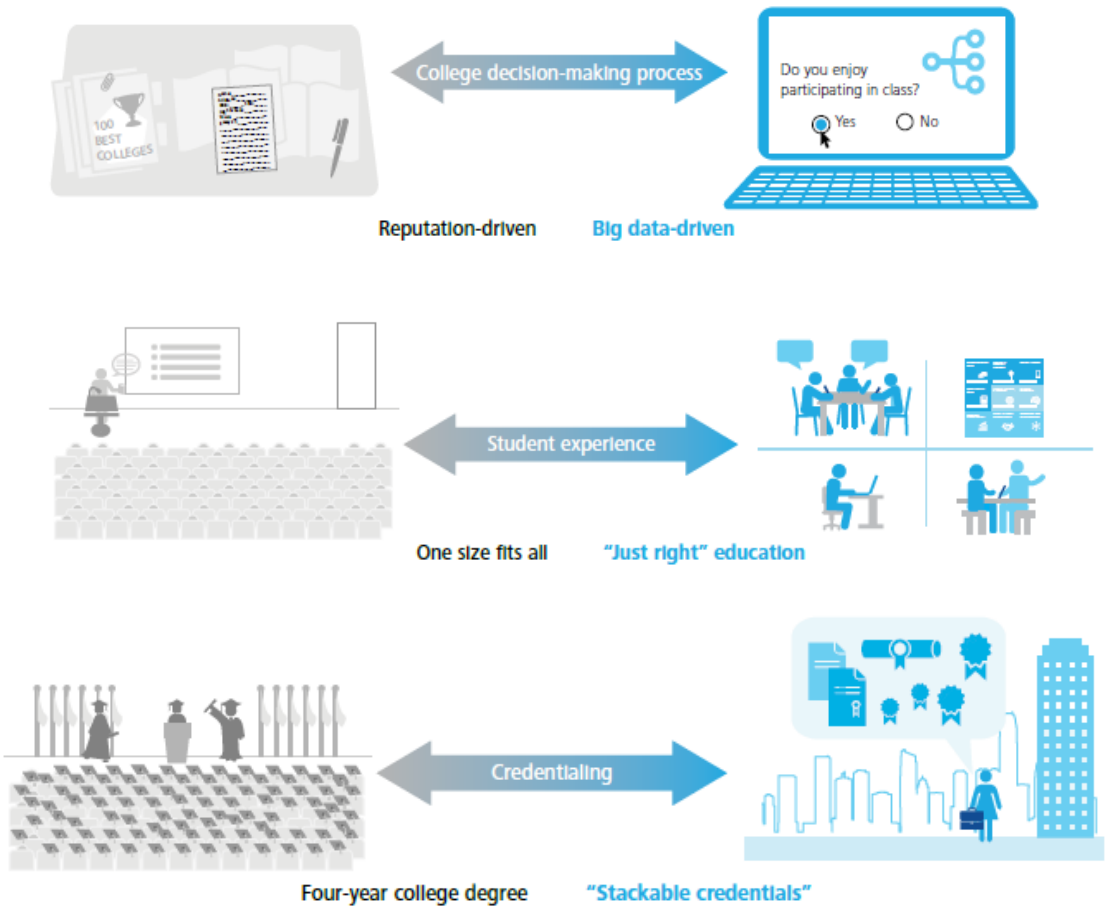
Master thesis Innovation Sciences:

Preparations for turbulence in the environment of the Dutch higher education system

An analysis of the antecedents of the adoption and implementation of different strategies by higher education institutions in order to anticipate to upcoming environmental turbulences.



Source: (Sledge & Fishman, 2014)

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Summary

Dutch higher education institutions are facing a number of different challenges in the near future. After the rapid increase in student numbers since the Second World War, the number of Dutch students will decrease from the mid-2020s, due to the ageing Dutch population. Besides these demographical developments, international and technological developments make it easier for students to study abroad, or follow courses at a foreign higher education institution in a digitalised way. This will lead to more international competition for Dutch higher education institutions, which means they have to innovate to keep track of their competitors. However, the Dutch government has not made any big changes in its higher education policies during the last decades. Furthermore, higher education institutions only have limited possibilities to change their markets, services and revenues as they operate in rather fixed geographical markets and are subject to strict regulations.

To analyse if and how Dutch higher education institutions can strategically anticipate to environmental changes in the future, the theory on the multi-level perspective and theories on strategy formation in public sector organisations are used. These theories are combined to give insight into the relation between slack resources, entrepreneurial orientation and environmental turbulence and the extent to which higher education institutions have adopted and implemented a prospective stance. To do this, three rounds of interviews are held.

The first round of interviews is conducted with four experts in the field of Dutch higher education institutions for an assessment of the indicators used in the interviews with higher education institutions. The second round of interviews is conducted with seventeen higher education institutions, divided into six types: specialised higher professional education institutions, medium higher professional education institutions, large higher professional education institutions, specialised universities, technical universities and traditional universities. The last round of interviews is conducted with six faculty directors of already interviewed higher education institutions in order to control for differences between different managerial layers within the organisation.

The results from these interviews show that specialised higher professional education institutions have adopted and implemented the most prospective stance and traditional universities have adopted and implemented the least prospective stance. Furthermore, results show that slack resources and an entrepreneurial orientation are only related to the implementation of a prospective stance, not the adoption of a prospective stance. Environmental turbulence is related to both the adoption and the implementation of a prospective stance.

Contents

1. Introduction

According to the World Bank index of knowledge intensity, the Netherlands is rated as one of the most knowledge intensive countries in the world (OECD, 2013). The number of students in Dutch higher education has grown enormously since the Second World War (CBS, 2011). This is not only due to the growth in population, but also the relative number of students enrolled in higher education has grown.

This number of students will keep on growing until the mid-2020s, when there will be 25% more students in higher professional education and 40% more university students than in 2007 (Ministerie van OCW, 2014). However, the government expenses on higher education per student are decreasing, because of the impact of the financial crisis since 2008 that has lowered government funding for higher education (CBS, 2013). In the next years, this decrease will continue because of the ageing population in the Netherlands. In 2040, 26% of the Dutch population will be 65 years or older. The increasing ageing of a population will invoke increases in healthcare costs, because of a higher demand for healthcare services by older people (Caley & Sidhu, 2011; Geue et al., 2013). This will increase the government expenses on healthcare while tax revenues are decreasing, which will exert a negative influence on other government expenses like higher education (Gandjour et al., 2005).

Both the growing number of students and the decreasing government expenses per student cause current efficiency improvements and efforts to attract more students by higher education institutions only to be a solution for the decrease in funding on the short term (Commissie Veerman, 2010). Furthermore, foreign higher education institutions can become a threat, because the changed circumstances resulting from globalisation and the digital revolution make those higher education institutions accessible for students from all over the world, including the Netherlands (IPPR, 2013). A last development in the higher education is the fact that the value of a traditional degree is under pressure. Practical experience is becoming more and more highly rewarded and could overtake the taught traditional broad-based knowledge over time (Stromquist, 2007).

These developments create a turbulent environment for Dutch higher education institutions and force them to formulate new strategies in order to react fast to these changing circumstances (WRR, 2013). However, the government has not made any big changes in its higher education policies during the last decades (WRR, 2013). This makes it quite difficult for Dutch higher education institutions to change their strategies because they only have limited possibilities to change their markets, services and revenues as they operate in rather fixed geographical markets and are subject to strict regulations (Boyne & Walker, 2004).

This study will analyse if and how and under what conditions Dutch higher education institutions strategically anticipate to the environmental changes underway. It will provide insight into the extent to which higher education institutions have adopted prospective strategies and if and how these are implemented by undertaking strategic actions and their antecedents. This leads to the research question:

To which extent have Dutch higher education institutions adopted and implemented prospective strategies to anticipate to upcoming environmental turbulences and under what conditions?

This study will look at higher education institutions in the Netherlands. It only focuses on the educational tasks of Dutch higher education institutions, because most changes will occur there. This study focuses on the higher education system of only the Netherlands because this system is embedded in typical national regulatory systems. National traditions and different institutional histories have considerable influence on how higher education institutions will respond to wider

developments in the knowledge society (Brennan, 2012). Therefore, the different starting points of individual higher education institutions, and especially the national systems of which they are part, must be recognised. The time period is set to 2020, because at that time the influences of the decreasing public funds and the dejuvenation of the Dutch population will become apparent (CBS, 2012). Furthermore, the number of Dutch students will then be at its peak (Ministerie van OCW, 2014), and the higher education institutions should have changed their strategy by that time.

The theoretical framework used for this study is a combination of the multi-level perspective (MLP) and firm level theories on strategy. The MLP is needed because it describes the transitions taking place, in this case in the higher education system, but also the impact of these transitions on the system (Geels, 2002). Furthermore, it gives attention to an environment of slow changing external factors that are of influence (Van Driel & Schot, 2005). The firm level theories on strategy are needed, because strategy is a general approach that describes an organisation's position and how it interacts with its environment (Boyne & Walker, 2004). Public sector managers are increasingly expected to rely on managerial strategies to improve organisational performance (Pablo et al., 2007). To implement a strategy, every organisation has to undertake different strategic actions. Distinctive competencies and unique capabilities in public organisations are as important for strategic actions by public organisations as they are for-profit organisations (Bryson et al., 2007).

A gap in literature can be found in the combination of strategic management theories with the MLP. In this way, not only the environmental turbulence of higher education institutions is taken into account, but also the way higher education institutions respond to those environmental changes in order to survive. This forces higher education institutions to adopt and implement a prospective strategy by undertaking strategic actions to change their organisation.

The theoretical relevance of this study for the MLP is that it overcomes the critique on the MLP that it focuses too much on technological niches as the principal locus for change (Geels & Schot, 2007; Geels, 2011). This is done in this study by using strategic management theories that focus on the way organisations interact with their environment and respond to changes therein (Boyne & Walker, 2004). Another critique on the MLP is that it mostly has a technology focus, neglecting other aspects (Genus & Coles, 2008; Geels, 2005). This study can therefore provide new insights because the transition in the higher education system has important cultural and societal aspects. The contribution of applying firm level theories to public organisations is to provide more insight into how public organisations adapt to changing conditions affecting their competitive positions and why such organisations fail to do so (Pablo et al., 2007). According to Piening (2013), this happens because public organisations face more and more diverse environmental changes than private sector firms due to frequent policy changes.

The societal relevance of this study is that this study will give insights into the chances of survival of Dutch higher education institutions in the future. Public organisations often struggle to adapt to changing circumstances, because managers of public organisations have to satisfy multiple, supposedly conflicting, goals imposed upon them by numerous stakeholders (Piening, 2013). Because the Netherlands has the ambition to become one of the top knowledge economies in the world, the Dutch higher education system must be of high quality (Commissie Veerman, 2010). Therefore, it is important to provide insight into how the Dutch higher education system anticipates to the changes taking place in its environment (WRR, 2013).

In this study first a theoretical framework will be developed. After that, the applied methodology, the results, the conclusion and the discussion will be described.

2. Theoretical framework

Changes in the environment of the Dutch higher education system will have a big impact on that system in the next years. Changes in government regulation, attitudes of students and collaborations with firms will force higher education institutions to adapt, because the higher education system is strongly linked to society. Therefore the higher education system should be analysed from a multi-level perspective (MLP). This framework involves changes in the system, but also in its environment (Geels, 2002). To respond effectively to these environmental changes, public organisations have to pay attention to the identification and building of strategic capacities to produce the greatest value for key stakeholders (Bryson et al., 2007).

2.1 Multi-level perspective

The MLP distinguishes three levels of analysis: the micro-level, the meso-level and the macro-level (see figure 1) (Geels, 2002). The macro-level consists of slow changing external factors, labelled the socio-technical landscape. The landscape constitutes the background for change: it can provide windows of opportunity for innovations but also provide a set of barriers for their development (Van Driel & Schot, 2005). For the higher education system, the developments in globalisation, the digital revolution, demography and the financial crisis occur at the macro-level.

The meso-level accounts for the stability of current incremental developments through regimes constituted by prevailing habits, routines and rules steering and shaping the activities of the actors involved (Geels, 2002). As long as the regimes are stable and aligned, radical novelties have little chances to break through and remain stuck in their niches (Geels, 2004). For the higher education system, the meso-level consists of actors influencing and being influenced by the higher education system and the higher education institutions themselves.

The micro-level consists of niches and accounts for the generation and development of radical innovations (Geels, 2002). These niches are protected or insulated from 'normal' market selection in the regime. In this way, they provide locations for learning processes and space to build the social networks that support radical innovations (Van Driel & Schot, 2005). For the higher education system, an example of a niche is the experiment with virtual master programs at the TU Delft (Delta, 2012).

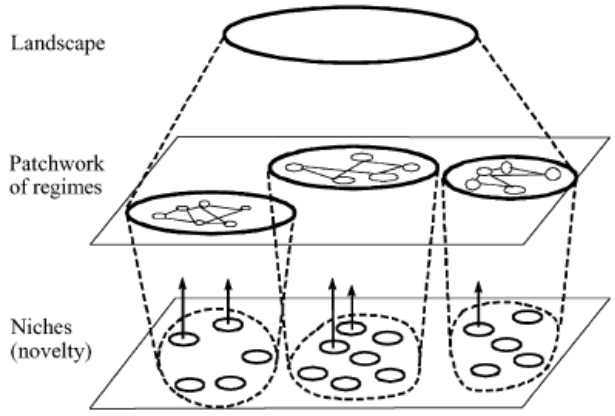


Figure 1: The MLP (Geels, 2002)

Changing a system is quite difficult. The alignment of institutions gives the regime stability and strength to coordinate activities, but makes it difficult to change one rule without altering others (Geels, 2004). Because of this, organisations seldom succeed in making radical changes in strategy and structure in the face of environmental threats (Hannan & Freeman, 1984). Furthermore, the

reorganisation of a system threatens the interests of the actors engaged in powerful coalitions with other organisations (Hannan, 1988).

When organisations do change, it is easier to modify the peripheral parts of their structures than their cores. However, for higher education institutions to strategically anticipate to a changing environment, peripheral changes are not enough. In regimes that face rapid environmental change, organisations need to build a competitive advantage in order to be able to anticipate to and deal with these changes (Teece et al., 1997). To do this, they have to adopt and implement strategies that are appropriate for the changing environment (Meier et al., 2007).

2.2 Strategies in public organisations

Organisations should identify, develop, and protect strategic capacities and the resources underlying them in order to stay viable (Bryson et al., 2007). The discussion of strategy is as important for public organisations as it is for private organisations, because the purpose, direction and goals of their activities are equally important for both types of organisations (Bryson et al., 2007; Johansson, 2009). Public organisations also have to adopt the same management techniques as their private counterparts to implement their policies.

However, public organisations are much more likely than private organisations to have strategy strains imposed on them, because they are not as free as private organisations in choosing their products and varying their quality or price (Boyne & Walker, 2004). Even if strategy strains are not directly imposed, public organisations are likely to be more heavily regulated by their political sponsors that provide their funding than private organisations.

Strategy can be conceptualised at two levels: 1) the general approach of the organisation; the strategic stance, and 2) the specific steps that an organisation takes to operationalise and implement its stance; the strategic actions (Boyne & Walker, 2004; Bryson et al., 2010).

Miles and Snow (1978) have identified three types of strategic stance. These stances are either prospective, defensive or reactive. An organisation with a prospective stance is likely to be a pioneer, searching for new markets and experimenting with responses to emerging environmental trends. They are mostly leaders in their field and can rapidly respond to new circumstances (Boyne & Walker, 2004). An organisation with a defensive stance takes a conservative view of new product development. They focus on a narrow segment of the market to retain their existing portfolio of activities and to protect their share of the public budget (Boyne & Walker, 2004). An organisation with a reactive stance has no consistent substantive stance, because it only adjusts its strategy when forced to do so by environmental pressures. It is therefore likely to have its formal stance imposed through the actions of external agencies such as regulators (Boyne & Walker, 2004).

In a changing and uncertain environment, a prospective stance is the most appropriate strategic stance (Boyne & Walker, 2004; Meier et al., 2007). In this kind of environment, prospective organisations outperform defensive organisations, who in turn outperform reactive organisations (Woodside et al., 1999). This is because the last two strategic stances mostly focus on existing markets and services, not on finding new markets or services (Andrews et al., 2006).

A turbulent environment can therefore be a reason for an organisation to choose a prospective stance (Andrews et al., 2012). The Dutch higher education system currently has a turbulent environment with the budget cuts from the government, an ageing population, the digital revolution and globalisation that all have impacts on higher education institutions (Commissie Veerman, 2010; WRR, 2013). Higher education institutions that recognise this turbulence should adopt a prospective

stance to deal with these developments. If they do not experience this turbulence, they will not adopt a prospective stance. This leads to the first hypothesis:

H1: Environmental turbulence is positively related to the adoption of a prospective strategy.

However, besides this environmental turbulence, the strategy of an organisation can also be influenced by a variety of organisational characteristics (Poister et al., 2010). To choose to adopt a prospective strategy, organisations do not only need to recognise the environmental uncertainty but also need slack resources and an entrepreneurial orientation (Boyne & Walker, 2004; Salge, 2011; Tang & Tang, 2012).

Slack resources are uncommitted excess resources that organisations can use to engage in the search, development and experimentation of innovations (Salge, 2011). These are needed because search processes often consume considerable resources and attention, which might be lacking elsewhere in the organisation. Decision makers need to assess the resource requirements of the intended search activities and have to examine whether the slack resources within the organisation are sufficient to meet these needs (Salge, 2011). When the level of available slack resources exceeds the resource requirements of the proposed activity, the organisation is able to deploy search activities within the organisation. This leads to the second hypothesis:

H2: Slack resources are positively related to the adoption of a prospective strategy.

An entrepreneurial orientation allows organisations to benefit from risk-taking, pro-activeness and innovativeness (Tang & Tang, 2012). When organisations are highly regulated, these regulatory frameworks inhibit entrepreneurial behaviour by managers, that may constantly have to consider whether new strategies will be acceptable to their regulators (Boyne & Walker, 2004). This is because these regulatory frameworks emphasize the efficiency of producing and marketing existing product or service lines, which can constrain the prospective stance (Boyne & Walker, 2004; Tang & Tang, 2012). This leads to the third hypothesis:

H3: An entrepreneurial orientation is positively related to the adoption of a prospective strategy.

In order to successfully implement the stance, strategic actions are needed. Strategic actions emphasize how organisations actually behave, in contrast to strategies that are merely rhetorical or intended but unrealised (Boyne & Walker, 2004). Organisations differ fundamentally in their ability to adapt and reconfigure their resources, capabilities and operating routines to undertake strategic action (Salge, 2011). Public-sector organisations with a prospective stance are characterised by having rapid organisational responses to new circumstances (Boyne & Walker, 2004).

The extent to which the prospective stance is implemented by undertaking strategic actions depends on the extent to which an organisation has adopted the stance. The strategic actions are the specific steps the organisation takes to operationalise its stance (Boyne & Walker, 2004). Furthermore, by deliberately choosing for a specific strategic stance, an organisation will be more willing to implement this stance by undertaking actions. This leads to hypothesis 4:

H4: A prospective stance is positively related to strategic actions

Besides having a prospective stance, the factors that are positively related to the adoption of a prospective stance are positively related to strategic actions: environmental turbulence, slack resources and entrepreneurial orientation. For environmental turbulence, the extent to which an environment is characterised by stability or turbulence is likely to influence the perceived need for

strategic action (Poister et al., 2010). Organisations with a prospective stance perform best in a turbulent environment (Boyne & Walker, 2004). An organisation with a prospective stance is likely to change its organisation in order to align itself with new environments. This leads to hypothesis 5:

H5: Environmental turbulence is positively related to strategic actions

In the case of slack resources, there is a positive relationship between slack resources and whether or not an organisation can adopt a prospective strategy, because slack resources are needed to implement the prospective stance (Salge, 2011). Public service organisations with a prospective stance require slack resources to fuel their often resource-intensive innovative search abilities (Salge, 2011). Innovation often requires additional staff and extra resources for its development and implementation. They may be innovative within their pre-existing budget where organisational slack permits this (Boyne & Walker, 2004). This leads to hypothesis 6:

H6: Slack resources are positively related to strategic actions

To respond to internal weaknesses or external threats, organisations need to be able to renew and reconfigure organisational resources, competencies and routines (Teece et al., 1997; Salge, 2011). However, the more routinised an organisation is, the less likely it will be involved in innovative and entrepreneurial activities. A centralised organisation mostly has a high degree of hierarchical authority and a low level of participation in decisions about policies and resources and therefore fits to the defensive stance and not the prospective one (Andrews et al., 2007). Therefore an entrepreneurial orientation is needed to implement a prospective stance. This leads to hypothesis 7:

H7: An entrepreneurial orientation is positively related to strategic actions

2.3 Conceptual model

Summarizing, three important concepts, i.e. environmental turbulence, entrepreneurial orientation and slack resources, have been derived, which will stimulate Dutch higher education institutions to adopt a prospective stance. All these concepts are prerequisites for the implementation of strategic actions focused on changing the internal organisation, the collaborations with other organisations, markets and services in accordance with the prospective stance in response to the environmental turbulence (to be) encountered (see figure 2).

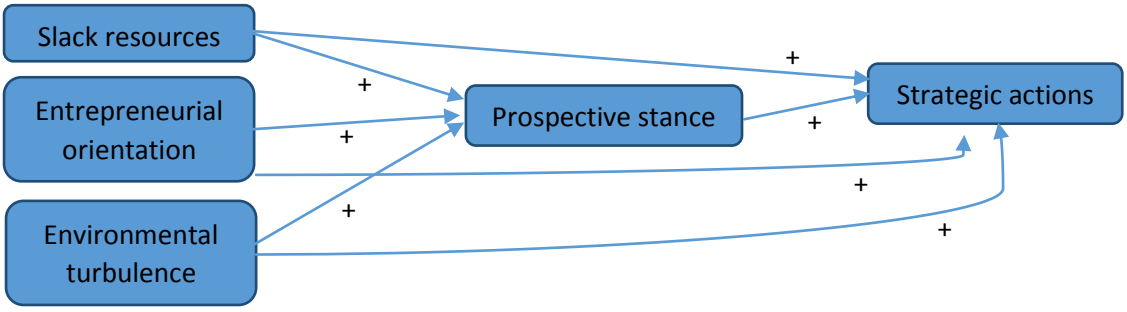


Figure 2: The conceptual model

The next section will explain how this conceptual model is investigated for the Dutch higher education system.

3. Methodology

3.1 Research design

This study has a double purpose. First, insights are given in the extent to which Dutch higher education institutions have adopted a prospective stance. This can be derived from the strategy reports of higher education institutions. The second part of this study exists of interviews with informed representatives of higher education institutions, to gain more in-depth insight in the strategy of higher education institutions and the degree of implementation of the strategy. But before these interviews will be conducted, the indicators used in the interviews are assessed by interviewing experts on Dutch higher education system. Interviews with informed representatives of higher education institutions are needed, because only using organisational mission statements or paper plans to measure strategic action will only give an overall insight in the strategy. They need to be supplemented with the information from managers about strategy implementation in practice. In this way, insights are gained into actual organisational activities and under what conditions they are performed (Boyne & Walker, 2004).

This study is a qualitative case study. It is a qualitative study because the concepts outlined in the theoretical framework are more sensitizing than definitive (Bryman, 2008). Sensitizing concepts give a general sense of reference and guidance, but lack the specification of relevant attributes of the concept that a defined concept gives (Bryman, 2008). This shows that the empirical content of these concepts are not yet clear enough for the higher education institutions to do a quantitative analysis. Due to contextual differences, the higher education institutions may have operationalised them differently in practice. A qualitative case study design explicitly takes the contextual differences of each case into account (Yin, 2003). Multiple case studies are needed in order to gain a more general insight into the degree of the strategy implementation by various Dutch higher education institutions.

3.2 Case selection

The units of analysis in this study are the higher education institutions in the Netherlands. The higher education institutions to be interviewed are selected by using purposive sampling. This type of sampling refers to how the units of observation are selected, with direct reference to the research questions being asked (Bryman, 2008). The participants are sampled in a strategic way. The respondents are chosen because of their relevance for understanding a social phenomenon; they are all working on the strategy program of a higher education institution. Because it is not a probability-based sampling approach, purposive sampling does not allow to generalize the results to a larger population (Bryman, 2008). However, there is only a limited number of higher education institutions in the Netherlands, so multiple case studies can contribute to generating a more general insight into the strategies adopted and implemented by Dutch higher education institutions.

A broad selection of institutions is interviewed, because the Dutch higher education institutions differ substantially from one another. For example, there are traditional universities, international technical universities and local higher professional education institutions. By taking this broad selection if institutions, generic as well as group and case specific insights can be derived.

3.3 Data collection

To analyse the strategic stances adopted and implemented by Dutch higher education institutions, first publications and reports from different researchers, research institutions and higher education institutions are analysed. These publications are gathered via Scopus, and the reports by searching the internet with the keywords ‘higher education’, ‘strategy’, ‘entrepreneurial orientation’, ‘slack

resources', 'environmental turbulence'. These key words are chosen because of their relevance for this study.

The next step of this study consists of three rounds of interviews. The posed interview questions can be found in Appendix 2. The first round interviews is held with four experts on higher education institutions to assess the indicators used in the interviews about strategic actions undertaken by higher education institutions. These experts are from the Onderwijsraad, the Center for Higher Education Policy Studies (CHEPS), the Rathenau Institute and the Vereniging Hogescholen. The Onderwijsraad is an independent advisory board in the field of education. CHEPS is an interdisciplinary research-institute of the University of Twente that seeks to increase understanding of institutional, national and international issues that bear upon higher education. The Rathenau Institute contributes to political opinion-formation by informing stakeholders. The Vereniging Hogescholen represents all the government-funded higher professional education institutions in the Netherlands.

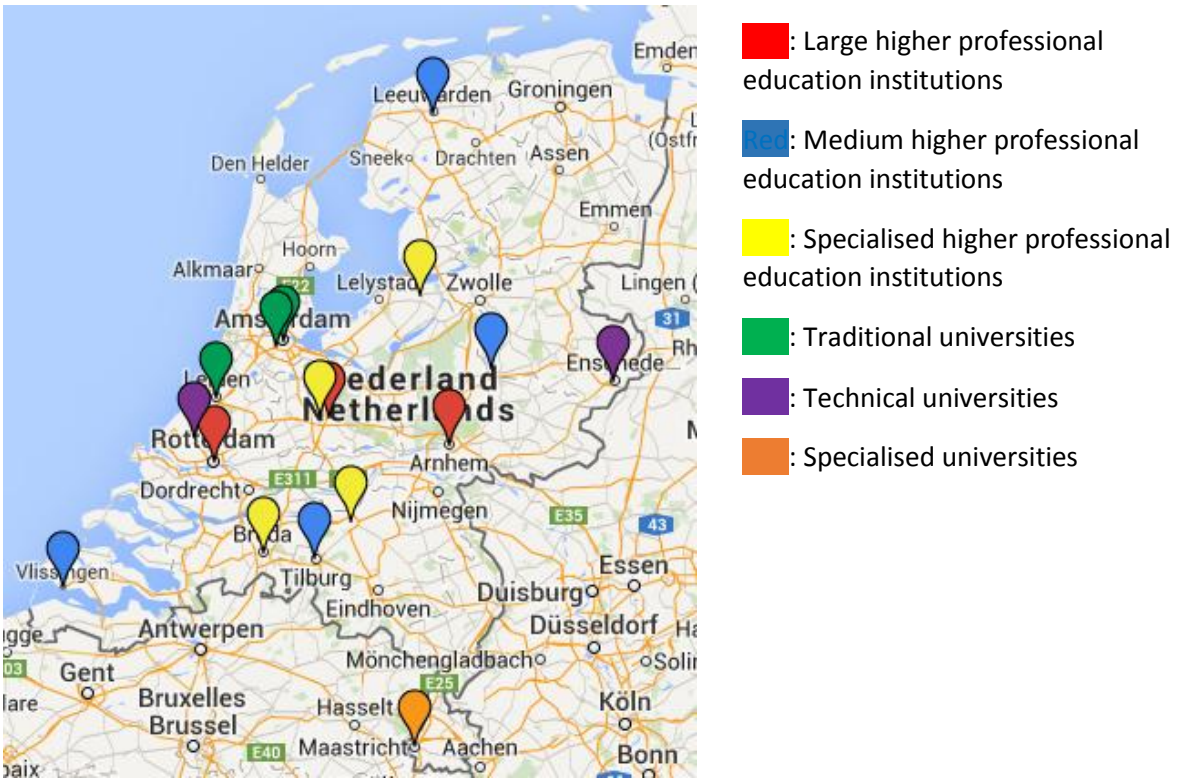
The second round of interviews is held at higher education institutions. To select the number of respondents that are interviewed from the higher education institutions, the Dutch higher education institutions are described in further details (see Appendix 1). The Netherlands has fourteen universities and 37 higher professional education institutions. The Dutch universities are categorised into three groups according to the higher education rankings of Elsevier: technical universities (3), specialised universities (3) and traditional universities (6) (Elsevier, 2013). Two Dutch universities could not be categorised in these groups because they either have a unique focus in the Netherlands (Wageningen UR) or a different organisational structure (Open University). Three interviews are held with traditional universities. Because technical universities have a very different focus than the traditional and specialised universities, it is important to include two out of three in the analysis. One interview is held at a specialised university to see if a specialised (and often smaller) university is very different from the interviewed traditional universities in its strategic choices and their implementation.

Of the 37 higher professional education institutions, nine only offer only one study program. These institutions are therefore left out. The other higher professional education institutions are divided into three groups: large (7), medium (9) and specialised (12) (Elsevier, 2013). Eleven interviews are held at these 28 higher professional education institutions. Four of these interviews are held at specialised institutions, four at medium institutions and three at large institutions to give a general insight in the Dutch higher professional education system and to see if there are any differences between these groups.

This makes that a total of 40 higher education institutions are available for this study within the Netherlands, of which seventeen higher education institutions are interviewed. This gives a more general insight in the whole Dutch higher education institution, because more than one third of the Dutch higher education institutions is interviewed. The distribution of these interviews is shown in table 1. Figure 3 shows the locations of the interviewed higher education institutions.

Table 1: Distribution of respondents

Institution	Type	Number of institutions	Respondents
University	Technical universities	3	2
	Specialised universities	3	1
	Traditional universities	6	3
Higher professional education institution	Large institutions	7	3
	Medium institutions	9	4
	Specialised institutions	12	4
	Total	40	17



: Large higher professional education institutions

: Medium higher professional education institutions

: Specialised higher professional education institutions

: Traditional universities

: Technical universities

: Specialised universities

Figure 3: Locations of interviewed higher education institutions

The third round of interviews is held with faculty directors of six higher education institutions, within three universities (Vrije Universiteit, Universiteit Leiden and TU Delft) and three higher professional education institutions (Hogeschool Rotterdam, Hogeschool Utrecht and Hogeschool Arnhem en Nijmegen). This is to check if the stated strategy from the strategy reports and its implementation according to the second round of interviews is actually implemented at a lower level of the organisation. The questions for these interviews are the same as for the second round interview with the higher education institution, but the answers from the second round of interviews are taken into account during the third round of interviews, so it is possible to compare the two interviews for each higher education institution involved. For all six higher education institutions involved, the same kind of faculty is chosen (the technical/science faculty), in order to be able to compare the different faculties.

3.4 Measurements

3.4.1 Dependent variables

This study has two dependent variables: the adoption of a prospective stance in Dutch higher education institutions and the implementation of this prospective stance by means of strategic actions undertaken. The first variable is measured on the presence of a prospective stance as reported in strategic reports and the mission statements of Dutch higher education institutions.

The second variable is measured on the relative intensities of activities carried out. According to Boyne & Walker (2004), the strategic actions concern changes in markets, services, revenues and the internal and external organisation. For this study, these activities are fitted with the higher education system. The first dimension, advertising current curricula corresponds to change in revenues, because this is about attracting more students to the institution. Advertising current curricula is measured on indicators related to attracting Dutch and foreign students. This is relatively easy to do for a higher education institution, because it only involves using marketing skills, instead of changing the core of the organisation (Hannan & Freeman, 1984).

The second dimension, broadening the market of current curricula, corresponds with changes in markets, because it is about providing existing services to new groups of people (Boyne & Walker, 2004). This dimension is measured on setting up joint degree programs with other higher education institutions, digitalising current curricula and offering existing courses and curricula in other countries (Altbach & Knight, 2007; Nuffic, 2013). This is more difficult for the higher education institution, because they need to change the way in which they offer their courses and curricula. To set up a joint degree program, higher education institutions have to collaborate with other (foreign) higher education institutions to compose a new curriculum of current courses given at the different higher education institutions involved. Digitalising current curricula also broadens the markets, by making curricula accessible for more domestic as well as foreign students. Lastly, by offering existing courses and curricula in other countries, higher education institutions can target foreign markets (Altbach & Knight, 2007; Nuffic, 2013). These international developments may provide higher education institutions with more students and a better international reputation (Commissie Veerman, 2010).

The third dimension, developing new services, corresponds with changes in services, because it is about offering new services to new and existing users (Boyne & Walker, 2004). This dimension is measured on the development of post-graduate courses, the development of job-oriented courses and setting up public private partnerships (WRR, 2013; Commissie Veerman, 2010; Sledge & Fishman, 2014). For a higher education institution, this means that they will have to develop and offer new courses and curricula next to their current ones. In this way, higher education institutions can offer more services to their current students and they can target post-graduate students, jobseekers, employees of firms and students that are looking for more practice oriented education.

The last dimension, specialisation, corresponds with changes in the external and internal organisation. This is because internal organisation is about the structure, culture and processes of formulation and implementation and external organisation is about the interorganisational relationships through which the public organisation provides services (Boyne & Walker, 2004). This dimension is measured on the profiling and division of tasks between higher education institutions. This is the most difficult thing to do for higher education institutions, because the curriculum embodies the institution's identity with reference to the broader society and its participants (Hannan & Freeman, 1984). However, if higher education institutions succeed in doing this, they can attract more students by offering high quality programs and they will be less dependent on large

student numbers (Commissie Veerman, 2010). The first indicator, profiling, measures if higher education institutions are making choices regarding curricula and courses offered based on student enrolment. The second indicator, division of tasks between higher education institutions, measures if higher education institutions are taking steps in establishing extensive collaborations with other higher education institutions in order to decide which higher education institutions specialise in which parts of a field of education. In this way, higher education institutions do no longer have to compete with each other for the same students, and every higher education institution can excel in different parts of fields of education (Commissie Veerman, 2010).

3.4.2 Independent variables

The independent variable consists of the concepts slack resources, entrepreneurial orientation and environmental turbulence.

3.4.2.1 Slack resources

Innovation often requires additional staff and extra financial resources for its development and implementation (Boyne & Walker, 2004; Salge, 2011) Therefore, decision makers need to assess the resource requirements for innovation and have to examine whether the slack resources available within the organisation are sufficient to meet these needs (Salge, 2011). For this study, the concept of slack resources is measured on the dimensions surpluses of financial and human resources (Boyne & Walker, 2004; Salge, 2011). A surplus of financial resources is measured on the amount of financial reserves. A surplus of human resources is measured on the number of employees that can be deployed to develop strategic plans and new courses and curricula.

3.4.2.2 Entrepreneurial orientation

The concept of entrepreneurial orientation is the extent to which top managers are inclined to take business-related risks, to favour change and innovation in order to obtain a competitive advantage for their organisation and to compete with other organisations (Tang & Tang, 2012). This concept is measured on two dimensions: decentralisation of decision-making and the extent to which routinised processes and procedures are changed. The first dimension, decentralised decision-making, can only be possible in an organisation with a low degree of hierarchical authority and makes it possible for innovations to be developed and implemented at a low level of the organisation, stimulating employees to have an entrepreneurial orientation (Andrews et al., 2007; Meier et al., 2007). This dimension can be measured on the extent to which different subunits of the organisation can make their own decisions. The second dimension, the extent to which routinised processes and procedures, is needed for an entrepreneurial orientation because the more routinised an organisation is, the less likely it will be involved in innovative and entrepreneurial activities (Tang & Tang, 2012). Carrying out processes and procedures in a standardised way makes an organisation rigid and less likely to innovate, which is a barrier for an entrepreneurial orientation (Andrews et al., 2007). This dimension is measured on the extent to which standardised procedures and processes are followed and the extent to which procedures and processes are carried out on an ad-hoc basis, and on the changes in procedures and processes implemented.

3.4.2.3 Environmental turbulence

The concept of environmental turbulence is measured on five dimensions, namely political developments, international developments, demographical developments, technological developments and changes in the demand for education. These developments are generally seen as currently having a large influence on organisations (Teece, 2010) or specifically on the higher education system (IPPR, 2013; Commissie Veerman, 2010; Altbach & Knight, 2007; WRR, 2013). The first dimension, political developments, is measured on changes in governmental policies regarding

higher education and changes in government funding (Commissie Veerman, 2010; WRR, 2013; Boyne & Walker, 2010). The second dimension, international developments, is measured on the competition from foreign higher education institutions for students (Altbach & Knight, 2007; Nuffic, 2013). The third dimension, demographical developments, is measured on the changes in the number of Dutch students available and the increase of competition for students among public higher education institutions, because of the decreasing number of students (Commissie Veerman, 2010; WRR, 2013). The fourth dimension, technological developments is measured on the digitalisation of education (IPPR, 2013). The last dimension, changes in the demand for education is measured on the competition from other types of (public and private) organisations offering higher education and the demand for job-oriented courses and programs (Commissie Veerman, 2013; IPPR, 2013; WRR, 2013).

The various indicators mentioned above will be further assessed based on the interviews with experts on the Dutch higher education system and respondents from the selected Dutch higher education institutions. The interviews are semi-structured. This offers the prospect of flexibility in questioning, within the context of a list of questions on specific topics to be covered (see appendix 2). In this way, there is flexibility in questioning during the interviews, and the interviewee has a great deal of freedom in how to reply, but all the questions in the schedule are asked (Bryman, 2008). After the interview notes are made about how the interview went, where it took place, the setting and other feelings about the interview.

3.5 Data analysis

This study is qualitative in nature. Information from Scopus and reports is used to analyse the strategic stance of higher education institutions, and the interview questions checked by experts are used to analyse the implementation of the strategic stance in higher education institutions. To investigate the hypotheses on the prospective stance in the strategy of higher education institutions, different sensitizing concepts are used. The sensitizing concepts for this study have been described in section 4 of this chapter.

For the purpose of investigating the hypotheses stated, the interviews are transcribed and the data of the interviews is coded using analytical coding. This type of coding not only stores information, but also considers their meanings in context to get new ideas from the data (Richards, 2009). The first step is a form of open coding, with the theoretical concepts in mind. Open coding is used to code the interviews and to express the data in the form of concepts (Flick, 2009). During this coding process memos are written to store thoughts about the data and emerging themes (Richards, 2009). After this, axial coding is used to categorize the codes and refine the codes that resulted from the open coding (Flick, 2009). The different categories formed are then used by making connections between categories. During this step, codes are linked to contexts, consequences, patterns of interaction and causes.

The last step, selective coding, continues the axial coding at a higher level of abstraction. In this step the theoretical concepts are used as the core categories, and the coded categories are systematically related to these core categories.

After this process of coding, the results are related to the prospective stances described in the strategic reports of the higher education institutions. These results are then compared with the results from the higher education institutions of the same type (technical universities, traditional universities, specialised universities, large higher professional education institutions, medium higher professional education institutions and specialised higher professional education institutions) in order to derive a result shared by all higher education institutions of the same type. In this way, the

six categories of higher education institution discerned can be compared to show differences. This gives insights in the extent to which different types of Dutch higher education institutions have adopted and implemented a prospective stance. The results from the interviews with faculty directors are used to indicate whether the intended strategy of a higher education institution is also implemented at a lower managerial levels in the organisation.

In the next step of analysis, the different types of higher education institutions are ranked on each indicator for both the dependent and the independent variables in order to indicate their relative involvement with each item asked for regarding each other. This gives insight into the strategic stance of the type of higher education institutions in comparison with the other types. As a last step, the rankings for the different indicators per variable are compared with each other, in order to control for inconsistencies between indicators of the same concept. The results of the dependent variables are also compared with the results from the independent variables in order to investigate the discerned hypothesised relationships.

3.6 Validity & reliability

To increase validity and reliability of this study, several actions are undertaken. Construct validity, the extent to which the research studies what it claims to be studying, is ensured in different ways (Bryman, 2008). First, triangulation is used. Triangulation is important to establish a good match between the observations from different sources outlined in the study and the theoretical ideas developed (Bryman, 2008; Yin, 2003).

This study applies triangulation in different ways. First, to analyse the strategy of higher education institutions, different sources are used: scientific publications, reports of research institutions and higher education institutions and interviews. This ensures that the findings can be checked between sources. Secondly, the indicators asked for in the interview questions are checked by interviewing experts in the field of higher education. By interviewing four experts, the findings from these interviews could be checked between the experts. Thirdly, it is tried to interview at least three higher education institutions per type, so that the findings could be checked between these institutions of the same type. However, this is not possible for every type of higher education institution, so only the results of the traditional universities, specialised higher professional education institutions, medium higher professional education institutions and large higher professional education institutions are triangulated. Lastly, by using interviews with experts from overarching institutions, the government and senior strategy advisors within higher education institutions, these findings could be checked between the different groups.

The construct validity of the results is also increased by comparing the interviews with experts and the interviews with higher education institutions regarding the same indicators (Bryman, 2008). Furthermore, by comparing the findings of this study with findings reported in scientific articles and on websites, it is ensured that the theory and the deductions that are made from the theory are used in the right way (Bryman, 2008).

Internal validity relates to the issue of causality and is concerned with the question of whether a conclusion that incorporates a causal relationship between variables holds water (Bryman, 2008). In this study this is increased by studying dependent as well as independent variables. Furthermore, different sources are used to study the relation of each independent variable and each dependent variable.

External validity is the degree to which findings can be generalised across settings (Bryman, 2008). Because purposive sampling is used, and not probability sampling, external validity of the results obtained cannot be claimed. However, because of the large number of interviews and the fact that

all Dutch higher education institutions operate in the same regulatory system and have to deal with the same changes and trends in their environment, the results of this study may still give a more or less representative picture for all Dutch higher education institutions.

Reliability is reached by a good documentation of the different steps of the study, which make it easier for other researchers to do a comparable study. In this study, this is ensured by clarifying the different steps undertaken in this study and setting up a database of the intermediary results obtained.

The next section of this study presents the results found in this study and analyses the hypotheses.

4. Results

The results section of this study starts with a summary of the interviews with the higher education institution per type of higher education institution. After this, the findings on the different types of higher education institution are ranked on the different indicators. These rankings are then used to analysed the hypothesised relations from this study. This section will end with a summary on the findings.

4.1 Summaries of the interviews with higher education institutions

4.1.1 Large higher professional education institutions

The large higher professional education institutions focus especially on education for students from their own region (Hogeschool Utrecht, 2014; Hogeschool Rotterdam, 2015; Hogeschool Arnhem en Nijmegen, 2012). The HAN has a strategy for 2030, which they have divided into periods of four years. They want to analyze the trends, where they are and where they want to be. This leads to scenarios for the future on which the HAN bases its strategy (Interview HAN, 2014). The Hogeschool Rotterdam finds it especially important to focus on quality of education and the satisfaction of their employees and students, which is also confirmed in the interview with the head of the Institute of Engineering & Applied Science (Interview Hogeschool Rotterdam, 2014; Interview Hogeschool Rotterdam - faculty, 2015). The strategy plan of the Hogeschool Utrecht states that it wants to educate students for jobs for the future, and thinks about skills and competences needed in the future (Hogeschool Utrecht, 2014). Because of their regional focus, attracting students is not a priority for large higher education institutions. Most students choose their higher professional education institution based on the closest location to home. So, trying to attract students from other regions does not work well and they do not expect domestic competition to grow in the future (Interview HAN, 2014; Interview Hogeschool Rotterdam, 2014; Interview Hogeschool Utrecht, 2014). To attract regional students, the technical faculty of the HAN collaborates with regional high schools to attract new students (Interview HAN – faculty, 2015). This regional focus also leads to less focus on attracting international students (Interview Hogeschool Utrecht, 2014; Interview Hogeschool Rotterdam, 2014; Interview HAN, 2014). The large higher professional education institutions do not expect that this regional focus will change in the future. This has a negative influence on the number of collaborations with institutions in other countries according to the Institute of Engineering and Applied Science of the Hogeschool Rotterdam (Interview Hogeschool Rotterdam – faculty, 2015). The large professional education institutions have made a start with offering English curricula and setting up internal international offices (Interview Hogeschool Utrecht, 2014; Interview Hogeschool Rotterdam, 2014). Most internationalisation activities are taking place at a lower level in the organisation, like the Rotterdam Business School of Hogeschool Rotterdam, which can set an example for other institutes. Furthermore, the technical faculty of the HAN states that most international collaborations are at a lower level in the organisation, because internationalisation can differ for different faculties or even study programs (Interview HAN – faculty, 2015).

Digitalisation is more important for large higher professional education institutions. However, digitalisation is not fully implemented yet at these institutions (Interview Hogeschool Rotterdam, 2014). Large strategic decisions are needed if large higher professional education institutions want to keep up with the technology, and lecturers need to adopt these technologies in their own work (Interview HAN, 2014; Interview Hogeschool Rotterdam, 2014). The demand for digitalisation from students is increasing according to the technical faculty of the HAN (Interview HAN – faculty, 2015). They want more flexible curricula with blended learning and massive open online courses (MOOCs), which is especially important to attract part time students (Interview Hogeschool Utrecht, 2014). Part time students do not always have the time to come to the higher education institution to follow

a course, so flexible and digital education is important, according to the faculty of Science and Technology of the Hogeschool Utrecht (Interview Hogeschool Utrecht – faculty, 2015).

Lifelong learning is another focus point of all three interviewed large higher professional education institutions (Interview Hogeschool Rotterdam, 2014; Interview Hogeschool Rotterdam, 2014; Interview HAN, 2014). However, there is still discussion about which form is the best: focusing on part time programs, dual programs, associate degrees or separate courses and trainings (Interview Hogeschool Rotterdam, 2014). For the future, the large higher professional education institutions do not see private higher education institutions as a threat for their lifelong learning programs, as they are investing a lot of money in post initial and flexible education (Interview Hogeschool Utrecht, 2014; Interview Hogeschool Rotterdam, 2014; Interview HAN, 2014). The faculty Engineering & Applied Sciences of the Hogeschool Rotterdam has even stopped its activities in the field of commercial education and only wants to focus on complete study programs for lifelong learning (Interview Hogeschool Rotterdam – faculty, 2015). However, because students will have to pay more for their education in the future, they will do more 'shopping' for the right study program, which may increase competition (Interview HAN, 2014).

Besides lifelong learning, higher professional education institutions can develop separate courses and training sessions in collaboration with firms. Co-creation of courses and curricula with firms and other institutions is very important, which was also confirmed by the interview with the technical faculty of the HAN (Interview HAN, 2014; Interview HAN – faculty, 2015). According to this technical faculty, these collaborations can lead to more regional embeddedness (Interview HAN – faculty, 2015). Hogeschool Utrecht collaborates with firms in a way that the firm offers internships and guest lectures and the Hogeschool Utrecht develops courses for the employees of a firm (Interview Hogeschool Utrecht, 2014). According to the faculty of Science and Technology of the Hogeschool Utrecht, they try to bring the firms and the job market into their curricula (Interview Hogeschool Utrecht – faculty, 2015). This collaboration with firms is a big focus point for higher professional education institutions, because they want to prepare their students for the job market (Interview Hogeschool Rotterdam, 2014; Interview Hogeschool Utrecht, 2014; Interview HAN, 2014). To do this, higher education institutions have to constantly change their curricula to adapt to the quickly changing job market (Interview Hogeschool Utrecht, 2014; Interview Hogeschool Rotterdam, 2014; Interview HAN, 2014).

Because of their regional function, large higher professional education institutions want to offer a wide range of curricula, as long as there is a regional societal need for that curriculum (Interview Hogeschool Rotterdam, 2014). However, according to the technical faculty of the HAN and the Hogeschool Utrecht, they are trying to specialize in the themes they use in their curricula (Interview HAN – faculty, 2015; Interview Hogeschool Utrecht – faculty, 2015). These themes will be applied in research first, but in the future also in the study programs they will develop (Interview HAN, 2014). To make it more efficient to offer a broad range of study programs, the different study programs work together (Interview Hogeschool Rotterdam, 2014). For example, from the interviews with the faculty directors of the HAN, the Hogeschool Utrecht and the Hogeschool Rotterdam, it became clear that in the field of technical study programs, there are now five standard study programs with later options for specialisation (Interview Hogeschool Rotterdam – faculty, 2015; Interview HAN – faculty, 2015; Interview Hogeschool Utrecht – faculty, 2015). Furthermore, large higher professional education institutions work together with MBO institutions and universities to make the transition between these types of institutions more easy (Interview Hogeschool Utrecht, 2014).

To implement their strategy, financial reserves are not a challenge for large higher professional education institutions (Interview HAN, 2014; Interview Hogeschool Rotterdam, 2014; Interview

Hogeschool Utrecht, 2014). The faculty of Engineering & Applied Sciences of the Hogeschool Rotterdam even stated that financial reserves are not important at all, innovation does not have to cost money (Interview Hogeschool Rotterdam – faculty, 2015). However, they hope that the government funding will not decrease further but will stabilise. Furthermore, the faculty of Science and Technology of the Hogeschool Utrecht wants to decrease the number of students that drops out, because a lot of money is wasted on these students (Interview Hogeschool Utrecht – faculty, 2015). Employees are much more important for implementing the future strategy of the education institution than money. Most large higher professional education institutions have a specific strategy department for developing strategic plans (Interview Hogeschool Utrecht, 2014; Interview Hogeschool Rotterdam, 2014; Interview HAN, 2014). Large higher professional education institutions want to invest in their employees for strategic development by giving them the opportunity to follow master programs and special courses and training (Interview Hogeschool Utrecht, 2014; Interview HAN, 2014).

This education of employees gives employees more space to be creative and innovative, which leads to more decentralization in the large higher education institutions. The large higher professional education institutions see themselves as very decentralised institutions, because innovation mostly starts at the level of the program directors who know most about how to improve education in their field of specialisation (Interview Hogeschool Utrecht, 2014; Interview Hogeschool Rotterdam, 2014). This has improved a lot over the last 8-10 years, according to the technical faculty of the HAN (Interview HAN - faculty, 2015). However, there need to be some shared frameworks and shared vision in order to implement big strategic changes (Interview Hogeschool Utrecht, 2014; Interview Hogeschool Rotterdam, 2014; Interview HAN, 2014). This can be difficult, because employees at higher education institutions are very autonomous. For example, the Hogeschool Utrecht is made up of six formerly individual higher professional education institutions. Therefore, in the beginning it was difficult to adapt to frameworks that cover the whole organisation (Interview Hogeschool Utrecht, 2014). Furthermore, the faculty of Science and Technology of the Hogeschool Utrecht states that the members of the faculty have to become motivated to implement the plans in their faculty, because otherwise they will not implement them in the right way (Interview Hogeschool Utrecht – faculty, 2015). On the other hand, it can be difficult to implement bottom-up innovation. Institutes at the Hogeschool Rotterdam are specifically stimulated to develop their own strategy, but some institutes still find this difficult (Interview Hogeschool Rotterdam, 2014). Higher education institutions have to find the right balance between bottom-up and top-down innovation. Another challenge for innovation are the strict quality control mechanisms applied to study programs by the government (Interview Hogeschool Utrecht, 2014; Interview Hogeschool Rotterdam, 2014; Interview HAN, 2014).They have become such big parts of developing new study programs and courses that a lot of resources are spent on securing these quality control mechanisms. More trust from the government is needed. Otherwise, it will escalate into a situation where innovation and experimentation is punished (Interview Hogeschool Utrecht, 2014; Interview Hogeschool Rotterdam, 2014; Interview HAN, 2014).

In the future, the ageing population of the Netherlands will have an influence on the number of students. However, of the interviewed large higher professional education institutions only in the both interviews at the HAN this is mentioned as a threat (Interview HAN, 2014; Interview HAN – faculty, 2015). This is probably because the other two institutions are located in a region where ageing of the population is a less serious problem. Because the HAN sees the decrease of students as a threat, they are already more focusing on special curricula for VWO-students, collaborations with firms and lifelong learning than other large higher professional education institutions. The other two large professional higher education institutions do see a large challenge in the change of the student

population. There is an increasing number of first-generation students from immigrant families, who need more support and a different approach than other students (Interview Hogeschool Rotterdam, 2014; Interview Hogeschool Utrecht, 2014).

4.1.2 Medium higher professional education institutions

Medium higher professional education institutions are mostly located outside the densely populated Randstad. Because of their location in the periphery of the country they already have to deal with decreasing student numbers and therefore they have a clear strategy to deal with this challenge (Interview NHL, 2015; Interview Hogeschool Zeeland, 2014; Interview Saxion, 2015). However, large strategic operations, like setting up their own digital platform for digital education, can be difficult for this group of higher education institutions, because they are too small and have too little resources (Interview Hogeschool Zeeland, 2015; Interview Avans, 2014). Just like the large higher professional education institutions, the medium higher professional education institutions are regional education institutions with a broad range of study programs. Because of this regional function, they mostly only have to compete with other higher education institutions in the same region (Interview NHL, 2015). They do not think that their regional function will change in the future, but increased student mobility can lead to more competition from other institutions.

To deal with the problem of decreasing student numbers, the four interviewed higher education institutions all have different approaches. To broaden their market, the higher education institutions close to national borders see their neighbouring countries as part of their home market and want to attract foreign students from Belgium and Germany (Interview Saxion, 2015; Interview Hogeschool Zeeland, 2014). The NHL has chosen to merge with Stenden Hogeschool. This is another medium higher education institution in the region, that focuses on internationalisation with campuses in Bali, Bangkok, Doha and Port Alfred (Stenden Hogeschool, 2015; Interview NHL, 2015). Internationalisation and attracting foreign students can become more important in the future, especially for the unique study programs of these higher education institutions. For example, the Hogeschool Zeeland offers courses on delta management and water management in other countries, but if they want to follow the entire study program they have to come to the Netherlands (Interview Hogeschool Zeeland, 2014).

Another way to attract more students is by offering more distant learning study programs. Developing flexible and modularised courses and study programs is important to do this (Interview Saxion, 2015). The merger between NHL and Stenden will help them to create more mass for developing their own digital platforms (Interview NHL, 2015). The Hogeschool Zeeland will become the first higher professional education institution in the Netherlands with their own MOOC in 2015 (Interview Hogeschool Zeeland, 2014). MOOCs are an important way of showing the quality of their study programs and to attract students from outside their region. Furthermore, digitalisation is important for lifelong learning programs. If public higher education institutions do not invest enough in lifelong learning study programs, they will lose their students to firms that offer their own study programs or private higher education institutions (Interview NHL, 2015; Interview Saxion, 2015). Avans Hogeschool already invested heavily in lifelong learning and even has developed a separate institute for lifelong learning: Avans+ (Interview Avans, 2014).

To get more embedded in the region, medium higher professional education institutions find it important to work together with firms in the region (Interview Avans, 2014; Interview NHL, 2015; Interview Hogeschool Zeeland, 2014; Interview Saxion, 2015). Besides teaching job-oriented skills and competences, students need to become more flexible to be able to adapt to the changing job market (Interview Avans, 2014; Interview Hogeschool Zeeland, 2014; Interview Saxion, 2015). Higher

education institutions want to use actual cases from firms in their study programs and want to offer their students relevant internships in the region (Interview Avans, 2014; Interview Hogeschool Zeeland, 2014). Furthermore, medium higher professional education institutions have focus points that are in line with their regional strategy and specialisation (Interview Saxion, 2015; Interview Hogeschool Zeeland, 2014; Interview NHL, 2015; Interview Avans, 2014). This leads to general study programs, next to specialised study programs based on the region, which can attract students from outside the region (Interview Saxion, 2015).

To implement their strategy, medium higher professional education institutions need resources. They have less financial reserves than the big higher professional education institutions, but they state that money is not the main challenge (Interview Avans, 2014; Interview NHL, 2015; Interview Hogeschool Zeeland, 2014; Interview Saxion, 2015). A larger challenge comes from the fact that it is difficult to find enough qualified employees with the ageing and decreasing regional population (Interview Hogeschool Zeeland, 2014). It is therefore important to stay attractive as an employer, for example by investing in educating their lecturers and giving them more responsibility in developing innovations (Interview NHL, 2015). Unlike the large institutions, these institutions do not have a specific strategy department, but they have specific employees that think about strategy and innovation. For example, at Saxion there is an innovation team that is formed by enthusiastic employees from different parts of the organisation (Interview Saxion, 2015). Because of this lack of a specific strategy department, strategy is formed at lower levels of the organisation (Interview Avans, 2014). This is also because these institutions are much smaller, which makes communication within the organisation more easy (Interview NHL, 2015). Lecturers are to a large extent influential when it comes to innovative ideas, and they are stimulated to do this by exchanging lecturers with other higher education institutions (Interview Saxion, 2015).

The friction between governmental policies and regulations and the higher education institutions is the same for this type of higher education institutions. The government wants the executive board to be more in control of what happens within the organisation, but the organisations themselves want to have a more bottom-up strategy (Interview NHL, 2015). These institutions also see the same problems with the strict regulations on quality as large higher professional education institutions (Interview Hogeschool Zeeland, 2014; Interview Avans, 2014; Interview NHL, 2015; Interview Saxion, 2015).

4.1.3 Specialised higher professional education institutions

The strategy of specialised higher professional education institutions is mostly focused on their specialisation. Of the interviewed specialised higher education institutions, both the NHTV and the HKU have no counterparts at the university level, which makes the development of master programs important for them (Interview NHTV, 2014; Interview HKU, 2015). Unlike other higher professional education institutions, specialised higher professional education institutions are more focused on attracting students from all over the country and foreign students (Interview HAS Den Bosch, 2014; Interview CAH Vilentum, 2014). They do this by focusing on their strong points and offering good quality study programs in unique fields of study (Interview CAH Vilentum, 2014; Interview NHTV, 2014). Because of their specialisation, they collaborate with institutions that have the same specialisation, in the Netherlands or in other countries. This can be in the form of joint degree programs, like the joint program on tourism by the Wageningen University and the NHTV or the joint degree on international food business of the CAH Vilentum with the Dalhousie University in Canada (Interview NHTV, 2014; Interview CAH Vilentum, 2014). Another example of collaboration is the close collaboration between twelve MBO institutions, four higher professional education institutions and the university of Wageningen in the agricultural industry. They exchange study programs and

develop their strategy and innovations together (Interview CAH Vilentum, 2014; Interview HAS Den Bosch, 2014). This collaboration and exchange of study programs also takes place in the art education, for example with the HKU taking over a study program of the Hanzehogeschool Groningen that fits better to their higher education institution (Interview HKU, 2015).

To reach more international students, this type of institution teaches students in other countries (Interview NHTV, 2014; Interview CAH Vilentum, 2014). However, this is mostly only a part of their study program. When foreign students are interested they can follow the rest of the study program in the Netherlands.

Digitalisation can be another way to make the study programs of this type of institution more accessible to larger groups of possible students (Interview NHTV, 2014). It can make education more personal and flexible. The HKU is experimenting with different types of digitalisation, like gamification: the use of game thinking and game mechanics in education (Interview HKU, 2015). This is perceived to be more useful in practical education than video lectures. In the field of gamification, the HKU is a frontrunner and even provides education tools for gamification to other higher education institutions (Interview HKU, 2015).

In the field of lifelong learning, the specialised higher professional education institutions have a wide range of possibilities. There are master programs for post-graduate students or other working people, or semi-commercial separate courses for interested Dutch or foreign students, or courses and programs in collaboration with firms (Interview HKU, 2015; Interview CAH Vilentum, 2014; Interview HAS Den Bosch, 2014; Interview NHTV, 2014). Collaboration with firms is also important for regular students of specialised higher education institutions. At the HAS Den Bosch, students even graduate based on a project for a firm, and the firm and the higher education institution together decide if the student graduates (Interview HAS Den Bosch, 2014). The NHTV has developed complete curricula in collaboration with firms, like the Efteling academy and study programs for tour operators (Interview NHTV, 2014). Furthermore, it is important that students learn job-oriented skills and competences and to build networks and work together with other disciplines in order to prepare them for future jobs or to become an entrepreneur (Interview HKU, 2014).

To implement their strategic activities, financial reserves are not seen as a challenge (Interview HKU, 2015; Interview NHTV, 2014). The only question sometimes is how to get it by applying for grants or funding from firms (Interview CAH Vilentum, 2014). Because of their relatively small size, most specialised higher education institutions do not have a separate strategy department. Lecturers are given a lot of space to be creative and come up with innovative ideas, because they know most about their field of specialisation and what is needed (Interview HKU, 2015; Interview NHTV, 2014; Interview HAS Den Bosch, 2014; Interview CAH Vilentum, 2014). This can lead to faster decision making, because communication in these small higher education institutions is relatively fast. However, some big developments need central structuring (Interview NHTV, 2014). Therefore, employees should be stimulated to share innovative ideas to get more leverage of new developments (Interview HKU, 2015). Delay in decision-making can be caused by the unclearness of government regulations, for example in the lifelong learning area (Interview NHTV, 2014). This can lead to challenges for innovation. On the other hand, the HAS Den Bosch states that government regulations are taken too seriously and that they are less strict than is stated; the government just wants high quality education (Interview HAS Den Bosch, 2014).

For the future, government decisions on budget cuts for higher education institutions are not seen as a huge challenge. However, the government decisions on budget cuts in student grants can lead to less Dutch students because they have less money to travel further for higher education

(Interview CAH Vilentum, 2014). International students will become a larger part of the student population of these institutions because of their internationally unique specialisation. These institutions are already competing on an international level. An example of this is the NHTV, which is the only European education institution recognised by the World Leisure Association (Interview NHTV, 2014). Increasing numbers of international students can be a solution for the decreasing number of Dutch students (Interview NHTV, 2014; Interview CAH Vilentum, 2014). However, they do not want to grow in student numbers in the future in order to keep their relatively small size and niche approach. To do this, the HKU already selects most of its students for their study programs (Interview HKU, 2015).

4.1.4 Traditional universities

Traditional universities are the largest and oldest higher education institutions within the Netherlands. Attracting Dutch students has not changed much over the years. Traditional universities currently do not see a big increase in competition from other higher education institutions. According to the faculty of Mathematics and Science of the University of Leiden, most of their students come from their own region (Interview University of Leiden – faculty, 2015). The number of Dutch students has grown so much over the last couple of years that a small decrease is even desirable to some extent (Interview University of Amsterdam, 2014). Furthermore, the western part of the Netherlands still experiences population growth. This, together with increasing numbers of first-generation students from immigrant families, will keep the expected number of Dutch students in the future at a stable level (Interview University of Amsterdam, 2014; Interview Vrije Universiteit, 2014). Traditional universities are also less vulnerable for changing student numbers, because education is not their only function, research is equally important.

To attract students, rankings are getting more important, especially for foreign students (Interview University of Amsterdam, 2014). Another way to attract students is by using MOOCs to put the study programs on display (Interview University of Leiden, 2014; Interview University of Amsterdam, 2014). The faculty of Mathematics and Science of the University of Leiden states that Dutch higher education institutions need to realise that education is not isolated, and that collaboration with international partners is very important for future development (Interview University of Leiden – faculty, 2015). If a university wants to get an international identity, they need enough international students (Interview University of Leiden, 2014). Study programs also need to become more open for different types of students (Interview Vrije Universiteit, 2014). This means more study programs in English, but also less strict access requirements for students from another higher education institution that want to follow their master program at another institution.

Most traditional universities are experimenting with digitalisation in education and expect it to become bigger in the future, but face-to-face education is still the biggest part of the study program (Interview University of Amsterdam, 2014). Digital tools can be an additional help for teaching, but will not take over (Interview Vrije Universiteit, 2014). Digitalisation is not yet centrally structured at traditional universities, some study programs and professors are experimenting a lot with digitalisation, while others are more conservative, according to the faculties of Sciences and Earth & Life Sciences at the Vrije Universiteit (Interview Vrije Universiteit – faculty, 2015). On the other hand, the University of Leiden wants to be a leader in the field of digital education, with small private online courses (SPOCs), MOOCs and other applications of ICT (Interview University of Leiden, 2014). However, according to the faculty of Mathematics and Science of the University of Leiden, it is important to not only develop these digital tools for attracting more students, but they also need to be an addition to their current curricula (Interview University of Leiden – faculty, 2015).

Lifelong learning is another development that traditional universities have started to implement, but is currently not developed in a structured way, according to the faculty of Mathematics and Science at the Universiteit Leiden and the faculties of Sciences and Earth & Life Sciences of the Vrije Universiteit (Interview University of Leiden – faculty, 2015; Interview Vrije Universiteit – faculty, 2015). Some faculties have a history with post-initial education, like special courses for lawyers and doctors and in business schools for economists, but other faculties are still searching for their way in lifelong learning and are experimenting on a small scale (Interview University of Amsterdam, 2014; Interview University of Leiden, 2014; Interview Vrije Universiteit, 2014).

Collaboration with firms is a third development in traditional universities. Traditional universities see that just knowledge-based education is not enough in the changing world of today. While the knowledge base has to stay the most important part of the study program, traditional universities want to educate their students with skills and competences like building a resume or having an entrepreneurial orientation (Interview University of Leiden, 2014). There are some collaborations with firms in the field of education, but those are mostly collaborations for research. According to the faculties of Sciences and Earth & Life Sciences of the Vrije Universiteit, traditional universities are quite reluctant to let firms have an influence on education, because they see education as their domain (Interview Vrije Universiteit – faculty, 2015). Furthermore, research is more important for collaboration because it is often too expensive for firms. Therefore, they need to collaborate with universities (Interview University of Amsterdam, 2014). Traditional universities still have to find their way in collaborating with firms, not wanting to deliver education on demand or tailor-made for a specific firm (Interview University of Leiden, 2014; Interview University of Amsterdam, 2014).

Traditional universities, like the large higher professional education institutions, have a broad profile in education. So, specialisation mostly takes place in research (Interview University of Amsterdam, 2014; Interview University of Leiden, 2014; Interview Vrije Universiteit, 2014). The faculty of Mathematics and Science of the University of Leiden states that this research specialisation should become more present in the type of master programs that the university offers (Interview University of Leiden – faculty, 2015). With the broad programs they have, traditional universities analyse the region in which they are located in order to see what is relevant, for example public administration at the University of Leiden because of its proximity to The Hague, and agrofood in Amsterdam because of its proximity to Zaandam (Interview University of Leiden, 2014; Interview University of Amsterdam, 2014). Traditional universities work together to make themselves and other institutions stronger on a national and international level (Interview Vrije Universiteit, 2014). According to the faculties of Sciences and Earth & Life Sciences of the Vrije Universiteit, the University of Amsterdam and the Vrije Universiteit work together in a close way, even merging their science faculties into one joined faculty, in which they each have their own specialisations and students can follow courses at both institutions (Interview Vrije Universiteit – faculty, 2015). The University of Leiden works closely together with Erasmus University and the TU Delft. This collaboration is mainly complementary, because the University of Leiden is not specialised in technical study programs, which is the specialty of TU Delft, and has no economic study programs, which is the specialty of the Erasmus University (Interview University of Leiden, 2014).

Just like in higher professional education institutions, financial reserves are not seen as a challenge for traditional universities. According to the faculties of Sciences and Earth & Life Sciences of the Vrije Universiteit, while there is less direct funding from the government, the government now directs more funds to the Dutch organisation for scientific research (NWO), so money is obtained from a different source (Interview Vrije Universiteit – faculty, 2015). Furthermore, the number of European grants for research has increased (Interview Vrije Universiteit, 2014; Interview University

of Amsterdam, 2014). However, there is a lot of competition for these grants from other European countries with even less government funding, like Greece and Spain (Interview University of Leiden, 2014; Interview University of Amsterdam, 2014).

To develop their strategy, traditional universities mostly have their own strategy department. However, academics already have a high workload and finding enough qualified people can be a challenge (Interview University of Amsterdam, 2014; Interview University of Leiden, 2014). This can lead to having less time to think about new courses or curricula. Decentralisation of decision-making is very important for professors and researchers in traditional universities, but there are some processes that need to be centrally organised. This can sometimes lead to challenges, because researchers and professors are very autonomous (Interview Vrije Universiteit, 2014). The main strategy and central processes are controlled by the executive board, but most choices regarding the development or implementation of innovations and the strategy in education lie with the directors of faculties and study programs (Interview University of Amsterdam, 2014). According to the faculties of Sciences and Earth & Life Sciences of the Vrije Universiteit, this is important, because professors have to become motivated to implement the strategy in their study program or faculty (Interview Vrije Universiteit – faculty, 2015).

Another challenge of innovation in higher education can be seen in the strict control mechanisms for quality and accreditation, which make changes in the higher education system very slow (Interview University of Amsterdam, 2014). This bureaucracy may lead to the destruction of capital and a decrease of research and education activities, which was also confirmed by the faculties of Sciences and Earth & Life Sciences of the Vrije Universiteit (Interview University of Leiden, 2014; Interview Vrije Universiteit – faculty, 2015).

A last challenge is that students and firms are becoming more critical about higher education. Firms expect more and different skills, while students want have more knowledge about their chances on the job market (Interview University of Amsterdam, 2014; Interview University of Leiden, 2014). This is not strange, because of the financial crisis a few years ago and the fact that Dutch students will have to pay more for their education in the coming years (Interview University of Leiden, 2014). However, while employers state that they want the 'employee of the future', universities often find employers to be the ones that are conservative in this respect, not the universities (Interview Vrije Universiteit, 2014). According to the faculties of Sciences and Earth & Life Sciences of the Vrije Universiteit, employees often relate current study programs to the study programs they have followed themselves 20 or 30 years ago (Interview Vrije Universiteit – faculty, 2015).

4.1.5 Technical universities

Technical universities want to anticipate to future students needs and want to avoid using a reactive strategy (Interview TU Delft, 2014; Interview University of Twente, 2015). Reactive strategies are often used by organisations, because most people cannot deal with the insecurities of decisions for the future (Interview TU Delft, 2014). Technical universities attract students with their technical profile and are therefore less region-based than traditional universities, though because the three technical universities are spread over the country, the three institutions still attract most students from a specific part of the country. Another way technical universities attract students is that they all have their own focus points and specialisation areas besides their technical specialisation (Interview TU Delft, 2014For example, the University of Twente promotes the fact that they are a relatively small, campus based university with a focus on the combination of science and social studies (Interview University of Twente, 2015).). They work together in the 3TU collaboration, which means that students can follow courses at all three technical universities (Interview University of Twente,

2015; Interview TU Delft, 2014). This can lead to some competition between the three technical universities, which is healthy, but too much competition can become a barrier for seeing what is really important for the future of the organisation (Interview TU Delft, 2014).

While it is difficult to predict the number of Dutch students in the future, and even more difficult to predict the number of students at technical universities in particular, it is clear for the technical universities that the number of Dutch students will decrease (Interview University of Twente, 2015; Interview TU Delft, 2014). This means that technical universities need to think about what they are going to do with student housing and university buildings because these are mostly monofunctional buildings that cannot be used for other purposes when they are no longer needed in the future (Interview TU Delft, 2014). To attract more students, technical universities could focus more on foreign students. However, the TU Delft states that Dutch higher education institutions underestimate the competition from foreign higher education institutions. Dutch higher education institutions always think that Chinese students will keep coming to the Netherlands, but the universities in China are also improving at a rapid speed (Interview TU Delft, 2014). In the future they could become huge competitors for Dutch higher education institutions. To attract foreign students, technical universities develop collaborations with other technical higher education institutions in the world to exchange students. They do not see offering education in other countries as a viable option, because this is very costly and they do not have the resources like the Massachusetts Institute of Technology (MIT) or Harvard to do this (Interview TU Delft, 2014). Internationalisation activities mostly take place on a small scale, in networks between faculties or even study programs in different countries (Interview University of Twente, 2015; Interview TU Delft, 2014). Research is already more international than education (Interview University of Twente, 2015).

Digitalisation is very important for technical universities. Technical universities should stay at the front of this development with open and online courseware and other developments (Interview TU Delft, 2014). The University of Twente and the TU Delft both have MOOCs and they are experimenting with other types of digitalisation, like blended learning, flipping the classroom and video lectures. However, they are still finding out how to improve this and really meet the needs of students. At the TU Delft this has been done in the form of a virtual faculty with different study programs (Interview TU Delft, 2014). The fact that technical universities are frontrunners in the field of digitalisation can also be used for attracting more foreign students, according to the faculty of Electrical Engineering, Mathematics and Computer Sciences of the TU Delft (Interview TU Delft – faculty, 2015). They can offer MOOCs and other types of digital education to foreign students, which can lead to a better international reputation.

Lifelong learning is another thing that technical universities want to invest in, but are not sure yet how they want to approach this (Interview TU Delft, 2014; Interview University of Twente, 2015). The faculty of Electrical Engineering, Mathematics and Computer Sciences of the TU Delft states that digital education can be used as a starting point for lifelong learning (Interview TU Delft – faculty, 2015). The TU Delft states that they will have to act quickly, because otherwise private higher education institutions will act on this market of technical study programs for lifelong learning and then they will lose this battle (Interview TU Delft, 2014).

A form of lifelong learning, which technical universities already have, is in the form of making curricula and variations on MOOCs or training sessions available for firms (Interview TU Delft, 2014). Collaboration with firms in the field of research has been present for a long time, but internships and guest lectures are becoming more common (Interview University of Twente, 2015). Besides collaborating with firms for education, technical universities invest in teaching skills and competences. However, the faculty of Electrical Engineering, Mathematics and Computer Sciences of

the TU Delft states that although preparing students for the job market is important, in depth professional knowledge is still the core of technical universities (Interview TU Delft – faculty, 2015). Therefore, they want to focus on the T-shaped professional: a professional with in depth knowledge of the field of education with a broad base of skills and competences (Interview University of Twente, 2015; Interview TU Delft – faculty, 2015). This could be implemented in excellence programs based on interdisciplinary and multidisciplinary projects (Interview University of Twente, 2015).

Technical universities see the decrease of money from the government as a bigger challenge than other types of higher education institutions. They state that it decreases the strategic space of these institutions (Interview TU Delft, 2014; Interview University of Twente, 2015). Performance-based funding increases these problems, because this means that funding is relying on agreements with the government and the higher education institutions themselves become less free to decide what they want to do. On the other hand, when higher education institutions have too much money, they tend to become lazy (Interview TU Delft, 2014). The University of Twente has just implemented a new educational model, and wanted to hire new employees to implement this model, but they could not do this because of their financial situation (Interview University of Twente, 2015). Employees at technical universities have a high work load, but they are very motivated to experiment and develop innovations (Interview University of Twente, 2015). However, for professors it can be difficult to devote a lot of time to developing education, because they are reviewed based on their research results.

Like stated above, employees at these institutions are very motivated to experiment and innovate, and they get the space to do this and make decisions on a low level in the organisation. However, when a technical university becomes too decentralised, faculties can get the feeling they are autonomous and can decide whatever they want (Interview TU Delft, 2014). This makes it difficult to develop one strategy for the whole organisation. A good combination of top-down and bottom-up and better communication between different levels in the organisation without limiting the freedom of researchers and lecturers is important for reaching strategic goals (Interview University of Twente, 2015). Another challenge are the goals the government has of its own, which can put limits on the extent to which technical universities can pursue their goals (Interview TU Delft, 2014; Interview TU Delft – faculty, 2015). The regulations regarding quality control and accreditation are also seen as limiting and even as the government distrusting the professors, lecturers and researchers, which was also confirmed by the faculty of Electrical Engineering, Mathematics and Computer Sciences of the TU Delft (Interview University of Twente, 2015; Interview TU Delft, 2014; Interview TU Delft – faculty, 2015). This can lead to employees becoming reluctant to collaborate with these systems. The technical universities hope that the quality regulations will become less strict and more trustworthy in the future (Interview TU Delft, 2014).

4.1.6 Specialised universities

Specialised universities do not only focus on attracting students from their own region, but also on attracting students from all over the Netherlands and international students. The University of Maastricht has a strategy that focuses on problem-based learning, internationalisation and multi-disciplinary education (Interview University of Maastricht, 2014). Because of its closeness to the borders of Belgium and Germany, the University of Maastricht not only sees the Netherlands as their home market but also Belgium and Germany. This proximity to other countries and their specialisation also means that the University of Maastricht always had to deal with competition from international higher education institutions whereas domestic competition is less important. However, in the specific case of the University of Maastricht, the ageing population of the region

leads to challenges with attracting Dutch students and employees (Interview University of Maastricht, 2014). Attracting students has changed over the years, as there is a culture shift among students. They want to choose a study program that will give them the highest return on investment (Interview University of Maastricht, 2014). Employability after education will become more important.

Internationalisation and attracting foreign students is a focus point for specialised universities. 48% of the students at the University of Maastricht is international, and they stimulate Dutch students to do a part of their study program abroad and stimulate foreign students to stay in the Netherlands by giving them the opportunity to follow a course in basic Dutch for free (Interview University of Maastricht, 2014). To attract more foreign students, they have marketing services in various countries and joint and double degree programs with different partners. An example of this is the study program on global health of the University of Maastricht that only consists of online education in a worldwide collaboration (Interview University of Maastricht, 2014). Besides this, they also experiment with digital tests and other more standardised forms of digitalising their problem-based learning model (Interview University of Maastricht, 2014).

Lifelong learning is something the University of Maastricht does not currently focus on, but they do have post-graduate education. It is important for specialised universities to expand this kind of education because they have the most knowledge in these fields of study (Interview University of Maastricht, 2014). Furthermore, job-oriented skills and competences are considered as less important than learning professional knowledge (Interview University of Maastricht, 2014).

While lifelong learning and job-oriented skills and competences are not a focus point, specialised universities work together with firms in order to offer relevant education programs for the firms. At the University of Maastricht, there is regional focus in the way they focus on the chemical and biobased sector in the province of Limburg, by starting up a study program for system biology and a biobased materials track. At a lower level, cases of firms are used in courses, to solve problems for a firm (Interview University of Maastricht, 2014).

Needless to say, specialisation is the core reason for existence for specialised universities. At the University of Maastricht this specialisation is mostly educational, with a focus on international education and problem based, multidisciplinary learning (Interview University of Maastricht, 2014). Specialised universities can work together with other higher education institutions in the Netherlands, but because of their specialisation those are mostly complementary collaborations. The University of Maastricht does work together with Hogeschool Zuyd in a lot of different projects and they have joint PhD's with the University of Hasselt (Belgium) (Interview University of Maastricht, 2014).

Financial reserves do not have a direct influence on specialised universities, but the budget cuts in the student grants can have an influence on the number of students that are willing to travel further to a specialised higher education institution (Interview University of Maastricht, 2014).

Specialised universities are smaller than most traditional universities, but they do have specific departments that develop strategy. At the University of Maastricht, they want to relieve the workload of employees, so that they can invest more time in thinking about strategy. This can be done by hiring more academic employees, or hiring more administrative employees. This gives lecturers more time to develop new courses and curricula. Because of the relatively small size, there is more communication between the different layers of organisation (Interview University of Maastricht, 2014). This gives space for bottom-up innovation. The dean of a faculty is responsible for

what happens in the faculty and the dean reports to the executive board (Interview University of Maastricht, 2014). However, the main strategy is developed at the level of the executive board in collaboration with the faculties.

Specialised universities are the only type of institutions that do not see the strict regulations for developing a new study program as a challenge. This is partly because there is currently a new clause that states that when a new study program fits with regional industry, this can be an extra motivation for the government to approve the new program (Interview University of Maastricht, 2014).

4.2 Rankings of higher education institutions on the indicators

In the next step of the analysis, the findings from the interviews are ranked per type of higher education institutions for each indicator of the independent and dependent variables. For this purpose the six categories of higher education institutions are put into a rank order from one (most present) to six (least present) in order to indicate their position on each indicator. By comparing these rank orders, insight is gained in the extent to which the higher education institutions have adopted and implemented a prospective stance.

4.2.1 Dependent variables

4.2.1.1 Adoption of a prospective stance

4.2.1.1.1 Presence of a prospective stance in the report

A prospective stance in the strategy report is most present in specialised higher professional education institutions (see table 2). Because of their specialisation and the fact that most of these institutions have no counterparts at the university level, it is more important for these institutions to attract students and develop new study programs, for example master programs. After this type of institutions, specialised and technical universities have the most prospective stance in their report. This can also be attributed to their specialisation, which has led them to decide earlier that they want to invest in for example internationalisation and lifelong learning. Lower in the ranking are large and medium professional education institutions. These institutions want to adapt to the turbulence in the environment, but are not ready yet. Furthermore, their strategy is based on the changing environment, which is more a reactive or defensive strategy than a prospective strategy. Lowest ranked are the traditional universities, which do not see much change in the future for higher education.

Table 2:Rankings on the presence of a prospective stance

Type of higher education institution	**Presence of a prospective stance**
Specialised higher professional education institutions	1
Specialised universities	2
Technical universities	3
Large higher professional education institutions	4
Medium higher professional education institutions	5
Traditional universities	6

4.2.1.2 Implementation of a prospective stance

4.2.1.2.1 Advertising current curricula

Specialised universities are ranked in first place for advertising current curricula (see table 3), because they attract students from all over the Netherlands and they also see neighbouring countries as their home market. Furthermore, they have marketing services in all parts of the world. Specialised higher professional education institutions are on the second place because they have internationally unique curricula and are not just regionally oriented. Technical universities are third, because they are investing in attracting students from all over the world. Traditional universities are at the fourth place, because these universities in general have always had a more national or even international focus than most higher professional education institutions and therefore also try to attract students from all over the Netherlands and foreign countries. On the last places are the medium and large higher professional education institutions. They see themselves as mostly regionally oriented and are not focusing on attracting more students from outside their region. However, the medium higher professional education institutions are mostly located in more sparsely populated areas of the Netherlands, and therefore already feel the need to attract more students from outside their region, while the large higher professional education institutions in the Randstad do not feel this demographic pressure.

Table 3: Rankings on advertising current curricula

Type of higher education institution	**Advertising current curricula**
Specialised universities	1
Specialised higher professional education institutions	2
Technical universities	3
Traditional universities	4
Medium higher professional education institutions	5
Large higher professional education institutions	6

4.2.1.2.2 Broadening the market of current curricula

Specialised higher professional education institutions are ranked first (see table 4) because they already broadened their market both internationally and digitally. They are offering international joint degree programs, invest in digitalisation, for example gamification at the HKU, and they are the only type of institution that offers parts of their curricula in foreign countries. Technical universities are ranked second because they are the frontrunners in the field of digitalisation, but they are not as far in the field of internationalisation as the specialised higher professional education institutions. They have international students, but they do not offer their study programs in other countries and international collaborations are mostly for research, not education. Specialised universities are ranked third because they collaborate with international higher education institutions and invest a lot in digitalised study programs, but they are not frontrunners in these fields. Medium higher professional education institutions are ranked in fourth place, because they always were regional higher professional education institutions but due to the demographic changes in the Netherlands and their location in areas with a decreasing population, medium higher professional education institutions want to catch up in the field of digitalisation and internationalisation. Ranked on the last places are the traditional universities and large higher professional education institutions. Both types of institutions are mostly located in and around the Randstad, and do not feel the need to broaden their markets. Because universities are often more internationally focused than higher professional education institutions, traditional universities are ranked on the fifth place.

Table 4: Rankings on broadening the market of current curricula

Type of higher education institution	Broadening the market of current curricula
Specialised higher professional education institutions	1
Technical universities	2
Specialised universities	3
Medium higher professional education institutions	4
Traditional universities	5
Large higher professional education institutions	6

4.2.1.2.3 Developing new services

Specialised higher professional education institutions are ranked first (see table 5) regarding developing new services, because they collaborate with firms for new study programs and courses, invest in lifelong learning and want their students to be prepared for the job market when they graduate. On the second and third place are the other types of higher professional education institutions. For higher professional education institutions, having a strong relationship with the job market has always been very important because they are so close to the job market. Large higher professional education institutions ranked higher because they are in a further stage of development of lifelong learning programs and collaborations with firms than medium higher professional education institutions. Technical universities are ranked highest of the three types of universities, because they do not currently have large-scale lifelong learning programs and collaborations with firms for education, but they are developing them and figuring out how they want to position themselves in these fields. Specialised universities are ranked fifth because they do not currently focus on lifelong learning, but they have a lot of collaborations with firms. Traditional universities are ranked last because lifelong learning and public-private collaborations are not yet centrally structured. They want to develop new services, but they do not yet know how to implement them in their university structure, without losing their strong points.

Table 5: Rankings on developing new services

Type of higher education institution	Developing new services
Specialised higher professional education institutions	1
Large higher professional education institutions	2
Medium higher professional education institutions	3
Technical universities	4
Specialised universities	5
Traditional universities	6

4.2.1.2.4 Specialisation

For specialisation, it speaks for itself that the specialised higher professional education institutions and universities and technical universities are ranked the highest (see table 6). Specialised higher professional education institutions are ranked first, because they have a specific specialisation and their strategy is focused on that specialisation. They work together with other institutions with the same specialisation on a national and international level, collaborate with firms and offer lifelong learning programs to carry out their specialisation. Technical universities also have a specialisation, and they work together with other technical universities in the Netherlands, but their specialisation is not as specific as for specialised higher professional education institutions. Specialised universities are ranked third, because their specialisation is also less specific and for the University of Maastricht it is more of a educational specialisation, with the focus on problem based learning. Medium higher professional education institutions are ranked in fourth place, because they are more and more

focusing on study programs based on the strong points of their region, like nautical study programs for the Hogeschool Zeeland. They do this because of their decreasing student populations. Traditional universities and large higher professional education institutions are on the last places because they both offer a wide range of study programs. However, traditional universities are ranked higher because they have more collaborations with each other, like the collaboration between the universities of Leiden, Delft and Rotterdam and the collaborations between the two universities in Amsterdam. In these collaborations, they decide which specialisation each university has. Large higher professional education institutions are mostly focused on their own region, and want to offer the student in their region a wide range of study programs.

Table 6: Rankings on specialisation

Type of higher education institution	**Specialisation**
Specialised higher professional education institutions	1
Technical universities	2
Specialised universities	3
Medium higher professional education institutions	4
Traditional universities	5
Large higher professional education institutions	6

4.2.2 Independent variables

4.2.2.1 Slack resources

4.2.2.1.1 Surplus of financial resources

Large higher professional education institutions are ranked firms because they mostly have financial reserves to implement their strategy, so money is not a challenge for these higher education institutions (see table 7). Traditional universities are ranked in second place, because they also do not see money as a problem, but because they do more research, more money is needed for research. Specialised higher professional education institutions were ranked in third place, because they see the decreasing government funds as a minor challenge. They state that they can get financial resources from other sources, like projects with firms. Medium higher professional education institutions also state they can do projects with firms for money, however, because of their smaller size, financial resources can sometimes become a problem when they want to implement a big strategic change. Specialised universities do not see financial resources as a challenge, but the budget cuts from the government on student grants can have an influence on the number of students that are willing to travel to a specialised university. Technical universities are ranked in last place because they see the decrease of money from the government as a bigger challenge than other types of higher education institutions. The budget cuts decrease the strategic space of institutions. This happens because technical universities work with expensive machines and laboratories that cost a lot of money.

Table 7: Rankings on the surplus of financial resources

Type of higher education institution	Surplus of financial resources
Large higher professional education institutions	1
Traditional universities	2
Specialised higher professional education institutions	3
Medium higher professional education institutions	4
Specialised universities	5
Technical universities	6

4.2.2.1.2 Surplus of human resources

Specialised higher professional education institutions are ranked first (see table 8) because they do want their lecturers to be involved in developing new courses and curricula, but they do not want to increase the work load of their employees. Because these institutions are relatively small, communication is easier than in larger higher education institutions, so a separate strategy department is not present. Specialised universities are second because they want to invest in more employees, to relieve the workload of their employees and deploy more employees for developing new courses and curricula. Large higher professional education institutions are third, because they have a specific strategy department and they invest in their employees by giving them the opportunity to follow courses or a master program. Medium higher professional education institutions are in fourth place. They are too small to have a specific strategy department, but there are teams of employees at these institutions that focus on innovation, like the innovation team of Saxion Hogeschool. Furthermore, they want to stay attractive as an employer and therefore invest a lot in their employees. In the last places are technical and traditional universities. Employees of universities do not only focus on education, as they spend a large part of their time to research. This means that there are high workloads for academic employees to deploy and develop new courses and curricula.

Table 8:Rankings on the surplus of human resources

Type of higher education institution	Surplus of human resources
Specialised higher professional education institution	1
Specialised universities	2
Large higher professional education institutions	3
Medium higher professional education institutions	4
Technical universities	5
Traditional universities	6

4.2.2.2 Entrepreneurial orientation

4.2.2.2.1 Decentralisation of decision-making

Traditional universities are ranked first regarding the decentralization of decision-making (see table 9), because most professors and researchers at traditional universities are very autonomous. However, this can lead to challenges for the executive board to direct the whole organisation toward a shared goal. Technical and specialised universities also have these challenges, but because they are smaller and more specialised higher education institutions, the decentralisation causes less challenges. Specialised higher professional education institutions are ranked fourth, because main processes are structured on a central level, while improvements of education are undertaken by lecturers. Medium and large higher professional education institutions are ranked fifth and sixth because they are larger than specialised higher professional education institutions and have more

processes centrally structured. However these institutions also find it important that lecturers and faculties undertake innovative activities at the level of their study program or faculty.

Table 9: Rankings on the decentralisation of decision-making

Type of higher education institution	Decentralisation of decision-making
Traditional universities	1
Technical universities	2
Specialised universities	3
Specialised higher professional education institutions	4
Medium higher professional education institutions	5
Large higher professional education institutions	6

4.2.2.2.2 Changing routinised processes and procedures

Specialised higher professional education institutions are ranked first (see table 10), because they state that large routinised processes in bureaucratic organisations lead to bad communication and delay in decision-making and they want to avoid that. Decisions have to be made at a low level and, because of their relatively small size, communication in the organisation is fast. This gives employees space to develop their own ideas. Ranked second are technical universities, because most of their decisions are decided on a low level of the organisation, but they also use some standard procedures to reach shared goals. Specialised universities are ranked third, because their strategy is decided on the level of the executive board, but in collaboration with the faculties of the university. Traditional universities are in fourth place, because they state that it is important to have some centrally organised processes, but bureaucracy in the education system can lead to destruction of capital. In the last years, they underwent a change from very autonomous professors and faculties, to a more centrally structured organisation. This can sometimes still lead to friction, so they have to find a way to balance autonomy and centrally organised processes in the best way. Medium and large higher professional education institutions are almost in the same situation with more routinised processes and procedures than the other types of higher education institutions. As large higher professional education institutions are larger, there are more centrally organised processes.

Table 10: Rankings on changing routinised processes and procedures

Type of higher education institution	Changing routinised processes and procedures
Specialised higher professional education institutions	1
Technical universities	2
Specialised universities	3
Traditional universities	4
Medium higher professional education institutions	5
Large higher professional education institutions	6

4.2.2.3 Environmental turbulence

4.2.2.3.1 Political developments

All types of higher education institutions see the strict rules on quality control and accreditation as a challenge. Furthermore, the three specialised types of higher education institutions state that budget cuts in student grants can influence the number of students that is willing to travel further for a specialised higher education institutions. Specialised higher professional education institutions are ranked first (see table 11), because they state that there need to be clear rules for internationalisation and part time study programs in the Netherlands and it will otherwise hinder

innovation. Technical universities are ranked second, because they mostly work with expensive equipment and laboratories, so when government funding decreases they need to find a way to stay attractive for students with less money. Furthermore, they want to be frontrunners in the field of digitalisation, and there is not yet clear regulation for this. Large higher professional education institutions do not see political developments as having a large influence on strategy, only in the field of strict regulations on quality and accreditation. Medium higher professional education institutions are ranked fourth, because they see political developments less as a problem because there are other environmental turbulences that have a larger influence on their strategy. However, both medium and large higher professional education institutions state that clear regulation on lifelong learning programs is needed. Specialised universities are fifth, because they do not see political developments as having a large influence on their strategy. They state that while there are regulations that can hinder innovation, regulation can also help higher education institutions develop new study programs. Ranked last are the traditional universities. They do not see political developments as having a large influence on their strategy because they are very old organisations that have always chosen their own strategic path. However, they state that too much government control can make changes go very slowly in the higher education system.

Table 11: Rankings on political developments

Type of higher education institution	**Political developments**
Specialised higher professional education institutions	1
Technical universities	2
Large higher professional education institutions	3
Medium higher professional education institutions	4
Specialised universities	5
Traditional universities	6

4.2.2.3.2 International developments

International developments have the largest influence on the strategy of specialised higher professional education institutions (see table 12) because they focus strongly on international students and international collaboration and compete with other higher education institutions on a international level. Technical universities are ranked second, because they state that international higher education institutions are improving at a rapid speed and will become huge competitors for Dutch higher education institutions. They therefore state that it is important to keep up. Specialised universities are ranked in third place, because they also already have a large number of foreign students and collaborations with international institutions. They see international competition from neighbouring countries as a challenge for the future. Traditional universities are ranked fourth on the influence on strategy of international developments, because they see a bigger influence of Europe in higher education and want to attract more international students, but they are not as far in the development of a strategy for this as the aforementioned higher education institutions. Medium higher professional education institutions are ranked fifth, because they always were regional higher education institutions like the large higher professional education institutions, but because of the developments in their regions, they are developing strategies to broaden their market to foreign countries. This leaves large higher professional education institutions at the sixth place, because they want to focus on their region, and do not see international developments as having a big influence on their strategy.

Table 12: Rankings on international developments

Type of higher education institution	International developments
Specialised higher professional education institutions	1
Technical universities	2
Specialised universities	3
Traditional universities	4
Medium higher professional education institutions	5
Large higher professional education institutions	6

4.2.2.3.3 Demographical developments

Medium higher professional education institutions are affected the most by demographical developments (see table 13), because they are mostly located in areas with a decreasing (student) population. Therefore, they are already changing towards a more specialised and a more national or even internationally oriented higher education institution. Large higher professional education institutions are less influenced in their strategy by these demographical developments of decreasing population, but the ones in the Randstad are experiencing a demographical change in their student population with the increase of first-generation students from immigrant families. This type of students needs a different approach and often more support. Technical universities are ranked third, because the decreasing student population has an influence on the way these universities use their buildings. Technical universities mostly have monofunctional buildings that cannot be used for anything else when they are no longer needed in the future, which they want to avoid. Specialised universities are ranked in fourth place, because they have a lot of international students, so the decreasing Dutch student population has less of an influence on the strategy of this type of higher education institutions. However, in the case of the University of Maastricht, the decreasing and ageing population of their region can become a challenge for finding enough highly-skilled employees and keeping these employees in the region. Specialised higher professional education institutions are ranked fifth, because they were never region-based in the first placed. They are used to attracting students on a national and international level based on their specialisation. Traditional universities are ranked on the last place because they do not see demographical developments as having a large influence on their strategy now or in the near future. Universities have grown so much over the last couple of years that a small decrease is even desirable to some extent. Furthermore, most traditional universities are located in or near the Randstad, which still experiences population growth.

Table 13: Rankings on demographical developments

Type of higher education institution	Demographical developments
Medium higher professional education institutions	1
Large higher professional education institutions	2
Technical universities	3
Specialised universities	4
Specialised higher professional education institutions	5
Traditional universities	6

4.2.2.3.4 Technological developments

Technological developments have the largest influence on the strategy of technical universities (see table 14) as they want to stay frontrunners in technology and digitalisation of education. Specialised universities are ranked second, because they are already experimenting with digitalisation of education and digitalised curricula to attract more students. Specialised higher professional

education institutions also state that this is very important, but not all specialised higher professional education institutions have already implemented digitalised education. Large higher professional education institutions are ranked fourth because they want to implement this technology in their curricula, as more and more students expect digital technology to be part of their education. However, it is not fully implemented yet. This is the same for medium higher professional education institutions, but this type of higher education institutions states that they are too small to build large platforms for this themselves. On the other hand, they do want to use MOOCs to profile their study programs outside their own region. Traditional universities are ranked last, because they want to invest in digital technology and see this technology as having an important influence on higher education in the future, but they mostly want to be flexible to adapt to future changes instead of being a frontrunner. Furthermore, they see digitalisation of education more as an addition to regular education, instead of a replacement.

Table 14:Rankings on technological developments

Type of higher education institution	**Technological developments**
Technical universities	1
Specialised universities	2
Specialised higher professional education institutions	3
Large higher professional education institutions	4
Medium higher professional education institutions	5
Traditional universities	6

4.2.2.3.5 Changes in demand for education

Specialised higher professional education institutions want to keep up with the changes in demand for education, and therefore they are ranked first (see table 15). Teaching skills and an entrepreneurial orientation to students has become more important, just like building networks and working together in varied teams. Specialised higher professional education institutions also want to invest in collaborations with firms for study programs and lifelong learning projects, because they are the leading expert in their specialisation. Technical universities are ranked second because they state that it is necessary for public higher education institutions to invest in the field of lifelong learning, because otherwise they will lose their market share to private higher education institutions. Furthermore, they state that they should always continue developing their study programs to stay up to date. Medium higher professional education institutions are ranked third, because they are investing in lifelong learning programs and flexible and digitalised lifelong learning projects. They also find it important that study programs are flexible and teach skills and competences to students to deal with the changing environment. Specialised universities are ranked fourth because they mostly see a change in the attitude of students. Students increasingly choose a program that gives the most return on investment. This means that it is very important to offer high quality education. Otherwise, students will search for alternatives. Large higher professional education institutions are ranked fifth, because changes in demand for education already have an influence on the strategy of this type of institutions as they constantly change their curricula to adapt to these changes. Traditional universities are ranked on the last place, because they do not see a big increase in competition from other institutions that offer higher education. Universities have even become more important in research for firms. But student skills and competences become more important, and students will become more critical about their education, although it is difficult to predict future developments.

Table 15: Rankings on changes in demand for education

Type of higher education institution	Changes in demand for education
Specialised higher professional education institution	1
Technical universities	2
Medium higher professional education institutions	3
Specialised universities	4
Large higher professional education institutions	5
Traditional universities	6

4.3 Comparing the rankings of higher education institutions on different variables

Investigating the rankings, the indicators of the dependent variables and the indicators of the independent variables have been compared with each other, to analyse if they are related (see figures 4, 5, 6 and 7). After this comparison, dependent variables have been compared with the independent variables.

For the dependent variables, the rankings on the indicators of the implementation of a prospective stance (advertising current curricula, broadening the market of current curricula, developing new services and specialisation) and the adoption of a prospective stance (presence of a prospective stance in the report) of the different types of higher education institutions are shown in figure 4.

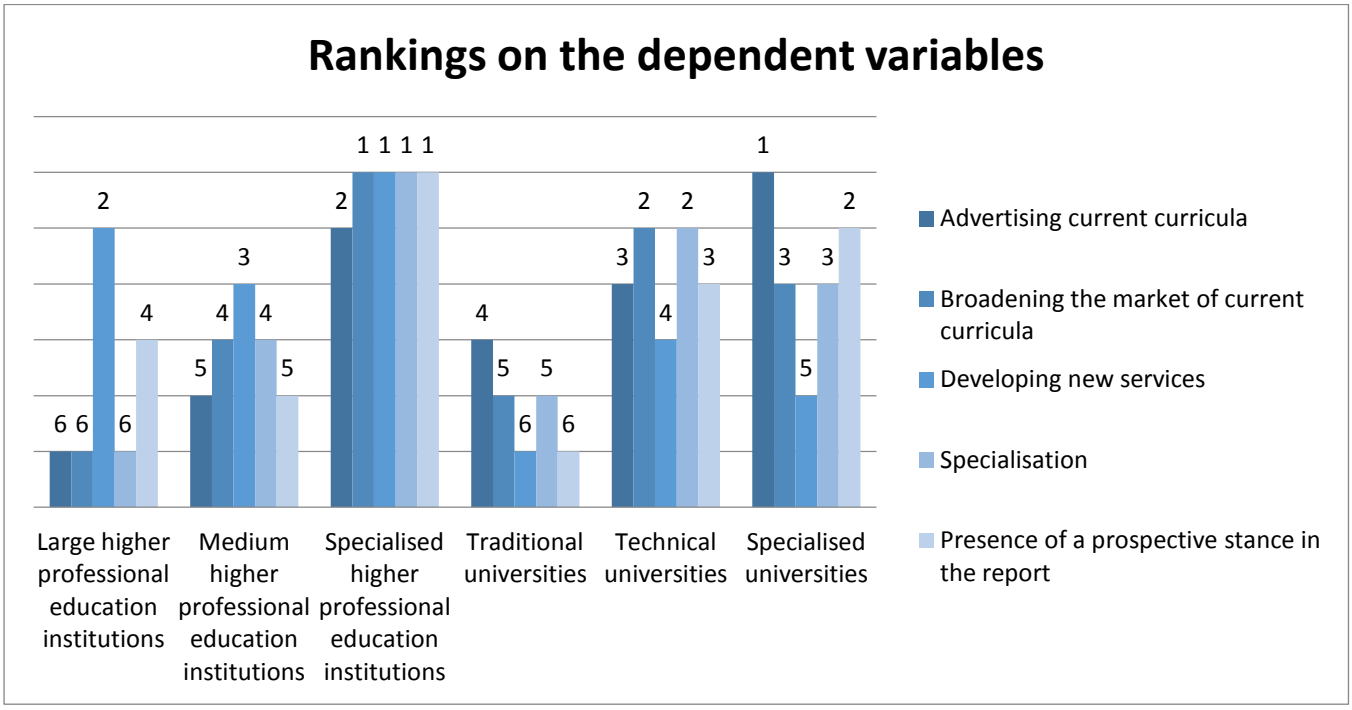


Figure 4: Comparison of rankings on the indicators of the dependent variables

The comparison of indicators presented above show that specialised higher professional education institutions are the only type of higher education institutions that rank high on all the indicators. (see figure 4). The other types of higher education institutions only ranked high on one or two of the indicators. For example, specialised universities ranked high on the presence of a prospective stance in the report, but only focus on advertising current curricula. The prospective stance that is present in their strategic report is far from being fully implemented in the organisation. Traditional universities ranked the lowest overall.

In figure 4, the rankings on 'developing new services' are not in line with those on the other indicators of the implementation of a prospective stance and with the rankings on having adopted a prospective strategic stance. It might be possible that developing new services is different, because all types of higher education institutions are developing new services to a more or lesser extent, but this can be in several non cumulative ways, like post graduate education, part time education, separate trainings and courses and curricula in collaboration with firms. Accordingly, 'developing new services' seems a less good indicator of the implementation of a prospective strategic stance and will be disregarded in the comparisons of the dependent indicators with the indicators of the independent concepts to be presented later on.

Overall, it can be seen that higher education institutions that have adopted a more clearly prospective stance (i.e. the stance is present in their strategy report), also rank higher on the extent to which this prospective stance is implemented. This means that there seems to be evidence supporting hypothesis 4 *'a prospective stance is positively related to strategic action*'.

This comparison was also done in the same way for the independent variables. The first independent variable is 'slack resources' with the indicators of financial reserves and human resources (see figure 5). The indicators show that higher education institutions that ranked high on having a surplus of financial resources ranked low on having a surplus on human resources. Furthermore, higher education institutions that are ranked high on having a surplus on human resources are ranked high on having a prospective stance, like specialised higher professional education institutions and specialised universities. Higher education institutions that are ranked high on having a surplus of financial resources are ranked low on having a prospective stance, like traditional universities and large higher professional education institutions. Technical universities are an exception, because they ranked low on both financial and human resources, but ranked high on having a prospective stance. This might be related to the fact that they have to invest a lot of money in expensive materials and equipment, which they cannot invest in creating a surplus of human resources necessary for the implementation of the adopted prospective strategic stance. This makes it more difficult for technical universities to implement a prospective stance.

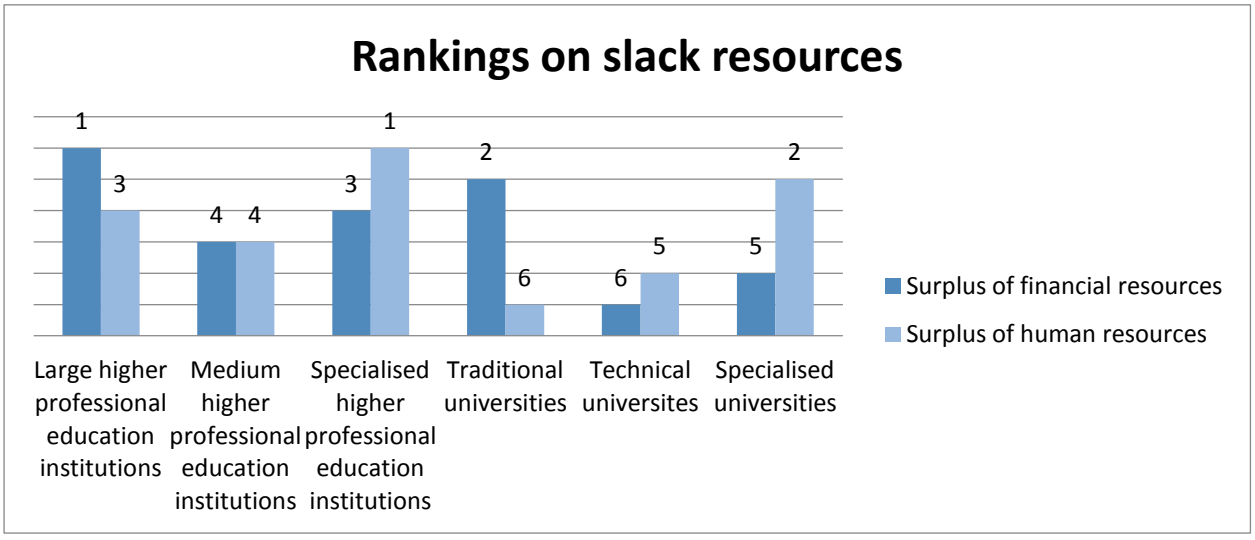


Figure 5: Comparison of rankings on the indicators of slack resources

For the other types of higher education institutions, the results show that when higher education institutions adopt a prospective stance, they invest their surplus of financial resources in employees and hiring new employees to implement the strategy. Higher education institutions that stated that

they invested in their employees to develop strategy and innovation had a prospective stance, while higher education institutions that stated that they had trouble finding enough skilled employees and had employees with high workloads had a more reactive strategy. Therefore, slack resources have a positive influence on the extent to which a higher education institutions can implement a prospective stance, but financial resources are not enough. There is no evidence found supporting hypothesis 2 *'slack resources are positively related to the adoption of a prospective stance'*. This is because slack resources are used to implement the strategic stance, they are not the reason for the higher education institutions to adopt a prospective stance. On the other hand, there is evidence found supporting hypothesis 6 *'slack resources are positively related to strategic action'* , because investing financial reserves in human resources makes it more easy to undertake strategic action.

The second independent variable is 'entrepreneurial orientation' with the indicators of decentralisation of decision-making and changing routinised processes and procedures (see figure 6). However, decentralisation of decision-making does not seem to have a direct influence on the extent to which higher education institutions have an entrepreneurial orientation. Universities traditionally have been decentralised organisations with a lot of autonomy for the individual professors and researchers, while higher professional education institutions always have been more centrally organised. This is also shown in figure 6 with universities ranking high and the higher professional education institutions ranking low. Both types of higher education institutions have not changed their structure and are locked in their traditional structure of being centralised or decentralised. Because entrepreneurial orientation is about an organisation undertaking innovative, proactive and changing activities (Tang & Tang, 2012), the indicator of decentralisation of decision-making seems less relevant for analysing the entrepreneurial orientation of a higher education institution. Decentralisation does not automatically lead to an entrepreneurial orientation, because it is about the ability to change the organisation that leads to an entrepreneurial orientation, which is hardly the case in this study.

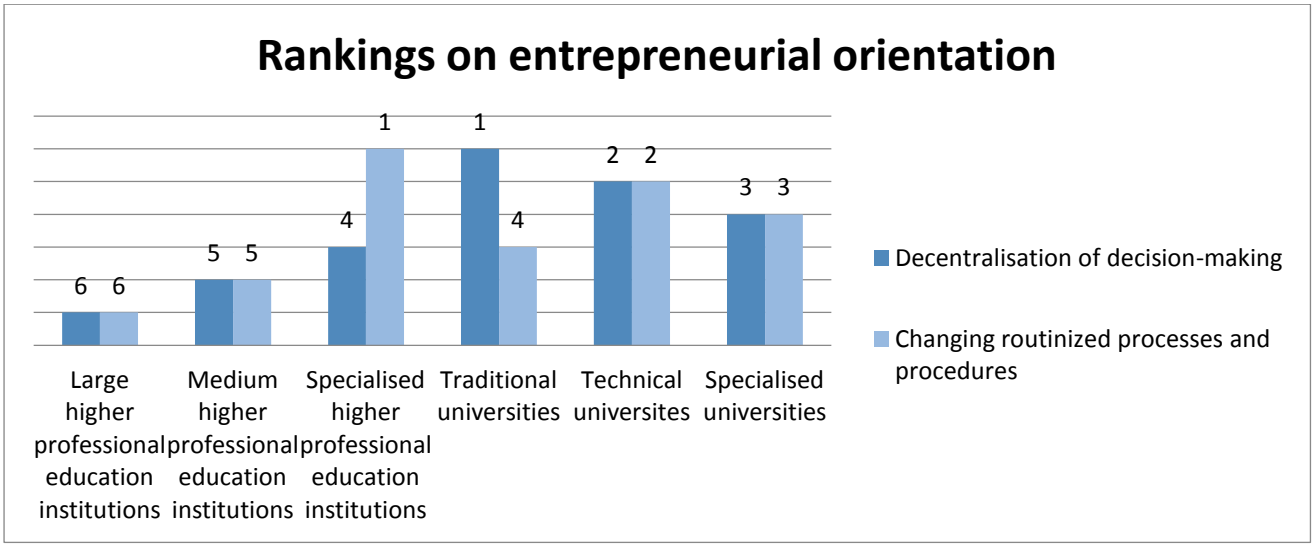


Figure 6: Comparison of the rankings on the indicators of entrepreneurial orientation

The extent to which routinised processes and procedures can change shows a more direct relation to having an entrepreneurial orientation. The specialised types of higher education institutions are ranked the highest on this indicator. These types of higher education institutions are also the types with the most present in terms of changing routines and processes prospective stance. This shows that an entrepreneurial orientation of higher education institutions is positively related to having a prospective stance. However, while an entrepreneurial orientation is important for changing an

organisation to implement strategic action, having an entrepreneurial orientation did not automatically lead to the adoption of a prospective stance in higher education institutions. A shared strategy is needed in a higher education institution before the higher education institution can make use of an entrepreneurial orientation by undertaking proactive and innovative activities. This shows that there is no evidence supporting hypothesis 3 *'an entrepreneurial orientation is positively related to the adoption of a prospective strategy',* but there is evidence supporting hypothesis 7 *'an entrepreneurial orientation is positively related to strategic action'* in terms of changing routinised processes and procedures.

The third independent variable is 'environmental turbulence' with the indicators of political developments, international developments, demographical developments, technological developments and changes in demand for education (see figure 7).

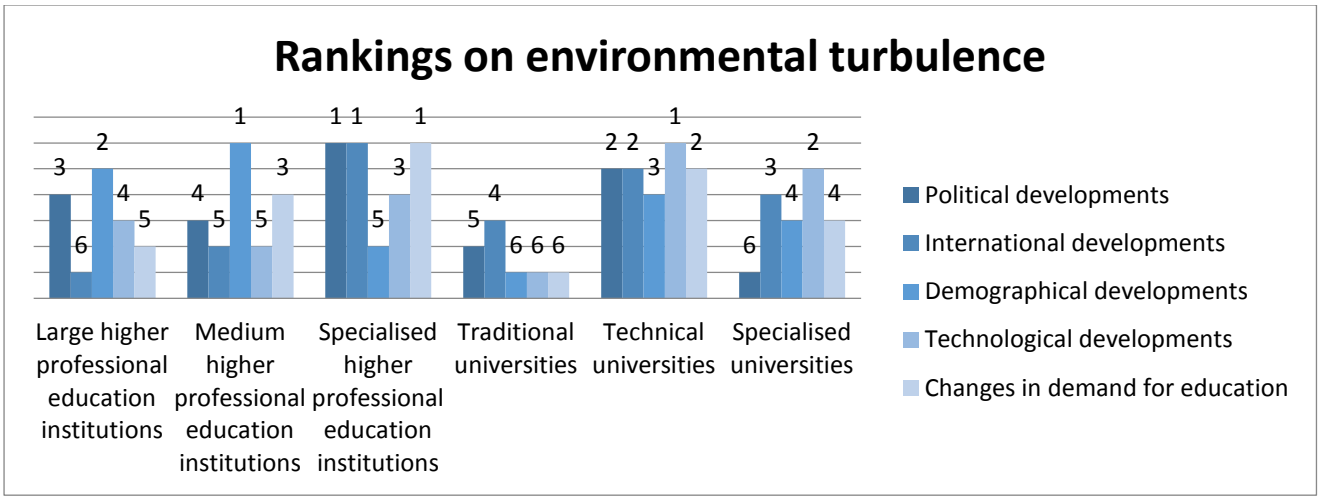


Figure 7: Comparison of rankings on the indicators of environmental turbulence

The two types of higher education institutions that have the strongest relation with the different environmental turbulences are also two types of higher education institutions with a present prospective stance: specialised higher professional education institutions and technical universities. Furthermore, the strategy of the traditional universities is the least influenced by environmental turbulences, and this is the type of higher education institution with the least present prospective stance.

Political developments have the strongest relation with the strategy of the types of higher education institutions that want to be frontrunners in the field of internationalisation, digitalisation or lifelong learning (i.e. specialised higher professional education institutions, technical universities and large higher professional education institutions) and the specialised types of higher education institutions. The specialised types of higher education institutions are the types of higher education institutions that have the most prospective stance. Furthermore, the higher education institutions that stated that they wanted to become a frontrunner in a specific field can be seen as having a prospective stance in that field. This shows a positive relation between the challenges posed by political developments and taking a prospective stance.

The next indicator, international developments, also has the strongest relation with the strategy of the specialised types of higher education institutions. This is because they do not only focus on the Netherlands, but they also try to attract foreign students. The types of higher education institutions that are focused more on their own region, the large and medium higher professional education institutions, are ranked the lowest. These types of higher education institutions are respectively

ranked high and low on having a prospective stance. This shows that the extent to which they were influenced by international developments has a positive influence on the extent to which the institution has a prospective stance.

The third indicator, demographical developments, is ranked the highest for the regional higher education institutions; the large and medium higher professional education institutions. Demographical developments are the main reason for developing a strategy and undertaking strategic action in these types of higher education institutions. For medium higher professional education institutions this is because of the decreasing number of students in their region, while for large higher education institutions this is because of the demographical change in student population with the increase of first-generation students from immigrant families. However, in institutions that are not regionally bound, like the specialised types of higher education institutions, demographical developments only had a small influence on their strategy. Traditional universities do not see demographical developments as having an influence on their strategy at all. Therefore, demographical developments can be seen as having a positive influence on the extent to which a higher education institution has a prospective stance for the regional higher education institutions.

The fourth indicator, technological developments, is ranked as having the strongest relation with the strategy of technical universities, which is not strange because technology is their specialisation. The other specialised types of higher education institutions are also ranked high, because they want to use technological innovations to reach more students in foreign countries. Large and medium higher professional education institutions are more and more influenced by technological developments, because they want to focus more on lifelong learning, and medium higher professional education institutions want to attract more students from outside their region. In total, a positive relation can be seen between the extent to which technological developments influence the strategy of a higher education institution and the extent to which the institution had a prospective stance.

The last indicator, changes in demand for education, had a less clear relation with the extent to which a higher education institution has a prospective stance. Most types of institutions stated that they are always trying to update their curricula, not necessarily because of changes in the demand for education. Therefore, this indicator has only a weak positive relation with the extent to which a higher education institution has a prospective stance.

These five indicators show that environmental turbulence has a strong relation with the strategy of higher education institutions. It can even be the decisive factor for the development of a strategy or for making large strategic decisions. However, for each type of higher education institution, different types of environmental turbulence are relevant. This shows that there is evidence supporting both hypothesis 1 *'environmental turbulence is positively related to the adoption of a prospective strategy'*, because of the large influence on strategy formation, and hypothesis 5 *'environmental turbulence is positively related to strategic action'*, because the environmental pressure on higher education institutions induces higher education institutions to adopt and implement a prospective strategy.

4.4 Summary of the results

After the analyses of the different variables, a summary can be given for the different types of higher education institutions. Based on the results obtained, the conceptual model in figure 2 should be adapted to with the findings of this study (see figure 8).

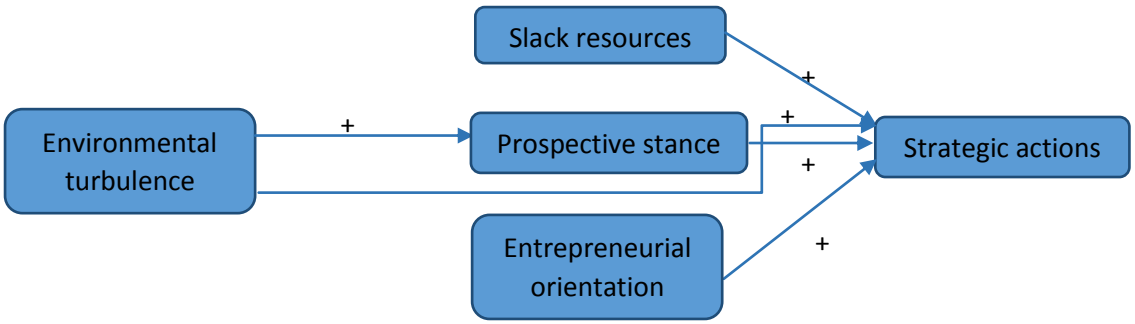


Figure 8: Adapted conceptual model

This adapted conceptual model shows that environmental turbulence has a positive effect on both the adoption of a prospective stance and undertaking strategic action, and that slack resources, the adoption of a prospective stance and an entrepreneurial orientation have a positive effect on undertaking strategic action. However, the concepts in the conceptual model can differ in importance and meanings between the various types of higher education institutions, especially environmental turbulence.

Specialised higher professional education institutions have the most prospective strategy. Environmental turbulences that influence the strategy of this type of higher education institutions are international developments, political developments, and changes in demand for education. Because of their specialisation, these institutions are not regionally or nationally oriented like broader higher education institutions; they focus more on international developments in their niche market. Changes in demand for education influence this type of higher education institution because they want to stay attractive for Dutch as well as foreign students. Therefore, they develop lifelong learning programs, digital education programs, separate courses, and study programs in collaboration with firms. However, this may lead to difficulties because government regulation is not yet adapted to these new forms of higher education. In this way, government regulation sometimes hinders such developments initiated by these higher education institutions. To keep their prospective strategy, they invest in their employees and also have moved towards a very decentralised organisation structure.

Specialised universities are starting to implement a more prospective strategy. Environmental turbulences that influence the strategy of this type of higher education institutions the most are international and technological developments. The reason for the influence of international developments is the same as for specialised higher professional education institutions; their specialisation. Moreover, in the specific case of the University of Maastricht, the location of the university near the borders of Germany and Belgium contributes to this. This international focus also makes technological developments more important, because with digital education programs specialised universities can reach more foreign students. To implement their strategy, specialised universities mostly try to broaden their market and promote their curricula, to reach as many students as they can. However, this is not enough to implement a prospective strategy, so further strategic actions have to be developed. Furthermore, they have a less entrepreneurial orientation

than specialised higher professional education institutions. To change this and to develop more strategic actions, they invest a lot of financial resources in their human resources.

Technical universities are also in the process of implementing a more prospective strategy. Environmental turbulences that influence the strategy of these universities are political, international, demographical and technological developments and changes in the demand for education. They are very aware of the changes in education, and are developing their strategy to cope with these changes. International and demographical developments have an influence on the strategy of this type of higher education institution, because they want to invest in internationalisation and having more foreign students. Currently, most of their students are Dutch and they see that this student population is decreasing. Technological developments also have a large influence on their strategy, because technology is their specialisation. They want to be frontrunners in the field of digitalisation of education. This explains the influence of the changes in the demand for education, that partly exists of students that expect higher education institutions to become more digitalised. Political developments have an influence on technical universities because further budget cuts from the government can have a large influence on technical universities with their expensive laboratories and special buildings, and on the number of students because cuts in student grants can lead to less students being able to travel to these universities.

Medium higher professional education institutions are recently starting to change towards a more prospective strategy. Environmental turbulences that have an influence in these decisions to become more prospective are demographical developments and changes in demand for education. Because this type of higher education institutions is mostly located in more sparsely populated areas of the Netherlands than large higher professional education institutions, the prospect of decreasing numbers of Dutch students has caused these higher education institutions to think about their strategy. They want to become more specialised and are trying to find niche markets, besides offering a broad package of standard study programs. Therefore, they are collaborating more (or are even merging) with other higher education institutions in their region. For the specialised part of their organisation, they are developing lifelong learning and digitalised study programs. In this way, they want to stay attractive in the future, not only for students from their own region with the standard study programs, but also for students from outside their region with their specialisation. This is the reason why changes in demand for education have an important influence on the strategy of this type of higher education institutions, because they have to adapt to the demand for education to stay attractive.

For large higher professional education institutions, the regional environment is the most important. Most of these institutions are located in densely populated areas of the Netherlands, so they do not yet experience decreasing student numbers. However, they do experience changes in their student population because of the increasing number of first-generation students from immigrant families. They want to offer study programs that are of high quality and are relevant for the regional job market. They invest a lot of financial and human resources in improving their study programs and the quality of their education and they have special financial reserves to do this. Their regional focus can also be seen in the way they attract students, and the collaborations they have with regional firms. In these collaborations, they offer study programs in collaborations with firms and also implement firm projects in their curricula. In this way, they want to stay up to date on changes in the region and the kind of employees the regional job market needs.

Traditional universities have the least prospective stance. Most environmental turbulences are not seen as having a large influence on this type of higher education institutions. Of the five identified types of environmental turbulence, traditional universities only did not rank the lowest on

technological and international developments. Traditional universities are aware of the fact that education is becoming more international, and that technology is getting a more important place in education, but they do not (yet) feel the need to change quickly.

5. Conclusion

In this study the adoption and implementation of a prospective strategy of Dutch higher education institutions is analysed. This is done based on the following research question:

To which extent have Dutch higher education institutions adopted and implemented prospective strategies to anticipate to upcoming environmental turbulences and under what conditions?

The multi-level theory and theories of strategy formation in public organisations are used to analyse the adoption and implementation of a strategy for the future by higher education institutions. The theory of the multi-level perspective was useful for identifying the environmental turbulences and barriers for innovation in the higher education system. The theories about strategy formation in public organisations were useful for giving insights in different strategic stances and how they are implemented and also gave insights into what is needed in the organisation to adopt and implement a prospective stance, instead of only focusing on external inducements.

The extent to which higher education institutions have adopted a prospective strategy is positively related to environmental turbulence, and the extent to which higher education institutions have implemented prospective strategies is positively related to their slack resources, entrepreneurial orientation and environmental turbulence. Higher education institutions that have adopted a prospective stance, also undertake strategic actions to implement this strategy.

In total seven relations derived from theory have been investigated to study the strategies of higher education institutions by conducting interviews with four experts in the field of higher education, seventeen higher education institutions, and one faculty board member of six of those higher education institutions. There is evidence found supporting all hypothesised relations, except for hypothesis 2 *'slack resources are positively related to the adoption of a prospective strategy'* and hypothesis 3 *'an entrepreneurial orientation is positively related to the adoption of a prospective strategy'*. There is no evidence found for supporting these hypotheses because slack resources and an entrepreneurial orientation are important for implementing a prospective strategy, but having slack resources and/or an entrepreneurial orientation does not lead to the adoption of a prospective stance, only environmental turbulences do.

This shows that when a higher education institution has adopted a prospective stance, they need slack resources and an entrepreneurial orientation to implement it. To do this, they should be able to change their routinised processes and procedures to undertake strategic action. Furthermore, when a higher education institution is implementing their prospective stance, they need to invest their financial resources in their human resources. This can be seen in the results. Higher education institutions that have more slack human resources also have a more prospective stance.

The type of higher education institutions that has implemented a prospective strategy to the largest extent and has undertaken most strategic actions are the specialised higher professional education institutions. In traditional universities, the prospective strategy and strategic actions to implement this strategy are the least present. Furthermore, there are some differences between universities and higher professional education institutions in general. Higher professional education institutions have more collaborations with firms, are more regionally oriented, and have more lifelong learning programs. Universities are more internationally oriented, have a more decentralised organisation structure and have less collaborations with firms in the field of education.

To sum up this conclusion, a higher education institution needs to feel the necessity to change to adopt a prospective stance. Types of higher education institutions that are aware of environmental

turbulences have a more prospective stance. However, different types of higher education institutions experience different types of environmental turbulence that are relevant to them. To implement a prospective stance in higher education institutions, both slack human resources and an entrepreneurial orientation are needed.

6. Discussion

The results of this study have several implications. First, there are some theoretical implications. The conceptual model must be adapted to fit with the findings of the study (see figure 8). The conceptual model can be filled out differently for different types of higher education institutions, due to their different external and internal conditions. This adapted conceptual model shows that only environmental turbulence has a positive effect on both the adoption and implementation of a prospective stance. This is in line with the study of Naranjo-Gil (2009) that states that organisations are more sensitive to environmental factors than to organisational factors. This is stronger in public sector organisations, because they have legal limits on their service and territorial mandates (Boyne & Meier, 2009). However, Hannan & Freeman (1984) and Ashworth et al. (2007) argue that environmental turbulence may alter the organisational periphery but leaves the core intact. Organisational structures and processes can be influenced, but the culture and strategic stance is not affected by these pressures (Ashworth et al., 2007).

Slack resources, the adoption of a prospective stance and an entrepreneurial orientation have a positive effect on undertaking strategic action. Previous studies on strategy formation in public sector organisations have stated that slack resources trigger organisational search for innovation and strategy formulation in the public sector (Salge, 2011; Poister et al., 2010; Boyne & Walker, 2004). However, the results of this study show that slack resources have a positive effect on undertaking strategic action, but not on adopting a prospective stance. The results from this study are in line with the study by Berry & Wechsler (1995), which states that implementing a strategic plan requires resources, but the formulation of a strategic plan can actually be encouraged by a lack of resources.

On having an entrepreneurial orientation, organisations with a prospective stance are generally associated with risk-taking and entrepreneurial managers (Meier et al., 2007; Tang & Tang, 2012). Prospective organisations do best when there is room for managers to explore new paths and technologies. However, this study only found a positive relation between an entrepreneurial orientation and implementing a prospective stance, not between an entrepreneurial orientation and adopting a prospective stance. Furthermore, decentralisation of decision-making could not be used as an indicator for an entrepreneurial orientation in this study. This is in line with the findings of Hendrick (2003) that state that strategic planning is more difficult in departments that use a decentralised planning process. Employees tend to view strategic planning as a top-down enterprise, and when this changes to a bottom-up, decentralised activity support decreases (Hendrick, 2003). Contrary, Andrews et al. (2007) state that organisations with decentralised processes are more often associated with a prospective stance, but this point of view is not supported by the results of this study.

This study shows that external environmental factors seem to have a larger influence on adopting a prospective stance than internal factors like employees and financial reserves. Specialised higher professional education institutions have implemented the prospective stance to the largest extent, followed by the other specialised types of higher education institutions: specialised universities and technical universities. The broader types of higher education institutions have not yet implemented a prospective stance and currently focus only on the small changes in the socio-technical regime. They operate in a stable environment with incremental innovations and a semi-coherent set of rules carried by different social groups (Geels, 2002; Geels, 2004).

For the broad higher education institutions to change, the socio-technical landscape has to change more severely to provoke windows of opportunity (Geels, 2002; Geels, 2004). This can already be seen with the different environmental turbulences discerned in this study that influence the higher

education institutions in the socio-technical regime. For example, the medium higher professional education institutions that are moving towards becoming more specialised to deal with the decreasing student populations in their region and becoming more attractive on an international level.

This shows that higher education institutions that are operating in a niche market (the specialised types of higher education institutions) are more innovative than broader higher education institutions. They can operate in international niche markets and are less dependent on developments in the Netherlands. This is because these niche markets are insulated from the 'normal' Dutch higher education market, which make it easier for innovations to emerge (Geels, 2002; Van Driel & Schot, 2005). These higher education institutions can dedicate more time and resources in developing innovations for this specialisation. This also corresponds with Boyne & Walker (2004) who state that prospectors may choose to develop better products for a wider market; in this case, developing study programs for international students that can compete on the international higher education market.

The theoretical relevance of this study is that it overcomes the critiques of the MLP that it focuses too much on technological niches as principal locus for change and that it mostly has a technology focus, neglecting other aspects. By combining the MLP with the strategic management theories, this study shows how organisations interact with their environment and respond to changes in this environment. Furthermore, this study overcomes the critique on the technology focus, because niches in the higher education system are based on the specialisation of higher education institutions, which can be a technological specialisation, but also a specialisation based on specific fields of study or an educational specialisation. For the firm level theories on strategy, the relevance of this study is that these theories are used on public organisations, that behave differently than private organisations.

Besides the theoretical relevance, the societal relevance of this study is to give insights in to the chances of survival of Dutch higher education institutions in the future. This relevance lies in the managerial and policy implications of this study. As it becomes clear from the results section, higher education institutions that invest a lot in their human resources are more likely to have adopted and implemented a prospective stance than higher education institutions that do not. Financial resources are not that important for a prospective stance. Most higher education institutions that stated that they had financial reserves even ranked lowest on having a prospective stance. An implication for higher education institutions is therefore to invest financial resources in human resources, because they are important for implementing a prospective stance in order to anticipate to environmental turbulences. Another managerial implication is that higher education institutions should focus more on their specialisation. A specialisation that is internationally distinctive leads to a stronger position in the future. This makes international profiling important. Higher education institutions should find out which specialisations they have and how they can develop study programs for foreign students and how to attract these students.

A large challenge for adopting and implementing a prospective stance comes from governmental regulation. Budget cuts in direct funding of higher education institutions and student grants, regulations of lifelong learning, internationalisation and digitalisation and regulations on quality control and accreditation are all seen as having a negative influence on implementing innovations in higher education institutions. Budget cuts on student grants especially have an effect on specialised and technical higher education institutions, because they make it more expensive for Dutch students to travel further to a higher education institution. This makes it difficult for technical universities, which are not only challenged by a decreasing number of students because of the budget cuts on

student grants, but they are also negatively influenced by the budget cuts in direct funding, because they have to spend a lot of money on their expensive laboratories and equipment. However, the budget cuts on student grants might be a policy incentive for higher education institutions for international profiling of their specialisation and their institution, to attract foreign students and improve the quality of education. This would make specialisation of higher education institutions more common in the future and make students more used to travelling further for their education.

Regulation on quality control and accreditation can make it more difficult for higher education institutions to implement new study programs, but also contributes to high quality study programs. The last challenge consists of the regulation on lifelong learning, internationalisation and digitalisation. Because regulations of these new developments in higher education are not clearly established yet, higher education institutions do not know where they stand. Therefore, an implication for the government may be to develop more clear regulations for lifelong learning, internationalisation and digitalisation in higher education institutions.

Besides these implications, there are some points of discussion that can be identified. Limitations of this study is that it is qualitative and descriptive and not all Dutch higher education institutions are interviewed for this study. Therefore, the results of this study are tentative and need to be quantitatively tested in future research.

When analysing the validity and reliability of this study, the internal validity is high, as evidence is found supporting most hypothesised relations. This shows that there seem to be positive relations between the dependent and independent variables discerned in this study. However, while the conceptual model fits with the results at the level of concepts, on the level of the indicators important differences can be seen between the different types of higher education institutions. More research needs to be done to give further insight into these differences between types of higher education institution.

The construct validity is an issue that needs to be improved. It is ensured to some extent using the methods of triangulation described in the methodology section of this study. For future research, it is recommended to increase the construct validity by increasing the internal reliability: by having different researchers coding the interviews instead of one. Another way to increase the construct validity of this study is to have more methods of triangulation. For specialised and technical universities there are more respondents needed for triangulation.

The external validity is about the extent to which the findings of the research can be generalised across settings. For this study, external validity of the results is not ensured, but the study gives insights on the Dutch higher education system that seem more or less representative. This is because different types of Dutch higher education institutions are studied, which gives insights in these different types and the differences between them. Further research can increase the external validity, if more institutions are interviewed. Future quantitative research based on surveys is recommended to determine if results hold for all Dutch higher education institutions. Furthermore, higher education institutions in other countries can be studied. Reliability in this study is ensured because the interview data, transcripts and intermediary results are all archived and documented. The used method and the followed procedures are described in detail in this study, so that this study can be repeated by other researchers.

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Appendix 1: List of Dutch public higher education institutions

Universities

	Name and location	Year of foun-dation	Specialisation	Departments
1	Technische Universiteit Eindhoven	1956	Technical university that focuses on Energy, Health and Smart Mobility	Applied Physics
				Biomedical Engineering
				Built Environment
				Chemical Engineering
				Electrical Engineering
				Industrial Engineering & Innovation Sciences
				Industrial Design
				Mathematics and Computer Sciences
				Mechanical Engineering
2	Technische Universiteit Delft	1842	Technical university	Aerospace Engineering
				Applied Sciences
				Architecture and the Built Environment
				Civil Engineering and Geosciences
				Electrical Engineering, Mathematics and Computer Sciences
				Industrial Design Engineering
				Mechanical, Maritime and Materials Engineering
				Technology, Policy and Management
3	Universiteit Twente	1961	Technical university with a focus on health, water, green energy, security and education	Engineering Technology
				Electrical Engineering, Mathematics and Computer Science
				Behavioural Sciences
				School for Management and Governance
				Science and Technology
				International Institute for Geo-Information Science and Earth Observation
4	Wageningen Universiteit	1876	Healthy food and environment	Agrotechnology and Food Sciences
				Animal Sciences
				Environmental Sciences
				Plant Sciences
				Social Sciences
				Gender Studies
				Humanitarian Aid and Reconstruction
5	Universiteit Maastricht	1976	Quality of Life, Learning and Innovation and Europe and a Globalising World	Arts and Social Sciences
				Business and Economics
				Health, Medicine and Life Sciences
				Humanitarian and Sciences
				Law
				Psychology and Neuroscience
6	Radboud Universiteit Nijmegen	1923	Research university focusing on	Arts
				Law
				Medical Sciences

			scientific questions and societal problems	Nijmegen School of Management
				Philosophy, Theology & Religious Studies
				Faculty of Science
				Faculty of Social Sciences
7	Erasmus Universiteit Rotterdam	1913	Internationally oriented, with a focus on health, wealth, governance and culture	Business Administration
				Economic Sciences
				Law
				Medicine and Health Sciences
				Institute of Health Policy & Management
				Social Sciences
				History, Culture and Communications
				Philosophy
8	Universiteit Leiden	1575	Societal focus on health, wealth and culture	Archaeology
				Humanities
				Leiden University Medical Center
				Law
				Social and Behavioural Sciences
				Science
9	Tilburg Universiteit	1927	Understanding Society	Economics and Management
				Law
				Social and Behavioural Sciences
				Humanities
				Catholic Theology
10	Vrije Universiteit Amsterdam	1880	Human Health and Life Science, Science for Sustainability, Connected World, Professional Services	Arts
				Dentistry/ACTA
				Economics and Business Administration
				Earth and Life Sciences
				Human Movement Sciences
				Law
				Medicine
				Philosophy
				Psychology and Education
				Sciences
				Social Sciences
				Theology
11	Universiteit van Amsterdam	1632	Broad focus	Dentistry (ACTA)
				Economics and Business
				Humanities
				Law
				Medicine
				Science
				Social and Behavioural Sciences
12	Rijksuniversiteit Groningen	1614	Energy, Healthy Ageing, Sustainable Society	Economics and Business
				Behavioural and Social Sciences
				Theology and Religious Studies
				Arts
				Medical Sciences
				Law
				Spatial Sciences
				Philosophy

				Mathematics and Natural Sciences
				University College Groningen
13	Universiteit Utrecht	1636	Sustainability, Institutions, Life Sciences, Dynamics of Youth	Humanities
				Law, Economics & Governance
				Science
				Geosciences
				Social & Behavioural Sciences
				Veterinary Medicine
				Medicine
14	Open Universiteit (different location)	1984	Innovative higher education	Culture and Law
				Management, Science & Technology
				Psychology and educational sciences

Higher professional education institutions

	Name	**Location**	**Foundation**	**Departments**
1	Amsterdamse Hogeschool voor de Kunsten	Amsterdam	1987	Fine Art in Education
				Architecture
				Conservatorium
				Netherlands Film Academy
				Reinwardt Academy (museology)
				Theatre
2	Artez Hogeschool voor de Kunsten	Amsterdam, Arnhem, Enschede, Zwolle	1926 (fusion in 2002)	Fine Art
				Design
				Fashion
				Creative Writing
				Music
				Dance
				Theatre
				Architecture & Interior
				Education in Art
3	Avans Hogeschool	Breda, Den Bosch, Tilburg	1812 (fusion in 2008)	Economics and Management
				Health
				Information Technology
				Art and Design
				Education
				Law
				Technology
				Welfare
4	Christelijke Hogeshool Ede	Ede	1954	Nursing Ethics
				Teacher and Talent
				Spiritual Leadership
				People and Organisation
				Religion and Media in Public Space
				Youth and Family
5	Codarts Rotterdam	Rotterdam	1930	Music
				Dance
				Circus
6	De Haagse Hogeschool	Delft, Den Haag, Zoetermeer	1987 (fusion	Economic and Market
				Health and Sport

			between 14 small institutions)	Information Technology and Media
				Management and Organisation
				Law, Security and Society
				Technology, Innovation and Society
				Welfare and Education
7	Design Academy Eindhoven	Eindhoven	1947	Man and Well-being
				Man and Mobility
				Man and Living
				Man and Public Space
				Man and Identity
				Man and Leisure
				Man and Activity
				Man and Communication
8*	Driestar Hogeschool	Gouda, Barneveld, Kapelle, Ridderkerk	1944	Education in primary and secondary education
9	Fontys Hogescholen	Amsterdam, Den Bosch, Den Haag, Eindhoven, Hengelo, Maastricht, Roermond, Rotterdam, Sittard, Tilburg, Utrecht, Veghel, Venlo, Wageningen	1992 (fusion)	Communication, Media & Design
				Economics & Marketing
				Healthcare
				Information Technology
				Arts
				People and Society
				Nature Sciences
				Education
				Law
				Sports
				Languages
				Technology
10	Gereformeerde Hogeschool	Zwolle, Bunschoten-Spakenburg, Groningen	1987	Healthcare
				Theology
				Education
				Social Work
11	Gerrit Rietveld Academie	Amsterdam	1924 (fusion)	Fine Arts
				Applied Arts
				Design
				Interior Architecture
12	Hanzehogeschool Groningen	Assen, Groningen, Leeuwarden	1797	Dance Academy Lucia Marthas
				Life Science & Technology
				Engineering
				Business Management
				Arts
				Conservatorium
				Architecture, Built Environment & Civil Engineering
				Communications, Media & IT
				Education
				Facility Management
				Financial & Economic Management
				Health Care Studies
				Law
				Marketing Management

				Nursing
				Social Studies
				Sport Studies
13	HAS Hogeschool	Den Bosch		Business
				Design
				Animal
				Food
				Landscape
				Nature
				Plant
14	Hogeschool Arnhem en Nijmegen	Arnhem, Nijmegen	1996	Economics, Management and Law
				Technology and Life Sciences
				Informatics, Media and Communication
				Education
				Behaviour and Society
				Healthcare
				Sports and Exercise
15*	Hogeschool de Kempel	Helmond	1995	Education in primary education
16	Hogeschool der Kunsten Den Haag	Den Haag	1682	Fine Arts and Design
				ArtScience
				Music and Dance
17	Hogeschool InHolland	Alkmaar, Amstelveen, Amsterdam, Delft, Den Haag, Diemen, Dordrecht, Haarlem, Hoofddorp, Oegstgeest, Rotterdam, Utrecht, Zaandam	2002 (fusion)	Communication, Media and Music
				Healthcare, Sports, Welfare
				Green Life Sciences
				Life Sciences and Chemistry
				Management, Finance and Law
				Marketing, Tourism and Leisure management
				Education, Learning and Philosophy
				Technology, Design and Informatics
18*	Hogeschool iPabo	Alkmaar, Almere, Amsterdam	2006	Education for primary education
19	Hogeschool Leiden	Leiden, Rotterdam		Health
				Social Work and Applied Psychology
				Education
				Management and Business
				Technology
20	Hogeschool Rotterdam	Rotterdam, Dordrecht	1988	Economics
				Behaviour and Society
				Healthcare
				Arts
				Media & ICT
				Education
				Technology
21	Hogeschool Utrecht	Utrecht, Amersfoort	1994 (fusion)	Building and Environment
				Communication and Journalism
				Economics and Management
				Healthcare
				Information and Communication

				Technology
				Life Sciences and Chemistry
				Society and Law
				Education and Upbringing
				Technology and Design
22	Hogeschool Amsterdam	Amsterdam, Almere		Exercise, Sports and Food
				Economics and Management
				Healthcare
				Society and Law
				Media, Creation and Information
				Education and Upbringing
				Technology
23	Hogeschool Van Hall Larenstein	Wageningen, Leeuwarden, Velp	1904	Water & Land/Nature
				Food/Dairy
				Animal/Animal Wellbeing
24	Hogeschool voor de Kunsten Utrecht	Amersfoort, Hilversum, Utrecht		Fine Arts
				Design
				Games and Interaction
				Arts and Economics
				Media
				Music and Technology
				Theatre
				Conservatorium
25*	Hotelschool The Hague	Den Haag, Amsterdam	1929	Hotel Management
26	HZ University of Applied Sciences	Vlissingen, Terneuzen	1987 (fusion)	Economics and management
				Education and Pedagogy
				Technology and Innovation
				Healthcare and Wellbeing
				Marine Technology
				Delta Management
				Vitality and business
27*	Iselinge Hogeschool	Doetichem		Education primary education
28*	Katholieke Pabo Zwolle	Zwolle		Education primary education
29*	Marnix Academie	Utrecht	1984 (fusion)	Education primary education
30	NHL Hogeschool	Leeuwarden, Groningen, Terschelling, Zwolle	2009 (new name)	Building & Architecture
				Healthcare & Behaviour
				Art, Culture & Society
				Management & Economics
				Marketing, Media & ICT
				Environment
				Education & Upbringing
				Government, Law & Security
				Technical Design & Innovation
				Maritime & Transport
31	NHTV Internationaal Hoger Onderwijs Breda	Breda	1966	Facilities
				Games & Media
				Hotel

				Logistics
				Tourism & Leisure
				Traffic & Built Environment
32	Saxion	Enschede, Apeldoorn, Deventer	1998 (fusion)	Economics, Management & Organisation
				Behaviour, Education, Healthcare & Wellbeing
				ICT & Media
				Life Science, Design &Technology
33	Stenden Hogeschool	Assen, Emmen, Groningen, Leeuwarden, Meppel	2008 (fusion), 1845 (first study program)	Management, Economics
				Healthcare, Education
				Hotel, Leisure, Tourism
				Technology, Media
34*	Thomas More Hogeschool	Rotterdam		Education for primary education
35	Vilentum Hogeschool (AERES Groep)	Dronten, Almere, Wageningen	2004 (fusion)	Agrofood and Entrepreneurship
				Food
				Applied Biology and Nature
				Economics & Green Environment
				Green Education
36	Windesheim	Zwolle, Almere, Hardenberg, Lelystad, Utrecht, Zwolle	1986	Sports and Exercise
				Logistics
				Education
				Theology and Philosophy
				Healthcare and Wellbeing
				Economics, Management and Law
				Media and Communication
				Technology
				ICT
37	Zuyd Hogeschool	Maastricht, Sittard	2001 (fusion)	Economics and Languages
				Behaviour and Society
				Healthcare
				Education
				Technology and Informatics
				Arts

*These institutions are left out of the analysis, because they only focus on one type of study program.

Appendix 2: List of interview questions

Interview questions for the higher education experts

"Icebreaking questions/introduction"

1. Professional and academic background of the interviewee
   1.1. Which function do you have in this organisation?
   1.2. How many years have you been working for this organisation?
2. General questions
   2.1. What is your opinion about the current status of the Dutch higher education system (quality, courses offered, teaching methods etc.)?
   2.2. How do Dutch higher education institutions have to change in the future?
   2.3. To which extent do you think the Dutch higher education system is able to adapt themselves for the future?

Dependent variables:

The adoption of future strategy in Dutch higher education institutions

3. What kind of strategy do Dutch higher education institutions currently follow? (promoting, broadening the market, developing new services, specialisation for excellence or other)
4. Which kind of strategy do Dutch higher education institutions have to follow in the future? (promoting, broadening the market, developing new services, specialisation for excellence or other)
5. How should Dutch higher education institutions implement this strategy in the future?

The implementation of a prospective stance in Dutch higher education institutions

Promoting current curricula

6. To which extent do you think higher education institutions promote their current curricula in the market? (fully agree, agree, neutral, disagree, strongly disagree)
   6.1. To which extent do they undertake action to promote curricula? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
   6.2. What actions do higher education institutions undertake to attract Dutch students?
   6.3. What actions do higher education institutions undertake to attract foreign students?
   6.4. What other actions should institutions undertake to promote their curricula in the market?
7. What actions should they have to undertake to promote curricula in the future?
   7.1. To which extent do Dutch higher education institutions already undertake these activities? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
   7.2. If they do not undertake these activities, to which extent are they able to undertake these activities? (more than able, able, neutral, unable, very unable)

Broadening the market of current curricula

8. To which extent do you think higher education institutions broaden the market of current curricula? (fully agree, agree, neutral, disagree, strongly disagree)
   8.1. To which extent do they undertake actions to broaden the market? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
   8.2. What actions do higher education institutions undertake to set up joint degree programs with other higher education institutions?
   8.3. What actions do higher education institutions undertake to digitalise current curricula?

8.4. What actions do higher education institutions undertake to offer existing courses and curricula in other countries?
8.5. What other actions should institutions undertake to broaden the market of current curricula?

9. What actions should they have to undertake to broaden the market in the future?
9.1. To which extent do higher education institutions already undertake these activities? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
9.2. If they do not undertake these activities, to which extent are they able to undertake these activities? (more than able, able, neutral, unable, very unable)

Developing new services

10. To which extent do you think higher education institutions develop new services? (fully agree, agree, neutral, disagree, strongly disagree)
10.1. To which extent do they undertake actions to develop new services? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
10.2. What actions do higher education institutions undertake to develop post-graduate courses?
10.3. What actions do higher education institutions undertake to develop job-oriented courses?
10.4. What other actions should institutions undertake to develop new services?
11. To which extent are higher education institutions setting up public-private partnerships?
11.1. To which extent do they undertake actions to set up public-private partnerships for education? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
11.2. What kind of public-private partnerships do higher education institutions develop?
11.3. Which kind of new services can higher education institutions develop in public-private partnerships?
12. What actions should they have to undertake to develop new services in the future?
12.1. To which extent do higher education institutions already undertake these activities? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
12.2. If they do not undertake these activities, to which extent are they able to undertake these activities? (more than able, able, neutral, unable, very unable)

Specialisation for excellence

13. To which extent do you think higher education institutions specialise their institution? (fully agree, agree, neutral, disagree, strongly disagree)
13.1. To which extent do they undertake actions to specialise? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
13.2. What actions do higher education institutions undertake to make choices regarding curricula and courses offered?
13.3. What actions do higher education institutions undertake to distribute their tasks by collaborating with other higher education institutions and specialising in specific parts of fields of study?
13.4. To which extent do higher education institutions collaborate with private institutions to specialise?
13.4.1. In what ways does this influence the quality of higher education?
13.4.2. In what ways does this influence the competition with private education parties?
13.5. What other actions should institutions undertake to specialise?
14. What actions should they have to undertake to specialise in the future?
14.1. To which extent do higher education institutions already undertake these activities? (more than sufficient, sufficient, neutral, insufficient, very insufficient)

14.2. If they do not undertake these activities, to which extent are they able to undertake these activities? (more than able, able, neutral, unable, very unable)

Independent variables

Resources

15. Which kind of resources do higher education institutions currently have to face future challenges?
    15.1. What kind of surpluses of financial resources do higher education institutions already have?
        15.1.1. To which extent do higher education institutions have financial reserves? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
        15.1.2. Which other kinds of surpluses of financial resources do higher education institutions have? (budgetary surpluses, savings, real estate)
    15.2. What kind of surpluses of human resources do higher education institutions already have?
        15.2.1. To which extent do higher education institutions already deploy employees to develop strategic plans? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
        15.2.2. To which extent do higher education institutions already deploy employees to implement these strategic plans for example by developing new courses and curricula? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
    15.3. Which kind of other resources do higher education institutions already have in order to prepare for the future?
16. Which kind of slack resources do higher education institutions need in order to prepare for the future?
    16.1. To which extent do higher education institutions already have these resources? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
    16.2. If they do not have these resources, to which extent are they able to develop these resources? (more than able, able, neutral, unable, very unable)

Entrepreneurial orientation

17. Which kind of entrepreneurial characteristics do higher education institutions already have to face future challenges?
    17.1. What kind of decentralised decision-making processes do higher education institutions already use?
        17.1.1. To which extent can different subunits of higher education institutions already make their own decisions?
        17.1.2. Which other kinds of decentralised decision-making processes do higher education institutions already use?
    17.2. What kind of processes and procedures on an ad-hoc basis do higher education institutions already use?
        17.2.1. To which extent do higher education institutions follow standard procedures?
        17.2.2. To which extent do higher education institutions already carry out processes and procedures on an ad-hoc basis? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
        17.2.3. To which extent have higher education institutions already implement changes in their procedures and processes? (more than sufficient, sufficient, neutral, insufficient, very insufficient)

17.2.4. Which other kinds of processes and procedures on an ad-hoc basis do higher education institutions use?

18. Which kind of entrepreneurial characteristics will higher education institutions need in the future?
    18.1. To which extent do higher education institutions already have these entrepreneurial characteristics? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
    18.2. If they do not have these characteristics, to which extent are they able to develop these characteristics? (more than able, able, neutral, unable, very unable)

Environmental turbulence

19. Which environmental turbulences do Dutch higher education institutions currently experience?
    19.1. What kind of political developments do Dutch higher education institutions already experience?
        19.1.1. To which extent do changes in governmental policies for higher education institutions affect Dutch higher education institutions? (strong positive, positive, neutral, negative, strong negative)
        19.1.2. To which extent do changes in government funding for higher education institutions affect Dutch higher education institutions? (strong positive, positive, neutral, negative, strong negative)
        19.1.3. Which other kinds of political developments affect Dutch higher education institutions?
    19.2. What kind of international developments do Dutch higher education institutions already experience?
        19.2.1. To which extent does competition from foreign higher education institutions for students affect Dutch higher education institutions? (strong positive, positive, neutral, negative, strong negative)
        19.2.2. Which other kinds of international developments affect Dutch higher education institution?
    19.3. What kind of demographical developments do Dutch higher education institutions already experience?
        19.3.1. To which extent does the change in number of Dutch students affect Dutch higher education institutions? (strong positive, positive, neutral, negative, strong negative)
        19.3.2. To which extent does the increase of the domestic competition for students affect Dutch higher education institutions? (strong positive, positive, neutral, negative, strong negative)
        19.3.3. Which other kinds of demographical developments affect Dutch higher education institutions?
    19.4. What kind of technological developments do Dutch higher education institutions already experience?
        19.4.1. To which extent does digitalisation of education affect Dutch higher education institutions? (strong positive, positive, neutral, negative, strong negative)
        19.4.2. Which other kinds of technological developments affect Dutch higher education institutions?
    19.5. Which changes in demand for education do Dutch higher education institutions already experience?
        19.5.1. To which extent does competition from other (public and private) organisations affect the Dutch higher education institutions? (strong positive, positive, neutral, negative, strong negative)

19.5.2. To which extent does the demand for job-oriented courses and programs affect Dutch higher education institutions? (strong positive, positive, neutral, negative, strong negative)

20. Which environmental turbulences will Dutch higher education institutions experience in the future? (political, international, demographical, technological, changes in demand)
    20.1. To which extent will this environmental turbulence affect Dutch higher education institutions? (strong positive, positive, neutral, negative, strong negative)

Interview questions for the higher education institutions

"Icebreaking questions/introduction"

1. Professional and academic background of the interviewee
    1.1. Which function do you have in this higher education institution?
    1.2. How many years have you been working for this higher education institution?
2. General questions
    2.1. What is your opinion about the current status of the Dutch higher education system (quality, courses offered, teaching methods etc.)?
    2.2. How do you think the higher education system will change in the future?
    2.3. To which extent do you think the Dutch higher education system is able to adapt themselves for the future?

Dependent variables:

The adoption of a prospective stance in Dutch higher education institutions

3. What kind of strategy does this higher education institution currently follow?
4. What kind of strategy does this higher education institution want to follow in the future?
5. How does this higher education institution implement their strategy? (promoting, broadening the market, developing new services, specialisation for excellence or other)

The implementation of a prospective stance in Dutch higher education institutions

Promoting current curricula

6. To which extent does this higher education institution promote its current curricula in the market?
    6.1. To which extent does this higher education institution undertake action to promote curricula? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
    6.2. What actions does this higher education institution undertake to attract Dutch students?
    6.3. What actions does this higher education institution undertake to attract foreign students?
7. What actions does this higher education institution want to undertake to promote curricula in the future?
    7.1. To which extent does this higher education institution already undertake these activities? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
    7.2. If it does not undertake these activities, to which extent is it able to undertake these activities? (more than able, able, neutral, unable, very unable)

Broadening the market of current curricula

8. To which extent does this higher education institution broaden the market of current curricula?
    8.1. To which extent does it undertake actions to broaden the market? (more than sufficient, sufficient, neutral, insufficient, very insufficient)

8.2. What actions does this higher education institution undertake to set up joint degree programs with other higher education institutions?
8.3. What actions does this higher education institution undertake to digitalise current curricula?
8.4. What actions does this higher education institution undertake to offer existing courses and curricula in other countries?

9. What actions does this higher education institution want to undertake to broaden the market in the future?
9.1. To which extent does this higher education institution already undertake these activities? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
9.2. If it does not undertake these activities, to which extent is it able to undertake these activities? (more than able, able, neutral, unable, very unable)

Developing new services

10. To which extent does this higher education institution develop new services?
10.1. To which extent does it undertake actions to develop new services? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
10.2. What actions does this higher education institution undertake to develop post-graduate courses?
10.3. What actions does this higher education institution undertake to develop job-oriented courses?

11. To which extent is this higher education institution setting up public-private partnerships?
11.1. To which extent does it undertake actions to set up public-private partnerships for education? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
11.2. What kind of public-private partnerships does this higher education institution develop?
11.3. Which kind of new services can this higher education institution develop in public-private partnerships?

12. What actions does this higher education institution want to undertake to develop new services in the future?
12.1. To which extent does this higher education institution already undertake these activities? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
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Specialisation for excellence

13. To which extent does this higher education institution specialise?
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13.3. What actions does this higher education institutions undertake to distribute their tasks by collaborating with other higher education institutions and specialising in specific parts of fields of study?
13.4. To which extent does this higher education institution collaborate with private institutions to specialise?
13.4.1. In what ways does this influence the quality of higher education?
13.4.2. In what ways does this influence the competition with private education parties?
13.5. What other actions should institutions undertake to specialise?

14. What actions does this higher education institution want to undertake to specialise in the future?
    14.1. To which extent does this higher education institution already undertake these activities? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
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    17.2. What kind of processes and procedures on an ad-hoc basis does this higher education institutions already use?
        17.2.1. To which extent does this higher education institution follow standard procedures?

17.2.2. To which extent does this higher education institution already carry out processes and procedures on an ad-hoc basis? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
17.2.3. To which extent has this higher education institution already implemented changes in its procedures and processes? (more than sufficient, sufficient, neutral, insufficient, very insufficient)
17.2.4. Which other kinds of processes and procedures on an ad-hoc basis does this higher education institution use?

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19.4.1. To which extent does digitalisation of education affect this higher education institution? (strong positive, positive, neutral, negative, strong negative)
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  19.5.2. To which extent does the demand for job-oriented courses and programs affect this higher education institution? (strong positive, positive, neutral, negative, strong negative)

20. Which environmental turbulences will this higher education institution experience in the future? (political, international, demographical, technological, changes in demand)
  20.1. To which extent will this environmental turbulence affect this higher education institution? (strong positive, positive, neutral, negative, strong negative)