcomes that can be influenced by performance management. An incentive system is an example of a performance management tool that contributes to the achievement of strategic goals. This link between strategy and operational measurements is provided in the management control cycle. Based on theory from chapter two and three, six expectations are written down to see whether the theoretical information is used in practice. These expectations will be discussed in chapter six.

4. Allocation models of UT, TU/e and TUD

In this chapter the central allocation models of the three Dutch universities of technology will be analyzed, focusing on financial incentives for successful grant procurement. Universities use the internal allocation model to distribute the first money stream over the different departments. How the Ministry distributes this money over the universities will first be discussed. After that the allocation model of the University of Twente will be discussed, followed by the University of Eindhoven and finally the University of Delft. The way universities charge overhead costs is important for the incentive mechanism. If an incentive is not large enough to pay for all costs, it is questionable whether the incentive is really an incentive or just a financing mechanism to pay for integral costs. This is why the overhead costs will get extra attention in this empirical research.

This chapter will answer the third research question: Which financial incentives do universities use in their allocation model to stimulate faculties in obtaining research grants and what are the motives?

4.1 Semi structured interviews

To find answers on the third and fourth research questions, interviews are held with controllers of the three universities and of the faculties of Applied Sciences. A questionnaire is used during this interviews, but because the choices of the allocation model depend on visions of universities and faculty managers, the interviews are semi-structured. This gives the interviewees freedom to talk about influences on the allocation model. The questionnaires for the central controllers and the faculty controllers can be found in appendixes three and four.

4.2 First money stream

Education (43%)	Research (57%)
Amount of first year students	Basic budget
Amount of degrees	Promotions
Fixed teaching allocation	Strategic component
	(top) research schools

The distribution of the first money stream over the universities is based on the following performance indicators in 2009 (van Steen, 2008, p. 6):

In 2009, the amount of first money stream for all universities was \in 3.026.000.000, 47% for education and 53% for research. This allocation is based on results from universities in 2007 (t-2) (Begroting UT 2009, p. 7).

PhD's are often the result of research projects for four years which are subsidized by NWO or an other third party. Therefore, within the OC&W allocation model, the premium promotions and premium designer certificates could be seen as a stimulus for collecting second and third money stream. Promotions and designer certificates are output indicators, because universities receive the premium only after four years, when a promotion is realized.





The formula the Ministry of OC&W uses for allocation of this indicator will be explained: In 2009, the universities received € 90.000 for every promotion that was realized in year 2007. This gives the following formula:

<i>Ppt</i> = 90.000(<i>Pt</i> -2)	<i>Ppt</i> is the premium for promotions in year <i>t</i> in euro.
	<i>Pt-2</i> is the number of promotions in year $t-2$.

For designercertificates a comparable formula is used:

Pdt = 75.000(*Dt*-2)

Pdt is the premium for designercertificates in year *t* in euro. *Dt-2* is the number of designercertificates in year *t-2*.

4.3 University of Twente

The university of Twente (further UT) was founded in 1961 as the Technische Hogeschool Twente. It was the third higher vocational institute of technology (after Eindhoven and Delft) that became a university later. The University is one of the fourteen universities in the Netherlands, with over 8000 students and almost 2500 employees. This makes it a medium-sized Dutch university. It has a broad range of degree programs and despite the technology degrees it also offers degrees in behavioral and social sciences. While the research focus is still on technology, this broad offer of degrees makes that the UT is officially not a university of technology anymore, despite its collaboration with the other two universities of technology in the 3TU.Federation.

4.3.1. Structure

The UT has twenty bachelor programs and 33 master programs divided over five faculties:

- 1. Engineering Technology (Construerende Technische Wetenschappen)
- 2. Electrical Engineering, Mathematics and Computer Science (Electrotechniek, Wiskunde en Informatica)
- 3. Behavioural Sciences (Gedragswetenschappen)
- 4. Management and Governance (Management en Bestuur)
- 5. Science and Technology (Technische Natuurwetenschappen)

The UT has published the following organization chart in its annual report of 2007:



Figure 4.1. Organizational structure University of Twente (Annual report 2007)

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The faculty dean is responsible for education activities and only partly for research activities. All research activities are situated in six multidisciplinary institutes. Within these institutes researchers from different faculties work together in institute programs. The head of an institute, a scientific director, is responsible for the institutional policy and all research activities within his institute. Together the faculties and institutes form a matrix organization in which the way they are interwoven is presented.

	FACULTIES						
INSTITUTES		TNW	EWI	CTW	GW	MB	
	MESA	+	+		+	+	
	IMPACT	+	+	+			
	MIRA	+	+	+	+	+	
	СТІТ		+	+	+	+	
	IBR				+		
	IGS			+		+	

Figure 4.2 Matrix structure University of Twente (www.utwente.nl)

4.3.2 Allocation model

To collect information about the allocation model of the UT, an interview was held with a controller of the central financial department. In 2009, the UT received m€ 147,3 of first money stream and tuition fees. Together with claims for salary and price developments, interest income and other (incidental) incomes, the total available normative budget is m€ 166,5 (begroting 2009, p. 21). The University is free to distribute this part of the income according to its own priorities. It is 71,2% of the total budget of the University. Figure 4.3 shows the different sources of revenues.



Revenue (budget 2009)

Figure 4.3 division of the revenues University of Twente (budget plan 2009)




Of this budget, 32% is used to finance specific tasks (stimulus for specific projects, talent management, language courses for teachers, new University logo etc.). These budgets are called temporary central support. Besides this the budget provides also regular central support (first-aid servicesystem, arbo care system, building committed services). After these costs the budget for research and education, used in the central allocation model is m€ 113,2. In 2009 58,6% went to research and 41,4% to education. The allocation from the Ministry to the UT was 56%/44%. An explanation for the difference in allocation between OC&W and the UT might be that the UT also receives tuition fees to finance their education activities which leaves more budget for research. Starting point for the UT allocation is the BAMA compartment for education (first year students and amount of SEC), including the tuition fees.

Indicators	Explanation	budget 2009 (in k€)	% of budget 2009	% of budget 2010
Normative budget: Central budget Temporary central services Central services Remaining budget for allocation	First money stream and tuition fees University logo, language courses for teachers, talent management etc First-aid system, arbo care building committed services	166.500 - <u>53.280 (32%)</u> 113.220 (100%)		
Education part: SEC Premium Add-on per studyprogramme Education stimulus Sub total	Amount of SEC (course credits) Amount of first year students	30.473 11.720 <u>4.688</u> 46.881 (41%)	65% 25% <u>10%</u> 100%	65% 25% <u>10%</u> 100%
Research part Fixed amount infrastructure Nanolab Premium Promotions Premium designers	Fixed amount Amount of promotions Amount of designers	1.000 11.720 1.482	2% 18% 2%	2% 22% 0%
Premium research contracts O&O component	2nd, 3rd and EU money stream. (divided in very technical, technical and non technical) Education-related research (Budget	15.620	24% 24%	0% 18%
University stimulus for Research	Bachelor master: 30-70%)	5.207	8%	4%
Strategic institute budget	Management contracts Fixed percentage per institute	15.620	24%	24%
Replenishment strategic institute budget	,	0%	0%	31%
		66.325 (59%)	100%	100%

The University uses the following allocation model:

Figure 4.4 Allocation model U

UNIVERSITY OF TWENTE.

The education budget goes to the faculties and the research budget to the institutes. However, the institutes have to distribute the education related research component (O&O) and promotions/designer components normative to the faculties where the promotions and ECTS were realized. This means that a part of this research budget flows indirectly to the faculties. All current indicators in the model are based on past performance, except the strategic institute budget. This will be explained in the next subsection.

Indicators for second and third money stream

In 2009, three direct incentives for successful grant procurement can be found. The first incentive is not present in the allocation model, but is a management decision that is beneficial for faculties. The other two can be found in the internal allocation model:

1.) Faculties can keep all revenues from second and third money stream. They don't have to pay a fraction to the central organization. They do have to pay overhead costs, but only costs they really make and these are not directly related to the height of revenues of the faculty.

2.) As explained above, the premium promotions is a stimulus from the Ministry of OC&W. The UT distributes this component based on the following formula:

Ppt = P(pt-4 until pt-2)*Ppt* is premium promotions budget in year *t* in euro. *P* is the premium OC&W uses for a promotion. *pt* is the amount of promotions in year *t*.

The budget for designercertificates is based on the following formula:

Pdt = D(dt-2)

Pdt is premium designercertificates budget in year *t* in euro. *D* is the premium OC&W uses for a promotion. Dt is the amount of designercertificates in year t.

	Weightings	
	Second money stream	Third money stream
Non Technical	2,0	1,0
Technical	2,80	1,4
High technical	4,73	2,36
Figure 4.5 weigh	ting of research cont	racts (hudget plan 200

4.5 weighting of research University of Twente)

3.) In 2009 the component 'premium research contracts' counts for 24% of the research budget. This percentage can differ every year, depending on the amount of first money stream and the proportion of the different weightings of the research chairs. These different weightings for research chairs are presented in figure 4.5. The premiums for 2009 are based on: (1) established fte t-2 (average fte two years before budget year). (2) Budget component 'premium research contracts' from 2009. (3) Corrections premium





based on relative premiums 2008. In 2009, the premium for one non technical fte in the third money stream is \in 6.830,-. This means for example that institutes receive \in 6.830,- x 4,73 = \in 32.305,90 for every full technical fte in the second money stream. Reason for introducing these different weightings is that technical contracts are not comparable with non-technical contracts because they have higher costs. Because the university offers technical and social courses it would not be fair to reward research activities on both disciplines identical. Institutes divide this premium to the research groups who earned it, according the central allocation model. Because the university will change the allocation model in 2010, these premiums of 2009 are already half the premiums of 2008 and will disappear completely in 2010.

4.3.3. Changes in 2010

The main difference in the allocation model of 2010 is that the component 'premium research contracts' is replaced by the component 'replenishment strategic institute budget'.

Based on experience a decision was made to replace this component because it is difficult to use it objectively. There are many research contracts that are difficult to categorize, which made the research allocation model very complex, difficult to understand and resulted in the effect that researchers were more focused on quantity (collecting premiums for highly technical research contracts) than on quality. Further, the budget for these research chairs differed every year while institutes ask for a more stable research budget. Distributing the 'premium research contracts' component budget to the 'replenishment strategic institute budget' gives institutes more freedom to spend their budget on long term projects, because this budget is more stable. Disadvantage could be that there is no guidance to match the second and third money stream with first money stream and institutes have to make their own budget for these matching costs.

Institutes have no total freedom in spending the 'replenishment strategic institute budget' but have to make covenants with the Executive Board. The Executive Board will make arrangement with every institute about their performance. This arrangements contain of:

- 1. Renewal goals: The scientific director has to explain how he want to realize renewals.
- 2. Performance goals: Every institute defines five-seven performance indicators which will be measured after the budget period of 2014. The score on these performance indicators might be input for the next budget period. The performance indicators are not available yet, but a list of possible indicators can be found in appendix five.
- 3. Contribution to the strategy of the UT

This change means that the UT switches this performance budget from a past performance budget to a future performance budget. Every institute can present its plans and have equal chance to receive a high budget. Of course past performance will play a role in the evaluation of the institutional plans because this gives the Executive Board an indication of future performance.

4.3.4 Differences between faculties/institutes

Most of the indicators are objective and easy to understand. Every faculty and institute receives its budget based on the same indicators. This leads to an objective and fair allocation system. However the

replenishment strategic institute budget will count for 30% of the research budget and can result in big budget differences between institutes as explained above.

4.3.5 Overhead

Overhead costs have to be paid by the faculties except the first-aid service system, arbo care system, building committed services (like depreciation of buildings) and temporary projects which are important for the University. These are paid by the components 'central services' and 'temporary central services'. The average overhead percentage of the UT is 28%. This means that when for example the turnover of external contracts (second and third money stream) increases with m \in 10, an extra budget of m \in 2,8 is needed (Nota Kaderstelling Jaarplan en Begroting 2010-2014, appendix 22).

The way universities finance overhead costs can have major influence on the incentive work for third parties. When a faculty has to pay all overhead costs, the incentive is needed to finance these costs. When overhead costs are paid central, the faculty can use the incentive really as a reward. At the UT the incentive is linked to the kind of research project. Appendix six shows that the incentive is large enough to pay for all costs which makes the incentive really an incentive. The overhead percentage that faculties have to pay is an estimation.

Based on this information it can be stated that at the UT the most important incentive for collecting second and third money disappears in 2010 with the replacement of the premium research contracts. However, the controller of the UT expects that the new performance indicators will include the amount of second and third money stream as a performance measurement. It is also one of the possible indicators, mentioned in the budget plan of the University (appendix five). Therefore the strategic institute budget is an indirect indicator for second and third money stream income.

4.4 University of Eindhoven

The University of Technology Eindhoven (further TU/e) was founded in 1956. The region of Eindhoven is highly industrialized and 50% of the national expenses in Research & Development is spent in this region. The TU/e contributes in a high amount to this high level of technology oriented activities, although it is one of the smallest universities in the Netherlands with 3000 employees and 7000 students.

4.4.1. Structure

The TU/e consists of nine faculties, eleven bachelor programs, one special bachelor program, 21 master programs, five special master programs, four educational master programs, eight post-doctoral programs for technological designers and various post-doctoral courses and programs.

The nine faculties are:

- Biomedical Engineering (Biomedische Wetenschappen)
- Industrial Design
- Applied Physics (Technische Natuurkunde)
- Architecture, Building and Planning (Bouwkunde)
- Chemical Engineering and Chemistry (Scheikundige Technologie)





- Mechanical Engineering (Werktuigbouwkunde)
- Electrical Engineering (Elektrotechniek)
- Industrial Engineering & Innovation Sciences (Technologie Management)
- Mathematics and Computer Science (Wiskunde & Informatica)

The TU/e uses the following organizational structure:

Raad van Toezicht				
U	niversiteitsraad C	ollege van Be	stuur	
_	<u> </u>			
Be	stuurlijk overleg			
	(CvB + Decanen)			
Faculteits-	 Faculteits- Stan A hestuur Ins 	ckermans I stituut	nnovation Diensten ·· Dienstraad	
ruuu				
В	Bouwkunde	DAZ	Dienst Algemene Zaken	
Е	Elektrotechniek	CEC	Communicatie Expertise Centrum	
ST	Scheikundige Technologie	DPO	Dienst Personeel en Organisatie	
TN	Technische Natuurkunde	DFEZ	Dienst Financiële en Economische Zaken	
ТМ	Technologie Management	DH	Dienst Huisvesting	
W&I	Wiskunde en Informatica	ICT	Dienst ICT	
w	Werktuigbouwkunde	IEC	Informatie Expertise Centrum	
BMT	Biomedische Technologie	DIZ	Dienst Interne Zaken	
ID	Industrial Design	STU	Onderwijs en Studenten Service Centrum	
		GTD	Gemeenschappelijke Technische Dienst	

Figure 4.6 Organizational structure of the University of Eindhoven (www.tue.nl)

The TU/e has a few top institutes which are directly financed by the government, they form a publicprivate foundation or are a collaboration between different universities. There are also internal institutes but these are all part of a faculty. The faculties are responsible for results on both research and education activities.

4.4.2. Allocation model

The allocation model of the TU/e has changed in 2009. The allocation model of 2008 will first be discussed, followed by the changes made for the 2009 budget. The TU/e uses the same definitions for second and third money streams as the common known description in chapter one.

In 2009, the total revenue of the university is m€ 283,5. First money stream and tuition fees (m€ 196,9) counted for 69% of this budget. Figure 4.7 shows the proportions of the different financial resources.





Figure 4.7 Division of Revenue, University of Eindhoven (budget plan 2009)

The first money stream, received from the government will be divided in two parts: Academic inputs and faculty inputs. The academic input is determined first. This means the higher the budget for the academic input, the less there is left for the faculty input. Figure 4.8 Shows the different categories into which the first money stream will be divided.



Figure 4.8 categories of dividing

The central services are reserved for the Executive Board to create, plan and coordinate new strategic plans in the areas Research & Education, student activities, employees, facilities and Governance & Management activities. This budget is determined for four years. The second compartment 'services' is the budget for small departments like sports and culture activities etc. The third compartment is reserved for the technological top institutes that participate in external research projects and are partly financed by the Ministries of OC&W and Economic Affairs. The internal research projects are financed with the faculty budget. The last compartment of the academic input contains budget for the interest charges the University has to pay. In 2008 49,1% of the first money stream went to the academic input.





Since 2007 this budget is distributed to the different faculties using the following division:

Performance	Explanation	Budget before evaluation (2008)	Budget after evaluation (2009)
Normative budget Academic input Remaining budget for allocation	First money stream and tuition fees Reserved for central services	196.900.000 <u>97.465.500 (49,5%)</u> 99.435.000 (100%)	
Budget first money stream for research Fixed amount regular	Fixed amount Fixed amount	1 million per faculty 2 million per faculty	1 milion per faculty 2 million per faculty
Tuition fees First year students	Amount of registered students Amount of first year students	1.100 per student 2.700 per first year student	1.100 per student 2.700 per first year student
ECTS Promotions Designcertificates Premium for contract activities	Amount of delivered course credits Amount of promotions Amount of designcertificates Bonus on work for third parties	108 per point 74.100 per promotion 61.800 per certificate 25% raise (fixed amount)	108 per point 84.200 per promotion 70.200 per certificate Variable (Balancing item) Second money stream weighting: 1 Third money stream weighting: 0,8
Research stimulus	Expired since 2009 -Amount of AIO's -Excellent visitationscores	Balancing item	Expired

Figure 4.9 Allocation model TU/e

These components are chosen because most of them are also used in the governmental allocation model. Only the premium for contract activities is not comparable with a component used by the Ministry.

The allocation model includes no differentation in research and education, but the different indicators can be divided in education or research related components. All indicators are based on past performance: results from college year 2006/2007 are the indicators for the budget of 2009.

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Indicators for second and third money stream

There are three kind of indicators present to stimulate the procurement of research grants:

- 1.) Faculties can keep all revenues from second and third money stream. They don't have to pay a fraction to the central organization. They do have to pay overhead costs, but only costs they really make and these are not directly related to the height of revenues of the faculty.
- 2.) In the central allocation model, the indicators 'promotions' and 'designercertificates' could be seen as stimulus for collecting second and third money stream. In the beginning of this chapter the allocation from the Ministry of OC&W for this indicator is explained. Because the TU/e wants to give faculties a more stable budget, they distribute the premium promotions and certificates to the faculties based on the following formula:

Ppt = P(pt-4 until pt-2)Ppt is the premium promotions budget in year t in euro.P is the premium that OC&W uses for a promotion.Pt is amount of promotions in year t.

This means that for 2009, the TU/e uses a moving average of the promotions from 2005, 2006 and 2007 to get a more stable result. This explaines why the premium for a promotion in 2009 is \notin 84.000 in stead of \notin 90.000 the Ministry of OC&W uses for 2009

3.) The indicator 'premium for contract activities' was in 2008 25%. This means that for every euro a faculty earns in second and third money stream, it receives 25 cents from the central budget. This is based on results from two years before the budget year. In 2008 the formula was:

$$Rca = 0,25(2^{ndt-2} + 3^{rdt-2})$$

Rca is the premium for contract activities in euro 2^{ndt-2} and 3^{rdt-2} is the amount of second and third money stream in year *t*-2

4.4.3 Changes in 2009

Because the first money stream declines (Plasterk deduction) it is not possible anymore to give faculties a bonus of 25% for every euro they earn in work for third parties. Internal research in 2007 found that researchers do appreciate the bonus; therefore it was no option to remove this 'bonus'. The solution is that the original balancing item (research stimulus) dissappeares in 2009 and the bonus for second and third money stream activities becomes the new balancing item. This means that every euro left after paying for the other performance indicators is available as a bonus on work for third parties. Because of the declining first money stream the percentage of the bonus will also decline.

An other change is the weighting for the second and third money stream. The ratio for rewarding the second and third money earnings is 1:0,8. This means the second money stream is better rewarded than the third money stream. This results in the following formula for the component 'premium for contract activities' in 2009:





 $Rca = Bt (2^{ndt-2} + 3^{rdt-2} \times 0, 8)$ Bt is the budget for faculties remaining after allocation of all other components.

4.4.4 Differences between faculties

Every faculty receives its budget based on this allocation model, except the faculties of Biomedical Engineering and Industrial Design. These are new faculties and have made additional multi-year budget contracts with the Executive Board, focussing on growth (Begroting TU/e 2009). There are six small institutes and service departments who also receive money through the allocation model. The institutes are temporary projects which receive budget for temporary personel costs and for matching costs. However, most research projects are situated in the faculties.

4. 4.5 Overhead costs

All expenditures that are made for or by the faculty have to be paid by the faculty, except the rent for buildings and energy costs. In 2009 these expenditures count for 12,5% of the total expenditures. Costs for equipment is partly financed by the central organization by using a yearly budget for specific equipment needs of the faculties. These investments are not sufficient to pay for all equipment costs. The supportive central services do not have to be paid by the faculty as well. These are the financial department, computer technology service, Human Resource department etc. They receive their own budget through the allocation model and through the central service budget. However, when faculties need products or hire people from these department they have to pay for it. Appendix six indicates how the level of overhead costs influences the incentive mechanism. The example shows that the incentive at the TU/e is large enough to pay all project cost.

This information has shown that the TU/e is also changing its allocation model. Main reason is the declining first money stream. The indicator work for third parties is the first component that has to decline. It is expected that this component will decline even more in the next few years.

4.5 University of Delft

The TU Delft (Further TUD) was founded in 1842 as the 'Royal Academy for the education of civilian engineers' by King Willem II. Because of the academic level of the School's technical education, it became an Institute of technology in 1905. In 1986 the Institute officially transformed into Delft University of Technology, also known as TUD. The TUD is one of the largest Universities with 4.700 employees and 14.000 students.

4.5.1 Structure

The TUD has fourteen bachelor programs and 41 master programs divided over eight faculties:

- Architecture (Bouwkunde)
- Civil Engineering and Geosciences (Civiele Techniek en Geowetenschappen)
- Electrical Engineering, Mathematics and Computer Sciences (Elektrotechniek, Wiskunde en Informatica)





Figure 4.10 Organizational structure University of Delft

4.5.2 Allocation model

- Industrial Design Engineering (Industrieel Ontwerpen)
- Aerospace Engineering (Luchtvaart- en Ruimtevaarttechniek)
- Technology, Policy and Management (Techniek, Bestuur en Management)
- Applied Science (Technische Natuurwetenschappen)
- Mechanical, Maritime and Materials Engineering (Werktuigbouwkunde, Maritieme Techniek en Technische Materiaalwetenschappen)

The total revenues of the TUD in 2009 are m \in 476,5. From this budget 72% comes from the first money stream and tuition fees (m \in 344). The revenues on second and third money stream are not separated in the annual report of 2008, but the total income from these money stream is m \in 115. In 2008 the amount of third money stream was three times as much as second money stream. It is expected that this will be comparable in 2009.



Revenue (budget 2009)

Figure 4.11 Division of Revenue, University of Delft (annual report 2008)

About 34% of the first money stream budget is reserved for central services. The rest flows to the allocation model. 45% of this budget is reserved for education and 55% for research. Slightly more budget goes to education compared to the 47% of the OC&W model.





The TUD allocation model was designed in 2003. In 2006 there were a few refinements, based on an internal evaluation of the model. The TUD uses an allocation model based on the model of the Ministry of OC&W, because it wants to keep the model transparent and use the incentives from the national allocation model. However, besides those incentives the TUD also has its own research incentives for performance indicators they find important. The following allocation model is based on percentages of 2006, which are still in use, with financial numbers of 2009.

Indicators	Explanation	Allocation 2009 (In k€)	Allocation(% of total budget)
Normative budget Central budget: Remaining budget for allocation	Central services, infrastructure and TUD programs	344.000 <u>116.960</u> 227.040	134% 34% 100%
Education part: (same as OC&W model) 1. Central strategy 2. Faculty policy Performance indicators: 1. SEC Premium 2. Increase per program 3. bachelor degrees 4. Master degrees	Amount of SEC (course credits); 0,2 point per SEC Amount of first year students; 1 point per student 2 points per bachelor degree 2 points per master degree	5.160 7.224 90.128	2,3% 3,2% 39,7%
 Research part: Central strategy Faculty policy Performance indicators: Promotions O&O component Premium research contracts Incentives from TUD: Publication in research journals Publication peer record Scientific book Scientific book part National scientific book part Contribution to conference proceedings Other scientific publications Chief/full editorship scientific book/journal Chief/full editorship conference proceedings Publication peer record 	Same as Ministry of OCW Education related research, same as OCW 10% raise for every euro in 2nd or 3rd money stream (in 2010 only premium for 2nd money str) 4-10 points 4 points > 80 pages, 4 points 4 points > 80 pages, 4 points 4 points 1 point > 3 pages, 1,5 points 1 point 6 points 3 points 4 points	18.920 16.856 34.056 54.696	8,3% 7,4% 15% 24,1%

Figure 4.12 Allocation model TUD

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The rank order used in this table is the same rank order the TUD uses. This means that the research budget is the balancing item. All indicators are output indicators. At this moment there are no input indicators, but there are plans to make the faculty policy an input indicator. This indicator is currently based on earlier years and sometimes on plans of the Executive Board. By linking this indicator to the multiyear policy plans of a faculty it is possible to relate the financial plans to the strategic plans. This subject will be discussed in the next chapter.

Indicators for second and third money stream

There are four indicators present to stimulate the procurement of research grants:

- 1.) Faculties can keep all revenues from second and third money stream. They don't have to pay a fraction to the central organization. They do have to pay overhead costs, but only costs they really make and these are not directly related to the height of revenues of the faculty.
- 2.) In the central allocation model, the indicator 'promotions' could be seen as stimulus for collecting second and third money stream. In the beginning of this chapter the allocation from OC&W for this indicator is explained. Because the TUD want to follow this distribution they use the same formula as the ministry of OC&W to distribute the promotionsbudget to the faculties

Ppt = P(Pt-2)	<i>Ppt</i> is the premium for promotions in year <i>t</i> in euro.
	<i>Pt-2</i> is the number of promotions in year $t-2$.
	<i>P</i> is the premium OC&W uses for a promotion.

- 3.) Faculties receive a premium of 10% for every euro they earn in second or third money stream. But because of the Plasterk deduction, this is not possible for the future. In 2009 the faculties receive this premium only for their second money stream income.
- 4.) Incentives from the TUD for publications. While the premium work for second money stream income is an input indicator because the performance is not yet reached, the TUD indicators are output indicators which are based on performance output of year *t-2*.

4.5.3. Changes in 2009

Because of the Plasterk deduction it is not possible anymore to reward both second and third money stream income with a 10% bonus. The University decided to reward only second money stream income with a 10% bonus, because these grants needs a lot of co-financing and give universities a better reputation compared to third money stream income. It is a possibility that the bonus on second money stream income also disappears within a few years.

4.5.4 Differences between faculties

To create a fair competition for the performance indicators of the TUD, a classification is made between comparability of the research groups on these indicators. This distinction was made in 2003 and resulted in three boxes who receive their own budget for their performance part.





- Science: Natural Sciences, Chemistry, Biotechnology, Electrical Engineering, Mathematics and Information Science (45%)
- Engineering: Civil Engineering, Earth Science, Air Traffic and Astraunotics, Mechanical Engineering, Maritieme Techniek, Material Sciences (31%)
- Design: Architecture, Industrial Design, Technical Public Management (24%)

These percentages are based on scores of a three year average (1999 until 2002) which were used in 2003. A fixed score per point was calculated by dividing the budget over the total average point of three years. The points were counted for every box and an average percentage of the total budget was defined. This division resulted in a major inflation of points in the engineering box because their publication score grew, but the budget stayed the same, they received less money for one point. This difference grew even till \in 600,- for one point which resulted in a repair action for 2010 to recalculate the box percentages based on numbers of 2008.

4.5.5 Overhead costs

The faculty has to pay for all overhead costs. The housing and energy costs are paid per m2 and supportive staff is hired by the faculty. It is unknown what the overhead percentage is at the TUD, but it is expected that it is comparable to the UT because both universities charge all overhead costs to the faculties. In appendix six a calculation is made to show the influence of overhead costs on the incentive 'work on third parties'. With the assumption of 20% overhead costs, the incentive from the TUD is not enough to finance all project costs. Therefore it is not really an incentive but just a compensation for the project costs.

4.6 Difference in grant procurement success

A study by the Rathenau institute about facts and figures of Dutch universities shows the following figure for 2006 (van Steen, 2008 p. 13):



It shows that the UT scores best in second money stream income and the TU/e scores best in third money stream income. The TUD scores below average on second money stream and on average on third money stream. Whether the financial incentives in the allocation model influence this outcome is not known

4.7 Summary

This chapter presented the allocation models of the universities of Twente, Eindhoven and Delft. The following table summarizes the main differences between the universities.

2009	UT	TU/e	TUD
Indicators from OC&W	Yes	Yes	Yes
adopted?			
Number of own university	1, stimulus 2 ^{na} /3 ^{ra}	1, stimulus 2 ^{na} /3 ^{ra}	10 Delft research
indicators	money stream	money stream	indicators and the
			stimulus 2 nd /3 rd
			money stream
			5
Seperate research/education	Yes	No	Yes
budget?			
incentive for 2nd and 3rd	Yes, after 2009 it is	Yes, balancing item in	Yes, 10% on 2nd
money stream present?	part of the strategic	allocation (± 20% on	and different points
(except promotions)	institute budget	2 nd and 3 rd)	for research output
incentive for 2 nd and 3 rd	15,8% of total	13% of total budget in	6% in 2009 for 2 nd ,
money stream as % of the	budget (24% of	the allocation model	and 24% for TUD
allocation model budget 2009	research budget)		indicators
Recharge overhead costs to	Yes	Yes, except housing	Yes
faculty?		costs	
Indicators for future	No, but will be in	No	No
performance available?	2010		

The indicators in the allocation model of the three universities are presented in this chapter. Both similarities and differences were found between the allocation models. The next chapter continues with differences between the three faculties in this study. In chapter six the differences between the universities are further discussed, using the expectations from chapter three.





5. Allocation model of the faculties of applied sciences

Having explained how the three universities use their allocation model to stimulate successful grant procurement, the next step is to find how the faculties distribute their budget over the different research groups. In this chapter the fourth research question will be answered: Which financial incentives do faculties use in their allocation model to stimulate their researchers in obtaining research grants and what are the motives?

The first faculty is the faculty of Science and Technology of the University of Twente, followed by the faculty of Applied Physics of the University of Eindhoven. The third faculty is the faculty of Applied Science of the University of Delft.

5.1 UT: Faculty of Science and Technology

The faculty of Science and Technology (further S&T) is one of the five faculties of the UT. In the section about the central allocation model of the UT, the matrix structure between institutes and faculties is already explained. There are six large institutes which are regarded as separate departments of the University. Those institutes are:

CTIT (Centre for Telematics and Information Technology) IBR (Institute for Behavioural Research) IGS (Institute for Governance Studies) IMPACT (Institute of Mechanics, Processes and Control, Twente) MESA+ (Institute for Nanotechnology) MIRA (Biomedical Technology & Technical Medicine)

The faculty of S&T participates in three institutes: MESA, IMPACT and MIRA. This means that scientists from research groups of S&T work for those institutes. An institute has no employees on their payroll, except the scientific director and a secretary. Research groups are part of a faculty, which means that the faculty has to pay the salaries.

5.1.1 Allocation model

The faculty uses the same allocation model as the University. Together with the three institutes they corporate with, the faculty follows the adjustments made by the central organization. However, because the faculty has relatively few students compared with their size they receive a small budget for education. This is why they use some of the research budget for education activities, because they have to pay for all overhead costs and teachers, no matter how small the groups of students are. The incentive for ECTS is distributed to the capacity groups based on the course they facilitate. Courses with for example high laboratory costs receive more budget for every ECTS compared to other courses. This means that this indicator is not distributed according to the central allocation model, but the faculty made some small adjustments.





Because of the matrix structure the faculty S&T is highly dependent on institute policies. Therefore it is difficult to design one allocation model for the faculty S&T. The controller said that the faculty uses the same allocation model as the UT, but could not give me detailed information about the model. The capacity groups receive research budget from the institutes and education budget from the faculty. The following table shows an overview, of the indicators in the model, based on the information from the budget plan 2009 of the UT.

Indicators	Explanation	Allocation 2009 (in % of faculty normative budget)
Facultybudget		100%
Central services		21.5%
Budget left for allocation	Defined as 100%	
Education part:		
SEC Premium	Amount of SEC (course credits)	6,3%
Raise per programme	Amount of first year students	5,7%
Premium designers		3,6%
Education stimulus		4,4%
Research part:		
Premium promotions	Received from insitutes and allocated over	27,7%
O&O component	the participating research groups	4,1%
Work for third parties		48,1%

Figure 5.1 Allocation model of the faculty of S&T

5.1.2 Relationship with institutes and differences between capacity groups

The relationship between faculties and institutes is very tight. Institute plans have to be discussed with the faculty management, because capacity groups have to participate in the research projects and they are part of the faculty. The reason why the University chose for this matrix structure is because it wants to present itself as a research university and create a profile as well as Focus & Mass. Positioning institutes separate from the faculties makes research activities more visible for outsiders.

Within the faculty, all capacity groups are treated the same. They execute research activities for the institute and education activities for the faculty. The research part is distributed from the institutes to the faculties where the performance was realized. How institutes use the strategic research budget differs, based on plans of the scientific directors. In 2010, these directors will have larger budget which they can spend freely because the budget work for third parties will flow to the strategic budget. The directors have to explain the Executive Board how they are going to realize the institute goals, but this new budget gives them freedom to translate their own vision in financial budget for capacity groups.

5.1.3 Overhead

The capacity groups have to pay their own overhead costs. For third money stream activities the faculty demands a 15% reservation for overhead costs in capacity group budget. If this is not available the faculty gives the capacity group a 'no go' and they have to ask the faculty dean for permission. For second money stream there is no rule for overhead costs but capacity groups know that they have to pay it themselves. Despite regulations there is no awareness of overhead costs in the capacity groups. They often pay these costs from their reserve budget.

5.2 TU/e: Faculty of Applied Physics

The faculty Applied Physics (further AP) is one of the nine faculties of the TU/e and consists of twelve capacity groups. The faculty uses its own allocation model to allocate the money to the twelve capacity groups. This allocation model has not changed in 2009. As we noted before, the TU/e does not use seperate budgets for research and education. Faculties have no guidance to decide how much they spend on research and how much on education.

5.2.1 Allocation model

The faculty AP made the following distribution in which education counts for 33% and research for 67%. The faculty dean, together with the capacity group directors, chose for this distribution because the faculty is a so called research faculty.

Indicators	Explanation	Allocation (in % of faculty normative budget 2008)
Faculty budget from first money stream		100%
Stan Ackermans institute Policy Organizational costs Remaining budget for capacity groups	Technological Designer institute Defined as 100%	2,83% 6,3% 30,5%
Basic financing capacity groups Research part: Promotions 2nd and 3rd money stream activities	Fixed amount per capacity group	18,5% 27,2% 27,2%
Obliged courses Free selection courses		13,6% 13,6%

Figure 5.2 Allocation model of the faculty of AP





As shown, some central costs are deducted before allocating the budget. The SAI budget is a fixed budget for the faculty contribution on the designer institute of the 3TU.Federation. The organizational costs are every year comparable and the policy costs can differ, depending on (1) the size of the budget from the central allocation model, (2) multiyear policy plans of the faculty, and (3) The budget that the faculty dean needs to stimulate new policy/projects. It can be regarded as a reserve budget. The rest of the research and education budget is allocated over the twelve capacity groups. These capacity groups organize both education and research activities. Because it is a research faculty it was decided to spend twice as much on research as on education. The research budget include two indicators:

- 1.) 50% for the amount of promotions, based on the average number of promotion from the last four years (t-4 until t-1)
- 2.) 50% for the amount of 2nd and 3rd money stream activities. The second money stream subsidies counts for twice as much as the third money stream subsidies. If a capacity group has for example earned € 15.000,- euro of second money stream and € 10.000,- euro of third money stream, it will be counted as 2 x € 15.000,- +€ 10.000,-= € 40.000,- of second and third money stream activities.

5.2.2 Differences between capacity groups

There are no differences between capacity groups in allocating the budget. Every capacity group is rewarded the same for their performance. The only difference that could be made in the allocation is for policy plans. Capacity groups can receive money from the faculty policy budget by presenting their plans for the coming years to the faculty dean. He decides how this money will be spent.

There is also no difference in the support that capacity groups receive for their research activities. At the TU/e there is an innovation lab which can help employees with their financial subsidy questions/problems. For writing a research proposal researcher can get support from their professor/supervisor, but there is no structural support for these activities

5.2.3 Overhead

The faculty of AP wants capacity groups to earn at least all additional costs for research projects in the second and third money stream, otherwise the project will not be accepted. The capacity groups have to pay these additional costs themselves (personnel costs, materials, traveling costs), as well as their overhead costs. Some third money stream partners compensate the integral costs, which of course makes them more attractive. However, not all clients are willing to pay for all costs and because the second money stream projects are more prestigious they are still more attractive for researchers.

5.3 TUD: Faculty of Applied Sciences

The faculty of applied sciences (further AS) consist of six departments and one institute which have their own management. The faculty is a research oriented faculty; scientists regard education as less important and mainly used to scout talented students for their research projects.



5.3.1 Allocation model

The faculty uses an allocation model which is mainly based on the allocation model of the TUD, with some exceptions. The following allocation model is used in 2009:

Indicators	Explanation	Allocation 2009 (in % of faculty normative budget)
First money stream budget: Minus: Central costs AP Available for departments	Defined as 100%	100% 49,8%
Basic compartment	Fixed distribution to the departments	40%
Education part: -Fixed amount -ECTS output	2000 x amount of max ECTS € 122 for every student who graduated for the course	20%
Research part: Publication in research journals Publication peer record Scientific book Scientific book part Contribution to conference proceedings Chief/full editorship scientific book/journal Chief/full editorship conference proceedings Other scientific publications Patent Dissertation	 4-10 points 4 points > 80 pages, 14 points > 3 pages, 4 points 1,5 point 6 point 3 points > 3 pages, 1 point 4 points 28 points 	40%

Figure 5.3 Allocation model faculty of AS

The education budget the faculty receives is about 24% of the total first money stream budget. Because the faculty is very research oriented, this education budget is not totally spent on educational activities. The faculty uses the 40, 40, 20 (basic, research, education) division. This division is used for more than 10 years.

The main exception on the research part compared to the central allocation model is the stimulus of second money stream. As explained before, the University uses in 2009 a stimulus of 10% bonus on each euro earned in second money stream. This stimulus is not adopted in the faculty model. The reason is that the faculty has already reached its maximum of second money stream income. There is not enough first money stream to co-finance the second and third money stream activities. This is the main reason why the second money stream stimulus is not adopted.

5.3.2 Differences between departments

There are no differences between the allocation to the capacity groups. Every capacity group receives a budget based on the same allocation model, except the reactor institute Delft. This institute is mainly





paid with the infrastructure component from the central model. It is not doable to relate this budget to performance because the reactor just has to be in progress full time.

5.3.3 Overhead

The faculty deducts the total overhead costs from the first money stream they receive. After this deduction and deductions for other fixed or incidental costs, the budget for the allocation is left and can be put in the allocation model. This means that capacity groups do not have to pay for overhead costs. They receive less budget because the faculty has used a part for overhead costs, but the amount of second and third money stream income has no direct influence on the first money stream budget for capacity groups. If overhead costs are paid by the central organization it becomes more attractive for capacity groups to accept work for third parties because this income will not influence the amount of overhead to be paid. However paying the real overhead costs in the central organization makes capacity groups less aware of the indirect costs which could lead to more ineffective use of these indirect activities.

5.4 Summary

Chapter five described how the allocation models from the universities were distributed in the faculties of Applied Sciences. Faculties did not want to present their financial number publicly. Therefore their allocation models are presented with percentages. At the faculty of S&T at the UT, some assumptions had to be made to create the allocation model. Based on the information from this chapter the following summary can be made:

2009	S&T (UT)	AP (TU/e)	AS (TUD)
Indicators from university adopted?	Yes	No, only promotions and stimulus 2nd/3rd money stream	Yes, except the stimulus 2nd and 3rd money stream
Number of own faculty indicators.	0	3	0
Separate research/education budget?	Yes, but research budget received from institutes	Yes	Yes
Stimulus for 2 nd and 3 rd money stream present?	Yes, after 2009 not	Yes, work for third parties	Yes, TUD indicators
Incentive for 2 nd and 3 rd money stream income as % of total allocation budget 2009	Allocated in institutes, (48,1% of faculty budget)	27,2%	40%
Charge overhead costs to department/capacity groups?	Yes	Yes	No

6. Differences between the universities

Expectations about the situation within universities were formulated at the end of chapter three. These expectations will be used to discuss the differences between the three universities. The last sub question will be answered in this chapter: What are the differences between universities in the role of the allocation model as a performance management tool in the Planning & Control cycle?

6.1 Expectation one: The advantages of successful grant procurement outweigh the disadvantages to achieve organizational goals.

Main goal of universities is to achieve a good reputation on education, research and valorization. Successful grant procurement can contribute to these goals, but also has some disadvantages. After the empirical research the differences between universities about the importance of grant procurement can be presented, using the advantages and disadvantages from chapter two, which are: Advantages:

- 1. The first money stream budget for research is not enough to finance all ambitions and activities of a university. Successful collection of research grants give universities more budget to spend on research activities.
- 2. Faculties lower their dependency on first money stream resources and have more financial freedom.
- 3. Credibility of scientists will increase, as referred to by the credibility cycle of Latour and Woolgar.

Disadvantages:

- 1. The current situation in which part of the first money stream is transferred to second money stream (Plasterk deduction), lowers the matching capacity.
- 2. High accountability and pressure to satisfy external expectations from grant providers.
- 3. Different chances for different research disciplines which can make successful grant procurement a struggle for scientists in research disciplines that have less chance in receiving a grant.

The disadvantage 'high accountability' is not mentioned during the interviews. The different chances for different research disciplines can be a problem but is not recognized at all three universities. The TUD act on it by using different boxes for different research disciplines in which comparable disciplines compete with each other for first money stream budget. This is introduced to give every faculty equal chance to receive TUD incentives for its performance. The UT uses another system. It provides higher rewards for high technical projects, because these projects include higher costs. This is a difference because the TUD gives less technical and less fundamental research disciplines more chance to collect first money stream incentives, while the UT rewards the most popular/fundamental research disciplines even more than less popular disciplines.

The Plasterk deduction is a problem at all three universities. The faculty AS of the TUD is the first faculty in this study that has reached its maximum in second and third money stream income. There is not





enough internal budget to finance more work for external parties. At the faculties of the UT and TU/e this problem grows but has not yet reached its maximum. This problem however is a reason to change the allocation system at all three universities.

All advantages were supported by the interviewees. Despite the difficulties with co-financing the second and third money stream, universities need this external income. The first money stream income is not enough to finance all ambitions of the university. This necessity counts for all layers in a university. All faculty controllers mentioned the importance of successful grant procurement for the reputation and credibility of a researcher or research group. The first expectation is therefore supported.

6.2 Expectation two: Universities use financial external motivators for their scientific staff.

All universities adopt the motivators that the ministry of OC&W uses. The table shows the percentages that universities use for fixed budgets and performance related budgets in 2009, based on their publicly available budget plans:

2009	UT	TU/e	TUD
Percentage that is reserved for central budget	32%	49,1%	34,6%
Proportion research/education	58,6%/41,4%	No division before allocation but in 2009 it is 52,5%/47,5%	54,3%45,7%
Performance related budget for education	90% (SEC premium, First year students)	80% (SEC premium, first year students, registered students)	87,9% (SEC premium, first years, masters, bachelors)
Performance related budget for research	66% (promotions, designer, premium research chairs, strat. Inst. Budget)	60%	71,3% (Promotions, designer, premium research chairs, TUD indicators)

The TU/e uses more budget for central services compared to UT and TUD. The housing and energy costs are paid by the central organization, while the UT and TUD charge these costs to the faculties and departments. At every university, a majority of the budget is allocated based on performance indicators. The second expectation is therefore supported.

6.3 Expectation three: The internal allocation models of universities includes financial incentives to stimulate successful grant procurement.

Every university in this study uses financial incentives to stimulate successful grant procurement. The first incentive is that faculties can keep their second and third money stream income. The second incentive is the premium on promotions and designer certificates. This is a financial incentive from the Ministry of OC&W and is distributed from the central organization to the faculties that realized the promotions. A difference between the universities is that the UT and TU/e mediate the premium by using the number of promotions from year t-4 till t-2. This results in a more stable budget. At the TUD the central organization does not average this premium, but the faculty of Applied Sciences does mediate the premium before it allocate the budget to the capacity groups. This indicates that there is a demand for a stable budget.

Every university uses the indicator 'premium research contracts' in their allocation model, however the weight of this indicator and the stability of this indicator differs:

UT: High technical contracts receive more budget compared to non-technical contracts, and second money stream contracts receive more compared to third money stream contracts. How much every contract is worth depends on the budget for this component; in 2009 it is 30% of the remaining research budget after deduction of the nanolab, promotions and designer costs. This indicator disappears in 2010 and will be replaced by a strategic institute budget. This budget will be allocated based on different performance indicators. Second and third money stream income will likely be one of the indicators.

TU/e: In 2008, the faculties received 25% bonus on every euro earned in second and third money stream income. Because the Plasterk deduction made this bonus difficult to finance, the Executive Board decided to make the component 'work for third parties' a balancing item. Second money stream is better rewarded compared to third money stream (1:0,8). This budget will fluctuate every year because it depends on all other indicators. Expected is that this budget declines every year because of the declining first money stream. The expectation of a growing second and third money stream means an extra decline of the percentage per euro on 'work for third parties'.

TUD: Until 2008 the TUD used a bonus of 10% on every euro earned in second and third money stream. It decided to remove this bonus for third money stream income because of the Plasterk deduction. This means there is only a bonus of 10% for second money stream income in 2009. Expected is that this bonus will be removed completely in 2011. Besides this incentive, the TUD has created own output indicators for different publications which count for 24% of the allocation budget. These are indirect incentives for successful grant procurement.

The third expectation is supported but the incentives decline every year. The premium promotions is an incentive from the Ministry of OC&W and it is expected that this incentive therefore will stay. The incentive work on third parties is declining and will soon disappear, certainly at the UT (2010) and probably at the TUD (2011).





6.4 Expectation four: The faculty allocation model includes the same financial incentives as the central allocation model

To make incentives work it is important that they are understandable and adopted at all layers of the organization. Therefore it is expected that faculties adopt the incentives from the central organization. There are differences between the universities in this study:

UT: The faculty of S&T finds it important to adopt the incentives from the central organization to match the University vision. The faculty spend slightly more on education and give the capacity groups more budget for high technical courses compared to non- technical courses, because of the extra costs for materials. The component 'promotions' is received from the research institutes and distributed to the capacity groups according the central model. The 'premium research contracts' is distributed from the institutes directly to the capacity groups according the central model.

TU/e: The faculty of AP uses own indicators for education (50% for obliged course and 50% for free courses). It adopts the research indicators from the TU/e, but uses its own division. The faculty provides a fixed basic budget for each capacity group. What is left is the budget for promotions (50%) and work for third parties (50%). The faculty does use some of the institutional indicators, but the faculty model is not based on the central model.

TUD: Major part of the indicators are adopted in the faculty of AS, except the -for this research interesting indicator- premium research contracts. The faculty management argues that collecting this money is not challenging enough to reward. There are capacity groups who do not have to put effort in it and are asked by other parties to join a research project. Many research subjects of this faculty are popular, which is the reason why the faculty has reached its maximum on work for third parties. There is not enough money to co-finance more second and third stream projects. Despite this situation, researchers do get rewards on work for third parties. The TUD rewards from the central organization are distributed to the capacity groups as well as the premium on promotions. This means the capacity groups are only rewarded for output from their projects.

The fourth expectation is not supported. All allocation models from the faculties look different from the central models. Only the faculty of S&T from the UT tries to link its allocation model to the central model, but has to make adjustments to fit the model to the faculty situation.

6.5 Expectation five: Universities use non-financial performance management tools to steer their faculties.

Literature provided information about performance management tools at universities. Besides financial tools universities use other performance management tools to stimulate researchers in collecting research grants. For example, all three universities offer a valorization center that assists researchers in writing a decent research proposal, or help them with juridical challenges. There are also career advisors available at all three universities that assist scientists in their career choices. The intensity of this support differs and depends on the knowledge of the researcher, the supporting employees and the kind of project.

Another HRM performance management tool is the tenure track contract, explained in section 3.2.5. With these contracts scientists have possibilities to develop themselves from an university lecturer to a

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senior university lecturer. This HRM career tool is not adopted central in universities, but different faculties have started with it. The faculty of S&T from the UT and the faculty of AS of the TUD use this tenure track contracts. At the TU/e it is known that the faculty of chemical engineering and chemistry uses the tenure track contracts, but the faculty of AP is not familiar with it. The TU/e has started with the tenure track related project, called Women in Science, to stimulate talented women to start an academic career. This project is financed by the central organization and available for all research subjects the TU/e delivers (Fruytier & Brok, 2007).

A third performance management tool are the research and teaching visitations, which are described in the 'Standard Evaluation Protocol for Public Research Organizations (SEP)'. Universities organize every three years self-evaluations for every institute and every six year an international peer review (Jongbloed & van der Meulen, 2006). Universities want faculties to use these outcomes as input for their strategy on research groups. Visitations often have no direct financial consequences; reputation is the most important outcome. Because researchers are highly intrinsically motivated and a good reputation is their main goal, it is expected that visitation outcomes might be even more important than incentives they receive from the allocation model. However, researchers always need financial resources to perform good.

The fifth expectation is partly supported. The three universities do use some management performance tools to stimulate researcher in collecting research grants but major part of performance management is situated in the faculties. Because they are responsibility centers they are also responsible for their own performance management, within the context of the university.

6.6 Expectation six: the incentives in the internal allocation model are linked with strategic goals of the universities.

As presented in chapter three, research has shown that organizations use the Planning & Control cycle to link performance indicators to strategic goals of the organization. In chapter two the mission of universities was presented: high quality on education, research and valorization. It is clear that the incentives in the allocation model are all meant to enhance quality at universities, but it was stated by every interviewee that the allocation model is not a reflection of specific plans of the university. The allocation model and policy plans are still two separate discussions in the Planning & Control cycle. The main reason is that linking the allocation model to policy plans will make the model less stable. Other influences are taken into account, like demand of the environment and financial resources. If the maximum in second and third money stream is reached (faculty AS of the TUD) it makes no sense to continue stimulating successful grant procurement.

Ambition of the universities is to link financial and policy programs by creating future performance incentives based on policy plans of the university. This ambition is in progress at the UT with creating Critical Performance Indicators for every institute for the coming four years. These indicators reflect policy plans and are used to define the component 'strategic institute budget' in the allocation model. At the TU\e and TUD the internal allocation models are still separated from policy plans.

It can be stated that this expectation is not (yet) supported because universities try to link performance indicators to their strategic goals, but external conditions makes is necessary to react on the environment by for example declining the stimulus on work for third parties.





In this chapter the expectations formulated in chapter three were used to show the differences between universities. Universities use both financial and non-financial performance management tools, which are both discussed in this chapter. The differences in the financial performance management tool is subject of this study, and therefore discussed more in depth. The expectations are supported, except the expectation that faculty models are linked with university models. Operational activities make it necessary to adjust the model to the lower level situation. The last expectation is not yet supported, but universities are aware of this and try to link the allocation model to their strategic plans.

7. Conclusion and reflection

This chapter answers the research questions which leads to the answer to the central research question. The central research question, formulated in chapter one is:

How do Dutch universities make use of their internal allocation model to encourage faculties and their researchers to engage in the procurement of grants for research, what are the underlying reasons and what differences do we observe?

7.1 Conclusion

Answers to the sub questions will first be discussed, followed by a reflection on the current situation at universities.

What is the importance of grant procurement for universities, faculties and researchers?

Chapter two showed the growth of second and third money stream income in the last few years. Universities need successful grant procurement to finance their research ambitions and enhance reputation. But there is also a drawback. The main problem the interviewees mentioned is the matching problem. Because research grants only finance part of the total costs, universities experience problems co-financing second and third money stream income with first money stream budget. Successful grant procurement is important, but limitations are visible. Because of the growing second and third money streams the matching discussion becomes more important in the future and makes grant procurement an issue for all layers of a university.

What is written in literature about performance management and the role of financial incentives to achieve organizational goals?

There is a discussion in literature whether universities need external motivators for scientific staff, because they are highly intrinsically motivated. Research by the Netherlands Bureau for Economic Policy Analysis in 2003 found that Dutch universities use financial incentives in their allocation model, which indicates that universities believe in the effectiveness of external motivators for scientific employees.

Performance management is used to provide external motivators by rewarding employees for their performance output. To make performance management work it is important to link performance indicators to strategic goals of the company (Atkinson, 2007; Bouckaert & Halligan, 2008). These performance indicators should stimulate actions that satisfy both the individual interest and the organizational interest, which is called goal congruence. Management control assure this goal congruence by translating strategic goals into operational measures.

Which financial incentives do universities use in their allocation model to stimulate faculties in obtaining research grants and what are the motives?

There are three financial incentives present in every allocation model to stimulate faculties in obtaining research grants, which are discussed in chapter six.





- 1.) Faculties are not obliged to transfer a part of second and third money stream income to the central organization.
- 2.) Premium on promotions and designer certificates.
- 3.) The use of the incentive 'work for third parties' is the main difference between the three universities.

The TU/e uses this premium as a balancing item, while all other indicators contain fixed rewards. With the declining first money stream it is obvious that this reward will decline every year.

At the TUD it is the other way around. Work on third parties is rewarded with an absolute reward of 10% on every euro earned in second or third money stream. The Delft parameters (all kind of publications) are the balancing item within the research budget.

The UT uses a combination by using percentages for every indicator, including the premium 'work for third parties '. This means that the budget depends on the total amount of first money stream (same as TU\e) but the dependency is not that large because it is no balancing item and there will be a budget reserved in the allocation model for this indicator.

Appendix six shows that the incentive from the central allocation model is often not enough to cover all research costs. Therefore the indicator 'work for third parties' is not always an incentive but only a contribution to finance all costs. According to the interviewees the main reason for the differences is the vision of managers within the organization. Changes between universities could also relate to the size of the university; the TU/e is the smallest university which uses the simplest allocation model and the TUD is the largest university which uses the most differentiated allocation model. It can also relate to the study area in which the universities act. The UT act also in social sciences which are difficult to compare with engineering. This explains why the UT introduced the different weightings for rewards on research contracts. However, the method of the TUD, as a real university of technology, is comparable by dividing comparable research groups in boxes.

Which financial incentives do faculties use in their allocation model to stimulate their researchers in obtaining research grants and what are the motives?

There are many differences between the faculties in the influence of the central allocation model on their own model. At the UT the institutes and the faculty Science & Technology adopt the incentives in the central model as much as possible because they want to contribute to the University plans by making the incentives work. At the TU/e, the controller of the faculty of Applied Physics stated that researchers appreciate the current incentives in the simple allocation model and are therefore maintained, independent from the central model. The faculty of Applied Sciences of the TUD relates its allocation model partly to the central model by adopting the Delft parameters, but uses the other indicators only when they are functional for their faculty. This functionality depends on external and internal situations and demand of faculty employees.

The situation at the central level can differ from the situation within faculties as management of faculties have more knowledge of operational activities. They have to make adjustments in the allocation model to be able to steer and facilitate capacity groups. In section 3.2.2 about performance management the different layers of the faculty are explained in which middle level managers have to

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translate strategic goals into operational goals. This is also what faculties have to do. They measure performance mainly with financial data but look also at environmental factors or personal factors that influence the performance of their capacity groups. This may influence the allocation.

At the UT and TU/e, the faculties charge overhead costs to the capacity groups. These are also the two faculties that use an incentive on 'work for third parties'. At the TUD there is no reward for capacity groups but they do not have to pay overhead costs. This means that the incentive mechanism is smaller at the faculty Applied Sciences of the TUD and capacity groups are not fully responsible for all activities. Expected is that they are less aware of the overhead costs they generate. It can be concluded that: Faculty UT relate their allocation mainly to the central allocation model with some adjustments

Faculty TU/e relate their allocation model mainly to internal needs

Faculty TUD relate their allocation model mainly to external situations

What are the differences between universities in the role of the allocation model as a performance management tool in the planning & control cycle?

Universities relate their allocation model to the model of the Ministry of OC&W. In 2009 all three universities use a bonus on 'work for third parties', in which the second money stream is better rewarded than the third money stream. Reason is that second money stream activities give universities better reputation, and the second money stream needs a lot of co-financing. Another similarity is that all universities are changing this component in 2009 or 2010, because of the Plasterk deduction.

Main difference is that the UT and the TU/e are using the indicator 'work for third parties' as a balancing item, while the TUD uses a fixed percentage of 10%. This makes this budget more stable. However, the next budget period can be completely different because this incentive might get too expensive for the University. Another difference is the treatment of different research disciplines in this indicator. In chapter two it was stated that differences between researchers in their chance of successful grant procurement should be taken into account if you want to make grant procurement a performance indicator. The TUD is the only university who adopt this vision with the use of different boxes. The TU/e does treat every research discipline the same and the UT argues that high technical research projects should receive a higher reward because of higher costs. This indicates that they regard this incentive as a reward, but even more as a compensation for the overhead costs.

The allocation model is not the only performance management tool that universities use to motivate researchers. The Tenure Track and function contracts are examples of HRM management tools which contributes to goal congruence. They meet employee demands (job certainty and more autonomy) and organizational demands (better evaluation on performance). At the faculties of S&T at the UT and AS at the TUD this tenure track is already in use. Some faculties are using these contracts but it is not centrally organized within universities.

Quality visitations are another performance management tool. These visitations are an important tool to enhance reputation and are therefore important. Performance on these visitations will influence faculty policy. It is not directly linked with financial consequences from the central organization, but low performance will definitely influence a capacity groups' reputation which can eventually lead to less budget (credibility cycle).





Main conclusion

Main conclusion is that the allocation model is an important performance management tool at every university. But other performance management tools, like visitations and tenure track positions are also important to steer universities, faculties and researchers. These performance management tools are

sometimes centrally organized, but often the responsibility of the faculties. It reflects the theory in section 3.2.3 which indicated that lower level managers have to translate performance financial in operational performance. At the central level of the university, financial performance is used to divide the budget. At the level of faculties and capacity groups operational influences like the reputation of a research group plays an important role. It can be stated that the financial choices in the central allocation model have small influence at the faculty level.



Figure 7.1 type of performance influence on financial allocation

7.2 Reflection

Because a sample of three universities was used, this research is not representative for all Dutch universities. Besides, the outcomes of the three universities are already quite different. The expectation is that there is not one best way of financial management. Other universities might experience other problems and opportunities in their allocation model, but some issues are similar for all Dutch universities.

Financing the indicator work for third parties.

The three universities relate their allocation model to the allocation model of the Ministry of OC&W but an important difference is the use of the indicator 'work for third parties'. This indicator is included in the university models but not in the governmental allocation model. This difference is the main reason why universities experience problems with matching. Because the second and third money stream income has grown enormously in the last years, universities have to reserve more budget to co-finance this income with first money stream budget. They do not receive more budget from the Ministry. Universities can ask themselves why they keep this incentive in their allocation model. There is no evidence that this incentive really motivate faculties and research groups in grant procurement.

Matching

Faculties and research groups demand a stable budget. A difficulty is the dependency on the financial environment. Universities experience the Plasterk deduction as a big constraint, because the matching regulations limit universities to collect more research grants. It might be necessary for the Ministry of OC&W to take action and not wait until universities really have to cut in their activities and ambitions

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because of financial shortages. Universities are more and more treated as business-like organizations who have to earn their own money in a competing environment. It is questionable whether this will contribute to innovative and fundamental research or to commercial research projects which have to deliver short term results. On the other hand, the Plasterk deduction is not that big, 3% of the total first money stream budget of 3,3 billion euro. The minister made a concession by financing 100% of the project costs instead of 67% for the Research Incentives Scheme.

Overhead

Because capacity groups often have no complete view of their overhead costs they are not able to present these costs on research proposals. Faculty controllers said that researchers are often not aware of the total costs of a research project and are therefore too enthusiastic in hiring PhD students or using materials and equipment. Faculties, except at the TUD, charge overhead costs to the capacity groups to make them aware. But if researchers really want a research project they find other ways to finance it. Making overhead costs visible in the organization makes it easier to manage the organization financially.

Different layers

Universities blame the Ministry of OC&W for the matching problem but they also have to look critically to their own financial management. Capacity groups know that they will receive the co-financing for their research projects from the faculties, who receive it from the universities. This works bottom up because some argue that researchers know best which research is interesting and important. The Executive Board has less knowledge about trends in research areas. Therefore top-down management would not enhance research quality. As the Executive Board has a limited budget they have to be critical about research projects. The UT started with this vision by removing the indicator 'work for their strategy, the university is better able to control whether these strategies match the university's strategy.

Management control

The allocation model is based on past performance and not on future strategic plans. Although faculties -as responsibility centers- experience high autonomy and responsibility, linking future performance to faculty budgets makes universities able to translate strategic plans into operational activities and give faculties guidelines about what is expected of them. The management control cycle at universities is meant to link the allocation model and other performance management tools to strategic plans. At the UT this link between allocation model and strategy will be made in 2010 with the use of future strategic performance indicators. At the TU/e and TUD the allocation model does not reflect policy plans. All interviewees agreed that this link should be present, and is a current discussion at the universities. The performance based allocation model is a good tool to divide the first money stream, but universities should be more critical about financing research projects. Universities could communicate their strategy plans to the faculties and demand research projects that are in line with their plans. Only research that fits the strategy plans will receive budget from the central government. This can be a solution for the matching problem and would provide a better link between policy plans and the allocation model. Management control would become more important and functional.





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Appendices

Appendix 1: Financing streams of the Universities of Twente, Eindhoven and Delft

Appendix 2: Trends in money stream UT, TU/e and TUD

Appendix 3: Questionnaire controllers central allocation model (in Dutch)

Appendix 4: Questionnaire faculty controllers (in Dutch)

Appendix 5: Performance indicators in the budget plan of the University of Twente (in Dutch)

Appendix 6: Influence of overhead costs on incentive

Appendix 1: Financing streams of the Universities of Twente, Eindhoven and Delft



Income 3.TU 2006 (x € 1 million)

Annual reports 2007 Utwente, TU Eindhoven and TU Delft.





Trends in money streams TU/e (annual report 2007)

Trends in money streams UT (annual report 2007)



Trends in money streams TUD (annual report 2007)



Appendix 3: Questionnaire controllers central allocation model (in Dutch)

Huidig allocatiemodel

- 1. Hoe ziet het huidige centrale allocatiemodel van de universiteit er uit?
- 2. Welke verdeling wordt er gebruikt?
- 3. Hoe groot is het onderzoeksbudget?
- 4. Welke prestatie indicatoren worden gebruikt bij de verdeling van het onderzoeksbudget?
- 5. Zijn deze indicatoren gebaseerd op het verleden of op toekomstige prestaties?
- 6. Zijn de indicatoren input, proces of output indicatoren?
- 7. Waarom is er gekozen voor deze indicatoren?
- 8. Hoe zwaar wegen de verschillende indicatoren?
- 9. Waar zijn deze wegingen op gebaseerd?
- 10. Zijn de indicatoren voor iedere faculteit gelijk? Waarom wel of waarom niet?
- 11. Wordt er rekening gehouden met de facultaire allocatiemodellen bij het opstellen van het centrale allocatiemodel?
- 12. Hoeveel invloed heeft een decaan op het centrale allocatiemodel?

Onderzoekssubsidies

- 13. Welke geldstromen voor onderzoekssubsidies worden onderscheiden?
- 14. Welke definities voor de verschillende geldstromen gebruikt de universiteit?

15. Wordt het binnenhalen van onderzoekssubsidies gestimuleerd in het allocatiemodel? Zo ja, Hoe is dit terug te zien in het model? Zo nee, waarom niet?

- 16. Indien er een stimulans voor het binnenhalen van onderzoekssubsidies bestaat, wordt hierbij onderscheid in de verschillende stromingen (2^e en 3^e geldstroom) gemaakt? Waarom wel of waarom niet?
- 17. Welke indirecte/overhead kosten moeten faculteiten zelf betalen?
- 18. Heeft dit invloed op de hoeveelheid 2^e of 3^e geldstroom die ze binnenhalen denkt u?

Planning & Control cyclus

- 19. Hoe ziet de Planning en Control cyclus er uit?
- 20. Wat is de rol van het allocatiemodel in deze cyclus?
- 21. Welke invloed heeft deze cyclus op het allocatiemodel?

22. Wordt het allocatiemodel gerelateerd aan het strategisch beleid van de universiteit? *Zo ja, waar blijkt dit uit? Zo nee, waarom niet?*

23. Wordt het allocatiemodel geëvalueerd? *Zo ja, op welke manier gebeurt dit? Zo nee, waarom niet?*

- 24. Denkt u dat het stimuleren van het binnenhalen van onderzoekssubsidies een positief effect heeft op de omvang van tweede en derde geldstroom?
- 25. Weet u of er naast het allocatiemodel nog andere (non-financiële)prikkels worden gebruikt om onderzoekers te stimuleren om meer subsidies binnen te halen? Bijvoorbeeld door HRM beleid of door beleid op het gebied van kwaliteitszorg?
- 26. Hoe belangrijk vindt u het allocatiemodel in verhouding tot andere sturingsinstrumenten bij het nastreven van middelenverwerving uit subsidies?

Appendix 4: Questionnaire faculty controllers (in Dutch)

Huidige allocatiemodel

- 1. Hoe ziet het huidige allocatiemodel van de faculteit er uit?
- 2. Welke verdeling wordt er gebruikt?
- 3. Hoe groot is het onderzoeksbudget?
- 4. Welke prestatie indicatoren worden gebruikt bij de verdeling van het onderzoeksbudget over de verschillende vakgroepen?
- 5. Zijn deze indicatoren gebaseerd op het verleden of op toekomstige prestaties?
- 6. Zijn de indicatoren input, proces of output indicatoren?
- 7. Waarom is er gekozen voor deze indicatoren?
- 8. Hoe zwaar wegen de verschillende indicatoren?
- 9. Waar zijn deze wegingen op gebaseerd?
- 10. Zijn de indicatoren voor iedere vakgroep gelijk? Waarom wel of waarom niet?

11. Wordt het facultaire allocatiemodel gerelateerd aan het allocatiemodel van de universiteit? Zo ja, waar blijkt dit uit? Zo nee, waarom niet?

12. Hoeveel invloed heeft het hoofd van een vakgroep op het facultaire model?

Onderzoekssubsidies

13. Welke geldstromen voor onderzoekssubsidies worden onderscheiden?

14. Wordt het binnenhalen van onderzoekssubsidies gestimuleerd in het allocatiemodel? Zo ja, Hoe is dit terug te zien in het model? Zo nee, waarom niet?

15. Indien er een stimulans voor het binnenhalen van onderzoekssubsidies bestaat, wordt hierbij onderscheid in de verschillende stromingen (2^e en 3^e geldstroom) gemaakt?
Waarom wel of waarom niet?

- 16. Wordt er rekening gehouden met het centrale allocatiemodel bij het opstellen van het facultaire allocatiemodel?
- 17. Welke prestatie indicatoren uit het centrale allocatiemodel worden wel 1 op 1 overgenomen en welke niet?
- 18. Welke indirecte/overhead kosten moet de faculteit zelf betalen?

Planning & Control cyclus

- 19. Heeft de faculteit een eigen Planning en Control cyclus?
- 20. Zo ja, Wat is de rol van het allocatiemodel in deze cyclus?

21. Wordt het allocatiemodel gerelateerd aan het strategisch beleid van de universiteit? *Zo ja, waar blijkt dit uit? Zo nee, waarom niet?*

22. Wordt het allocatiemodel geëvalueerd? *Zo ja, op welke manier gebeurt dit? Zo nee, waarom niet?*

- 23. Weet u of de financiële prikkels helpen om onderzoekers beter te laten presteren? Dus hebben de stimulansen in het allocatiemodel zin?
- 24. Weet u of er naast het allocatiemodel nog andere (non-financiële)prikkels worden gebruikt om onderzoekers te stimuleren om meer subsidies binnen te halen?
- 25. Hoe belangrijk vind u de financiële prikkels in het allocatiemodel in verhouding tot andere prikkels om onderzoekers te stimuleren om meer subsidie binnen te halen?

Appendix 5: Performance indicators in the budget plan of the University of Twente (in Dutch)

		08-'09	09-'10	10-'11	11-'12	12-'13	13-'14	14-'15
1. Algemeen								
	Imago/reputatie Instelling	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
	Medewerkers tevredenheid	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
Aantrekkelijk werkgeverschap	Succes in rekrutering/vacatureruimte	15%	12%	11%	10%	8%	7%	6%
	Vacature vervulling / doorlooptijd	6mnd	5mnd	4mnd	3,5mnd	3mnd	2,5mnd	2,5 mnd
Stimulerend wekgeverschap	BKO (WP)	4% (40)	30%	50%	60%	80%	85%	90%
	Engelse taalvaardigheden (C1 niveau)	0-meting	N.T.B.	80%	80%	85%	85%	90%
	Mobiliteit docenten (gemiddelde functie verblijfsduur)	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
Management/organisatieontwikke	Medewerkers met POP (%)	0-meting	20%	30%	50%	60%	70%	70%
	Gevoerde jaargesprekken (%)	0-meting	70%	75%	80%	85%	85%	90%
2 Onderwijs								
	Instroom Bachelor							
	Marktaandeel 1e jaars bachelor instelling	3,2%	3,3%	3,4%	3,5%	3,6%	3,7%	3,8%
	Instroom 1e jaars bachelor instelling (aantal)	1352	1450	1550	1650	1750	1850	1950
Verhouding: 60/30/10	Internationale instroom in bachelor	272	300	350	375	400	450	500
Undergraduate/Graduate/Phd		20%	21%	22%	22%	23%	24%	26%
	Instroom Master							
	Totale instroom	onbek.	1085	1180	1275	1380	1460	1650
	Doorstroom UT totaal	onbek.	560	580	600	630	665	750
	Externe instroom (aantal)	444	525	600	675	750	825	900
	Instroom buitenlandse studenten (aantal)	139	250	370	490	610	730	825
	Instroom buitenlandse studenten (%)	onbek.	23%	31%	38%	44%	48%	50%
	Rendement							
	Studieduur bachelor	6,7 jr	6,0 jr	5,5 jr	5,0 jr	4,6 jr	4,3 jr	4,0 jr
	P-rendement (%) (te bepalen)							
	B-rendement (%) (te bepalen)	25%	35%	50%	60%	65%	70%	75%
	Studieduur technische master (50%) (te bepalen)	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	2 jr
	Studieduur niet-technische master (50%) (te bepalen)	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	1 jr
	M-rendement (%) (te bepalen 140 ECTS grens)							90%
	Kwaliteit							
	Ranking Keuzegids hoger Onderwijs (rapportcijfer)	7,01	7,05	7,10	7,15	7,20	7,25	7,30
	Studenttevredenheid Instelling (rapportcijfer)	7,4	7,5	7,6	7,7	7,8	7,9	8,0

		08-'09	09-'10	10-'11	11-'12	12-'13	13-'14	14'15
3. Onderzoek								
	Aantal Phd (totaal) Aantal promovendi (per FTE OZ vast)		810	820	830	840	850	856
			0,9	0,95	1	1,05	1,1	1,2
	Promotierendement (exclusief buitenpromovendi)	4,7	4,6	4,5	4,3	4,2	4,1	4,0
	Gemiddelde genormaliseerde citatiescore (landelijk 1.31)		1,45	1,5	1,55	1,6	1,7	1,8
Aantal gerefereerde publicaties (per OZ FTE)		2	2,1	2,2	2,3	2,4	2,5	2,6
	0,23	0,30	0,35	0,40	0,40	0,45	0,50	
4. Valorisatie								
	Aantal studentondernemingen	75	85	95	110	125	140	150
	Aantal nieuwe starters (startende ondernemingen)		33	36	40	44	48	50
Groei werkgelegenheid (FTE)		500	1500	3000	4000	5000	5500	6.000
	Groei startende ondernemingen in FTE.		5%	6%	7%	8%	9%	10%

Werkgroep/verantwoordeliik	Indicatoren	2008-2009	200 9 -2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Pre-University								
Ton Mouthaan	1e jaars instelling bachelor (aantal)	1352	1470	1582	1667	1754	1843	1934
Ondersteund door:	Gemiddeld eindexamenciifer VWO	6,86	6.9	7.0	7.1	7.2	7.3	7.4
Decanen/OLD's/S&C	Aantal interne overstappers (te bepalen)	10%	10%	9%	8%	7%	6%	5%
Undergraduate								
Ton Mouthaan	Studiesnelheid (jaar)	6,7	6,0	5,5	5,0	4,6	4,3	4,0
Ondersteund door:	Rendement	25%	35%	50%	60%	65%	70%	75%
Decanen/S&O/S&C	Doostroom UT-bachelors naar masters (%) (te bepalen)	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	70%
and the second of the second second	Score in Keuzegids Hoger Onderwijs (cijfer)	7,01	7,05	7,1	7,15	7,2	7,25	7,3
	Studenttevredenheid (rapportcijfer)	7,4	7,5	7,6	7,7	7,8	7,9	8,0
	Engelstalige bachelors (aantal)	2	2	3	3	4	4	5
	Internationale Instroom (aantal)	272	300	350	375	400	450	500
	Internationale instroom (%)	20%	21%	22%	22%	23%	24%	26%
Schools								
Hubert Coonen	Externe 1e jaars master (inter)nationaal	444	525	600	675	750	825	900
Ondersteund door:	Studiesnelheid technische masters (jaar) (te bepalen 140ECTS)	0-meting	N.T.B.	N.T.B.	N.T.B.	2,5	2,5	2,5
Decanen/S&O/S&C	Studiesnelheid niet-technische masters (te bepalen 140 ECTS)	0-meting	N.T.B.	N.T.B.	N.T.B.	1,25	1,25	1,25
	Rendement (te bepalen)	0-meting	N.T.B.	N.T.B.	N.T.B.	90%	90%	90%
	Studenttevredenheid	7,4	7,5	7,6	7,7	7,8	7,9	8,0
	Instroom buitenlandse studenten (aantal)	139	250	370	490	610	730	825
	Instroom buitenlandse studenten (%)	onbek.	23%	37%	38%	44%	48%	50%
	Gemiddelde visitatiescores masteropleidingen (NVAO)	0-meting						4.0
Graduate School								
Gerard van der Steenhoven	Aantal promovendi	800	810	820	830	840	850	856
Ondersteund door:	Gemiddelde visitatiescores	onbek.	3,4	3,5	3,6	3,8	4,0	4,0
Decanen/WD'en	Promotierendementen	4,7	4,6	4,5	4,3	4,2	4,1	4,0
	Gemiddelde genormaliseerde citatiescore	1,4	1,45	1,5	1,55	1,6	1,7	1,8
	Phd vacature ruimte	10%	10%	9%	9%	8%	6%	5%

		2008	2010	2011	2012	2013	2014	2015
		8	8	-10	1 H	012-1	013-	14
Werkgroep/verantwoordelijk	Indicatoren	<u> </u>	Х	5	5	5	5(5(
Protessional Learning	A model exercise and a set of the state	0	NTO	NTO	NTO	NTD	NTO	NTO
Paul Van Loon	Aantal cursussen en certificaten	0-meting	N.I.B.	N.I.B.	N.I.B.	N.T.B.	N.T.B.	N.T.B.
	Aantai geaccrediteerde postacademische	0-meting	N.I.B.	N.1.B.	N.1.B.	N.I.B.	N.1.B.	N.I.B.
Ondersteund door:	opleidingen	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
Decanen/OLD's	Gemiddelde evaluatiescore	0-meting	7	7,2	7,4	7,6	7,8	8
	Positie in rankings	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
	Kostendekkend opereren	0-meting	-15%	-12%	-10%	-5%	-3%	0
Excellent onderzoek								
Peter Apers	Aantal promoties per oz fte	0,8	0,9	0,95	1,0	1,05	1,1	1,2
	Aantal gerefereerde publicaties per oz fte	2,0	2,1	2,2	2,3	2,4	2,5	2,6
Ondersteund door:	Veldgenormaliseerde citatieimpactfactor	1,40	1,45	1,5	1,55	1,6	1,7	1,8
Wetenschappelijk directeuren	Inverdiencapaciteit (verhouding 2e en 3e	0,23	0,30	0,35	0,40	0,40	0,45	0,50
	geldstroom t.o.v. 1e geldstroom)							
	Investering 5 multidisciplinaire		1.0	2.0	2.5	2.5	1.5	0.5
	themagerichte strategische researchagenda's							
	Groei onderzoeksomzet tov 2008-2009	Nvt.		2,0 mln+	4,0 mln+	5,0 mln+	5,0mln+	3,0 mln+
Talent								
Anne Flierman	Aantal tenure tracks	9	15	30	40	50	60	70
Ondersteund door:	Aantal doorgroeitrajecten	16	25	40	60	70	80	100
PA&O/Decanen/WD'en	Eigen' AIO's (aantal) (te bepalen obv alumnidatabase)	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
	Omvang vacatureruimte (%) (totale bezetting)	10%	9%	7%	5%	4%	3%	3%
Campus	Vrouwen in hogere functies (%)	0-meting	N.T.B.	20%	21%	22%	23%	25%
Campusmanager								
	Spreiding Evenementen naar aard	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
Ondersteund door:	Aantal bezoekers evenementen	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
S&O/FB/Vastgoed	Studenttevredenheid t.a.v. campusvoorzieningen	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
	Dekking evenementen tov totaal beschikbaar	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.
	Omzet Catering/Horeca per bezoeker	0-meting	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.	N.T.B.

Appendix 6: Influence of overhead costs on incentive

The overhead costs are unknown and differ per faculty, depending on equipment and facilities needed. For an indication we will use a overhead percentage of 20% for the faculty.

Faculty S&T at UT					
FP7 grant	7 grant 75% of integral costs			€1	00,000. I
overhead costs		20% of FP7 grant (budget plan UT)			200,00
Integral costs	tegral costs FP7 grant/ 0,75			€1	1.333,33
Direct costs	paid by capacity groups	Integral costs - overhead costs	€ 1.133,33		
Total Matching costs		integral costs - FP7 grant		€	333,33
incentive:	tariff promovendus	79			
number of promov.	FP7/79	12,66			
Tariff high technical		€ 32.320,00			
hours of work a year		1.512,00			
incentive:	(number of promov * tarif	ff)/ hours		€	270,58
Bonus for faculty		incentive - overhead costs		€	70,58
Faculty AP at TU/e					
FP7 grant		0,75 x integral costs	€ 1.000,00		
Overhead costs		20% of FP7 grant according to UT		€	200,00
Integral costs		FP7 grant / 0,75		€1	1.333,33
Direct costs	paid by capacity groups	Integral costs - overhead costs	<u>€1.133,33</u>		
Total Matchings costs		integral costs - FP7 grant		€	333,33
incentive		25% in 2008		€	250,00
Bonus for faculty		incentive - overhead costs		€	50,00
Faculty AS at TUD					
FP7 grant		0,75 x integral costs	€ 1.000,00		
Overhead costs		20% of FP7 grant according to UT		€	200,00
Integral costs		FP7 grant / 0,75		€1	1.333,33
Direct costs	paid by capacity groups	Integral costs - overhead costs	<u>€1.133,33</u>		
Total Matchings costs		integral costs - FP7 grant		€	333,33
incentive		10% in 2009		€	100,00
Bonus for faculty		incentive- overhead costs		€	-100,00

The UT has the highest incentive for work on third parties. This is an incentive for the high-technical research projects. For non-technical research projects the incentive would only be \in 114, but then the overhaed costs would also be less. At the TU/e the incentive is average but the overhead costs will be lower because faculties do not have to pay for housing services. Therefore, in reality the bonus will be higher at the TU/e. At the TUD the incentive is not enough to pay the overhead costs which makes this stimulus not really an incentive.