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Entrepreneurial University - Myth or Reality

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Entrepreneurial University Myth or Reality?



ECIU

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1 Executive Summary

entrepreneur *n* the owner or manager of a business enterprise who, by risk and initiative, attempts to make profits

myth *n* a person or thing whose existence is fictional or unproven

reality *n* the state of things as they are or appear to be, rather than as one might wish them to be

The concept of a uniform, consistent and clearly defined ‘entrepreneurial university’ is not only a combination of myth and reality, it is extinct.

The original Burton Clark definition of the series of attributes which characterise an entrepreneurial university has been superseded by a large number and range of university practices and activities that one may, or may not, label “entrepreneurial”.

In reality, there is no longer a model of an “entrepreneurial university.” Rather, there is an ever-increasing and broadening cadre of universities which are striving to not only position themselves as entrepreneurial but to practically and financially demonstrate the achievement. They have created their own definitions and interpretations of entrepreneurship and place varied emphasis and resource across a wider range of activities which can be seen as entrepreneurial. The concept has evolved in such a way that, not only do different organisations adopt bespoke definitions, but there is a wide variance in how these are operationally represented in terms of structure and activities. The content of this report illustrates this point.

Findings in this report are based on a set of interviews within four entrepreneurial universities. At each university on average five of the most knowledgeable stakeholders were interviewed. By reviewing the entrepreneurial perceptions and actions of this consistent set of activists, the group has been able to identify and confirm a revised and expanded list of criteria of which some, or all, are demonstrated by a successful entrepreneurial university or, more frequently, an exemplar department within. It has also shown that entrepreneurship can exist in a form which may not represent the central corporate ‘mission statement’ view, yet which is highly successful. The review has identified areas at a macro and micro level on which each university can focus for development and/or duplication. This report thus offers a powerful, and potentially actionable, insight for each participating university.

The report also identifies an important and symbiotic relationship between innovation and entrepreneurship (the former appearing to be a prerequisite for the latter), the importance of a profit ethos and the key linkages between internal and external entrepreneurship. Successful entrepreneurship is driven not only by external collaborations and ventures but by effective internal synergies: there must exist suitable support structures for entrepreneurs; any management or administration structures must be entrepreneurial in their activities; there must be

a willingness and support for intellectual and financial risk-taking; and the entrepreneurial ethos must permeate into the educational mindset, not just for areas delivering commercialisation activities.

The report details how each of the universities performs against a list of 20 Burton Clark features (identified by the group) and highlights differences between them. However, there is no right answer – there is no single score of emphasis of resource and effort which gives optimum entrepreneurial performance: each of the universities has elements of success and best practice within their activities – sometimes in similar, but often in different, areas.

Overall, for all of the universities reviewed, the ‘glass is half full’ with all scoring around halfway on the scale of optimum entrepreneurial performance across the revised criteria. Three key factors must be reviewed and enhanced to maintain and increase entrepreneurship, and this must be done in a coordinated way as each relies on the other two:

- Strategy – the university must clearly and regularly define its own “entrepreneurial” vision, what the desirable measurable outcomes will be, and how and who will achieve it
- Structure – all university structures (formal or informal) must be reviewed to ensure that wherever possible they do not hamper, and ideally facilitate, entrepreneurship
- Culture – entrepreneurship relies upon entrepreneurs: the vision, examples and benefits of entrepreneurship must be regularly communicated to all university staff.

Universities should consider establishing internal entrepreneurial networks, similar to those operating externally.

Entrepreneurship can be seen as a beneficial virus: the more parts of an organisation that catch it and pass it on the better and, like a successful virus, it should mutate and evolve to match its host.

2 Introduction

2.1 Background to ECIU Leadership Programme 2004/2005

The ECIU Leadership Programme was first delivered in 2003 as a partnership between the Universities of Strathclyde, Aalborg, Dortmund and Twente. Seventeen participants from the four universities were chosen to attend a series of three workshops at Strathclyde, Aalborg and Dortmund, in addition to working on a group assignment and reporting to the ECIU Rectors Meeting held in Dortmund in May 2004.

Following on from the success of this innovative programme, and taking into account feedback from previous participants, the Leadership Programme was revised for 2004/2005 and extended to incorporate four workshops. It is being led by the University of Strathclyde and this year 16 participants from five universities are participating. To meet the challenging needs of effective management and leadership in European universities, the Programme is planned to develop leadership potential in the selected individuals from the ECIU.

The Programme will offer an understanding of the changing environment in higher education, and develop an appreciation of the new leadership roles needed to maintain and grow the innovative and entrepreneurial spirit of the participating universities.

The aims of the Programme are to:

- prepare participants for senior management roles in higher education
- enhance participants knowledge and understanding of issues facing higher education and the ECIU
- build a cohort of senior managers through a shared learning experience as a contribution towards institutional development
- enhance strategic thinking and understanding of strategic approaches to change
- provide a broader perspective on managing and leading knowledge-based enterprises
- establish a team of managers who will appreciate and carry forward the drive towards innovation and enterprise in higher education.

Through a series of workshops and a group assignment the participants will develop:

- An awareness of leadership traits and strategic management processes to provide effective guidance and organisational change
- Knowledge of environmental and cultural influences on the university in its role as a regional, national and European entity
- A network of managers who have an appreciation of governance and management challenges within the ECIU
- Familiarity with bench-marking techniques for evaluating the managerial success and institutional achievement as a learning organisation

- Insight into the dynamic and reinforcing relationships between research, teaching, learning and training.

Specifically, the themes of the four workshops are:

- Defining the leadership landscape in contemporary universities
- Leadership and management issues facing middle managers
- Addressing management tasks to meet the third mission of knowledge transfer
- Communicating and implementing solutions in practice.

The group assignments for 2004/2005 are related to the current and future needs of the participating universities and are conducted in between the scheduled workshops. The results were presented to the Rectors and senior staff from the participating universities at the final workshop in Aalborg in May 2005. The topics for 2004/2005 are:

- The role of universities in a regional context
- A review of internal decision-making processes
- Entrepreneurial University: myth or reality?

2.2 The Challenge: Entrepreneurial University: myth or reality?

The study which this document reports on relates to the last topic in the above list, with group 3 being set the following challenge:

The “entrepreneurial university” is a well-traversed concept. Each of the partner universities within the ECIU asserts itself as an entrepreneurial organisation. Using the initial definition of Burton Clark¹, analyse the entrepreneurial activities of the partner universities, to justify, or reject the sobriquet, and propose changes needed to achieve a greater ‘entrepreneurism culture’.

The study should take into account the conflicting demands arising from the dynamics required to be entrepreneurial, the financial pressures arising from formula-driven government funding of higher education, and the need to maintain and meet quality standards in teaching and research.

The group is tasked to report back via a 15-minute presentation and production of a formal report to the meeting of the ECIU rectors in Aalborg on 26th May 2005.

¹ Burton R Clark, *Creating Entrepreneurial Universities, Organisational Pathways of Transformation*, Pergamon, 1998.

2.3 Group Members

Associate Professor Allan N Gjerding	Aalborg
Mr Klaus-Joachim Scheunert	Hamburg
Mrs Shona Cameron	Strathclyde
Mr Adam Taylor	Strathclyde
Professor Celeste P M Wilderom	Twente

Below is a summary of the role and responsibilities of each group member and the personal and group objectives they set for their involvement in the project:

Associate Professor Allan N Gjerding

Role: Associate Professor, Aalborg University

A combined academic and administrator role responsible for administration, research, teaching and regional policy

Personal project objectives are to:

- learn from other universities
- identify similar problems and challenges
- identify solutions which may be applied to Aalborg University
- develop recommendations for change
- create network/co-working culture/friendships.

Mr Klaus-Joachim Scheunert

Role: Member of the University's Managing Board and Head of Administration (Vice-Chancellor), Hamburg University of Technology

Administrative role responsible for personnel (110 professors and 1000 other employees), finance/budget (turnover €56m)

Personal project objectives are to:

- gain useful learning – personally and for the University
- identify examples of entrepreneurship for universities
- discuss and learn from best practice.

Mrs Shona Cameron

Role: Director of Learning Services, University of Strathclyde

Academic support role responsible for IT training, E-learning, technology support for disabilities, lecture theatre support, conferences, events and graphic design for print/web

Personal project objectives are to:

- gain broader/deeper understanding of other universities

- understand and learn from cultural differences eg student demographics/funding
- identify areas for collaboration and joint funding
- develop strategic thinking.

Mr Adam Taylor

Role: Director of Marketing and Communications, University of Strathclyde
Administrative role responsible for marketing/brand, student recruitment, fundraising, alumni relations, communications/PR

Personal project objectives are to:

- understand what constitutes entrepreneurship
- understand best practice in UK/Europe/worldwide
- audit gap analysis/entrepreneurship.

Professor Celeste PM Wilderom

Role: Professor, School of Public and Business Administration, University of Twente

Academic role specialising in management and organisational behaviour

Personal project objectives are to:

- review practices from a customer/staff/student perspective
- ensure management disciplines are taken more seriously
- improve the overall quality of universities' management practices
- highlight useful practices adopted by 'non-entrepreneurial' universities
- embed useful management practices into day-to-day management/competencies.



Figure 1: The group working together at the University of Dortmund

Group Objectives

Common objectives for the project are to:

- gain a better insight into the member universities
- revisit and audit their own "entrepreneurial activities"
- produce a concise and actionable report.

3 Entrepreneurial University – Burton Clark Definition

In approaching the challenge: ‘Entrepreneurial University: myth or reality?’, the group reviewed the two seminal published works of Professor Burton R Clark:

Burton R Clark, *Creating Entrepreneurial Universities, Organisational Pathways of Transformation*, Pergamon, 1998

Burton R Clark, *Sustaining Change in Universities, Continuities in case studies and concepts*, Open University Press, 2004

Book 1 – Creating Entrepreneurial Universities

In this first book, Burton Clark suggests the concept of the Entrepreneurial University and highlights a number of features of such a university:

- **Cross-university risk-taking:** entire universities taking risks when initiating new practices where a doubtful outcome is a major factor
- **Innovation and Entrepreneurship:** the terms are often used synonymously but entrepreneurship is often perceived as taking innovative practices to the next commercial ‘profit-exploiting’ stage
- **A collective mindset and practice:** transformation is not driven by a solitary entrepreneur at the top – often universities are too bottom-heavy, too resistant from bottom-up. Transformation occurs when a number of individuals come together in university basic units and across a university over a number of years to change, by means of organised initiative, how the institution is structured and oriented.

The book also highlights five key enabling ‘pathways to transformation’ to allow for movement from a traditional to an entrepreneurial university:

1. The strengthened steering core

Burton Clark identified that a strong and expedient decision-making body which can react to expanding and changing market conditions exists at the heart of entrepreneurial universities:

- Elite institutions can to an extent ignore lack of steering capacity longer than others, depending on reputation for patronage, resources and competitive status
- Ambitious universities need to become quicker, more flexible, needs-driven organisations to refashion and change their capabilities
- A strengthened steering core is a necessity for such change
- Such cores must embrace central managerial groups and academic departments, reconciling new managerial values with traditional academic ones.

2. The expanded developmental periphery

Entrepreneurial universities have active units, both in academic and specialist fields, which positively exhibit a more dynamic and flexible approach to external activities and third-party partnerships:

- Enterprising universities show growth in units that cross boundaries more quickly than traditional academic departments, to link up with outside organisations and groups
- 'Professionalised outreach offices' exist to work on knowledge transfer/industrial contact/intellectual property development, continuing education, fundraising and alumni affairs
- Outward-reaching research centres express non-disciplinary definitions of problems
- Entrepreneurial universities take the risk promoting an entire new periphery of non-traditional units.

3. Diversified funding base

To nurture a new, change-orientated outlook, universities need to have new and changing sources of funding:

- Discretionary funds and a widened financial base is vital
- In virtually all universities, government support as a share of total budget is decreasing
- Universities increase efforts to source funding from the second stream (Research Councils, etc)
- Universities set out to increase income from the third stream (industrial firms, local government, via royalties from intellectual property, income from campus services, student fees and alumni fundraising)
- Third-stream funding represents true financial diversification.

4. Stimulated academic heartland

The existence of a strong central core, peripheral entrepreneurial units and diversified funding sources only go some way towards delivering an entrepreneurial university. Adoption by core academic units of the entrepreneurial ethos is key:

- If the organisational heartland remains in traditional academic departments, their adoption of change and transformation is critical
- If there is resistance and opposition to such change, activity will proceed largely as before
- For effective transformation to take part, each unit needs to aspire to becoming an entrepreneurial unit, linking with external organisations to derive third-stream income
- Members of such entrepreneurial units need to participate and input into central steering groups
- Faculties and departments need to accept that entrepreneurs will require stronger management authority and empowerment (in a managerial line

that stretches from central officials to heads of departments to research centres)

- In a truly entrepreneurial university, the heartland adopts a modified belief system.

5. The integrated entrepreneurial culture

The culture of an entrepreneurial university embraces entrepreneurship into its working practices:

- Entrepreneurial universities develop a work culture that embraces change
- Such a new culture may begin as a relatively simple institutional idea ,or from reflection on positioning for supporting change
- Later such an idea may become elaborated into a set of beliefs which, if diffused in the heartland, become university-wide culture. Strong cultures are rooted in strong practices
- As ideas and practices interact, the endemic cultural aspect of such practices become important in cultivating institutional identity and distinctive reputation
- In the transformation of universities, values or beliefs may lead or follow the development of other elements
- A macro-institutional perspective is required.

The first four elements are operational means which facilitate the fifth element of cultural change.

Book 2 – Sustaining Change in Universities

In Burton Clark's second book, he further expands on the concept of the entrepreneurial university through revisiting previous case studies and the citing of new exemplars.

The group reviewed the case studies and determined that the previous (above) criteria and behaviours for entrepreneurial activity had evolved and the breadth of criteria had widened. The group reviewed the case studies and determined a list of 20 entrepreneurial criteria/features against which a university's entrepreneurship could be tested.

This work is described further in the next section, with the 20 features detailed in Section 4.5.

4 Methodology

4.1 *Interpreting the mission statement*

The objective of this report is to find out whether the universities with which the group members are associated are entrepreneurial, as they claim, and if not, how they can achieve a greater entrepreneurial culture. The study should take into account that there may be conflicting demands arising from the dynamics required for entrepreneurship, that formula-driven government funding may impose financial pressures, and that quality standards in teaching and research must be maintained. The Burton Clark definition of entrepreneurship, as it appears in Clark (2004), is the framework within which the analysis will take place.

In order to pursue the objective, the group behind this report had to interpret the different assumptions implied by the assignment and to clarify the main characteristics of the Burton Clark definition.

Firstly, the assignment implies that universities have to operate on the basis of external pressures and demands that in some instances may limit how entrepreneurial universities may be. An important requirement is to educate graduates to meet the nationally-required standards of Bachelor and Master degrees, as these are defined by formal definitions of competence levels and the content of these levels. Another important requirement is that the research of universities must conform to conventional academic international standards of how good subject knowledge is produced and what good subject knowledge is. Funding of university activities is to a large extent regulated by these two requirements. Thus, the assignment implies that entrepreneurship can only be pursued to the extent that the university fulfils its social obligations, and that this may or may not be conducive to entrepreneurship.

Secondly, the assignment presupposes that the university operates within a context and that being entrepreneurial is context-dependent. Since the context of each of the universities involved in the assignment is national, and context differs across nations, the extent to which the universities are entrepreneurial must be defined with due reference to the context in question. This implies that it may be impossible to define a uniform standard of entrepreneurship when several universities within different national contexts are analysed.

Thirdly, the assignment refers to the Burton Clark definition as a well-defined concept or set of concepts. However, the definition put forward in Clark (2004) is quite broad and relies on references to practices from several universities within different national contexts. Thus, the assignment makes it necessary to investigate how these references occur and are used in Clark (2004) in order to present an inventory of practices that characterises what an entrepreneurial university actually means.

4.2 *Making the mission statement operational*

As a result of these interpretations, and based on the time constraints within which the group members have to work, the group made two early decisions.

First, since the Burton Clark definition is widely recognised and plays an important role in the assignment, the group chose to spend considerable time

dissecting the references to various practices that appear in Clark (2004). The process of dissection resulted in the identification of 20 practices that, according to Clark, are important to the way in which universities are entrepreneurial.

Second, instead of observing institutional practices and arrangements within each country and making an inventory of what is going on at the different universities, the group decided to take as its point of departure the decision-making reality of influential and informed players who are in a position to shape the future direction of the university, or operate in institutional circumstances that influence the future direction of the university. The basic assumption of this choice is that key individuals can be sufficiently powerful to create and drive entrepreneurship within universities, partly through the creation of strong organisational structures.

These key individuals and organisational structures cannot *a priori* be assumed to operate in a way that corresponds with the Burton Clark definition. They may (and presumably do) act according to a different logic. Thus, it becomes important to discover this logic before assessing the degree of entrepreneurship of the universities implied by the Burton Clark definition. However, at the same time the assignment requires that the report confront the logic discovered within the Burton Clark definition.

In order to reconcile these two analytical requirements, the group chose a three-step analysis. First, a number of interviews with key players at each university were conducted. The interviews were based on a limited number of questions that were kept open and asked informally in order to let the respondents reveal their thoughts about being entrepreneurial and the type of practices that need to be in place for entrepreneurship. Second, the key players were asked to assess the extent to which their university complies with the 20 practices identified by analysing Clark (2004). Third, the data obtained in the first two steps was analysed.

The analysis reveals what the respondents think about entrepreneurship and which practices they think make their university entrepreneurial; which practices facilitate or create barriers to entrepreneurship; and how entrepreneurship within their universities can be further developed. The analysis also reveals how the respondents perceive their universities according to the Burton Clark definition. Finally, the analysis employs these two kinds of data in order to make recommendations for furthering entrepreneurship in universities.

4.3 *The analytical approach of the report*

The basic approach of the report is hermeneutic. Instead of relying on a uniform definition of entrepreneurship, the report assumes that entrepreneurship may have different meanings in different contexts, depending on the people involved in entrepreneurship. The report aims to understand the actions, influences on the actions, perceptions on internal activities and interpretations of the social reality within which universities operate. Thus, the way in which the report creates knowledge is by discovering how key people interpret their context and actions, and what type of conclusions they arrive at on the basis of their perceptions. In essence, this means that the report sees entrepreneurship as a social and contextual reality that is constructed by the individuals involved in that reality.

The hermeneutic approach implies that the data created during the analysis is derived through qualitative analysis. The qualitative analysis primarily takes the form of open questions in order *not* to impose the pre-understanding of the group members on the respondents. Instead, the respondents have a large degree of freedom to define and describe what they mean by entrepreneurship and entrepreneurial practices. The influence of pre-understanding only occurs in the case of asking the respondents about the 20 Burton Clark practices, and even in this case the hermeneutic approach is maintained, as the respondents appear to interpret the 20 practices very differently and are not influenced by the interviewers in doing so.

In consequence, the recommendations put forward in this report are highly influenced by what the group has learned from the respondents. To some extent, the recommendations can be seen as the outcome of a dialogue between the group members and the respondents.

Initially, the group had to decide which respondents to interview based on finding a set of respondents sufficiently informed and diverse in order to reveal a useful image of entrepreneurship at the different universities. Ideally, the group should have had further meetings post-interviews to inform the respondents of the overall results from the interviews and then conduct renewed dialogue based on the findings. The dialogue should then have continued until some sort of intersubjective agreement on entrepreneurship had been arrived at. Due to time limits this was not possible. As a result the pre-understanding of the group of key people has set the limits of the analysis. In order to minimise this limitation, the group was careful in selecting respondents and ensuring that they represented a variety of different points of departure for opinions on entrepreneurship.

The respondents were chosen on the basis that the set should represent the following aspects:

- Background in providing professional services to support activities related to entrepreneurship
- Significant experience in university administration
- Position as an academic head of faculty/department/school
- Recognition as a successful entrepreneur within the university
- Independence of the university and able to provide an informed view from the outside.

In total around 25 interviews were conducted with a range of four to six taking place at each university. This figure includes some respondents who were involved in piloting the research instrumentation. The main findings of the report are based on 19 interviews.

4.4 The open questions employed in the interviews

The interviews took place in four steps.

First, the respondents were asked to define an entrepreneurial university and then describe in what sense they think that their university is entrepreneurial, and which main activities and people make their university entrepreneurial. These questions allowed for the respondents to define the agenda for the interview.

Second, the respondents were invited to reflect upon the agenda by describing the key facilitators and barriers to entrepreneurship at their university. This part of the interview aimed to dig further into the state of entrepreneurship, as perceived by the respondent.

Third, the process initiated in step two increased in momentum by inviting the respondents to reflect on the distinctive entrepreneurial characteristics of their university, and practices that could be developed or implemented in order to make their university even more entrepreneurial. Besides pointing to possible recommendations, step three also served as a further validation of what had been said and conceived so far during the interview.

Fourth, the respondents were asked to look at the university environment in order to find people and organisations that are, or could become, important to the entrepreneurship of their university. Besides pointing to recommendations, the fourth step helped to make the respondent less focused on the practices within the university, if such a focus had occurred.

The four steps created a process of reflection and dialogue that increasingly validates what the respondents were saying, not only to the interviewer but also in the mind of the respondent. This created an interview where the respondent reflected on more than one question at the same time.

4.5 The 20 features

At the end of each interview, the respondent was asked to assess on a five-point scale the extent to which his/her university complies with the 20 Burton Clark (2004) practices listed below:

1. **Independence of government funding:**
The university does not need to seek approval from governmental offices for major investments eg to establish new scientific branches (for research and teaching), commercial units, etc.
2. **Emphasis on a central steering core:**
There is a strong and decision-orientated senior management group delivering expedient outcomes on entrepreneurial requests; participation of wider academic and student committees is less important.
3. **Management quality of staff, especially in finance:**
The university hires quality professionals and offers sufficient staff development programmes to maximise their input and retention.
4. **Entrepreneurial culture:**
The administration and academic staff have a culture of change rather than a rule-based orientation; they prefer innovation and realisation of new ideas instead of strong rule-executing.
5. **Lump sum budgeting:**
The university is largely permitted to use government funding as it wishes (eg it can transfer funds between personnel, IT, estates and other infrastructure and investments) and can retain annual unspent income (eg to set up strategic funds).
6. **Output-oriented contracts with financiers:**
Government, foundations, and other financiers funding is calculated and

based on measurable outputs and outcomes and these are monitored through regular reporting.

7. **Flat structure:**
Reporting barriers and hierarchies are minimised between the centre and base units in order to shorten idea creation and associated decision-making processes.
8. **Mission statement and strategic plan:**
There is a well-communicated paper which is a guideline for all the strategic decisions and objectives of the university.
9. **Extensive alumni activities:**
There is a programme of extensive and appropriate alumni-funding or other alumni support activities.
10. **Cooperation with industry and other (excellent) universities:**
The university realises possible synergies in research, investment in research equipment, teaching and other useful activities with a network of excellent individuals and institutions.
11. **Competitiveness of campus infrastructure:**
The campus and its environs are attractive environments for the recruitment and retention of excellent students.
12. **Additional funding through 'cash cows':**
Establishing third-stream income sources eg conference centre, management/business school, other offers for "lifelong learning", hotel, etc.
13. **Focus on a limited range of teaching and researching fields:**
Management of the university should not be over-stretched through extremely diversified activities in fields which are outside of the core know-how.
14. **Monitoring future opportunities in teaching and research:**
The university has a permanent sight on the development of the teaching and research markets and reserves resources for fast response to such market developments.
15. **Attractiveness for endowments:**
The reputation of the university, its plans and alumni attracts regular and substantial donations.
16. **Attractive environment for young researchers:**
The university recruits and retains successful young researchers because they can attract students and donors and carry out innovative research.
17. **Interdisciplinary research structure:**
There is an established organisational structure in research and teaching which supports intra-organisational cooperation.
18. **Technology transfer:**
There are well-established/structured technology transfer processes into the region.
19. **High share of master and postgraduate students:**
New teaching income streams are developed by thinking beyond traditional/historical reliance on undergraduate activities.
20. **Service-offers for spin-off/out companies:**
There is logistical support for gaining risk capital, consultation, office and small production facilities, finding guarantors, etc.

The purpose is to create a scoring matrix for comparison, both across the respondents within each university and across the universities in question.

Comparing the scores indicates the following:

- The extent to which the universities comply with the Burton Clark definition
- Areas where changes are needed according to the Burton Clark definition
- Difference of opinion among respondents
- The relevance of the Burton Clark definition to the universities in question

The score list informs the recommendations in this report. Ideally, an analysis of why the respondents answer as they do could be undertaken by comparing the answers in the score list with the answers in the interviews, but this type of analysis is outside the scope of the present report.

4.6 *The ambition of the analysis*

The group's goal was been to understand how entrepreneurship is perceived and pursued at each university by key players and to derive recommendations based on that understanding. Recognising that a thorough in-depth analysis based on theoretical concepts and detailed quantitative and qualitative analysis is prevented by the short timeframe of the group work, the group chose to rely on a relatively small number of key individuals that are in a position to influence the direction of the universities in question. The method employed is based on the assumption that the opinions of the key individuals are valid images of the policies pursued by the universities included in the analysis.

5 Entrepreneurial Activities Evidenced

5.1 Feedback from interviews

The evidence on entrepreneurial activities that was obtained during the interviews previously described in Section 3 relates to four main questions:

- How the respondents define an entrepreneurial university
- How the respondents understand the entrepreneurial features of their universities
- What are the main facilitators and barriers to entrepreneurship
- What are the distinctive entrepreneurial practices and warranted changes at each university.

This section gives an impression of the respondents' reactions to these questions.

5.1.1 Defining an entrepreneurial university

Three main issues occurred during the conversations with the respondents on how to define an entrepreneurial university.

- The relationship between being innovative and entrepreneurial
- The importance of making money
- The relationship between internal and external entrepreneurship.

In essence, all universities are supposed to be *innovative*, and they always are if innovative means that research and education are continuously developed and pointed in new directions. However, being innovative does not necessarily mean that the university is *entrepreneurial*. Most respondents (and the Burton Clark definition) associate entrepreneurship with external collaboration by which the university contributes to the development and formation of companies and the evolution of society in general. Being entrepreneurial is regarded as time-specific, meaning that the university is located in a certain period of time and that the extent to which the university is entrepreneurial depends on the university's ability to contribute to the needs of firms and society in that period of time. One respondent summarised this issue by saying that being entrepreneurial today means that the university transforms itself from the industrial society to the knowledge society. In order to be able to transform itself, the university must be innovative and externally cooperating at the same time.

The debate on entrepreneurship often equates entrepreneurship with *making money*. That is, the university should embark on activities that generate an incoming cash flow from the outside world. To some extent, the respondents were divided on this issue, presumably reflecting differences in traditions and funding across nations. While the aspect of generating commercially viable ideas and activities is widely agreed upon, the aspect of making money was most strongly pronounced in the case of Strathclyde and less pronounced in the case of Aalborg, while Twente and Hamburg appear as middle cases. In all cases, getting external funding is considered important and is actively pursued, but the emphasis on making money as a strategic objective in itself differs across universities. Some respondents point to the fact that the logic and time horizon of academic and market-oriented activities are often quite different, and the recognition of this point of view as part of a strategy for entrepreneurship may be one possible explanation for the observed difference.

Generally, entrepreneurship is not only perceived as a phenomenon that has to do with *external* relationships, but with *internal* relationships and activities as well. Several important features are pointed to. First, there need to be sufficient support structures that can assist researchers with getting funding, protecting intellectual property rights, commercialising viable business ideas, managing projects and so on. Second, the administrative part of the university organisation itself needs to be innovative and entrepreneurial. Third, there must be a willingness to take risks, financially and intellectually, and regarding intellectual risk there must be an academic recognition of high-quality applied research. Fourth, entrepreneurship must pertain not only to research and administration, but also to education because the whole ethos surrounding educational activities highly influences what is going on in other parts of the university.

5.1.2 The distinctive entrepreneurial features

In what sense are Strathclyde, Hamburg, Twente and Aalborg innovative and what are the main people and activities contributing to this? Several themes occurred as the respondents reflected on these questions.

The *history* of the university is important because it defines the general ethos of the university. A history of being entrepreneurial means that the university is to some extent entrepreneurial in what it is doing, even though the management's or researcher's focus on entrepreneurship may weaken from time to time. In the case of Twente and Aalborg, the young age of the university provokes an entrepreneurial atmosphere because people still feel that they have to prove themselves vis-à-vis the older and more traditional universities.

The *culture* of the university regarding the willingness to take risks and the willingness to promote applied research backed up by strong basic research is highly conducive to entrepreneurship. An important part of organisational culture is how flexibly rules are interpreted and how rules more specifically can support entrepreneurship, but also when not to apply rules and rely on broad, activity-directing values instead. Finally, an ethos that emphasises the importance of external cooperation and the role of the university in the development of firms and society has stimulated entrepreneurship at all the universities and is especially conducive in cases where there is a strong focus on solving real-life problems through collective research and learning.

Being entrepreneurial is subject to *diversity* at each university, simply meaning that some parts of the university are more entrepreneurial than others. The differences in being entrepreneurial are determined by three background factors. First, some fields of research and teaching, especially within the technical sciences, attract funding more easily and thus have better opportunities for being entrepreneurial. Second, some of the support structures for entrepreneurship are better linked with some parts of the university than others. (In fact these two points seem to be closely linked.) Third, the ethos of some fields of research and education gives fewer stimuli to entrepreneurial activities than others.

Finally, an *understanding of commercialisation* seems important at all universities. Recognising that entrepreneurial ideas have to be commercially viable enhances the ability to cooperate externally with firms and organisations. However, there seems to be some debate on the extent to which the universities in question are really successful in creating and promoting commercially-viable

ideas and the extent to which this should take precedence over other types of external collaborations.

5.1.3 Facilitators

The basic facilitators for entrepreneurship may be grouped into four main factors:

- Organisational culture
- Supporting organisational structures
- Strategy in practice
- External cooperation.

Regarding *organisational culture*, the ethos of the organisation seems to be crucial. If entrepreneurship is a basic value guiding what people are doing, the university will experience entrepreneurial activities even in cases where supporting infrastructures, funding and the like may not be ideal for promoting entrepreneurship. Examples of an entrepreneurial ethos that pervades most of the activities of the university are the mission of Strathclyde for being “the place of useful learning” and the mission of Aalborg for being a promoter of problem-based learning and research. A culture of free discussion and inter-disciplinarity in research and teaching is conducive to entrepreneurship, especially if there is no contradiction between the academic virtue of publishing and the entrepreneurial virtue of cooperating with external partners. In general, it is important that the researchers understand and respect the culture of those with whom they cooperate.

Even though a university cannot be entrepreneurial without key individuals with a strong entrepreneurial spirit, *supporting organisational structures* need to be in place in order to facilitate entrepreneurial activities. Lump sum budgeting and a dynamic management structure combined with supporting entities committed to entrepreneurship are essential, as is funding that can be used flexibly. Potential external partners often mandate matching internal funding. Thus it is important to have ready access to internal funds set aside for this purpose.

The type of *strategy* that the university leadership pursues *in practice* (rather than on paper) is important to entrepreneurship. A strategy that combines strong leadership with decentralised degrees of freedom seems preferable. A combination like this must take a form where individual researchers and groups of researchers are allowed to take intellectual risks without risking their jobs and academic reputation. Incentive structures, financial and otherwise, need to be in place.

External cooperation is an intrinsic feature of a university being entrepreneurial. Fields of technical science appear to offer more opportunities for external cooperation than human and social sciences. Human and social sciences do not necessarily offer fewer opportunities for external cooperation, but in practice this is the case because of the availability of funding. Being an important player in the development of the region in which the university is located stimulates external cooperation and hence entrepreneurship. However, it is important that the university also adopts a national and global perspective in order to find partners that are sufficiently sophisticated for cooperation. Especially important are cooperation with industry and support structures for company spin-offs.

5.1.4 Barriers

Important barriers to entrepreneurship are the absence of the facilitators to entrepreneurship mentioned above. However, apart from this, the respondents' comments on barriers indicate that the basic barriers for entrepreneurship may be grouped into five main factors:

- Flexibility of administration and regulation
- Risk-averse culture
- Absorptive capacity and recruitment of external users
- Long-term commitment to external cooperation and applied research
- Systems for spin-offs.

Regarding *flexibility of administration and regulation* there seems to be a tension between the governmental and the administrative need for rule-guided behaviour and the entrepreneurial activities' need for flexible solutions. Lack of transparency in rules and administrative decisions, too centralised decision-making, and HRM policies that prevent flexible hiring in projects block entrepreneurial initiatives. Low quality of administrative support is often experienced as a problem. Furthermore, management is often not project-oriented and planning cycles are too rigid.

A *risk-averse culture* often characterises the management decisions when it comes to the allocation of resources to new initiatives and the freeing up of existing resources to new forms of use. There is a tendency for management to equate entrepreneurial activities with making money rather than with developing the quality of research, teaching, and external cooperation. In general, incentive structures need to be unambiguous and tuned to entrepreneurial activities, eg in the form of demand structures that result in positive incentives. Lack of security, job-wise and intellectually, prevents people from taking risks. Finally, in many cases, there is a general resistance to organisational change, both among administrators and researchers.

External users are often hard to come by in the sense that many external partners do not have the knowledge or the willingness necessary for cooperating with universities. To some extent, the university must educate external users and provide them with offers they cannot refuse. Furthermore, lack of alumni activities and lobbying mean that the university misses entrepreneurial opportunities. Finally, the lack of a university 'showcase' and worn-out buildings are detrimental to external cooperation.

There is a need to strengthen *long-term commitment* in several fields. Often, money is more easily allocated for short-term purposes than long-term purposes which limits the scope of entrepreneurship. Resources for basic research that forms the foundation for applied research is needed. Finally, there is a need for closer cooperation between the different research groups at the university because the fragmentation of the university organisation into many different groups makes it more difficult for external partners to cooperate on a broad scale. (However, de-fragmentation must not take place at the expense of decentralised decision making.)

Systems for spin-offs are, in general, lacking. The universities are not sufficiently tuned towards assisting students to create start-up businesses. Seed capital is lacking, and there is also a lack of good business ideas because education focuses

more on operations and management than on entrepreneurship. The use of the university as a pre-development system for industry is, in general, too limited.

5.1.5 Distinctive entrepreneurial practices...

Regarding *Aalborg*, the respondents point to the focus on problem-based learning in education and research, and the diversity of activities going on. The problem-based approach is believed to create a tradition where traditional academic disciplines are combined with new and more practical oriented activities often based on pragmatic interdisciplinarity. Diversity of activities is seen as a strength because it creates freedom for decentralised activities and makes it possible for external partners to cooperate with the university on a broader scale.

In the case of *Strathclyde*, the respondents point to a strong commitment to entrepreneurship in education and in setting up collaboration with private companies and parts of the community devoted to develop private business. Important parts of the collaborative efforts focus on creating new companies, primarily by spin-outs. Flexibility of employment where university work can be combined with consultancy work is also mentioned.

Respondents at *Twente* focus on the ability to stimulate the creation of new firms, including firms established by students, where the university has been extremely successful. Large parts of the university and the way in which budgeting and organisational changes take place are committed to promoting entrepreneurial activities. In general, a structure where decentralisation is combined with creating large research institutes is seen as an important strength.

The *Hamburg* respondents describe a strong business-oriented decision-making culture as a distinctive feature of the university's entrepreneurship. The business-oriented decision-making is supported by a strong central core of management and a general understanding of commercial needs among the staff. Specifically, academic staff are very committed to innovation and entrepreneurship. The teaching practice is entrepreneur-oriented because many academic staff have business experience.

5.1.6 ... and warranted changes

The most important organisational practice missed by the *Aalborg* respondents is an incentive system that facilitates entrepreneurship. They point to funding of both short-term and long-term initiatives as important, above all they point to the need to recognise entrepreneurs by providing money, titles, prizes, and freedom to pursue personal ideas and visions. Time is a particularly important factor and there is a need to create a learning organisation by which the practices of university entrepreneurs are disseminated to fields that are less entrepreneurial. Establishing a learning organisation must be supported by a clear and well-communicated set of management values on innovation and entrepreneurship.

The *Strathclyde* respondents find in general that the entrepreneurial spirit could become more prevalent not only amongst academics and administrators, but also students, although much progress has recently been made to enhance awareness and entrepreneurial skills in undergraduates. The development of the entrepreneurial spirit could be furthered by increasing incentive structures assisting entrepreneurship, eg giving public recognition and extra funding to those who show entrepreneurial successes. Clear signals from management on the

benefits of entrepreneurship must assist this process, alongside a clearer focus on developing entrepreneurship amongst staff. In addition to the focus on spinning-out companies, priority should also be given to getting external venture capitalists to invest within the university.

In the case of *Twente*, the respondents generally feel that the support functions need to become more professional in supporting entrepreneurship, ie less bureaucratic, more flexible and less ambiguous about what can and cannot be done. An enhancement of the entrepreneurial culture is warranted and it is suggested that students should be oriented towards entrepreneurship during their studies, that the small units within the university should become more focused on entrepreneurship and that the university should form strategic alliances with large firms and other organisations. Sharing more facilities with firms is suggested.

The *Hamburg* respondents point to a stronger focus on core competencies, outsourcing support services, and recruiting professionals from industry as part of a strategy to make the university more concentrated on entrepreneurship. They mention the need to strengthen internal university communication structures with regard to research and development activities and to create a stronger campus community including student activities. The development of alumni activities is expected to increase the entrepreneurship of the university.

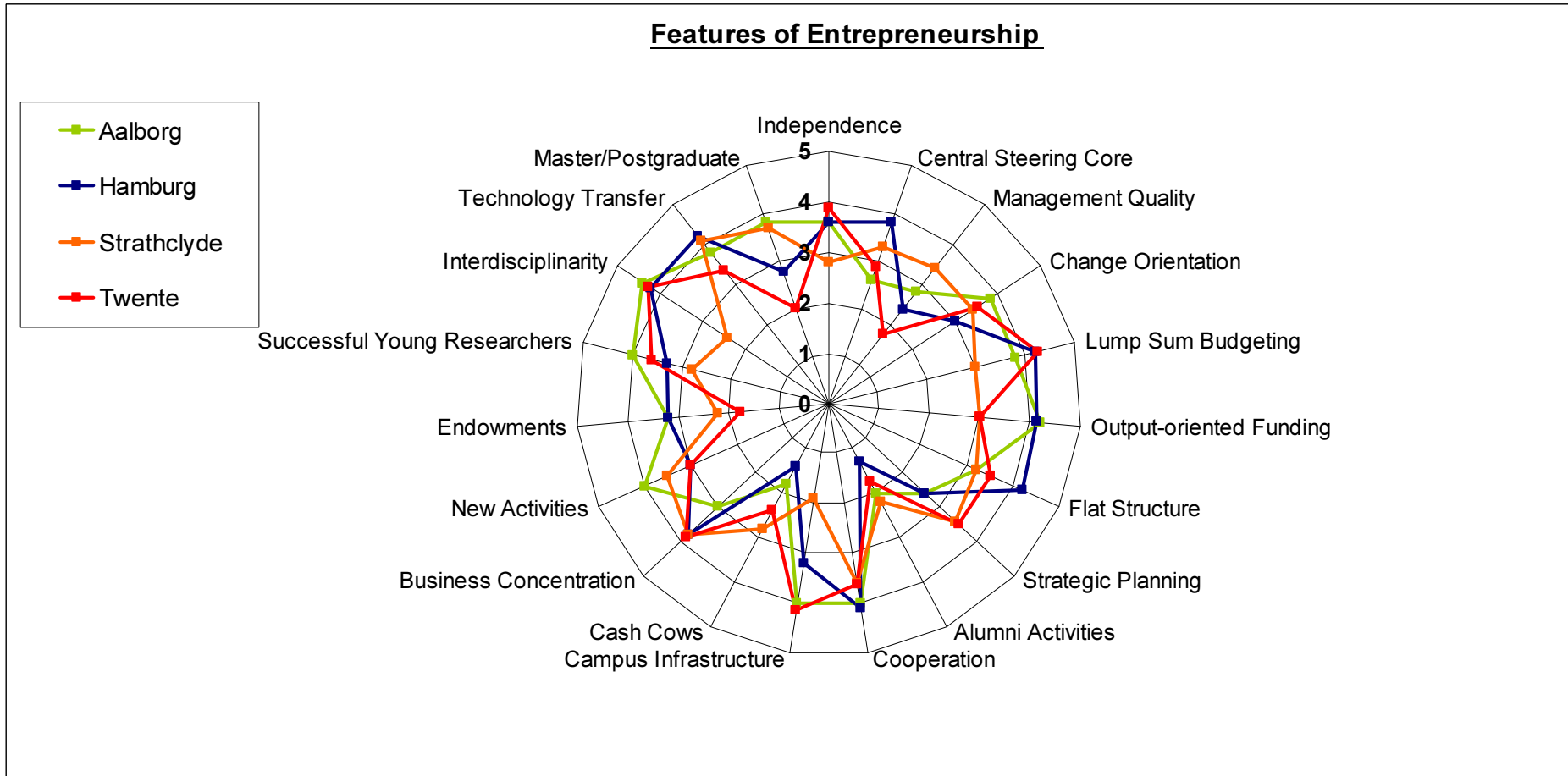
Regarding external individuals or organisations that have or could have a major influence on entrepreneurship, the respondents from all four universities argue that stronger ties with venture capitalists, banks and business angels should be established. Generally, there is a belief that the existing external institutional arrangements for supporting and promoting spin-outs could do much better than as is currently the case. There is an interest in strengthening the ties with institutions that are engaged in further education and whose students often progress onto universities. Engaging even more in the development of the region in which the university is located seems important in some cases, as does an intensified cooperation with regional and national policy-making and funding bodies.

5.2 Scoring Entrepreneurship

In this section the average values of the Burton Clark scoring analysis of the four universities are compared.

The results of the averages are shown overleaf in Figure 2.

Figure 2: Average Scores



The initial analysis involved calculating the arithmetic average value from the average values of the individual universities and the variances and standard deviations. Where the variance for each of the 20 features was more than 0.25, further comment is provided.

Management quality of staff (variance 0.4)

In general, all universities score below average with this criterion; this leads to the conclusion that they have to invest in training and staff development in order to promote greater entrepreneurship.

The particularly low score for Hamburg was attributed to the introduction of new systems in 2003: both a new software system (SAP) and a new accounting method (double-entry bookkeeping). Substantial performance loss resulted from a poor-quality staff development and training programme. Within Twente there is a perception that the quality of support staff could be improved on.

Output-oriented funding (variance 0.3)

During the evaluation of this criterion the Universities of Aalborg and Hamburg scored 4.2 and 4.1, the Universities of Strathclyde and Twente both 3.0, i.e. all four universities scored 3 or greater. This criterion of an entrepreneurial university appears to a large extent to be fulfilled. The particularly high evaluations for Hamburg and Aalborg are due to the fact that output-oriented funding is an established mechanism with respect to the management of universities.

Campus infrastructure (variance 0.8)

All universities, with the exception of Strathclyde, scored 3 or greater. However, it is acknowledged by Strathclyde that there is a requirement to modernise the estate, much of which was built in the 1960s, to maintain recruitment and improve competitive position.

Cash cows (variance 0.3)

None of the universities was rated highly with regard to this feature, although Strathclyde fared best. Strathclyde's MBA and other national and international programmes have generated significant income, as have its activities related to residential conferences. Hamburg has recently established some subsidiary companies which are offering similar postgraduate courses but this activity is still at an early stage. The development of conference facilities is not currently included in Aalborg's strategy.

Endowments (variance 0.4)

Aalborg and Hamburg both scored 3.2, ie greater than the average score 3.0 – however within these nations it is only recently that endowments have increased in importance. Within the Netherlands there is also little tradition in this area. The scoring of Strathclyde (2.2) is explained by the fact it has had no new significant endowments in recent years, but this is currently being given priority.

Interdisciplinarity (variance 0.7)

The Universities of Aalborg, Hamburg and Twente are well regarded with respect to cross-disciplinary activity, scoring greater than 4 – however it should be noted that Hamburg has only a single faculty (Engineering). Practitioners within Strathclyde

believed there to be no tradition and very limited evidence of interdisciplinarity within teaching and research fields at a cross-faculty level.

Master/Postgraduate (variance 0.5)

Aalborg and Strathclyde scored above 3 indicating a high level of postgraduate activity. The below average value for Hamburg and Twente results from the fact that the conversion to the Bachelor/Master system has yet to be implemented according to the Bologna process and will not be fully achieved before 2007. Additionally within Twente the development of new courses and programmes has been slow, with more focus on research.

Appendix A contains a table showing a summary of the numeric data, including variance and standard deviations.

6 Conclusions

This study endorses the Burton Clark principle of the integrated entrepreneurial culture. Universities that strive to be viewed as entrepreneurial need to ensure that entrepreneurship is ingrained in their identities. However, the formulation and development of an organisation's identity takes a lot of time, effort and determination.

There is natural understanding of teaching and research but entrepreneurship is not traditionally seen as a third core element within well-established educational institutions. Teaching and research are firmly perceived as part of a university's identity. Adding successful entrepreneurship to the identity of a university will involve changing attitudes and behaviour of key staff, including administrative and support staff.

With respect to the key challenge set – Myth or Reality? – the four institutions under review do not fully reveal themselves to be totally entrepreneurial universities. Much has still to be done before entrepreneurship is fully integrated into teaching and research.

The results of our survey show that the respondents perceive that the four universities are only past the half-way stage. On examination of the number of the 20 Burton Clark features rated by our respondents greater than 3 (on a 1 to 5 scale where 1 = very poor, 2 = poor, 3 = okay, 4 = good, 5 = excellent):

	Aalborg	Hamburg	Strathclyde	Twente
# of features rated > 3	14	13	11	12
% of 20 features	70%	65%	55%	60%

The following sections provide further insight and analysis for each of the four participating universities and propose specific recommendations to help reduce the barriers to increasing entrepreneurial activities as noted by our interviewees (see Section 5.1.4).

6.1 Aalborg University

In this section further exploration of the quantitative data is undertaken. Regarding the Burton Clark scoring list, Aalborg University has an above-middle score in 14 of the 20 cases. This shows that Aalborg University is strongly committed to entrepreneurship. However, it must be noted that the commitment to entrepreneurship differs across departments and across faculties. Most Aalborg respondents agree that the faculty of technical science has more entrepreneurial activities than the other faculties at the university, ie the faculty of social science and the faculty of humanities.

Cases where Aalborg performs relatively poorly in comparison with the other universities comprise the following:

- In general, the presence of a strong *central steering core* is less marked in Aalborg than in the other universities. Aalborg has a tradition and policy for decentralised decision-making, but it is not clear whether this tradition explains the difference. Stimulated by a recent change in the legislation on the

governance structure of Danish universities by which central management formally has become stronger, the topic of a strong centre in the organisation is currently being widely discussed within the university. In general, academics oppose strong central management, and the central management is very much aware that even though there is a need to make central management stronger, the strengthening must leave substantial degrees of freedom for decentralised activities.

- Regarding *strategic planning*, the responses from the Aalborg respondents seem to indicate that Aalborg only to a relatively small degree has a well-communicated strategic plan. Devising major strategic plans is a recent phenomenon in Aalborg and is just currently being implemented to a full degree. Even though strategic plans have occurred, they have been of a relatively general nature and the decision-making culture has relied on decentralised decision-making within broad guidelines. However, this is changing as part of a strengthening of the central steering core.
- Like the other universities in the sample, *alumni activities* play a small role in Aalborg. The most important alumni activity is a recurrent lifelong learning programme at the technical faculty where postgraduates get the opportunity to be updated on a number of specific topics. In some parts of the university, attempts to undertake alumni activities are currently taking place, and it has also become an issue for central management. In general, there are only a few examples of alumni activities in Denmark, and there is no tradition for alumni to donate money to their university. University activities are generally believed to be a public task, primarily financed by the taxation system.
- *Cash cows* score low in Aalborg, basically because Aalborg has refrained from creating cash cows in the form of conference centres, business schools, etc. There is a tradition and external political expectations that the university uses the facilities offered by local providers in the community. Lifelong learning programmes and Master programmes do exist, but in line with the Danish tradition entry fees are low and the activities not really focused on profits. Currently how to create cash cows, especially in the form of further education and consultancy, is being discussed. However, it will require a change of culture, and there is still a long way to go.

In conclusion, what Aalborg could learn from the Burton Clark definition regarding the factors where the university performs comparatively poorly, is that there needs to be a stronger commitment to strategic planning, in combination with a strengthening of the central steering core. In addition establishing cash cows in the form of teaching and consultancy should be considered as a future option.

6.2 Hamburg University of Technology

Regarding the Burton Clark scoring list, Hamburg University of Technology is, in 15 of the 20 features, rated equal or higher than the average (3.0 points). This is equivalent to 75%, with five features scoring less than average. These are explored further:

- *Management quality* of staff, in this case especially financial staff, scores only 2.4, because in 2003 the university installed new enterprise resource planning software and a new financial reporting system. Both were accompanied by poor change management processes and unsuccessful training programmes for staff.

The performance of the accounts department is still bad, does not fulfil customer demands and as a further sign the balance sheet of 2003 will not be finished before mid 2005.

- Regarding *strategic planning*, the responses from the Hamburg respondents seem to be equivalent to Aalborg. They indicate that Hamburg only to a relatively small degree has a well-communicated strategic plan. Increasing scarcity of financial funds and more intensive and probing questions from external board members will lead to greater importance being placed on strategic planning and communication of aims and objectives throughout the university.
- *Alumni activities* have little tradition in German universities, because the primary funding is supported via the taxation system. Alumni activities have recently started to play an increasing role in the evaluation of the German universities and resource for this task is increasing, but all universities, including Hamburg, have a long way to go.
- *Cash cows* are not a strategic target in the corporate strategy of Hamburg University of Technology and this situation is unlikely to change in the near future. The university is located in a big city, so the external offering is very good and the competencies for operating conference centres, hotels, etc, are not core to the university.
- The German universities are in a period of change from the Diploma to the Bachelor/Master system. This will be finished in the period 2007 – 2009. At present the small share of *master/postgraduate* students is attributable to structural and historical reasons but this situation will change over the next few years.

We have to conclude that Hamburg University of Technology should concentrate on improvements in management quality, strategic planning and alumni activities to increase its score. Learning through application of this benchmarking process will be instrumental towards fulfilling this intention.

6.3 University of Strathclyde

Both the qualitative and quantitative data from the investigation show that Strathclyde is not perceived internally to be highly entrepreneurial, although some respondents noted that they felt Strathclyde was still well-regarded externally. In general, Strathclyde was not rated as highly, with respect to the 20 Burton Clark features, as the other three universities in the survey. However, it also had the lowest number of features in the categories 'Poor' and 'Very Poor'. It was clear that Strathclyde *is* viewed as *innovative* and that this had high strategic importance, with key focus on performing well in the established areas of teaching and research.

However a few specific suggestions for improvement can be articulated following analysis of the data:

- Strathclyde's lowest score (1.9) was related to *campus infrastructure*. This is not unexpected and is being actively addressed through the recently-published Estates Development Framework.

- The university is viewed as performing well when it comes to *technology transfer* activities. The professional services, offered by Research and Consultancy Services, to support commercialisation and the creation of spin-out companies are in general well-regarded.
- The Hunter Centre for Entrepreneurship @ Strathclyde has quickly become established and is well-regarded with respect to increasing skills and entrepreneurial capabilities of undergraduates and postgraduates. It could play a greater role in enhancing staff through offering sessions as part of general staff induction as well as more in-depth courses.
- Success stories should be given a higher profile – greater promotion of good practice and celebration of success with ‘role models’ who are happy to work with others and act as mentors.
- The university is encouraged to establish an entrepreneurial network for academics inside the institution, mirroring current external entrepreneurial networks. This approach, within a knowledge and learning culture, perhaps augmented by the development of a framework, should nurture the sharing of expertise, knowledge, case study development, etc. However, there is also a need to learn from unsuccessful ventures.
- Strathclyde received the highest average score related to *management quality*. Strathclyde should focus on further developing image and reputation in areas in which it already has great strengths. The development of quality marketing material for senior management to use (effectively as a ‘sales pitch’) could be used to promote Strathclyde as a leader in such areas and ensure that a consistent message of entrepreneurship/innovation was given around the UK and internationally.
- Many respondents noted the tensions between ‘Rule Book vs. Risk Take’, but interestingly all understood this from both sides. It is difficult to make specific recommendations other than perhaps to suggest that consideration be given to exploring whether the rate at which funding decisions are made could be increased. This was partly evidenced in the medium rating for the *‘flat structure’* feature.

Finally, it is encouraging that respondents found it difficult to identify other institutions, particularly within the UK, as exemplars, with the exception of Warwick University (also defined as entrepreneurial by Burton Clark in 1997).

6.4 Twente University

Compared to the insights of the respondents from the three other universities (see Appendix A) the University of Twente is considered to:

- Operate fairly independently from the central government, and somewhat more independently than the others (for a full description of the Clark-2004

features see Appendix B). The high standard deviation in the score of Twente may point to the fact that teaching and research may differ in this respect. There is more freedom in terms of major research investments than in major new teaching affairs.

- Operate poorly in terms of feature 3: The *quality of the finance staff* at Twente is considered to be poor.
- Score somewhat above average but not yet ‘good’ in terms of *strategic planning*. The university should continue to enhance communications about strategic decisions.
- Score only a 1.8 with respect to *alumni activities*: This is another area which could be considered for improvement.
- Score a 2.4 in terms of creating *cash cows* for the university. Hence Twente is considered less than successful and might need to more seriously consider how better to follow up on the Burton Clark advice to establish a conference centre, management/business school, other offers for lifelong learning, hotel, etc.
- Become much more active in terms of feature 14: *Monitoring future opportunities in teaching and research*. The university scores a 3, one of the lowest scores of the universities being studied.
- Become much more active in terms of *attracting endowments*. The university scores 1.8. This score is the absolute lowest, compared to the other four universities that all also operate in a national context where donating monies to the state-funded universities is not common (in contrast to the situation eg in the USA).
- Become much more active in terms of feature 19: ‘*High share of master and postgraduate students.*’ The university scores 2. It is the lowest score of the four universities.

7 General Recommendations

Based on our project findings it is suggested that successful entrepreneurship involves the close interactions between three main areas: strategy, structure and culture.

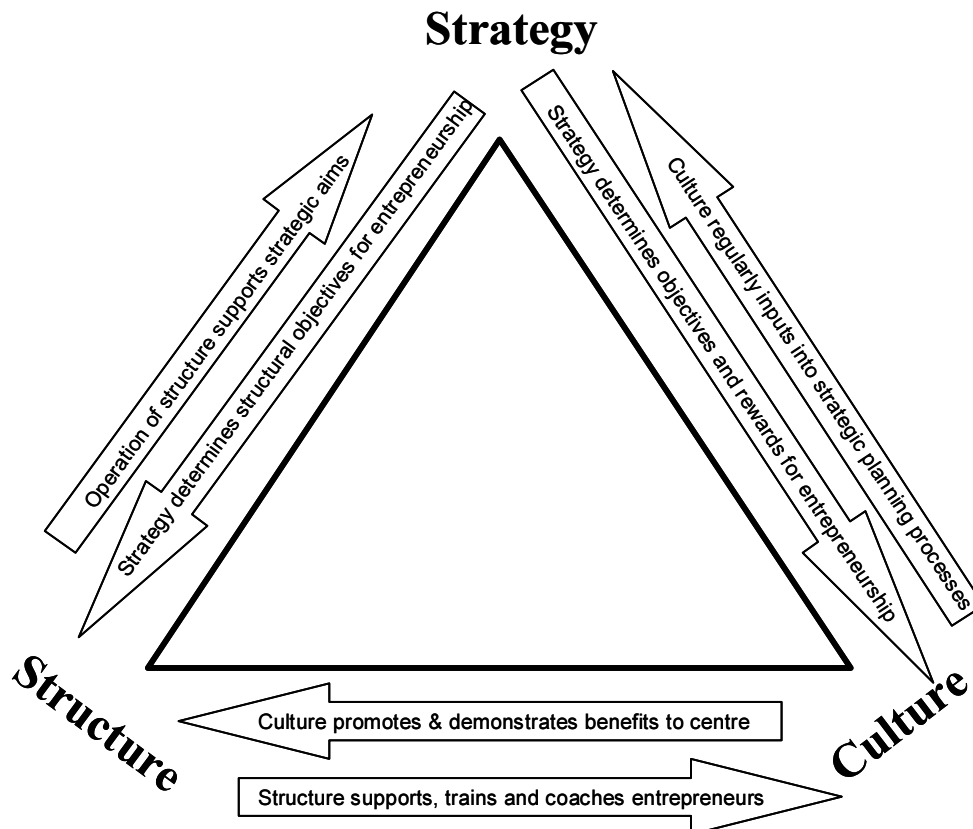


Figure 3: Strategy – Structure – Culture, the triangle of university entrepreneurship

Strategy

- Need for a clear university definition of entrepreneurship
- Need to define the entrepreneurial concept and aspirations of a university operationally ie profit, innovation, market conditions, value to society, etc.
- Entrepreneurship to be integrated into the university's strategic objectives and core activities
- Clear central focus and support on developing an overall entrepreneurial university
- Identify entrepreneurial risks and develop risk management support to allow for risk-taking
- Deliver demand-driven activities and offerings.

Structure

- Develop support structures that are flexible and demand-driven
- Implement appropriate incentive structures – resource, time, reward and recognition

- Strike a balance between central steering and entrepreneurial freedom
- Strike a balance between stimulating entrepreneurship and rule imposition
- Clear, concise and expedient processes must exist for decision-making
- Secure the links between applied research and basic academic research
- Develop better ideas and support for spin-outs.

Culture

- Reward, promote and showcase good entrepreneurial practice, and communicate this internally and externally
- Engender entrepreneurship into staff development
- Teach entrepreneurship to students and provide support for spin-outs for this group
- Nurture better team and cross-team working.

“Viral Entrepreneurship – catch it and share it!”

8 Appendices

Appendix A – Ratings of Burton Clark 20 Features

BC Feature	Average				Std. deviation of institutional responses						
	Aalborg	Hamburg	Strathclyde	Twente	average	variance	std dev	Aalborg	Hamburg	Strathclyde	Twente
Independence	3.6	3.6	2.8	3.9	3.5	0.16	0.40	1.02	0.58	0.51	1.14
Central Steering Core	2.6	3.8	3.3	2.9	3.1	0.21	0.45	0.49	0.75	1.21	0.54
Management Quality	2.8	2.4	3.4	1.8	2.6	0.36	0.60	0.75	0.96	1.36	0.43
Change Orientation	3.8	3.0	3.4	3.5	3.4	0.08	0.29	0.98	0.89	0.86	1.12
Lump Sum Budgeting	3.8	4.2	3.0	4.3	3.8	0.25	0.50	1.17	1.17	0.84	0.83
Output-oriented Funding	4.2	4.1	3.0	3.0	3.6	0.34	0.58	0.40	0.54	0.89	1.22
Flat Structure	3.2	4.2	3.2	3.5	3.5	0.17	0.41	0.98	0.40	1.17	0.87
Strategic Planning	2.6	2.6	3.4	3.5	3.0	0.18	0.43	0.80	1.20	0.37	0.50
Alumni Activities	2.0	1.3	2.2	1.8	1.8	0.11	0.34	0.89	0.40	0.51	0.83
Cooperation	4.0	4.1	3.6	3.6	3.8	0.05	0.22	0.63	0.80	0.80	0.41
Campus Infrastructure	4.0	3.2	1.9	4.1	3.3	0.79	0.89	0.63	0.75	0.49	0.22
Cash Cows	1.8	1.4	2.8	2.4	2.1	0.29	0.54	0.75	0.49	1.17	0.41
Business Concentration	3.0	3.8	3.8	3.9	3.6	0.13	0.36	0.63	0.40	0.68	0.22
New Activities	4.0	3.0	3.5	3.0	3.4	0.17	0.41	0.89	0.63	0.45	0.71
Endowments	3.2	3.2	2.2	1.8	2.6	0.40	0.63	1.33	0.40	0.81	0.43
Successful Young Researchers	4.0	3.3	2.8	3.6	3.4	0.19	0.44	0.63	0.87	0.75	0.96
Interdisciplinarity	4.4	4.2	2.4	4.3	3.8	0.67	0.82	0.49	0.75	0.97	0.43
Technology Transfer	3.8	4.2	4.1	3.4	3.9	0.10	0.32	0.75	0.75	0.49	0.41
Master/Postgraduate	3.8	2.8	3.7	2.0	3.1	0.54	0.74	0.98	1.09	0.40	0.71
Spin-offs	3.8	4.2	3.6	4.1	3.9	0.06	0.24	0.98	0.40	0.66	0.22

Appendix B – Burton Clark 20 Features Checklist

Entrepreneurship of Universities (SCALE - 1 = very poor, 2 = poor, 3 = okay, 4 = good, 5 = excellent)

Name of University: _____

No.	Feature	Feature (short)	Response 1	Response 2	Response 3	Response 4	Response 5
1	Independence of government funding: The university does not need to seek approval from governmental offices for major investments eg to establish new scientific branches (for research and teaching), commercial units, etc.	Independence					
2	Emphasis on a central steering core: There is a strong and decision-orientated senior management group; participation of wider academic and student committees is less important.	Central Steering Core					
3	Management quality of staff, especially in finance: The university hires quality professionals and offers sufficient staff development programmes to maximise their input and retention.	Management Quality					
4	Entrepreneurial culture of (change-, not rule-oriented): Administration and academic staff prefer innovation and realisation of new ideas instead of strong rule-executing.	Change Orientation					
5	Lump sum budgeting: The university is largely permitted to use government funding as it wishes (eg it can transfer funds between personnel, IT, estates and other infrastructure and investments) and can retain annual unspent income (eg to set up strategic funds).	Lump Sum Budgeting					
6	Output-oriented contracts with financiers: Government, foundations and other financiers calculate funding with respect to measurable output and outcomes and these are monitored through regular reporting.	Output-oriented Funding					
7	Flat structure: Minimalisation of barriers between the centre and base units in order to shorten decision-making processes.	Flat Structure					
8	Mission statement and strategic plan: There is a well-communicated paper which is a guideline for all the strategic decisions of the university.	Strategic Planning					

9	Extensive alumni activities: There is a lot of alumni funding or other alumni support activities.	Alumni Activities					
10	Cooperation with industry and other (excellent) universities: The university realises possible synergies in research, investment in research equipment, teaching and other useful activities in a network of excellent individuals and institutions.	Cooperation					
11	Competitiveness of campus infrastructure: The campus is an attractive environment for recruitment and retention of excellent students.	Campus Infrastructure					
12	Additional funding through 'cash cows': Establishing eg conference centre, management/business school, other offers for "lifelong learning", hotel, etc.	Cash Cows					
13	Focus on a limited range of teaching and research fields: Management of the university should not be over-stretched through extremely diversified activities in fields which are outside of the core know-how.	Business Concentration					
14	Monitoring future opportunities in teaching and research: The university has a permanent sight on the development of the teaching and research markets and reserves resources for fast response to such market developments.	New Activities					
15	Attractiveness for endowments: The reputation of the university attracts donations.	Endowments					
16	Attractive environment for young researchers: The university should recruit and retain successful young researchers because they can attract students and donors and carry out innovative research.	Successful Young Researchers					
17	Interdisciplinary research structure: Establishing an organisational structure in research and teaching which supports intra-organisational cooperation.	Interdisciplinarity					
18	Technology Transfer: Well established/structured technology transfer processes into the region.	Technology Transfer					
19	High share of Master and Postgraduate students: Developing new teaching income streams by thinking beyond traditional/historical reliance on undergraduate activities.	Master/ Postgraduate					
20	Service-offers for spin-off/out companies: Support for gaining risk-capital, consultation, office and small production facilities, finding guarantors, etc.	Spin-offs					

Appendix C – Survey Questions

Main audience: people who embody/know most about entrepreneurship of this university.

1. How would you define an entrepreneurial university?
2. In what sense do you think that this university is entrepreneurial? What are the main activities and people that make this university entrepreneurial?
3. What do you think are the key facilitators in this university for entrepreneurship – if possible please identify the main three?
4. What are the key barriers (three) in this university to entrepreneurship?
5. Is there anything unique or distinctive about this university's entrepreneurial practices?
6. What else could this university do to increase entrepreneurship? Are there any practices you think are missing which ought to be in place?
7. Are there any external individuals or organisations that have major influence on entrepreneurship, either as a facilitator or obstacle? Are there any external people or organisations that you would like your university to cooperate with in order to facilitate entrepreneurship that it is not currently cooperating with?
8. Is there anything else we should know, but didn't ask or discuss, about this university as an entrepreneur? Could you point to other universities that you find entrepreneurial to an extent that you would like this one to be?

