UNIVERSITY OF SOUTHAMPTON

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SCHOOL OF MANAGEMENT

Factors influencing a productive research management environment at two merging higher education institutions in South Africa

Volume 2 of 2

by

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CHAPTER 5

Presentation of Qualitative Data

Layout of Chapter 5

Introduction

The purpose of this chapter is to present the qualitative data collected during the study. The data will be presented without discussion, since this is reserved for chapter 6, main outcomes will, however, be presented in this chapter. The data is presented in three networks that emerged from the analysis of interviews. The three networks illustrate the factors that influence a productive research management environment, at institutional level, at two merging higher education institutions. Furthermore, the networks illustrate the systemic interactions of tangible and intangible factors that influence the delivery of research at these institutions. The networks are:

The intangible research management factors – figure 5-1
The tangible research management factors – figure 5-5; and
Tools for organizing people and resources – figure 5-8.

This chapter will begin with a note to readers explaining the interpretation of networks. Following this, the three networks are presented. The Intangible network is discussed first, followed by a discussion of the Tangible network. The chapter concludes with a discussion of the network that represents the Tools for organizing people and resources. Factors (codes) are illustrated by the use of remarks made by interview participants. The relations between factors, indicating their systemic interactions, are also explained.

5.1 NOTE TO READERS

In this chapter quotations are used to highlight, support or illustrate codes/factors. Relations are indicated where systemic interactions between factors take place. Explanations of relations are highlighted in paragraphs. A detailed list of relation types and an explanation of the interpretation of codes are provided in chapter 3. Factors are represented by codes in each of the networks and each code is followed by numbers in brackets e.g.:

SUBJECT DISCIPLINARY DIFFERENCES {20-11}~

Throughout this chapter footnotes have been included to indicate the code names and in brackets the {groundedness : density} of codes identified using Atlas.ti. This is done to support the findings.

Colours used in network layout

Four colours are used to represent the different types of factors in the networks in table 5-1.

Table 5-1: Network colour codes

Colour		Represents
Grey		Intangible factors
Orange		Tangible factors
Blue		Non-essential tangible factors
Green		Management tools used for organizing people and resources

Although each network's factors are discussed individually, factors that fall under another network are sometimes included (in colour-coded format) to indicate links between the networks.

Quotation layout and symbols

Quotations are used to support and/or highlight explanation of the networks. Each quotation starts with the symbol P followed by a number, e.g. `P1`. The symbol P denotes a primary document in the Atlas.ti programme and is equivalent to an interview transcript. The primary document number is followed by a row of numbers in brackets e.g. `P1:(3:4)` denoting row numbers 3 to 4 in primary document number/interview 1.

Quotations are rendered verbatim except where square brackets are used. Square brackets, i.e. [ ], indicate words that were added by me to clarify context or terminology. Note that seven of the first interviews and five follow-up interviews were conducted and transcribed in Afrikaans. Quotations from these interviews were translated into English by a translator and verified by me to ensure that the original meaning was not compromised.

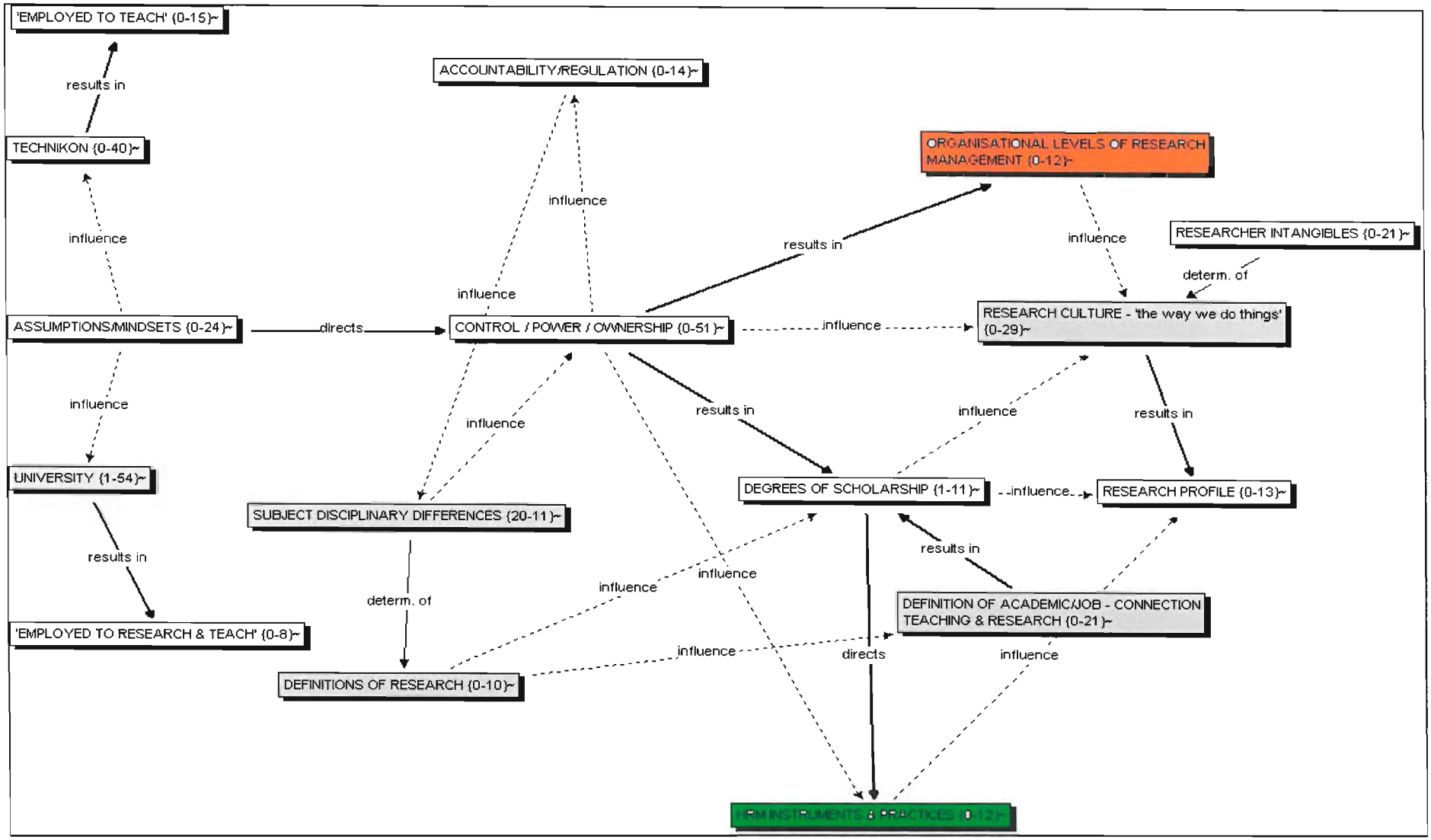

Figure 5-1: Intangible research management factors

Section 2

5.2 THE INTANGIBLE RESEARCH MANAGEMENT FACTORS NETWORK

Figure 5-1 contains a network representing the intangible research management factors. For purposes of explaining the interlinks of the intangible factors with the tangible factors, figure 5-1 shows one tangible factor, which is highlighted in orange, and one management tool, which is indicated in green. Each code on the network represents an intangible factor. The intangible factors are:

- Employed to teach
- Technikon
- Employed to research and teach
- University
- Control/Power/Ownership
- Accountability/Regulation
- Subject disciplinary differences
- Definitions of research
- Degrees of scholarship
- Definition of academic job – connection between teaching and research
- Research profile
- Research culture – 'the way we do things', and
- Researcher intangibles

Considerable space is devoted to describing the codes 'university' and 'technikon', not only because of the density of these codes, but because this thick description also offers a backdrop for understanding the context of the three networks. Figure 5-1 is broken down into three parts represented by figures 5-2 to 5-4. Figure 5-2 is discussed next.

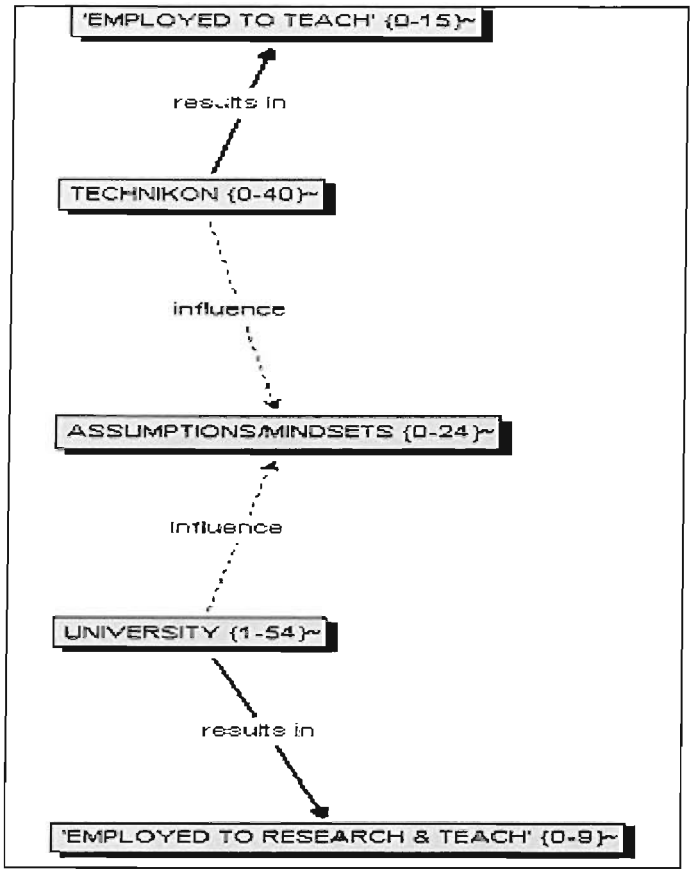

Figure 5-2: Excerpt of left-hand side of intangible factors network

Starting from the left-hand side of the network as presented in figure 5-2, the history and current status of the two merging institutions serves as background to the dynamics of the intangible research management factors. At the technikon, academics were employed to teach and this has a significant *influence* on the status and importance of research at this institution. Academics at the technikon are furthermore managed very differently from the academics at the university. Academics at the university were employed to research and teach, which in turn has had a favourable effect on the status and importance of research at the institution. Therefore, referring back to figure 5-2, the history of the institution has a material influence on the attitudes of the employees: being employed by the technikon *results in* academics being hired to teach; and, conversely, being employed by the university *results in* academics conducting research as well as teaching.

The differences between the university and the technikon, however, go further than the academic staff members. The institutions have different institutional cultures and are therefore managed very differently. One might also argue that they are managed

differently and therefore have different cultures. This is evident in viewpoints about the stimulation of research, research management and leadership as well as the importance of research. The differences between the two institutions influence the assumptions and mindsets that interviewees have of each other and of people within the opposite institution, as illustrated in figure 5-2. This implies that the interview participants of each of the institutions have clear mindsets about the other institution and these mindsets drive the uncertainty that they have regarding the unknown.

In order to explain the differences between the two institutions and describe the meaning of the codes in figure 5-2 a detailed discussion, using quotations to highlight points, follows.

5.2.1 'TECHNIKON'

Code name: TECHNIKON {0-40}~
Number of quotations linked to this abstract code: 70
Code comment: The purpose of this code is to highlight, in the words of the technikon participants, the differences between the technikon and the university regarding institutional character, history, management philosophies and practices as well as academic staff members' mindsets.

The presentation of codes and quotations under this section are based on how the interview participants, from their perspective, viewed the existing factors that influenced research at the technikon. In other words, these views were expressed by the interview participants from the technikon concerning factors that currently (prior to the merger) influenced research. The views rendered in this section are not based on the future state of research, nor are they views expressed by interview participants from the university.

It is important to explain the management differences between the technikon and the university since they are vast and play a *directive* role in the assumptions that senior management at the two institutions hold about each other. The present nature of the technikon and university sets the scene for understanding the dynamics *associated with* all research management environment factors.

5.2.1.1 Preamble of code 'Technikon'

The nature of the technikon can be summarized as follows: it is an institution with a mission of teaching, given to it by government. This teaching mission was adjusted in 1993 to include the ability to award degrees.[1] Until this change in government policy, the technikon's research activities centred on industry research contracts. Up to 1993, the technikon could not earn any research subsidy from government and found it difficult to gain access to other sources of research funding. Furthermore, a complete overhaul of the management of the technikon has also occurred since 1997. The institution followed a managerial strategy to transform senior management and this *resulted in* a predominantly classical strategic management approach of managing the institution. A classical strategic management style (refer to chapter 2) is where the environment is scanned, goals are set, responsibilities are allocated to various organizational levels and evaluation is done at intervals during the operationalization of the strategy.

The structure of the rest of this section which describes the technikon's present nature flows from the present classical strategic management approach of managing the institution and its resultant management practices. The academics at the technikon and their predominant mindsets towards teaching and research are discussed next. The focus is on teaching, and questions about teaching quality are raised. The implications of degree-awarding powers are assessed next, as is the support given by government in terms of research funding and the close link that the technikon has with industry. Attempts at the establishment of a research culture are explained and the rest of this section then focuses on how research is presently managed at the technikon.

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1 Founding date of Technikon - 1925

5.2.1.2 Management at the technikon

5.2.1.2.1 Management team

The management team at the technikon clarified the use of the term 'we' during interviews. The members of the senior management team at the technikon work closely together and make most institutional decisions in consultation with each other. This means that the deans view their faculties as part of the larger institutional agenda and make their decisions accordingly. The term "we" was clarified as referring to the collective senior management team (P10: [Follow-up interview]). "The Senior Management I'm talking about now are obviously all the people that are part of our Management team - that's all the Deans, Vice Chancellor and the two Deputy Vice Chancellors and the heads of key support departments and then I'm also talking, to some extent, about the level below that" (P10: 435: 437).

This contrasts sharply with the university, where the management team is usually seen as being constituted by the Rector, Registrar and Vice-Rectors, and excluding the Deans.

The clarification by the technikon of the term 'we' seems to create a sense of shared understanding that emerges from working closely together, as is illustrated by:

> P10: (432: 441)
> "What I do think is that the Senior Management in this institution understands [the merger] process well . . . But certainly within the management team there is, I think, a pretty good understanding and a well-shared understanding of what's happening, of the role of the technikon in this merger process and I think it's a fairly sophisticated understanding, but as I said it might not be, you know, it might not roll down to all the levels in the institution."

5.2.1.2.2 Transformation of management

The deep-rooted change in the management approach and management team at the technikon from 1997 onwards is expressed in the following viewpoint:

P11: (261: 264)
". . .[the technikon] was a predominantly Afrikaans, bureaucratic, civil service, miserable-dominated [sic] place, make no mistake . . . totally, and I say it loud and clear, and it was transformed dramatically when [the Vice Chancellor] came in 6 years ago."

The above viewpoint is important since it highlights the interview participants' feeling that the technikon's current management team, structure and practices are now very different from all of the 'negatives' that are mentioned in the above quotation. The 'negative' or unfavourable state of being Afrikaans is grouped together with notions of bureaucracy, civil-service and being 'miserable' and could prove explosive, as the management team of the university is solely composed of Afrikaans-speaking persons.

During all the interviews the technikon managers expressed the opinion that their management team and philosophy was transformed and contemporary:

P11: (265: 268)
". . .[the Vice Chancellor] has really transformed management. She created executive dean posts . . . she imported us from outside to challenge management and so we have at the top a very, very transformed management system which is definitely not the old world, but built with the staff that have been here from the old world."

In the above quotation the participant expresses a viewpoint that the management team and the management system at the technikon has been vastly transformed but, that the staff of the technikon were perhaps not as much. The 'old world' refers back to the "predominantly Afrikaans, bureaucratic, civil service, miserable-dominated [sic] place" (P11: (261: 264).

5.2.1.2.3 Management philosophies

The management philosophies at the technikon are varied but with a distinctly greater propensity for control and regulation executed by the senior management team, when compared to the university. Managers are held accountable for their subordinates' actions.

> P 9: (244: 246)
> "Well, first of all I see 'leadership' as different from 'management' because you know it's setting the tone as well as influence. But management is accountability, you're now holding your managers accountable."

This interviewee expressed the importance of management by means of managerial accountability throughout the organizational layers.

> P 8: (175: 178)
> ". . .It means for one department I [dean] would have to go in and troubleshoot, another department might be at another level. I can sit back and tell the head of school - fine with whatever decision you take. . ."

One respondent explained that his management style is an adaptation of various styles and philosophies, depending on the situation, but with emphasis on his preference for the outcome of the situation, in other words exerting some form of control:

> P 8: (151: 156)
> "In short, my management style will be a mix of the various classical [sic] styles. Classical [sic] in inverted commas. It depends on the particular situation. My philosophy is that you are managing people and people are very different, and therefore you have to manage them according to their make-up. Sometimes I would use a consultative approach, whereby I might go with a decision that I would like to take but I can steer my team to take the decision that I would like to take."

The technikon manages people through emphasis on accountability of managers in all of its layers. This implies that managers have to be involved in the decisions that have

direct bearing on them. Classical strategic management is used to guide all levels of management in the same direction. Strategies are carefully planned according to the institutional goals, criteria are determined for the strategic goals and managers are held accountable for reaching those goals, according to the criteria.

> P 7: (150: 151)
> "We draw on a very strong strategic plan for each faculty."

Strategic planning underpinned by the accountability of managers means that central institutional goals are placed above subject discipline or individual academic freedom.

> P 7: (126: 127)
> ". . .you can't just let individual pockets of people continue doing what they are doing, without aligning it to some kind of coherent strategy."

The processes employed during strategy formulation are open and transparent, and although participation is encouraged, mechanisms are put in place for people to participate through their representatives. These representatives are in some cases elected by their constituencies and are in many cases managers that have been appointed by senior management.

> P10: (67:77)
> "Well, I also mentioned the open lines of communication - efficient lines of communication. By that I also mean that they [academics] need to know how decisions are made, what the processes are involved [sic], in other words, transparent decision-making processes - it's part of the communication. Decision-making processes which they feel they are part of, and most of them understand that they as individuals cannot be consulted on every decision so they're sophisticated enough to understand that you put in place processes that cater for that need for buy-in and collective decision-making but at the same time avoiding the involvement of every individual researcher in these things - that's clearly not feasible. So I think that open, transparent decision-making processes and also obviously rational ones - you know, you can be open and transparent about

> patronage but that doesn't make it right you know, so I think the processes have to also be rationed [sic] and acceptable.

The technikon's management style is more democratic and more unionized (labour unions), so there is very little identification with collegiality and its characteristic 'first amongst equals' style of management. P7 in the follow-up interview stated that: ". . . everything goes down to a vote. Therefore strategic management is used to direct planning and the academic base participates in every level of decision-making" – through 'democratically' elected representatives.

5.2.1.3 Nature of people management

Academics' time and teaching load are managed though a system of class rosters that is filtered up through the management hierarchy from the head of department, then to the head of school and then controlled by the dean. Some participants viewed some of their managers as *part of* the technikon's bureaucracy, although they did not view themselves as *part of* it.

> P11: (227: 229)
> ". . . every person has a timetable and each of my heads of department, each member of staff, will have a little roster. "Look, [the managers that report to the dean are] very bureaucratic. Technikons are unbelievable I've realized, shatteringly so, you know. I think universities are still very much freer. So [our academics] all have timetables."

The monitoring of staff activity through the class roster system goes further in some instances where academics are not encouraged to telecommute and their 'on campus' presence is favoured.

P 9: (38: 41)
". . .but [academics] actually have to be on campus because, otherwise it means filling in leave forms, the implications for your group-life and all these things, you officially cannot be away from campus, . . . but this is up to the line managers to ensure that this person is not disturbed [at work]. . .."

5.2.1.3.1 How performance is managed

Performance management is effected for control, rather than a developmental purpose. The performance management system, of which time spent in classroom forms a major component, encourages people to focus on teaching.

P11: (228: 234)
"We have performance management in place, and performance management, to my way of thinking, is far too bureaucratic. It's very much a control thing instead of a development thing, because I bought in, but I said this is about development. The bureaucratic mind says 'oh, this is about controlling' so they will control the amounts of lectures and they like to compare with each other. . ."

5.2.1.4 The academics of the technikon and their mindset towards research

As a consequence of the history of the institution and its teaching mission, participants expressed the view that academics at the institution view themselves as teachers.

P 7: (27: 29)
"Remember people came into this institution as teachers, of vocational orientation. That's what you were employed for."

P11: (317: 319)
". . . [the academics have] taken [the requirement of research] to the unions because they now claim historically 'we came here so we didn't have to go and publish and perish and now you're bullying us into that'."

Individual managers interviewed also identify keenly with their teaching role as illustrated by the following:

P 7: (460: 460)
"There is an inbred kind of teaching aspiration amongst vocational training people."

5.2.1.5 Over-teaching

Interviewees indicated a prevailing sense of too much teaching, referred to as 'over-teaching', at the technikon.

P11: (136: 136)
"I think the biggest impediment [to research] is the [teaching] tradition of the technikon and the over-teaching."

Reasons for the phenomenon of over-teaching included:

- Over-teaching promotes procrastination:

P10: (461:463)
"Other [academics] will take issue with [teaching] . . . out of a sense of procrastination - so they don't have to spend time [on research]. . ."

- Over-teaching is a consequence of curriculum duplications:

> P10: (464:472)
> "Concrete example . . . our [department's name] teaches something like 20 different first-year . . . modules. So they have catered for every nuanced difference between different types of [jobs] . . . in a sense that's totally irrational. I'm a [profession's name] by training. I know that a first-year [module title's name] course is a first-year [module title's name] course. You can flavour it differently for different groups of students but the content is basically the same, and it hasn't varied much for the last 20 or 30 years."

- Over-teaching is a result of disadvantaged students:

> P 8: (360:363)
> "[The technikon's academic's lecturing] loads are heavier [than those at the university] . . . It doesn't need to be heavy because I say 'well why don't you reduce from five lectures to three lectures' and so the excuse is, 'no, no, no, we are dealing with disadvantaged students and we work on throughputs and therefore we need more lectures'."
>
> P 8: (371:372)
> ". . .but there is no instrumental argument to show that more contact time leads to more throughput. . ."

- Over-teaching is a result of national design of teaching curricula:

P7, in the follow-up interview, highlighted the fact that technikons have, throughout their history, designed a collective national curriculum for each subject discipline. Representatives from each institution for every subject discipline determined teaching curricula nationally. P7 therefore felt that the technikon is over-teaching because there is a high level of non-specialization in its subject offerings. The university, on the other hand, has always had an individualist curriculum with high degrees of specialization. The university, according to P7, is a place where concepts are formed and people think conceptually, learning takes place and boundaries are broken. At a university, fundamental research takes place regularly and the academic base accepts

a research leader because s/he came from their group and is therefore a 'first amongst equals'.

In summary, over-teaching leads to less time for research – for the reasons cited above – and this occurs predominantly at the technikon as a result of a preference for teaching activity.

5.2.1.6 Teaching quality

Although the technikon has a strong tradition of teaching, participants questioned the teaching quality, and teaching improvements were called for:

> P 8: (414:416)
> "What happens at the technikon, [academics] just take the existing stuff from the textbook and they dish it out to students. That's not what we are here to do. We want to train people to think and we want to train people to be critical thinkers, out there in industry."

Teaching quality is related to research, and this could be an indication that the academic staff are neither attempting to be leaders in teaching in their respective fields, nor are they improving their teaching skills to challenge students through critical thinking. These two factors – being leaders in a particular field and critical thinking – are essential for research development.

5.2.1.7 Focus on other entrepreneurial activities instead of research

Participants indicated that academics at the technikon are very involved in entrepreneurial activities. These entrepreneurial activities do not form part of the formal institutional activities, and income generated from such activities is not ploughed back into the institution but is instead retained by the academics. Some academics fulfil their lecturing commitments and thereafter engage in these entrepreneurial activities for the rest of the day. These entrepreneurial activities are not associated with research or research stimulation.

> P 9: (411: 412)

"So they are very entrepreneurial, but to translate that into being entrepreneurial for the unit for the benefit of the institution, it's still taking time."

P 9: (436: 436)
"No. . .the problem is they don't bring [the income] to the department, that's the problem."

Income generated through entrepreneurial activities that are declared to the institution is furthermore not directly utilized for research.

P 8: (250:255)
"[Additional income generated] is a major problem at [the technikon] - I'll tell you why - because of the culture. If someone generates or designs a short course and generates income he would not want to give that money up for research. There is still a culture where they believe it is their money and they want to optimize that money for their benefit. So even if they are paid this money they want to keep it [for themselves] and use it for their department to buy PC's, furniture, and all kinds of other things. But not for research."

5.2.1.8 Management system reinforces undesired behaviour

The measurement of academics' performance through formal contracting that can be monitored, as well as the manner in which managers place emphasis on appropriate and undesirable behaviour by academics, leads to the reinforcement of the 'in own pocket' entrepreneurial activities as well as a strengthening of the teaching focus.

P 8: (372: 373)
"But the lecturers won't . . . [conduct research]. Why? Because everybody is measured by the amount of time that you spend in the classroom."

The underlying philosophy of the staff incentive scheme, to pay money into staff members' pockets, furthermore strengthens the assumption on which staff members operate, namely, that they should be paid, into their pockets, for any research-related work. This practice of paying individuals is also extended to students.

P11: (79: 80)
". . . plus, of course, the **staff** will get money back, literally. I mean if they do publish, x amount comes back into their pocket, so that incentive is there and has been there for quite a while already."

P11: (85: 88)
"Added to that the technikon here also gives Master's and Doctorate **students** who do our own Masters and Doctorates a massive cash incentive in that when they're fully registered, and their proposal is accepted, they get cash up front, and when they qualify they get the other half of cash up front - several thousand Rand."

Although research is encouraged by management there is not a research career path for academics.

P10: (449:450)
"The institution has not been able to establish a career path for its researchers."

5.2.1.9 Implications of degree-awarding powers of the technikon

The reality at the technikon, no matter the level of resistance to research from the academics, is that the South African government gave technikons degree-awarding powers in 1993. This immediately meant that research had to become a core function of the institution if it were to embark on offering postgraduate degrees.

P 8: (58: 62)
"We started off with degrees in about 1993 and so research really took off since then. And it was purely because with the offering of degrees one realized that you can't separate higher degrees from research. There has been a quick evolution, also linked to the fact that we've been granting degrees, with respect to staff qualifications, that if you are offering degrees then the staff needs to be appropriately qualified."

Staff qualifications, with respect to research-based qualifications, had to increase, as the same level of qualifications that were acceptable for undergraduate teaching would no longer be suitable for teaching at postgraduate level.

The merger with the university has further placed pressure on academic staff members at the technikon to pursue postgraduate qualifications and become actively involved in research.

P10: (493: 495)
"Some of [the academics] have been resisting . . . [research], resisting it thinking there will always be space for them as technikon staff and now this merger with [the university], I think has confronted them in a very real way."

5.2.1.10 External involvement by government bodies to stimulate research

- **NRF – special funds to improve research at technikons**

Presently, the funding from the National Research Foundation (NRF) is geared towards the technikon sector as, which serves to redress some of the uneven external funding history.

P11: (305: 307)
"But I think, if anything, we've [the technikon sector] really been privileged. I mean the universities have had their funding cut [from the NRF] . . . that money is going to technikons as well to

cover arrears, without a doubt. So we can't complain that we weren't being favoured financially."

- **Strong links with industry**

The strong links with industry and professions, which have characterized the technikon as distinct from the university, is illustrated by the following:

P 7: (170: 170)
"Each unit of my faculty is a separate unit linked very closely to their profession."

- **Establishing a research culture is threatening**

The establishment of research as a core function of an academic's job is very threatening for those academics who view themselves as teachers. Persons in managerial positions are threatened too since, in some instances, they might have to employ an academic with a higher level of qualification than that which they themselves possess.

P 9: (502: 504)
". . . let's say you're sitting with an Honours degree, right, you are then threatened if you employ someone with a Master's [degree]. . . "

P 9: (509: 511)
". . . I found, for example, a manager who was sitting and finishing a Masters [degree]. He did not want to bring a Doctorate [candidate] in because he felt threatened."

5.2.1.11 How the technikon manages research

- **History of a prolonged lack of emphasis on research**

Although the technikon has made tremendous strides in trying to foster a culture of research, the institution historically had a prolonged lack of emphasis placed on research.

P 8: (270: 273)
"That's another keyword one needs to bear in mind is [sic] that research is not perceived as a core business by the technikons and of course everything

stems from . . . [core business]. That determined the psychology or the way staff members behave in the context of research."

P11: (10: 11)
"In other words, you did not have [at the technikon] this publish or perish mentality which I grew up with at [a university]."

Participants referred to an absence of a 'research environment' or 'research culture' at the technikon.

P 8: (81: 82)
"The problem of course has been that the environment has not been conducive to research and is still not conducive to research."

P 9: (67: 68)
"You know, I keep on going to [sic] the environment for research, the culture of research. Establishing culture first of all, that has been our big battle."

Research at the technikon is predominantly at a stage of 'research for activity' as opposed to 'research for output'.

P11: (301: 305)
"Because the technikons also like to say that 'we're doing all this research and, research is in all the doing' and we say 'ha, where are the end products?' you see, and the end products are publications, and when you look at the publications they're small. . . "

- **Need for a research manager within each faculty**

The need for a centralized research management structure at the technikon was born out of the indifference of previous deans and other senior managers towards research.

P 8: (266: 268)
"For the technikon environment [the research management structure] was necessary because the original intention was to have a research manager that will help facilitate and drive research within the

faculty. At one stage the deans weren't research-orientated."

The placement of a research manager at each faculty was another consequence of the indifference of senior management towards research and the resulting lack of emphasis placed on the importance of research.

P 8: (280: 281)
"There was a need [for a research manager in the faculty] because one thought that if the dean weren't [sic] pushing [for research] and if the dean were [sic] too busy then the research manager [would stimulate interest in research]."

The fact that the research mission had not been fully established at the technikon was cited as another reason for the placement of research managers at faculty level.

P 8: (310: 311)
"But [a faculty research manager] was necessary because you are in a developmental environment and you needed some drivers."

The role that each research manager plays in the faculties varies from being responsible for the entire research culture within the faculty to being highly operational. Operational support includes the conducting of research as well as research mentorship.

P 9: (539:541)
"If you have a senior academic in [the research manager] position, a seasoned researcher, I think it will help as well, you know, to set the tone and to create a climate conducive for research and publication."

- **Dean's role**

The former deans at the technikon were described as disinterested in research.

P 8: (268: 270)
"At one stage the deans weren't research-orientated. And so, if a dean is not research-orientated, the dean

tends to bring obstacles in the way of the researchers, because they don't see research as a core business."

Linking to the previously illustrated point that the participants felt that the technikon management was newly transformed and in line with contemporary South Africa, participants indicated that the current deans had a good understanding of research.

P 8: (74: 79)
"And then of course you've had a change in technikon management. Where you've had highly qualified people coming into the management, even into the deanship as well. Where you have had a traditional university graduate with higher degrees, or if not technikon people, who have had some research exposure, so they understood research and they also pushed the research agenda as well."

One participant described the importance attached to the position of deans at the technikon. The quotation furthermore supports the already mentioned propensity for top-down controlling management and the view that 'management' is task-driven.

P 9: (481: 482)
"We [the deans] are important. We are instrumental in developing policies and implementing policies. You understand?"

- **Centralized research management**

The direction and control of research is centralized in the Central Research Management Office of the technikon. Instructions are issued from this office and funding is provided according to the criteria influenced by annual strategic planning. This centralized management of research is seemingly rooted in the traditions of the natural sciences, which have traditionally been influenced by the strict centralized criteria of external funding bodies, which have arisen as a result of the expensive nature of research.

P 9: (146:148)
"Yes, I think it's been done well here [referring to research management at the technikon] especially with

science. . .the animated [sic] materials and this kind of thing, but in my faculty per se we don't have anything, but I think from [the research dean's] office . . . we take our cue from there. . ."

Funding is provided through a long pathway of decision-makers and is communicated formally at all levels of management within the institution.

P 9: (454:460)
". . . [funding approval] comes through the research dean's office, then towards the dean and the rest of the managers. So we have policies in the faculty that any enquiries about funding, either for conference attendance or for further studies, they must go to the research manager and then we have a faculty exco every week or every second week, and the research manager is part of the exco, so then the schools are informed there as well. We say 'listen we have this. . .' We have a fixed item on the agenda . . . Research Matters, so this is [sic] all the issues on research."

Due to the centralized focus of the research management system, in part due to the centralized funding criteria, participants felt that a bureaucracy – as opposed to an empowerment office – was forming.

P 8: (281: 287)
"I have to say that there is a part of me that thinks that the central research office was trying to structure or set up an empire . . . and that has worked negatively to some extent because the biggest criticism amongst my staff is that they just see the central research office as someone that always wanting [sic] to set up an empire, put obstacles in the way, not obstacles deliberately in the way of researchers but obstacles so that [sic] . . . it is typical organizational behaviour, when you want to maintain a bureaucracy, one of the ways you maintain that is with obstacles [referring to paper-work, forms to complete and rules to follow]."

P 8: (318:321)
"The research manager [in the faculty] of course tended to have similar tendencies as well. I know in

my faculty we had a major problem because he decided himself as a research manager - 'I'm here to manage research'. Now what that means is chairing all the meetings, and making sure all the deadlines are met."

5.2.1.12 Little money for lots of people

The lack of available research resources for the technikon sector prior to 1993 is illustrated by the following quotation:

P 7: (29: 31)
". . . there is only a small percentage of money available to a large number of people who wanted to conduct research."

The above suggests that a strict funding allocation scheme is necessary to ensure that scarce resources are optimally utilized.

During one of the follow-up interviews, a participant indicated that currently there really was not a lack of funds for technikon research, but rather a lack of researchers with viable projects to 'sell' to funding agencies. P10: [Follow-up interview]

5.2.1.13 *Research funding, approval criteria and research niche areas*

Centralized funding criteria are formulated in order to be of benefit to the community, industry and the overall institutional strategy, and in order to assist in funding research that will make a financial contribution to the institution.

> P 7: (15: 19)
> "Where if you wanted to conduct research, you had to say what benefit was there going to be for the community, and the industry and the sector in which you work. [Management] will give you funding if you could demonstrate that if you embrace this research aspect, what are the outcomes with respect to not just knowledge, but how can it add value to the industry."

Research used to be treated confidentially because it was mainly linked to industry, and therefore competition hampered the free dissemination of research results.

> P 7: (35: 37)
> "[Academics] had to home in and demonstrate the viability of the financial savings that you are going to make [through your research]. And there was confidentiality around that research."

Research niche areas are centrally upheld for the institution. This ties in with funding criteria and if a research project falls outside the scope of the niche areas, it is rarely funded from central institutional funds.

> P 8: (493:497)
> "I have this picture in my mind where an outside person or a person in charge, got together [sic] and put forward the niche areas and they want this to grow and mature but they don't want any new birth . . . and I can't reconcile that in my mind . . . because we have the policy here [at the technikon] that [research] is only supported if it is part of a niche area, and I have fought that. We have actually killed some really novel ideas just because [researchers] don't want to support the niche areas."

5.2.1.14 *Research output measured by number of people doing postgraduate studies (staff and students)*

Many staff members are in the process of upgrading their postgraduate qualifications and are not engaged in research beyond their own qualifications.

> P 9: (124: 128)
> Question posed by interviewer: ". . . say for instance you finished up your doctorate and you just want to continue with research, would you also get lecture relief?"
> Dean: "Can I say we've never had that experience [academics wanting to continue with research after completing their doctorates]. Many of them are busy with doctorates."

As a result of the above, deans predominantly estimate their faculty's research outputs based on the number of staff members engaged in postgraduate research.

> P 9: (261: 266)
> "[Research output targets] . . . are based for example on an understanding of who's involved in, let's say, post studies, for example if you do a degree [such] as a doctoral [degree] . . . if you can't publish in the subscribed accredited journals, then what have you produced? That's my question. So if [an academic] pursues a doctoral [degree] we say that you have to [publish]. So if I know there are three staff members busy completing a doctoral, I can expect at least 3 SAPSE accredited outputs. So we're realistic. That's how we set up . . . [research] targets."

In summary, the key thoughts on the management of research at the technikon are:

- A history of prolonged lack of emphasis on research;
- Top-down research management through a centralized research management office and faculty-based research managers;
- A lack of strategic importance given to research – research is not seen as core business;
- Long rigorous centralized decision-making channels;
- Strict funding criteria associated with niche/focus areas; and

- Research output is predominantly measured by the number of staff members completing their postgraduate qualifications.

5.2.1.15 Conclusion of code 'Technikon'

In conclusion, the technikon participants were all comfortable with the notion of managing their institution according to the classical strategic management process where the environment is scanned, goals are set, responsibilities allocated to various organizational levels and evaluation done at intervals. Although there is no one single management paradigm for the institution, a core theme of central management functioning as a team and making decisions for the institution as a team, featured strongly. This notion of taking decisions as a team tends to lead to control and centralization, which were key themes that emerged from interviews. Democratic participation processes in which all staff members of the institution could participate, however, tempered centralization and control.

The senior management team of the technikon views itself as 'transformed' and 'contemporary' in management style. This is often contrasted with a viewpoint that the university management is not. Managerial accountability to the total management team and management through classical strategic planning form the backbone of management philosophies. Although each interview participant had his own style of management, accountability was in many instances driven through control, and people were managed as resources that have to be optimized for the overall good of the institution.

Reflections on the academic staff at the technikon highlighted the fact that academics had been employed to teach. This implies that very few academics at the technikon view themselves as researchers, and the majority resists the task of research. Resistance to research has led to great difficulty in establishing a research culture at the institution. As a consequence of the initial teaching mission that the institution had, which *resulted in* the appointment of academic teachers, an over-emphasis on spending time on teaching or 'over-teaching' is evident. Together with this, every interviewee questions teaching quality. Since the government granted degree-awarding powers to the technikon the institution has been able to access research funds. However, this has not assisted in changing the perception of members of staff

regarding research. Participants indicated that the institution has not yet shifted its focus to fully embrace research together with its well-established teaching mission. Academic staff members and their mindset (of which fear of research was a component), were cited as the main reasons for the lack of a research culture.

Institutionally, research is managed centrally, and each faculty has a research manager that reports to the central Research Development Unit. Current deans indicate that they are in favour of research notwithstanding distinct institutional shortcomings in research achievements. Research is seen as a way in which teaching content and practices can be upgraded. In line with the overall centralized management approach at the institution, the strategic management process together with centralized research fund allocation, according to institutional focus areas and criteria, is followed in managing research. Furthermore, rewards are paid out into the pockets of successful researchers, as well as post-graduate students, and this form of incentive is used as the main driver of interest in research at the institution. The number of academic staff members continuing with their postgraduate studies largely determines research output for each faculty.

A detailed discussion of the code 'University' follows.

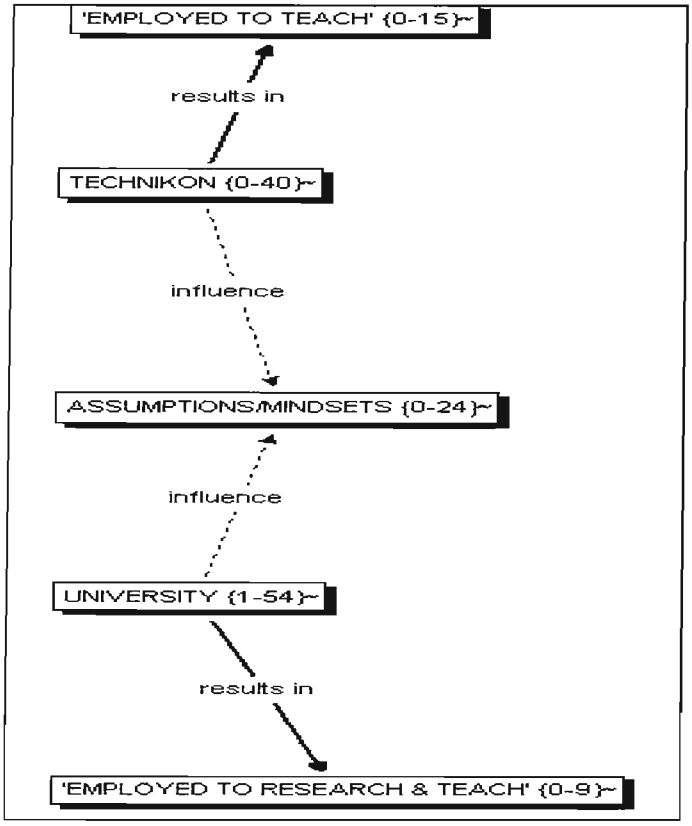

Figure 5-2: Excerpt of left-hand side of intangible factors network

5.2.2 'UNIVERSITY'

Code name: UNIVERSITY {1-54}~

Number of quotations linked to this abstract code: 133

Code comment: The purpose of this code is to highlight, in the words of the university participants, the differences between the technikon and the university regarding institutional character, history, management philosophies and practices as well as academic staff members' mindsets.

The presentation of codes and quotations in this section is based on how the interview participants, from their perspective, viewed the existing factors that influence research at the university. In other words, these views were expressed by the interview participants from the university concerning factors that, prior to the merger, influenced research. The views under this section are not based on the future state of research, nor are they views expressed by interview participants from the technikon.

5.2.2.1 Preamble of code 'University'

The nature of the university can be summarized as follows: it is an institution where both research and teaching have been part of the core mission since its inception in 1967. The university has followed the typical Western model of a university in which there is unity between teaching and research, and through student learning the development of new knowledge emerges. The university is furthermore managed by academics for academics.

The structure of the rest of this section describing the university's present state (as indicated on figure 5-2) stems from the notion that the university is a place where science is practised. Participants focused on the status of research at the university and this flowed into a description of how research is managed at the institution. The commonly held notion amongst participants that a learning and research climate is fostered through academics and their interaction with each other, sets the scene for collegial management and the view of a traditional role of a university. Researchers are described next and the section is concluded with the recognition that all might not be in order with the research practices at the institution.

5.2.2.2 University – a place where science is practised

Participants viewed the university as a place where science is practised. Together with this viewpoint, researcher autonomy is interlinked with the manner in which the practice of science is defined.

> P 4: (125:127)
> ". . . this is how a university functions . . . you [an academic] are here . . . you have the space and the freedom to express yourself, according to your needs, within the broader context of scientific practice."

The implication of the above statement is that the mechanisms of research dissemination are seen to be best housed at a university.

P14: (115: 116)
"And that is why I am of the opinion that it is good if there are people at the university [who are willing to publish journals], because this is still the ideal place to publish . . . [journals]. . ."

5.2.2.3 Researcher autonomy and academic leadership

The institutional stance regarding researcher autonomy is a theme that is evident throughout most aspects of people management and research management philosophies at the university.

P 5: (197:198)
". . . I [a researcher] am busy with science and you are not going to influence me in the practising of my science."

As a result of a very strong emphasis on researcher autonomy, academics are seen as self-determining individuals who are to be treated as equals, as opposed to subordinates. Researchers are therefore not managed directly by the dean and there is very little direct control over academics.

P 4: (123: 137)
". . . my philosophy about these things is if you have highly intelligent people, professional people placed [at the university] who have in fact worked out a programme for their lives . . . that is how a university works . . . you [a researcher] are here . . . you have the space and the freedom to express yourself, according to your needs, within the broad context of the practice of science . . . the individual decides, or the department decides, what they want to do and I [the dean] provide the facilities, the financial resources etc, . . . because I, as dean, do not have the technical knowledge to prescribe to [department's name] that they must now do research about x . . . that is not my role. To my mind, the moment a dean assumes that role, you are going to step on toes . . . you will have to establish a control mechanism . . . I don't believe that is the role [of the dean] . . . because, again, you have

> highly intelligent people who know what they are doing, who know what they should be doing, you can't rule those people with an iron fist . . . you can only tell them, just make it possible for them to do what they have to do . . . provide the context and let them get on with it. You can maybe just give advice here and there . . ."

The notion of leadership in the university is based on 'first amongst equals – Primus inter pares' [P6: Follow-up interview], and since leadership is viewed in this way, 'managers' are chosen from the ranks of academics. Therefore, the management of academics is facilitative, as opposed to controlling. Academics are furthermore seen to be the initiators of research interaction (refer to 'bottom-to-top' in the quotation below).

> P12: (269: 271)
> "But . . . [research interaction] is a process that runs from the bottom up, with 'persist' from the top down [by the dean]. It is a stimulus environment rather than a forcing environment."

The facilitative people-management philosophy, where the *people's view* is that academics are self-motivated to conduct research (i.e. intelligent, know what they are doing, know what they should do), occurs in the context of an institution that places emphasis on the importance of research:

> P 6: (52: 53)
> "It is possible to defend our way of doing things [referring to the university's way of doing things], because you have an institution that is serious about research."

5.2.2.4 Emphasis placed on importance of research

At the university great emphasis is placed on the importance of research. This is primarily done in the interaction of academics with each other, and is mainly driven by the theory that people are motivated through self-actualization and status needs. Academic debate and discussion are key factors of the intangibles that drive research interaction. The role of academic leadership is to reinforce the emphasis on research with instruments such as promotion criteria (e.g. promotion to professorship), and emphasizing the associated status that research carries at the institution.

> P 6: (14:15)
> ". . . the creation of an environment where people realize 'everybody' around me cares about research."
>
> P 6: (77:80)
> "If you are a new young chap . . . then the next thing you have to do [after appointment to the institution], once everyone welcomed you in the tearoom, is to enrol for your D [doctorate]."

As a result of the fact that 'intangible' interaction amongst academics takes place, most other research management decisions are based on creating the physical environment and infrastructure within which researchers can carry out their tasks.

> P 6: (16:19)
> ". . . [research interaction] is debouched in the context of conferences, in publications, in tearoom discussions, in the building of library collections, where everyone has a tacit understanding of what research is about, and how you should practise and manage research."

Other than the intangible interactions between academics that reinforce the importance of research, the rules of promotion and advancement in academia are predominantly based on research:

> P 4: (143: 146)
> ". . . I think that the directiveness of [management style] is to tell people very clearly and very honestly, look: 'the rules of the game at a university

are if you are not interested in promotion, good and well [not to do research], but if you want to build on your CV, if you chose an academic career, then it is important that you should do research."

The rules of promotion and advancement in academia are, however, not always explicitly explained to all. Those that are not from an institution that places such great emphasis on research may find themselves left behind, as they might not automatically 'pick up' on the covert rules of the game.

P 1: (93: 97)
". . . [research-inactive academics] will soon realize and they already know that this is a 'publish or perish' faculty. . . and I think the pressure on them. . .will force them to publish. . .because not one of them is a professor or an assistant professor. . . and they know that promotion is 'out'. The fact that they will enter a 'publish or perish' milieu, will force them to publish. They [research-inactive academics] will tell you, 'I couldn't publish because I lecture too much' . . . but that is a ridiculous argument . . . because the moment a vacuum is created, someone is away or ill, or someone is pregnant, they queue to lecture in that person's stead. In other words, to them it is about money, and I pity them, but now it is a case of 'sink or swim'. If they want to be promoted they must deliver the goods. They must now comply with the [university's] criteria . . . publications, many, many."

The emphasis placed on the importance of research is further illustrated by the 'publish or perish' sentiment that was frequently repeated during interviews.

P 6: (211:213)
"For many years we have had this 'publish or perish' syndrome about which the guys are so derogatory. I say, let them publish, for heaven's sake. Naturally this will also produce some rubbish. But rather that than a person doing nothing."

5.2.2.5 Research at the university

Research has been a high priority of the university:

P 6: (20:21)
"Over the last four decades research has been regarded a priority, which has pervaded this university."

Research has, however, been allowed to take its own course and was not directed at institutional level.

P 5: (77: 78)
"To my mind [research at institutional level at the university] was very divergent and unstructured - without any real focus."

5.2.2.5.1 Research status of the university

The participants were, in some cases, quite explicit about the excellent research status of their faculties and their researchers. The fact that the university has the highest per capita permanent academic staff member research output in the country was linked to the high quality of researchers and research groups (or institutes) that the faculties felt they had:

P12: (275:277)
". . . the majority of colleagues here see themselves as very strongly positioned . . . many of them work highly competitively internationally."

The high regard for the research profile of the institution was tempered by the reality that, although the institution had a proud and strong research tradition, it was not regarded as a research-intensive institution by external role players and that this might be linked to the profile of the research that was conducted, and by implication the standing of those researchers.

P 6: (146:147)
"To my chagrin we [the university] are not regarded as a research-intensive university."

P 6: (176:177)
". . . I don't often see [the university] scientists' names in lights."

Participants were very aware of the reality that, once the merger took place, the institution could no longer lay claim to having the highest research output per capita, due to the low research output of the academic personnel from the incorporation and merger partners.

> P12: (189: 190)
> ". . . the moment the new university is established we will no longer be the top research university per capita, purely because of an accounting entry. . ."

5.2.2.5.2 Research management philosophy

Given the indication that a research environment exists at the university due to the existence of intangible interactions between academics, a facilitative reinforcement of the importance of research by academic 'leaders', and the provision of research infrastructure and tools, the research management philosophy can be summarized as follows:

> P12: (11: 15)
> "To stimulate research . . . and research literature also proves this - you must create an environment, different from managing research. It is not unimportant to manage research, but it is more important to create an environment so that the research can probably move more easily in a pro-active direction."

The creation of a research environment is therefore not equated with 'research management'. Furthermore, the creation of a research environment is not seen as being done through a 'research manager'. In the majority of interviews at the university, the word 'management' was rarely used. In many instances 'management' was described as 'control'. One participant did, however, comment that:

> P 5: (296: 303)
> "Management, to my mind, is about achieving the best results for your core business. So, for me it is about outstanding results, naturally the achievement of your goals and your core business."

Some attempts at research management have started emerging at the university, such as the Central Research Management Committee and its associated Fund. Collective institutional research management has, however, not been practised at the university:

> P 5: (83: 84)
> "I don't think research was seriously managed in the past."

The ability of formal institutional research management to attain higher research output at the university is doubted:

> P12: (69: 72)
> "Research, we can stimulate it, we can hope to generate more output, but we are a natural system . . . we cannot achieve more than certain efficiencies . . . even if we want the efficiencies to appear to be more than 100% . . . it can't be done. . ."

The prevailing thought regarding research management is, however, concerned with autonomy versus centralized ownership and control:

> P12: (68:69)
> "The moment we start managing research at this university and we become prescriptive, we will have problems."

5.2.2.5.3 Research development philosophy

Given the context at the university that the intangible interactions amongst academics are in place, research development is in many cases seen as something that occurs naturally.

> P 2: (238: 243)
> "There will be a natural way [of research development], there will be mentorship. Just as there is currently in the departments, you take on [academics], you encourage them, you support them with advice . . . if you are not in such a culture, these things are difficult. But within a department [research development] will occur naturally, just the way it has always been at a university."

In extreme cases, research is regarded as something that you are either able to do, or you should not be in academia. Assumptions are also made that academics will feel comfortable to approach seasoned researchers for mentorship and guidance and that the experienced researchers will in turn respond positively.

> P 1: (101: 101)
> "Well, none of us [mature academics] attended any courses, or had guidance or anything when it comes to publication. And if you can't publish then you are not an academic. End of story. Then you don't belong here . . . people like that [inexperienced researchers] are welcome to come and talk to people who publish a lot."

The management of formalized research development, however, is practised by some faculties at the university:

> P 5: (217:220)
> ". . . we all have different talents. Everybody can't become A-graded, B-graded or even C-graded researchers. And I think one should have clarity regarding that. But you must create the opportunity for everybody to develop as researchers."

5.2.2.5.4 Research management practices

Operational research management is decentralized to the academics in the particular subject discipline at the university. Some faculties have research programmes and/or centres or institutes that cut across subject disciplines and departments.

> P 2: (29: 29)
> "Yes, [research management] is decentralized."

> P 5: (22: 24)
> "So - primarily, when I am referring to masters and doctoral research - it is first managed in the [subject discipline] programme."

Departmental managers and academic leaders are responsible for research management at subject discipline level. Once again note the reference to 'leaders' and not the term 'managers'.

> P 2: (17: 18)
> "At this stage, research is facilitated within departments, actually by a few leaders in the departments."

Departmental chairs are either appointed on the basis of a rotating position for a set period of time and or are formally selected by academic staff in the department. Departmental chair positions are never advertised externally and appointments are always made from the academic staff within the department. Once again the 'first amongst equals' principle applies. Chairpersons are not necessarily the strongest researchers in the department but always have a research background.

> P 2: (106:108)
> ". . . I think that the role of [departmental] chairman is a very important one and you have to choose the right person as chairman, and you can't appoint too junior a guy to fulfil this role, especially if he doesn't have [research] experience."

5.2.2.6 Peer evaluation system

Peer evaluation is currently the main form of performance recognition, and academics are extremely conscious of their research profile amongst their subject discipline peers, internally at the university as well as with external peers.

> P13: (70: 74)
> "And if you have not published anything, after all, the list is known to the entire faculty and the guys are embarrassed. 'I did NOTHING the whole year'. It is a totally open process. It is presented to the entire faculty - the publication record as well as how much you earned. Peer pressure plays quite an important role."

Peer evaluation is given higher regard when promotions are considered; it is even ranked above internal research output criteria. The definition of what is regarded as acceptable research, is furthermore limited to the traditional outputs that are peer-evaluated and acknowledged by the Department of Education of the government.

> P 4: (68:73)
> "Look, when we talk of research - what are we talking about?. . .I don't know because there are departments here who concentrate on research reports . . . They make contact with people from the private sector. Due to this contact they get a project and they write research reports. They call it publications . . . contract research . . . so there are areas where it happens a lot . . . so, you know, it has always been a battle, when you [an academic] appear before a selection committee [research reports] don't really count . . . it's not an accredited article . . ."

5.2.2.7 Research approval

Research approval is, furthermore, largely based on external peer evaluation:

> P 1: (56: 56)
> "Well, the fact that one is invited to deliver a paper already carries enough merit, end of story."

Through peer evaluation, research publication outputs are formally evaluated before the research is published in an accredited journal. Various academics from the university serve on editorial boards or publish accredited journals.

> P14: (118:122)
> ". . . and I must say, it could be said that one always has the impression that it is easier for someone who is, say, affiliated to [the university], to publish in [the university's] journals, but okay, maybe it is simply a fringe benefit and the journals is [sic] naturally also peer-evaluated and everything that goes with that. So, actually I am quite for it [housing journals at the university]."

A clear place for in-house publications in the development of research skills is, however, acknowledged:

> P6: (190: 196)
> ". . . these sort of in-house journals, when I was at [university x] we also had an in-house journal and 'I learnt my trade' in that publication. I never pretended to be changing the course of the discipline with my publications. But I did publish a few things in it which I am quite proud of to this day. I was published when I was a young guy and it is the kind of place where I could easily have managed to publish in those days. And [the in-house journal] . . . was a springboard- for later publications of a more substantial ambit and nature."

Participants did not refer to other research approval criteria for research. This indicates that publications, together with postgraduate students, are the predominant form of research output at the university.

5.2.2.8 SAPSE research subsidy paid into researcher's trust fund

The autonomy of researchers is further strengthened by the practice of paying the publication output subsidy after deductions for institutional management and, in some instances faculty-specific deductions, into a researcher's personal trust fund.

> P 6: (38:44)
> "I should think [paying into a researcher's personal trust fund] has a positive effect which can be proved . . . but the last ten years or so the research outputs of this university, per capita, have been extraordinarily high. For some years the highest in the country, other years second, third, but in terms of research outputs per capita we are always on the first team. And that time span correlates directly with a decision to establish research trust funds where individual researchers received monies via their trust funds in accordance with faculty-specific criteria for individual application and to my mind there is a clear connection . . ."

Researchers are permitted to utilize these trust funds for any research-related matter and they have full ownership of the trust fund whilst they are employed by the university.

> P 1: (7:7)
> ". . . a laptop computer, [a researcher] can attend overseas conferences without delivering a paper, overseas visits to other faculties, anything relevant to research, anything . . . It's his money. . . [indicating clear ownership]"

Some departments within faculties have their own criteria for awarding research subsidies to individual researchers, and some faculties have standardized criteria. The criteria are not centrally determined at the institutional level.

> P 4: (180:183)
> "I find it fantastic that each department has its own system [of personal trust fund allocation] which it

can manage. Regarding how you are going to divide the money - that the deans don't say: 'but you are not allowed to - you have to do it this way' . . . [academics] won't be happy with that. They want to use their own initiative, how to manage these things [sic]."

Research subsidy is never paid out to researchers, but placed in a personal research trust fund so that the money can be ploughed back into research.

P 6: (44:51)
"One may ask but why don't I give [researchers] in their back pockets. And there are some institutions that do just that, [other university's name] for example, allowed their researchers to take research income as personal income. [The technikon] has a similar system. We have not followed that system thus far, we believed that research has such inherent value in a university environment, serious researchers come to this university - they're not in it for the money - so you create research opportunities for them. You give them the money to promote research. You don't give them money to pay off their house or to build their holiday home."

5.2.2.9 Generation of funds and ownership thereof

Researchers have in many instances built up sizable personal trust funds through their research outputs. Personal research trust funds are also augmented by private work and consultation income.

P14: (131: 132)
"We have quite an active publishing culture within the faculty which means that colleagues [researchers] amass a considerable amount of money [in their personal trust funds] stemming from articles."

P14: (132: 139)
". . . therefore [in your personal trust fund you have], money that you collect yourself, for instance through accredited articles, but also by means of smaller jobs which one does for outside institutions."

Research funds at department level at the university are furthermore substantially supplemented through extra-curricular activities. These activities include the presentation of short courses, consultation work, privately commissioned research projects and any other entrepreneurial activity from which the department can generate income. Each faculty's research fund is supplemented by a percentage of profits from all the extra curricular activities of the departments in the faculty.

P 4: (45:46)
"and extra-curricular courses are actually your biggest driving force - it is your biggest source of income for research . . ."

Academics regard personal trust funds as an extension of their autonomy and take a strong position regarding ownership of funds.

P 5: (226: 228)
". . . protection of research trust funds is very, very important to us. We have put a lot into it. By its very nature we generated a lot of third stream income with our [project names] which we really make available to our academic personnel [for research]."

P12: (24: 24)
"People's trust funds for which they fight are mostly replenished by themselves."

One participant equated academic freedom with access to trust funds.

P 1: (109:109)

"That [taking away of trust funds] will be a pity as it will diminish that feeling of academic freedom even more."

5.2.2.10 *Internal funding is abundant, therefore researchers do not investigate or make use of external sources of funding*

Because researchers build up sizable personal trust funds, application at external bodies for the funding of research has not been actively pursued, nor does leadership place pressure on academics to do so.

P14: (132: 133)
"It happens that colleagues [researchers] publish say three, four articles per year and the disadvantage of that is that people who in the past were not really driven to [apply at], for instance the HSRC or the NRF, as it is today, didn't always have reason to apply for funds [externally] as funds were readily available in the faculty [in personal trust funds]."

5.2.2.11 *Abundance in decision-making*

A sense of deans being liberal in their decision-making around research matters was evident from the following quotations:

P 5: (229: 231)
"And we feel very, very strongly and again, here the programme groups start playing a terribly important role and I see it in the forms that I sign for people going [overseas]. Just about the whole [programme] group goes [overseas]."

P12: (98: 101)
"Yesterday I, for argument's sake, sent R1.2 million through my account, I think that is sort of an example. It is not my money - as long as there is money that is accountable, and someone asks for it, "let's put the money to good use". . . and I think and I say okay, that is just an example . . ."

Reference to 'abundance in decision-making' refers to a sense of openness with which deans approach funding approval. It is done in the spirit of the creation of opportunities and leaving decisions such as the research topic and process to the researchers. University interviewees felt that permission should be easily obtainable and given in a supportive spirit – not in a spirit of condemnation and criticism.

P 1: (75: 75)
"Encourage the thing by not always saying 'no' . . . if there is money, and he has a valid motivation, then you say 'yes'."

P13: (41: 45)
". . . be generous with permission to go overseas. Be very liberal in giving your signature . . . 'go and do this thing - attend that thing. Stay another week - don't come home straight away, seeing as you are there, pay a visit to the University of Leyden, go and see those guys' . . . that people-approach - encourage it."

P13: (45: 48)
"Don't always say 'no' - 'I don't think that is an important congress.' If the money is available and the guy can motivate it, then you say yes. And I think that you encourage in this way."

5.2.2.12 Resistance to accountability

Although all participants acknowledged that academics' performance should be monitored and corrective action taken where there is a lack of performance, there is a prevailing sense that the need for accountability is something external to the institution. Accountability at the institution is questioned and equated with a lack of trust; it is also seen as being regulatory and controlling in nature.

P 5: (372:374)
"Accountability. I don't think in [the university] in my last three, four years' experience there hasn't been enough accountability with reference to the core business output per faculty."
P 5: (56:57)
"So there is a bit of resistance now and some of them

[researchers] experience [accountability] as regulatory."

Self-evaluation at departmental levels was indicated as acceptable but scrutiny from faculty and university levels was felt to be out of place and 'regulatory'.

5.2.2.13 View of traditional role and form of a university

Although participants acknowledged that the university and their particular subject disciplines had to have strong links with industry and other external role-players the form of the university, when interfacing with industry, was described as beyond the scope of a traditional university; therefore the institution was rigid and slow to respond:

P12: (257: 258)
". . . one important consideration is the [subject discipline's name] can never ever afford to be distanced from the industry."
P12: (159: 161)
"The question is whether [the university] can [interface with industry] as a university. I don't believe [the university] is a business - [the university] does not display enough characteristics for 'agile' and 'nimble'."

5.2.2.14 Description of researchers

Researchers are described *in vivo* as prima donnas. This related back to the emphasis on researcher status and profile.

P 1: (67: 67)
"That's why I say we [researchers] actually consist of a bunch of prima donnas . . ."

5.2.2.15 High retention of staff members once they have joined the university

The university has a high staff retention rate, indicating high levels of staff satisfaction. Highly skilled researchers have remained at the institution, indicating that the manner in which research is managed has been acceptable to staff members.

P 1: (18: 18)
"But in the twenty-five years that I have been here,
only one person left for another university."

5.2.2.16 Academics who predominantly teach

Although research is a very high priority and is emphasized throughout the institution, the reality of high student numbers, and its associated high teaching loads, has led many academics to being lecturers instead of researchers.

P 6: (172: 173)
"So there are many colleagues within [the university]
who could just as well go into teaching."

5.2.2.17 A few individuals publish and make up for the others who do not actively publish

Although research output for the institution is good, and the scheme of rewarding research output with money in personal trust funds is seemingly working well, participants were clear that not all academics are pulling their weight with research, and that a few researchers publish a lot, thereby making up for many who are not research-active.

P 5: (84: 86)
"There were a few individuals who did strong research and delivered strong research outputs and that is still the case."

P 5: (211: 212)
"The fact that there are a few people who do research and the rest don't really is, to my mind, not the ideal situation."

5.2.2.18 Follow-up interview thoughts on the university

P6, during the follow-up interview, expressed a summary of the status of the university as follows (summarised version of the discussion):

At a university, a scholar (an academic) presents his/her assets (knowledge) to the university in exchange for payment. A scholar is like an independent contractor and the university supports him/her in doing his work. What he was describing is a very individualistic world where a scholar is independent if he/she is a good researcher and the institution does not control his every move, nor does it question his/her every move. As already described, the mission of a university is to generate knowledge. The management of researchers is therefore laissez-faire. Less good researchers are treated with more control and management because they have not met the research performance criteria of the institution.

Academic leaders at a university are 'primus inter pares'. They are temporary appointments through a selection procedure that happens amongst equals. The intention is that decisions for the collective are made collectively, though not always democratically, since entry as an equal requires you to have obtained your doctoral degree and to have a publication record.

P6 further elaborated that the mission of the technikon is to teach. Academics are employed on the basis of an employer–employee relationship within a managerial culture. The managerial culture views people as resources that have to be optimized to ensure a greater return on investment. Academics are part of the 'corporate' institution. Managers are held accountable and they monitor whether the people

whom they are managing are fulfilling their obligations and whether their values are in line with those of external funding bodies and therefore with government and societal needs.

As a result of the managerial culture at the technikon, deans are in power and held accountable by the institutional management. The dean is an authoritative figure and is more autocratic in his or her approach and also serves in a permanent position. The centre of gravity (relating to management) at the technikon lies in the senior management of the institution. Teachers are abundantly available; however, the institution's reputation rests on the manner in which the management of the institution steers the teaching staff. The technikon has a standardized national curriculum and the external stakeholders (such as the business world) expect people to be trained to 'do a job'. This implies that the management of teaching staff is less complicated and the work that the institution carries out is more standardized and straightforward in nature.

The centre of gravity at a university is much lower than at a technikon. At the university the centre of gravity lies in the academics. They are the individuals at the coalface who produce new knowledge and create the research profile with associated status for the institution. They tend to work more organically and therefore the more senior and formal institutional structures are not as important to them. The reputation of the institution rests with the academics.

5.2.2.19 Conclusion of code 'University'

In summary, the university, in the words of the interview participants, can be described as a place where science is practised and therefore knowledge is developed. Researchers are seen as individuals who are highly intelligent and can manage themselves. Good academics are furthermore seen to be scarce and due to the scarcity of this resource, researchers are not unduly controlled nor are they held accountable for anything other than research output and good teaching. Academics are therefore autonomous and are led by other academics who have also proven their worth in the world of knowledge-generation.

The university sees itself as a research-strong institution. The reality that the institution is not viewed by many external judges as research-intensive, as well as some questions about the quality of the research being conducted, tempers this perception. The institution has always placed great emphasis on the importance of research. The research culture has been handed down 'covertly' through generations of academics and has been facilitated through 'first-amongst-equals' leadership that values peer review above other institutional evaluation mechanisms.

Research funds are generated by academics through research output. Personal trust funds are furthermore supplemented by external research contracts, research grants and private work. For this reason, ownership of these funds is placed squarely in the hands of the individual academic. Autonomy is also practised in terms of research funds and each academic is left to his/her own devices as to how to manage his/her personal trust fund. The research culture is therefore built on individualism.

Deans view themselves as facilitators of a research environment. To achieve this they are generous in their decision-making. Faculty research funds are supplemented by extra-curricular income, which in most instances creates an abundance of funds. Because of the abundance of funds at faculty level and in personal research funds, researchers are less likely to apply for research funds external to the organization, and in fact interviewees cited this as the main reason for the institution's low external funding track record.

Academics at the university remain employed by the university for a long period of time. Interviewees did mention that there is a shortcoming in the university's pool of researchers, in that there are a few academics who publish a lot and some academics who predominantly teach without producing any research output.

The rest of the Intangible research management factors will be described next. From this point forward codes will be described together with their interactions as they are illustrated in the networks. The data from the two case institutions are furthermore combined in the rest of the codes of this chapter. This was done to reach an understanding of the combined factors that influence a productive research management environment for the merged university. Footnote references are given to

link back to the data and also give an indication of code-groundedness and density. A description of the code 'Assumptions/Mindsets' follows.

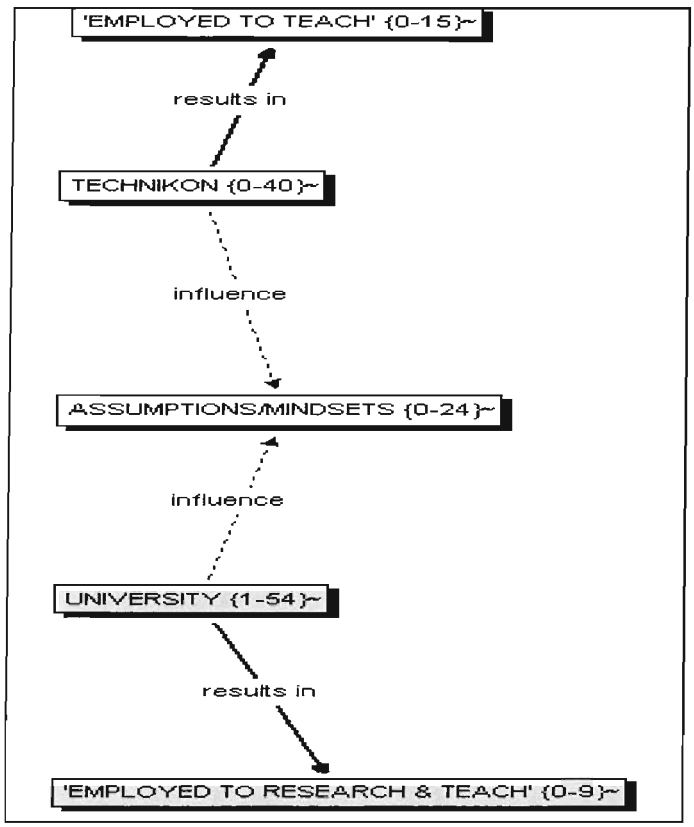

Figure 5-2: Excerpt of left-hand side of intangible factors network

5.2.3 CODE 'ASSUMPTIONS/MINDSETS'

Code name: ASSUMPTIONS/MINDSETS {0-24}~

Number of quotations linked to this abstract code: 47

Code comment: Codes linked to this abstract code are the assumptions upon which the interviewees based their opinions of the other institution. Many of these assumptions were projected onto persons in the merging partner institution or onto the collective culture of the merging partner institution.

The mindsets and assumptions of senior management at both institutions *direct* the battleground for control, power and ownership. These mindsets and assumptions in turn are *influenced* by the history and culture of the two institutions, which have been explained in the codes 'University' and 'Technikon'.

Interviewees make the blanket assumption that their institution's way of managing people is the right and preferable way. The technikon's classical strategic management approach is held as the rational and right way forward for research management at the institution.[2]

> P10:(121:123)
> "Yes, I do. I think we can only manage those things if we proceed on the assumption that by and large you're dealing with rational people and that by and large people will respond to rational arguments [i.e. the technikon's way]."

The university's initial response to the perceived forced removal of its autonomy and researcher independence is one of resignation: it acknowledges that the merger will change research at the institution:[3]

> P 2:(344:344)
> ". . . so [the merger]is external[ly driven] and we can't do much about it."

Certain interviewees perceive that the university is trying to hold on to the past[4] and its associated funding derived from a previous inequitable dispensation because its managers have 'personal agendas.'[5] Furthermore, technikon interviewees easily accepted the fact that the merger provides an opportunity for the merged university to form a collectively strong enterprise, predominantly because their institution's management style is more collective in nature.[6]

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2 Code: Strategy – institutional strategy more important than disciplinary strategies {1-5}, Code: Strategy – research linked to strategy minutely examined and monitored {1-4}, Code: Strategic management – done top down {1-4}

3 Code: Take away {4-2}, Code: Autonomy {5-5}, Code: Despondent {5-1}

4 Code: Holding on to past subsidies, history, etc. {6-4}

5 Code: Personal agendas {1-2}

6 Code: Ownership – individual academics {11-5}

P 7: (163:165)
". . . and it is [sic] no point just keeping that money [university's reserve funds] within the control of the individual people who are associated with it, when you actually need to look at a much bigger picture [for the whole merged university]."

The fact that the merger also provides an opportunity to right the wrongs of the inequitable government funding policies during apartheid[7] also serves to strengthen the resolve of the technikon. One interviewee referred to ". . . pay-back time . . ." P7: (53:53).[8] Technikon interviewees emphasized the transformation of the university,[9] with its individualist management style, to a larger extent than the transformation of the technikon, more specifically its teaching practices.[10] Transformation in the former sense, and as described in chapter 1, together with a transformation of the curriculum, was seen as the reason for the merger[11].

P 7:(135:137)
"So you need to transform on [university management] issues . . . and you need to say, how is your research developing new knowledge to feed into your curriculum so as to add to transformation . . . isn't that why we are merging in the first place?"

The university interviewees all stated that the centralization of individual researchers' trust funds and other institutional research funds[12] would be counter-productive and even impossible:

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7 Code: Don't continue exclusion through no internal funds {2-6}, Code: Correct imbalances to limit resentment {2-4}

8 Code: Payback time {1-2}

9 Code: Transform institution in terms of management practices {1-3}

10 Code: Teaching improvements necessary {7-2}

11 Code: Transformation agenda even through research {1-5}

12 Code: Funds – Centralization of trust funds inhibits research {2-1}, Code: individual researcher autonomy for use {1-0}, Code: Funds – trust funds (personal and departmental) supports research {1-1}, Code: Centralized criteria for receiving funding – take away ownership/prescriptive {2-3}

P12: (56:57)
". . .and the merger says [sic], [the technikon] wants to throw all trust funds together. This notion is practically impossible."

University people are projected as elitist and exclusionary[13] and even the technikon managers who themselves have a university background feel that they have been accused by their own staff of having a 'university mentality':

P 7: (78:80)
"Because of the fact that the people who run those [exclusionary] professional bodies are university-type, structured people, and the people that sit on the board that caused this merger to happen, are all university people."

The university, on the other hand, is largely built on individualism,[14] which is threatened when there is talk of centralization and a standardization of research policies, procedures and especially funding criteria[15] and research niche/focus areas[16]. The perceived threat to the individual nature of the institution has created a lot of uncertainty[17] and a drop in morale:

P 2: (305:307)
". . . people experience [the merger] negatively and say 'where are we going' [it is] a waste of time . . . so the morale [is also] . . . influenced. . ."

[13] Code: Projection – 'university' people are elitist and exclusionary {5-2}

[14] Code: Ownership – individual academics {11-5}

[15] Code: Centralized criteria for receiving funding – take away ownership/prescriptive {2-3}

[16] Code: Focus areas – not centrally determined and centrally enforced {4-1}, Code: Focus areas – obstacles to research creativity {1-2}, Code: Focus areas – long-term weakening of potential knowledge base {1-2}, Code: Focus areas – from passion {4-2}

[17] Code: Uncertainty {1-1}

A technikon interviewee acknowledged that mindsets have to change[18] and that the histories of the two institutions had to remain just that – history:

> P10: (265:266)
> "Another part to it of course is that the staff of the new institution are going to have to start seeing themselves as ambassadors of [the] . . . brand [of the new institution], not of their histories."

The 'Assumptions/Mindsets' that each of the senior managers has about research management and about the other institution *directs* the emergence of a code titled 'Control/Power/Ownership' from the interview data. A discussion of this code and the other codes illustrated in figure 5-3 follows.

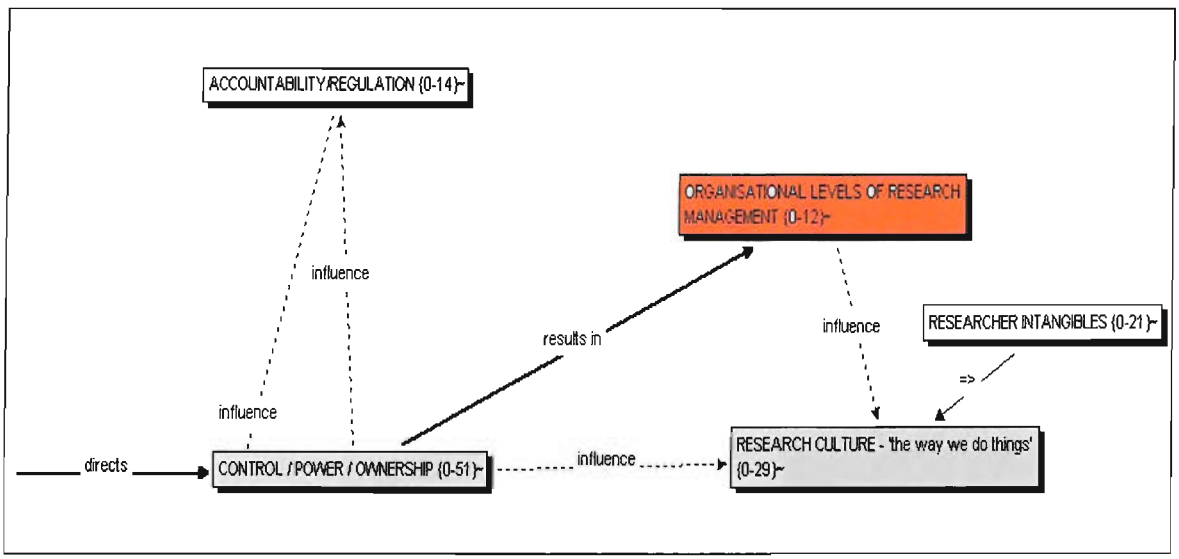

Figure 5-3: Excerpt of intangible research factors – top of network

5.2.4 Code 'Control/Power/Ownership'

Code name: CONTROL / POWER / OWNERSHIP {0-50}~
Number of quotations linked to this abstract code: 88

[18] Code: Mindset – people's has to change {5-3}

Code comment: Expressions of the positive as well as negative interaction and dynamics of various codes that relate to power, control and ownership issues.

Figure 5-3 illustrates that the dynamics between the intangible factors are predominantly driven through the battle for control, power and ownership, not only in the sphere of research management but also in terms of the rest of the management of the merged university. In essence, the code 'Control/Power/Ownership' lies at the heart of the intangible factor network and has the potential to *influence* the research culture at the institution positively or negatively. This factor is *directed* by the histories and the assumptions that the role-players come with – in other words the baggage that they carry with them.

The battle for control, power and ownership within the area of research management fundamentally has to do with centralization or decentralization of all aspects of the research function. This includes research leadership, management, planning, execution, niche or focus areas, funding and research evaluation.

> P12: (52:54)
> ". . . but the moment the perception is created that the funds are rightly held [centrally] and that they will be distributed by way of some or other decision-making criteria, it is centralization . . ."

Interviewees who identified with the notion that the institution is more important than the individual[19] are comfortable with the central management of research, especially through institutional focus areas and central criteria for funding. On the other hand, interviewees who identified with the individualist perspective that researchers[20] lie at the heart of research and are therefore the most important part of the research environment, felt very uncomfortable with the notion of central focus areas and

[19] Code: Institution is more important than the individual {1-3}

[20] Code: Ownership – individual academics {11-5}

central funding criteria. On the identification with the collective or the individualist perspective the clear divide between interviewees from the technikon and the university started to change. Interviewees started speaking about their personal academic backgrounds and this meant that opinions about centralization or decentralization were not clearly split between the technikon and the university interviewees but rather split by proponents of individualist versus collective perspectives of research management.

The main themes that emerged in the struggle for power, control and ownership were:

- Decentralized research management with measurement of outputs and success;[21]

> P 8: (300:304)
> ". . . you decentralize, you put [sic] someone responsible, you give them both the authority and the responsibility and just leave them alone. Set out the parameters . . . To me that is far less bureaucratic. And to do that you need various [hierarchical] tiers because there needs to be some relationship with accountability."

- Decentralization of research funds and the associated decision-making powers to subject discipline level;[22]

> P 8: (515:515)
> "Research must be managed within the department or faculty."

- Empowerment of academics to make decisions, plan and execute all research-related tasks and funds at their level;[23]

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[21] Code: Decentralize RM {2-2}, Code: Decentralization of management with measurement {1-1}

[22] Code: Disciplinary level – research & RM done within micro discipline {16-6}, Code: Decentralize research funds to departments {1-1}

[23] Code: Disciplinary level – research & RM done within micro discipline {16-6}, Code: Empower academics with control over own funds {1-1}

P14: (235:236)
"I think one should give colleagues [at disciplinary level] . . . the maximum possible power to be able to work."

- Experienced researchers with strong opinions about their research and who demand autonomy;[24]

P12: (88:90)
". . . unfortunately these opposite poles are sometimes formed [because these individuals become very strong and have strong opinions]. But if you manage it correctly then you get much more out of those people."

[24] Code: Experienced researchers – strong opinions – autonomy {4-3}

- Ownership of research funds by individual academics;[25]
- A belief that research is not stimulated from the organizational or institutional level;[26]

> P14: (240:241)
> ". . . But I remain convinced that research is stimulated with difficulty from above [institutionally]."

- A belief that the heart of research lies at the subject disciplinary level, where the researchers are expanding the knowledge of their own discipline;[27]

> P11: (364:365)
> ". . . again that if . . . in a department [research] gets driven . . . it goes even better . . ."

- That institutional centralization of research management is redundant since it should be driven by the faculties;[28]

> P11: (384:393)
> "What we had [at this institution] originally, we had a dean of research who had to drive research. But he came in saying that 'in two and a half or three years time I'm going to work myself out of a job' and he actually admits that, because the faculties must take [research management] up. Now what did happen, the faculties did take it up, we did appoint research managers and the faculty had actually taken it up. Which means that our dean of research place has actually become redundant. However, now [with the merger] there's this whole thrust to create another centralized [research office]. I personally think

[25] Code: Ownership – individual academics {11-5}

[26] Code: Research not stimulated from organizational level {1-1}

[27] Code: Disciplinary level – research & RM done within micro discipline {16-6}

[28] Code: Central research cluster – add value to the faculties not other way around {1-0}

maybe you can have a generic person sitting there, almost like a faculty manager that does, that sort of institutionally talks [sic] to the NRFs and . . . that sort of stuff, and goes with top management policy straight [to the council] . . . but the nitty gritty of research, honestly and truly must be in the faculties, driven strong [sic] by the faculties."

- Too many rules lead to the death of creativity[29] which is essential for a productive research environment;
- Centralization of research management leads to a bureaucracy being formed and obstacles being placed in the way of research;[30]

P 8: (281:287)
"I have to say that there is a part of me that thinks that the central research office was trying to structure or set up an empire . . . and that has worked negatively to some extent because the biggest criticism amongst my staff is that they just see the central research office as someone that always wanting [sic] to set an empire, put obstacles in the way, not obstacles deliberately in the way of researchers but obstacles [such as rules, forms, etc.]. It is typical organizational behaviour, when you want to maintain a bureaucracy, one of the ways you maintain that is with obstacles."

- Centralization was equated with being prescriptive, autocratic and controlling;[31]
- Research focus areas were seen on the one hand as a mechanism which ensures exclusivity to a select few and on the other hand a mechanism where there could be retention of a strong research focus for the institution;[32]

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[29] Code: Too many rules = death of creativity {1-1}

[30] Code: Bureaucracy {4-8}, Code: Central research structure – places obstacles in researcher's way {3-2}

[31] Code: Facilitative leadership vs. prescriptive {15-3}

[32] Code: Focus areas – exclusion mechanism {1-3}, Code: Focus areas managed centrally (maintain strong focus for institution {2-0}

P 8: (493:497)
"I have this picture in my mind where an outside person or a person in charge got together [sic] and put forward the niche areas and they want this to grow and mature but they don't want any new birth . . . and I can't reconcile that in my mind . . . Because we have the policy here [at the technikon] that [research] is only supported [by the institution] if it is part of a niche area, and I have fought [the policy]. We have actually killed some really novel ideas just because they don't want to support the niche areas."

P 5: (311:312)
". . . I think [niche areas] depend a lot upon your individual [researchers] - who do you have, what are their competencies, and who are the stars . . . and according to this you direct your strong points. . ."

- Emphasis is also placed on the government's Programme Qualification Mix (PQM) and the direct influence it has on an institution's choice of subject area that it may research;[33]

P 5: (124:125)
"[research and teaching] depend on the . . . Programme Qualification Mix of the faculty. . ."

- Too many rules would lead to red tape and red tape has made researchers give up before they have even started;[34]

P14: (232:235)
". . . I think one should not have too much red tape involved. There is nothing as frustrating as an incredibly difficult process that you have to undertake to, for instance, purchase a computer, or to

[33] Code: Focus areas – determined by PQM {1-1}

[34] Code: Red tape – slow {3-5}, Code: Red tape – too much work involved {2-5}

obtain a book, or to get approval for a [research] project . . ."

Ownership is another issue that is closely associated with power and control. Interviewees discussed ownership mainly in relation to the ownership of research funds. This is because the university and certain individual academics at the university have large reserves of research funds and the technikon has very little (refer to section about the technikon). Therefore the technikon's interviewees indicated that ownership could not be solely based on history[35] and that the institution[36] – seen as an independent entity – should have ownership over research funds, especially since the institution is the funder of most of the research. The history of South Africa and the inequitable manner in which institutions were allocated funds[37] also came into play:

P 7: (95:100)
"It's like the Land Act and everything [the legacy of the history] that we are sitting with in South Africa, you can't just say . . . 'we [making an example of the university] have earned this and we have worked this land as a family, and we have bought it, and we have made it much better, and colonial education has come to South Africa and taught agriculture, and I've sent my two boys to go and study agriculture, and they are in the best position to manage this land' do you hear what I'm saying? And that's what [university people] are actually [implying when they hold on to research funds] . . ."

Ownership of research funds was certainly the main factor discussed during interviews at the university.

P12: (57:61)
"You can't say that trust funds that were generated

[35] Code: Ownership – not based on history {1-3}

[36] Code: Ownership – depends who gave funding {6-1}, Code: Ownership – university {1-2}

[37] Code: Funds – earned through unfair/inequitable system {2-2}

> [by a researcher] of more than R1-million, . . . now the university says: 'now this is ours'. . . and [this researcher] will have to apply to use these funds under [the institution's] criteria . . . to centralize the funds will be catastrophic. I want to seriously warn against any activity [of centralization] . . . specifically with reference to the centralization of research trust funds."

The contentious issue of the ownership of intellectual property was also discussed[38] and this was identified as one of the factors that influences research management (refer to code 'Commercialization/Knowledge transfer'). Ownership was, however, explored as a mechanism that could enhance research, in that when individuals feel a sense of ownership in their research work, this could lead to a sense of community.[39]

For research management at the merged university, power, control and ownership over research is therefore predominantly seen to be placed in the hands of the subject discipline. There is however a strong recognition of the external influence of accountability by government and research funding councils, which make for a strong argument of some form of centralization of communication and institutional information-keeping. This leads to a discussion of accountability and regulation.

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[38] Code: Intellectual property and patents {6-2}

[39] Code: Ownership – creating sense of community {1-4}

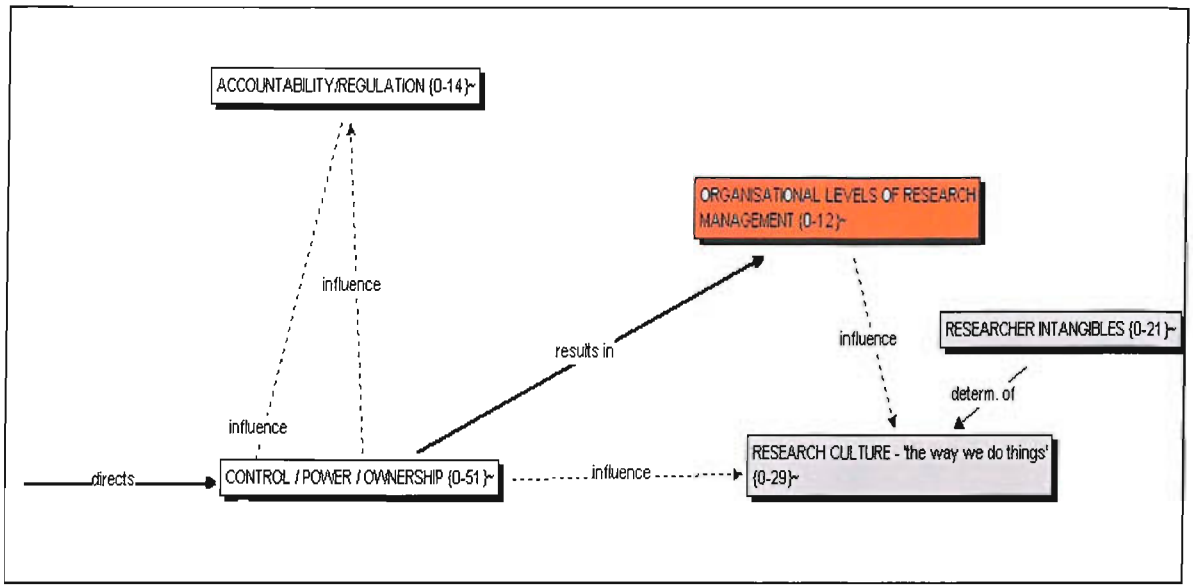

Figure 5-3: Excerpt of intangible research factors – top of network

5.2.5 Code 'Accountability/Regulation'

Code: ACCOUNTABILITY/REGULATION {0-14}~

Number of quotations linked to this abstract code: 25

Code comment: This code combines quotations that referred to the need and push for internal and external accountability and its associated perceived regulation. Both accountability and regulation are viewed positively as well as negatively in quotations and the code also includes quotations about ethics.

As illustrated in figure 5-3, the code 'Control, power and ownership' is *influenced* by pressure from external stakeholders, such as the government, for accountability.[40] This pressure is exerted through external regulation via forced mergers, external quality assurance, external research funding criteria, etc. Only one interviewee mentioned that quality assurance, as driven by government, was an important factor in research management. Quality assurance is seemingly driven by compliance rather

[40] Code: Accountability – held accountable {5-5}

than by improvement.[41] The self-accreditation status of the institution[42] is, however, determined by the quality assurance audits of the Higher Education Quality Committee (HEQC).

The interviewees did also, however, articulate a need for internal accountability at the institutions.[43]

> P 5: (377:378)
> "We [the management of this institution] must be much more accountable, [indicate] what we are busy with, what we are doing and why . . . and what is the value added thereby?"

This need for internal accountability was articulated in terms of the inconsistencies that occur across faculties and the lack of central direction at one of the institutions.[44]

> P 5: (383:385)
> "I think it is more about consistency. At [institution's name] we had too much inconsistency, each faculty, for many, many years did just what they wanted . . . in their own way . . . and there was no centralized direction."

The subject of ethics in research[45] was mentioned during discussions about accountability. This ranged from an absence of ethics to formal committee structures to oversee ethics at faculty level. Ethics was primarily discussed in the context of a faculty's responsibility to see that an ethics committee oversees research.

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[41] Code: Quality assurance driven by compliance {1-2}

[42] Code: Self-accreditation status {1-1}

[43] Code: Accountability and justification absent {4-8}

[44] Code: Standardization of policy at university level {4-2}

[45] Code: Code: Ethics – few, not all proposals go to ethics committee {1-1}, Code: Ethics – managed by ethics committee {3-1}, Code: Ethics missing {1-2}, Code: Ethics necessary {1-0}

The code 'Organizational levels of research management' is referred to next, although it forms part of the tangible research management factors.

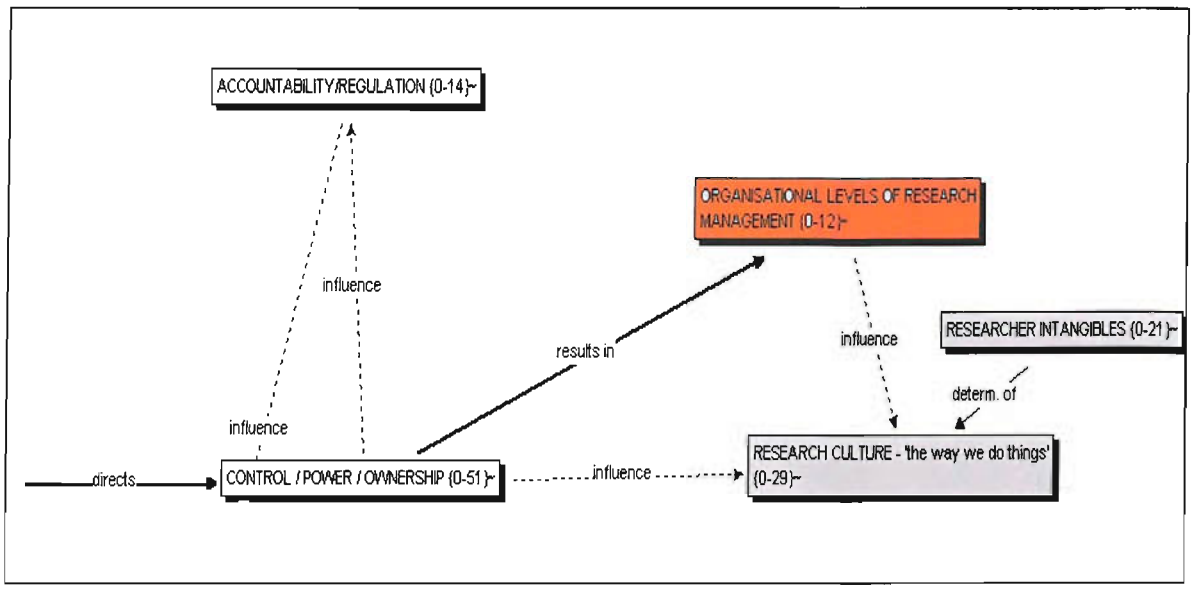

Figure 5-3: Excerpt of intangible research factors – top of network

5.2.6 CODE 'ORGANIZATIONAL LEVELS OF RESEARCH MANAGEMENT'

Code name: ORGANIZATIONAL LEVELS OF RESEARCH MANAGEMENT {0-12}~

Number of quotations linked to this abstract code: 123

Code comment: Various hierarchical levels within the organizational structure created specifically for the management of research.

The battle for control, power and ownership is presently *resulting in* the definition of the organizational levels of research management (organizational structure for research management). This is partly due to the fact that the institution's Council decided to retain the existing senior management for the merged university in the interim until the permanent appointments are made by the new Council. As a result of this decision, individuals are consciously or subconsciously drawn into a battle for survival, and in some instances, for the creation of positions in the merged university's organizational structure. The new research management organizational structure was hotly debated during the interviews and in committee work:

P 8: (296:300)
". . . the question that was raised for example - and this has to do with research - no we want a flat structure because it is quicker to give a decision from the top. So I raised the question in the meeting 'well why should the decisions come from the top in the first place?' . . ."

The code 'Organizational levels of research management' is an abstract code, and three of the codes that are linked to this code relate to the actual levels of the organizational research management structure that was distilled from the interview data. One interviewee explained the functions of research management that were necessary at different organizational levels as follows:

Operations management[46]

P10: (93:97)
"First of all, at the level of the research operations themselves, there's the managing of the research process, the alignment of the resources that are necessary, the management of the research operations themselves and the production of research outputs. So management would be precisely managing that birth to death scenario of the research project, so that's managing the research operations."

[46] Code: Code: RManagement - level - research operations {1-3}

Support services[47]

> P10: (98:102)
> "Then part of managing research is also managing the support activities or support services around that - that's also part of research management. So, you know, making sure that the administrative support services and the other support services like finance and HR and procurement [sic] is right, that those are functioned [sic] optimally in support of research, that's also part of research management."

Policies and structures[48]

> P10: (102:104)
> "And then moving to a higher level is conceptualizing then the whole research management and administration regime in terms of policies and structures - conceptualizing that and then managing and administering it is part of research management."

Strategic management[49]

> P10: (105:106)
> ". . . and then at the highest level is considering how those research activities are going to align themselves with and add value to the institutional strategic objectives."

These above quotations are linked to the code 'Organizational levels of research management', which is indicated in orange on figure 5-3. These are tangible organizational research management factors and as such are discussed in detail under

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[47] Code: RManagement – level – research support services {1-4}

[48] Code: RManagement – level – policies and structures {1-3}

[49] Code: RManagement – level – strategic management {1-4}

the Tangible research management factor network. The research culture or 'way research things are done' is discussed next.

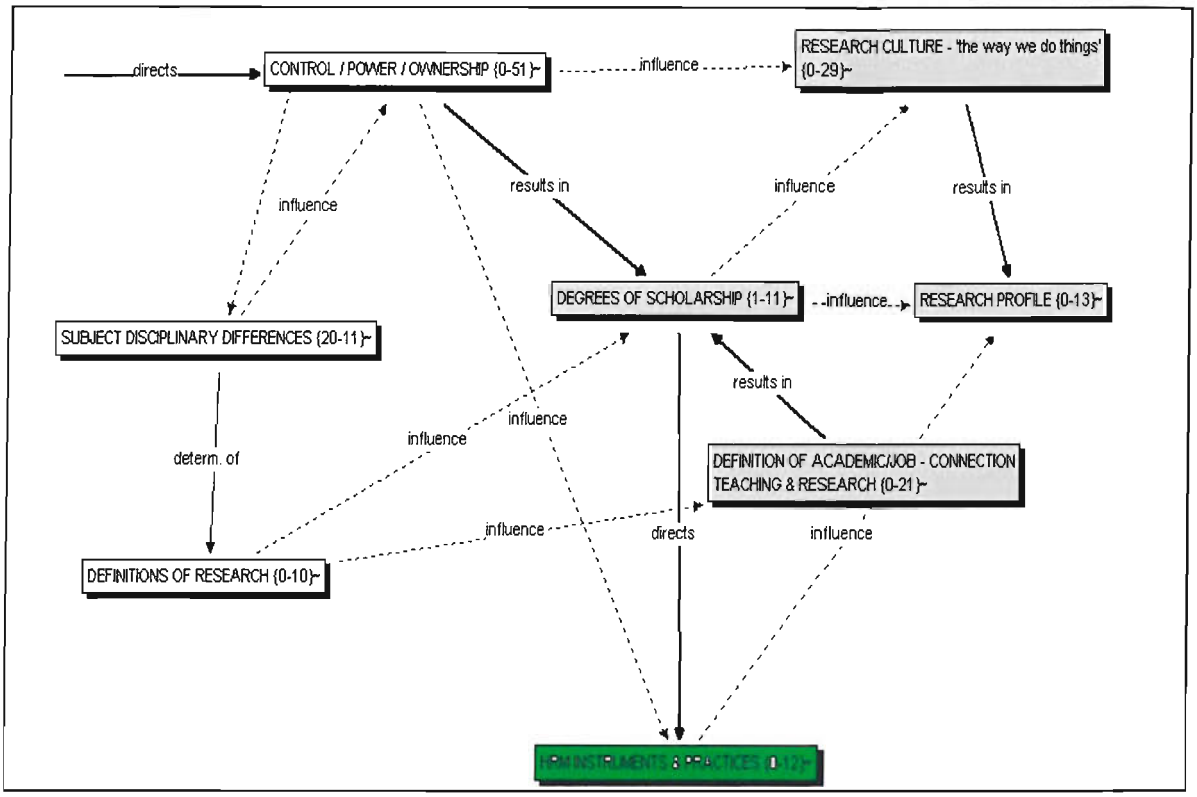

Figure 5-4: Excerpt of intangible research factors – bottom of network

5.2.7 CODE 'RESEARCH CULTURE – THE WAY WE DO THINGS'

Code name: RESEARCH CULTURE - 'the way we do things' {0-28}~

Number of quotations linked to this abstract code: 93

Code comment: A collection of codes that richly reflects the intangibles associated with the creation and maintenance of a research culture. The code reflects the way that research is encouraged, fostered, organized and maintained.

Figure 5-4 shows that the organizational levels of research management will *influence* the research culture of the institution fundamentally as a result of the new roles and responsibilities that will be awarded to persons on these levels, which will ultimately *result in* a change of power and perhaps ownership of research resources. The main source of research resources for the merged university will initially come from the accumulated funds of the university partner. This complicates the ownership of

research funds, as these funds will be redistributed in the merged university to many academics that have no research record.

The interviews at the university yielded the richest information regarding the nature of a research culture. The research culture is explained as 'the way we do things'[50] and a reinforcement of those ways, ultimately becoming the rituals, symbols and practices of the institution.

> P 6: (16:19)
> ". . . [research interaction] is debouched in the context of conferences, in publications, in tearoom discussions, in the building of library collections, where everyone has a tacit understanding of what research is about, and how you should practise and manage research."

Culture is an intangible factor that permeates all aspects of research management and differs from the research environment in that the research environment is seen as a combination of all the tangible and intangible factors that influence research, over which the institution has control. The research culture is an intangible factor and therefore part of the institution's research environment.

A description of the research culture that supports a productive research environment includes:

- Decisions about research, by leaders and managers, are made with an abundance mentality[51]

Decisions are made with an open mind, and with the perception that there might be very little return on investment at the end of the research project.[52] It is like an attitude

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[50] Code: Code: Research culture – 'the way we do things' {0-28}~

[51] Code: Abundance – funds and decision-making {14-1}

[52] Code: Research risky – no guarantees about outcome {1-0}

of 'nothing ventured, nothing gained'. This implies that funding is abundantly given to encourage research and that there is non-judgemental trust and encouragement by leaders of researchers in new research ventures.[53]

> P 1: (75:75)
> "Encourage [research] by not always saying 'no' . . . if there is money, and [a researcher] has a good motivation [for a particular project], then you say 'yes'."

- Researcher autonomy is protected at all costs, even in the operational and financial management of research projects.[54]

- Some form of accountability, through report-back requirements, always tempers financial autonomy;[55] however, a researcher never has to beg for money once it has been awarded initially.

- Individualism is reinforced.

Researchers are described as prima donnas and this is an accepted and somewhat cherished description[56] since the notion of a prima donna was explained as special and individualistic people.

> P 5: (200:202)
> ". . . you [must] make provision for individualists who want to do their own thing in their own way. I don't think one wants a structure that forces them to do things in a particular way . . ."

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[53] Code: Support – non-judgmental trust and encouragement {7-2}

[54] Code: Autonomy {5-5}

[55] Code: Funds – good management {10-1}

[56] Code: Prima donnas {2-3}

- Good research practices are continuously reinforced and academics keep themselves immersed in academic matters.[57]

> P 8: (86:90)
> "At a university, you are immersed in research and immersed in academia. Every other colleague sits with a cup of tea or a beer talking about certain [research] areas . . ."

Ways in which the above practices can be inculcated into a research culture include:

- Repetition of these practices, as in the absence of reinforcement a bad practice becomes an accepted norm.[58] This is the process of creating and maintaining a culture.

- Strong emphasis must be placed on the importance of research.[59] This is done through active encouragement of research activities as well as rewards and career promotion systems that are largely based on research output.

- Gate-keeping[60] to some extent of activities such as the protection of the title of professor.[61]

- Importance placed on research, described as 'publish or perish',[62] meaning precisely that there is such an emphasis on research that if you do not partake, you will certainly be sidelined in promotion and other benefits. For all academic members of staff, however, there is an expectation that research activities will be

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[57] Code: Continuous discussion about academic matters {1-3}

[58] Code: Bad practices (continuous) becomes policy {1-1}, Code: Impede research activity – prolonged lack of emphasis on research {2-2}, Code: Repetition of research behaviour leads to enforcement of 'the way we do things' {1-0}

[59] Code: Emphasis placed on importance of research {13-4}

[60] Code: Gate keeping – emphasize importance of research {3-2}

[61] Code: Gate keeping – professorial title {7-2}

[62] Code: Publish or perish {5-3}

participated in every year.[63] Some staff members, who are not presently research active, perceive this as threatening;[64] however, this does not deter the institution from placing emphasis on its importance and reinforcing this as part of the institutional culture through the use of tangible research management factors such as rewards and recognition.

> P 9: (234:237)
> ". . . the strong research of the university environment that enforce [sic] to carry over to the technikon environment and jointly or together you'll find that it's going to motivate the colleagues, even if they didn't think about research, but if everyone's doing it, 'it's happening all around me now, you know I've got to join in'."

> P 2: (357:361)
> "you must loosen [researcher's] hands to be able to [do research] . . . and then you should reward them. There has to be a reward and I feel strongly . . . that if people achieve, give bonuses, we give research funds, but you nearly [sic] have to do more . . . to retain these guys here."

- Young and potentially good researchers are strongly encouraged to participate in the research projects of older and more experienced researchers.[65]

- Research capacity development is highly encouraged.[66] Research development is described fully under the Tangibles network.

- An interest in research and a love for the development of new knowledge is fostered at subject disciplinary level.[67] This is where students and academics are

[63] Code: Research expectation {3-1}

[64] Code: Research expectation – threatening {4-2}

[65] Code: Research development – collaborate with young researchers {5-1}, Support – young and good potential researchers {12-1}

[66] Code: Research development – capacity development valued {1-1}

exposed to the research practices of the discipline and where new knowledge frontiers are challenged.

In conclusion to the code 'Research culture – the way we do things', a research environment is created without managing research,[68] implying that research management is a process of facilitation, not control which is rigid or prescriptive in nature.[69] Managers/leaders are there to create opportunities and an environment where research can flourish.[70] Trust between researchers and those that lead/manage them is of the utmost importance.[71]

> P12: (12:13) & (68:69)
> ". . . you must create a [research] environment - different from managing research . . . The moment we are going to manage research at this university, and we are going to be prescriptive, then we have problems."

The maintenance of a strong research culture can only be successful if the type of research carried out is of high quality and quantity.[72] This implies that the research culture *results in* good or bad research profiles for individual academics as well as for the institution.

The code 'Researcher intangibles' is discussed next, as the intangible factors found at individual researcher level greatly *influence* an institution's research culture.

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[67] Code: Disciplinary level – Research & RM done within micro discipline {16:6}

[68] Code: Create environment instead of managing research {1-3}

[69] Code: Facilitative leadership vs. prescriptive {15-3}

[70] Code: Create research opportunities {1-0}

[71] Code: Trust – foster trust environment {2-1}

[72] Code: Strong research culture depends on high quality of work {1-0}

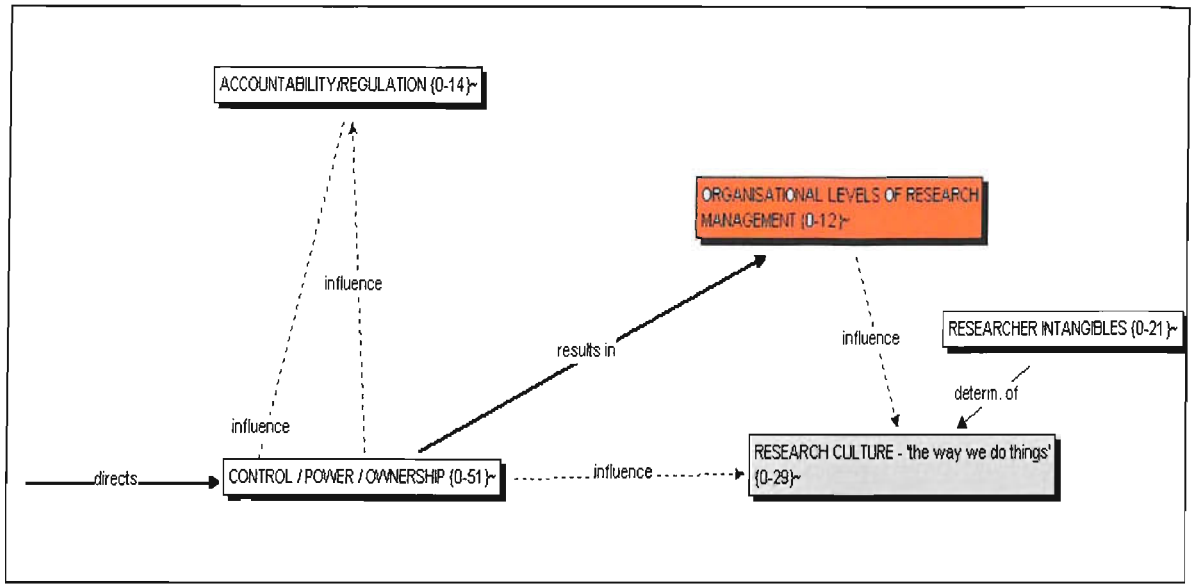

Figure 5-3: Excerpt of intangible research factors – top of network

5.2.8 CODE 'RESEARCHER INTANGIBLES'

Code name: RESEARCHER INTANGIBLES {0-20}~
Number of quotations linked to this abstract code: 63
Code comment: Intangible characteristics of individual researchers who are willing, positive, and able to conduct research.

The interest in and love of research that is fostered at subject discipline level is done through committed and passionate researchers. University interviewees expressed the view that researchers were strong individuals around which research grew and a research culture developed. These researcher intangibles *are a determinant of* a productive research culture and enforce 'the way we do things' in terms of research.

In order to discuss the researcher intangible factors I distilled a classification from the data which included attitudes, motivation for research, and work environment categories. These categories will be discussed next.

- Attitudes

Interviewees indicated that, on the basis of their 'true' definition of an academic[73] – i.e. a person who can do both research and teaching, academic candidates want to learn and study more about their subject discipline and the world[74] and they are therefore not intellectually compliant.[75] These attitudes mean that researchers are interested in research[76] and take pride[77] in demystifying the complexity of research.[78] One of the important attitudes of a researcher was described as being able to ask for help and support.[79]

- Motivation for research work

The motive for an interest and success in research was ascribed to a researcher being passionate[80] about his/her subject discipline and the view was expressed that, in essence, good academics had a calling[81] and did not work for material gain. Therefore the motivation for academics to do research lies in the intrinsic value that research holds for the individual[82].

> P10: (52:55)
> ". . . very few academics are academics simply because of the value it adds in a material sense to their own life. Many of them are driven by what I might call 'higher motives' but that's a hackly term, but by motives other than just the material rewards to them as individuals."

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[73] Code: 'Academics' do research not just teaching {6-3}

[74] Code: Academic candidates want to learn/study more {1-1}

[75] Code: Academics intellectually critical not compliant {2-4}

[76] Code: Attitude – interested in research {5-7}

[77] Code: Pride in research work {1-2}

[78] Code: Demystify seeming complexity of research {1-3}

[79] Code: Ask for help and support {1-1}

[80] Code: Passion – for research {6-3}

[81] Code: Motive – a calling {4-2}

[82] Code: Intrinsic value of research {3-2}

- Work environment

The work environment of researchers becomes very entrepreneurial or innovative because of the passion that they have for their work and the presence of an entrepreneurial environment tends to stimulate research.[83] Once research project management becomes too cumbersome and draining,[84] the entrepreneurial/innovative environment disappears.

The research environment has research leaders[85] – usually people who are not in management positions but who have the necessary experience and passion for the subject being researched. Direction in the research environment comes from either the experienced researchers or, in the absence of this, from the dean of the faculty.[86] Although researchers were described as people who ask for help and support, and make use of teamwork and collaboration,[87] experienced researchers were described as people who have strong opinions about autonomy[88] and feel that they should stand up and fight for their autonomy[89] if it were ever threatened. The direction given for research as well as the strong stance on autonomy could be areas of concern for the merged university, as the majority of academics in the new institution have little or no research experience and could therefore be side-lined by management in research matters.

Researchers were furthermore described as people who set the research example[90] for the rest of the institution but that the environment allowed for mistakes to be made, as this is part of learning.[91]

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[83] Code: Passion for research leads to entrepreneurial activity {1-1}, Entrepreneurship stimulates research {1-3}

[84] Code: Projects logistics too cumbersome and draining {1-1}

[85] Code: Research environment – leadership {3-1}

[86] Code: Research environment – direction {5-1}

[87] Code: Teamwork and collaboration {10-4}

[88] Code: Experienced researchers – strong opinions – autonomy {4-3}

[89] Code: Researchers must stand up and fight for their autonomy {2-2}

[90] Code: Set example {11-3}

The locus of research for the institution is therefore situated at the subject discipline level. From here, research is practised, learnt, developed and nurtured. Subject disciplines do differ considerably, though, and this is discussed next.

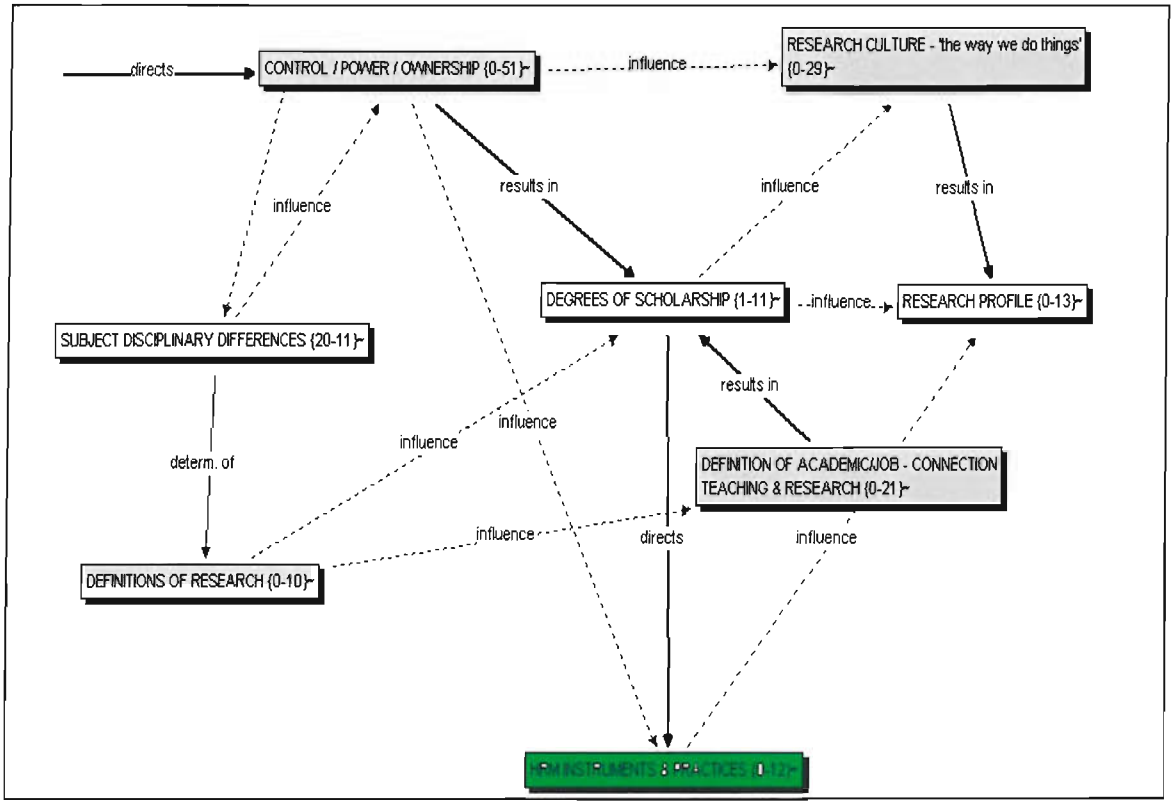

Figure 5-4: Excerpt of intangible research factors – bottom of network

[91] Code: Mistakes part of learning {2-1}

5.2.9 CODE 'SUBJECT DISCIPLINARY DIFFERENCES'

Code name: SUBJECT DISCIPLINARY DIFFERENCES {20-11}~
Number of quotations linked to this abstract code: 20
Code comment: A collection of codes and direct quotations that support the notion that there are vast differences in research practices, criteria and assumptions across subject disciplines.

Differences in subject disciplines' research definitions, research practices, research needs and, by implication, research evaluation criteria were articulated in great detail by the interviewees. These subject disciplinary differences in turn fuel the control, power, ownership debate and in the interviews with senior managers who identify strongly with their different faculties (subject disciplines)[92] it became apparent that the dynamic between these two factors is volatile. Certain interviewees commented on the tendency for subject disciplines to exercise a form of gate-keeping in order to protect their own discipline.[93]

Disciplinary differences[94] were described according to:

- The resources and infrastructure that disciplines use for research.

> P 4: (211:213)
> "The natural sciences' source of information to do research is the laboratory, Law and [the faculty] of Arts is the library, Education and Nursing is the students on campus and patients in hospitals, but the Management Sciences' information is in the business world."

- The subject disciplinary conventions of group research or solitary research.

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[92] Code: Allegiance to own discipline {1-1}

[93] Code: Gate-keeping – protect own discipline {7-1}

[94] Code: Subject disciplinary differences {20-11}

In some of the disciplines, research is seen as being a solitary exercise and in others research is done in groups.

P 7: (321:323)
". . . you know [subject discipline name] is a very different thing to science or maybe something else where you are dependent on somebody else . . ."

- The research paradigm in which the discipline predominantly works and the nature of traditional research in the subject area.

P 8: (27:31)
. . . When people talk about research, people tend to have a framework or notion with respect to research in Humanities or research in Social Science, research in pure Science. But when you talk about [subject discipline's name] research, it is very difficult to distinguish applied research from blue sky research . . ."

- The acceptance of external scrutiny in different disciplines.

For some disciplines, as a result of the human interest nature of their field, scrutiny of external parties such as government councils and professional boards has become part of the subject discipline's research protocol.

- Student numbers

This factor relates to the student numbers that popular and less popular subject disciplines have to deal with. This implies that the smaller the undergraduate student numbers the less likelihood there is that large numbers of postgraduate students, who stimulate research output, will be generated.

P11: (235:237)
". . . it's very difficult to compare [x] with [y] because in [x] you can have 500 students sitting in a class with one lecturer . . . In [y you have very few students and lots of practical work] . . ."

- The capital-intensiveness of the subject discipline.

> P12: (245:249)
> "[research equipment] is capital-intensive. . .and therefore we do a lot of cross-subsidization between areas that are not as capital-intensive and other areas that are . . ."

The current definition of research and whether a particular discipline and its research output could fit into the definition. The ability of a particular discipline to earn research income from industry or through government subsidy as a result of the definition that is given to 'research'.

> P 7: (412:416)
> "[Researchers do] . . . product development. The [funds] are not earned through subsidy which then pays for a conference attendance or a publication of a book necessarily. They are there to either create moulds, or to . . . develop the prototypes . . ."

The definition of what constitutes research is therefore a contentious but very important one. The interviewees all gave different definitions, and this leads to the conclusion that there is a need for clarification of the understanding and interpretation of the concept of research.

5.2.10 CODE 'DEFINITIONS OF RESEARCH'

Code name: DEFINITIONS OF RESEARCH {0-10}~

Number of quotations linked to this abstract code: 14

Code comment: Various definitions were given for research, as contained in this code. The differing opinions about what constitutes research indicated a need for a clarification of what is seen as research in the institution. A tolerance for different understandings of the concept of research is implied by the need for the broadening of the definition of research.

Figure 5-4 illustrates the need for a definition of research[95] – i.e. what at institutional level is viewed as research and in turn what at subject disciplinary level is viewed as research. This has arisen as a result of the varying opinions regarding the topic of research at the subject disciplinary level. Different definitions of research will also *influence* the definition of what constitutes an academic job. There will be more discussion of this code later on. The definition of research (as previously explained) and what type of research is appropriate for a developing nation is further complicated by the needs of the society that the university serves:

> P 8: (16:23)
> "So for example if you are in a highly developed country, where there is a need to develop knowledge to such an extent that you can afford to have knowledge for the sake of knowledge, you define your research agenda accordingly. If you are in a less developed country where there is a need to generate knowledge for the sake of generating knowledge because you want to be internationally accepted and competitive . . . but at the same time there is a dire need to solve issues within the environment, then that agenda must also be defined accordingly. So it is not a simple one of definition, it is relative to the context and to the institution."

[95] Code: Need for broader clarification of research – definition {8-5}

The definitions of research become key factors that *influence* and drive the tangible research management factors (next network to be discussed) as well as the degrees of scholarship (what is seen as scholarship).

5.2.11 CODE 'DEGREES OF SCHOLARSHIP'

Code name: DEGREES OF SCHOLARSHIP {1-11}~

Number of quotations linked to this abstract code: 6

Code comment: Degrees of scholarship as articulated by an interviewee and associated with promotion criteria and selection of academic staff.

Control, power and ownership and its associated gate-keeping of, for example, professorial titles, *result in* degrees of scholarship. The different meanings and interpretations of research further *influence* the interpretation of scholarship, and the definition of an academic job *results in* the reinforcement of degrees of scholarship. This means that, in effect some forms of scholarship are viewed as more important than others. This inequality in scholarship is reinforced through the tangible organizational research management factors such as promotion and recognition.

The degrees of scholarship that were articulated by one of the interviewees were as follows:

Top band

P 8: (420:422)
". . . a certain percentage on top with very high scholarship, where you might have your A-rated researchers and so on . . ."

Maintenance mode researchers

P 8: (423:427)
"Then below that you need a band of what I call maintenance-mode researchers . . . you're just hitting the one paper every two years . . . and included in this band are people that get a research grant - little bits of money here and there, supervising postgraduate students as part the whole deal . . ."

Lecturing and tutoring band

> P 8: (427:430)
> "And then you get a small band at the bottom that's doing a bit of tutoring and lecturing. Not too much of research, but might be linked to one of the groups on the next tier. And I would not really call them researchers as such; they will be the typical lecturers."

The interviewee indicated that the fact that the merged university will be a comprehensive institution will no doubt influence the number of lecturing-only academics that the merged university will have:

> P 8: (451:452)
> "Perhaps the bottom band will be a bit thicker in a comprehensive institution . . ."

Degrees of scholarship in turn *influence* the research culture and *direct* tangible HRM instruments and practices. The research culture reinforces 'the way we do things', and the degrees of scholarship form *part of* the cultural symbols such as the title of 'Professor' or 'Researcher'. HRM instruments and practices are built around the definitions that are given to the degrees of scholarship – e.g. remuneration levels and promotion prospects. The code 'HRM instruments and practices' is discussed in detail under the network 'Tools for organizing people and resources'. The code 'Definition of an academic job' is discussed next.

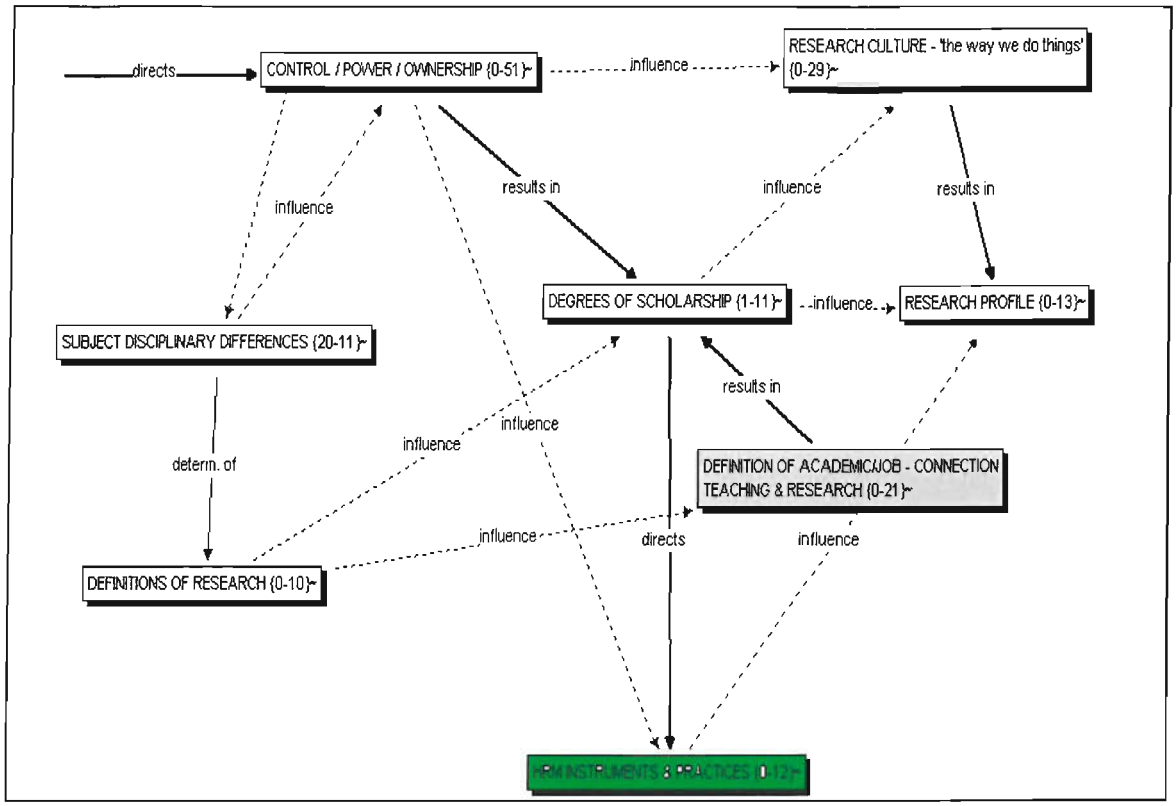

Figure 5-4: Excerpt of intangible research factors – bottom of network

5.2.12 CODE 'DEFINITION OF AN ACADEMIC JOB – CONNECTION BETWEEN TEACHING AND RESEARCH'

Code name: DEFINITION OF ACADEMIC/JOB - CONNECTION TEACHING & RESEARCH {0-21}~

Number of quotations linked to this abstract code: 50

Code comment: Codes indicating the various opinions regarding the definitions of an academic job and the associated teaching and research nexus.

The definition of an academic job, in other words what makes up an academic's roles and tasks, *results in* the notion of degrees of scholarship because academic jobs vary according to the amounts of time spent on teaching and research. Therefore each academic's job lies on a 'time-spent' continuum, with teaching on the one end and research on the other.

All interviewees were in agreement that an academic job had to contain both teaching and research,[96] with emphasis being placed on at least half of work time spent on research,[97] as a result of the current over-emphasis on teaching in the majority of academic posts. The differences in time spent on research or teaching occurred between subject disciplines and the workload of academics, especially with reference to student numbers.

The concept of an 'academic', however, was clearly understood as a person who could do research[98] and not a person who just did teaching. The latter was referred to as a lecturer or a tutor.

> P 1: (101:101)
> "And if you cannot publish then you aren't an academic. End of story."

Research, as part of the duties of an academic, was seen as the catalyst for the general improvement of academia[99] and the quality of research and the quality of teaching were seen as interdependent.[100] Teaching was seen as a way of keeping up with research[101] and research was seen to lead to fresh teaching perspectives.[102] There was no agreement as to whether there is a link between good researchers and good teachers (and the converse).[103] There was some support for the notion that good researchers should be used to teach undergraduate students, since this is where an interest in the subject discipline begins and where young researchers are nurtured.[104]

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[96] Code: Academic job – never just research {4-2}, Academic job – never just teaching {10-4}, Academic job – research and teaching {1-2}

[97] Code: Academic job – ½ time research {2-2}

[98] 'Academics' do research, not just teaching {6-3}

[99] Code: Research seen as catalyst for general improvement of academia {2-1}

[100] Code: Research and teaching quality interdependent {6-1}

[101] Code: Teaching assists you in keeping up with research {1-3}

[102] Code: Teach – research leads to fresh teaching perspectives {2-4}

[103] Code: Teach – good researcher not equal to good teacher {1-3}, Code: Teach – good researcher = good teacher {1-3}

[104] Code: Teach – good researchers undergraduate teaching {3-2}

The concept of community service was articulated by one interviewee as follows:

> P 7: (260:260)
> ". . . in [another country] academics do a lot of social upliftment work."

Some interviewees indicated that academics should be critical thinkers:[105]

> P10: (327:329)
> ". . . it's the responsibility of academics to be intellectually critical and the last thing what we'd want in this new university is a culture of compliance."

Separate research and teaching career tracks were mentioned by some of the interviewees as an option, although the combination of both teaching and research in an academic job was still preferred.[106] The paradigm adjustment that would be necessary for these separate tracks, especially a research-only career track, was elaborated on.[107]

The definition of an academic job therefore *influences* HRM instruments and practices through degrees of scholarship. Once the definition of an academic job has been clarified and the degrees of scholarship are defined, then the degrees of scholarship *direct* the tangible organizational factors, but more specifically the Human Resource Management instruments and practices, such as selection, promotion, etc. The degrees of scholarship, together with the definitions of research, provide a framework for research management, which informs research management as well as individual researcher evaluation and facilitation.

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[105] Code: Academics intellectually critical not compliant {2-4}

[106] Code: Separate teaching and research career tracks {7-1}

[107] Code: Separate career tracks – paradigm adjustment {2-1}

A good research profile is the ultimate aim of research management and is discussed next.

5.2.13 CODE 'RESEARCH PROFILE'

Code name: RESEARCH PROFILE {0-13}~

Number of quotations linked to this abstract code: 27

Code comment: The code reflects the institutional as well as individual factors that influence research profile. The code is associated with other codes that encourage or impede the research profile of individual researchers as well as that of the institution.

The degrees of scholarship *influence* the behaviour of individual academics since they form a framework in which academics are evaluated and appraised. Control, power and ownership represent the dynamics between the managers/leaders in the research management environment. Together these two intangible factors strongly *influence* the research culture of the institution, which *results in* the positive or negative research profile of the institution.

Research profile further comprises experienced and strong researchers[108] and their evaluation by external bodies.[109] The external bodies such as the government and the NRF[110] use research output volume[111] as well as consistency of outputs[112] as strong indicators of a researcher's status and by implication an institution's research profile. These bodies, in many instances, still make judgments of the value of research output based on the positivist notion of 'true research'.[113]

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[108] Code: Status – experienced and strong researchers {1-1}

[109] Code: Status – external bodies give status {6-4}

[110] Code: Experienced researchers – NRF rated {1-2}

[111] Code: Status – output volume important {1-2}

[112] Code: Status – consistent r outputs increases profile of academic {1-0}

[113] Code: Status – elitist positivist notion of true research {3-1}

P 4: (195:197)
"Research is very wide. You get a type of research snobbery where guys say that if you don't do a minimum of three rotations in a factor analysis for an article then you are not doing research."

Together with the above complication in the determination of research profile goes the fact that the language of research dissemination can limit a researcher's audience. Publication in Afrikaans was mentioned as an example[114] of this limitation.

One interviewee indicated that the public, to a certain extent, determines the research profile of an institution largely through what they perceive as socially relevant research. Socially relevant research in turn is conducted and publicized through research groups.[115]

P14: (170:173)
". . . it is also a good opportunity to advertise, for people external to the university to see, that here's a group of people who are conducting research around a specific theme."

A good research profile is ultimately that towards which the merged university will work when considering its research mission, as this is also the focus of the tangible organizational research management factors. The tangible factors network will be discussed next.

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[114] Code: Research dissemination – in Afrikaans a limitation to institution {1-1}

[115] Code: Research groups – give status and exposure to institution {1-0}

5.3 THE TANGIBLE RESEARCH MANAGEMENT FACTORS NETWORK

The tangible factors that are present in the organizational research management environment are presented in figure 5-5. The tangible factors are those factors in the research environment that are physically observable and usually measurable and/or quantifiable. These factors were distilled from the interview data by the identification of tangible factors relating to the following aspects in the organizational research management environment:

- the actors in the research environment, i.e. (people and organizations);
- the organizational structures of research management – i.e. such as the subject disciplinary level, faculty level, and institutional or central level within the organizational hierarchy; and
- the research process and its relations between factors.

Although all the tangible factors that are indicated in figure 5-5 are really important for the functioning of a full research management environment, certain of the tangible factors are absolutely essential factors, without which a university research environment would not exist or be able to function. In order to identify these factors I kept in mind a picture of a very micro-level research process, i.e. research that occurs at subject discipline level. Taking such a process as an example, I worked through all the tangible factors in the tangible network (refer to figure 5-5), and identified the absolutely essential tangible factors that would be present in such a micro-level research process. These essential factors have been indicated in orange in figure 5-5 and are:

- Researchers;
- Teaching;
- Workload of an academic;
- Post graduate students;
- Research / disciplinary level;
- Subject discipline level management;

- Research development;
- Dean's role;
- Dissemination; and
- External environment – general.

In order to explain my thinking in determining the absolutely essential factors and following on figure 5-5, I started with the research process at the subject disciplinary level. Research revolves around academics (researchers) who also teach and collaborate with postgraduate students in order to research. The workload of an academic, and specifically an academic's teaching workload, creates the context for active or non-active participation in research. The workload of academics and other intangible factors such as degrees of scholarship etc. *direct* the institution's human resource management (HRM) practices. At a very basic level, these HRM practices revolve around pay and promotion. The academics operate at the subject discipline level where the research development of other academics also takes place. Researchers interact with the general external environment which includes actors such as the Department of Education, research funding agencies, professional bodies, publishers, etc. through the mechanism of dissemination of research, thereby obtaining funds to *support* their research activities. The dissemination of research creates a positive or negative research profile for individual academics and by implication for the institution. Deans manage groupings of academic subject disciplines, thereby exerting great *influence* over the subject disciplines' research operations, but research is not necessarily managed from the faculty level, although *support* for research administration may very well come from this level. The description as provided in this paragraph could be the full description of research management for many universities that are not research-intensive.

Additional tangible factors were highlighted in blue in figure 5-5 and are factors which I propose exist in some, but not all, university research environments. These are non-essential factors for a research management environment to exist. These non-essential tangible factors (indicated in blue) are:

- Inter-disciplinary research;
- Inter-institutional research;
- The industry as part of an external environment;

- The international environment as part of the external environment;
- Commercialization and knowledge transfer;
- Faculty level management (excluding the dean's role); and
- A centralized research management cluster as part of the organizational hierarchy.

A university's research environment could exist without the abovementioned seven factors, though whether such an environment would be effective and efficient, if the aim is to support a research-intensive university, is doubtful. One intangible factor, which is indicated in grey, is presented in figure 5-5.

The presentation of data starts on the left hand side of the network with the code 'Researchers'.

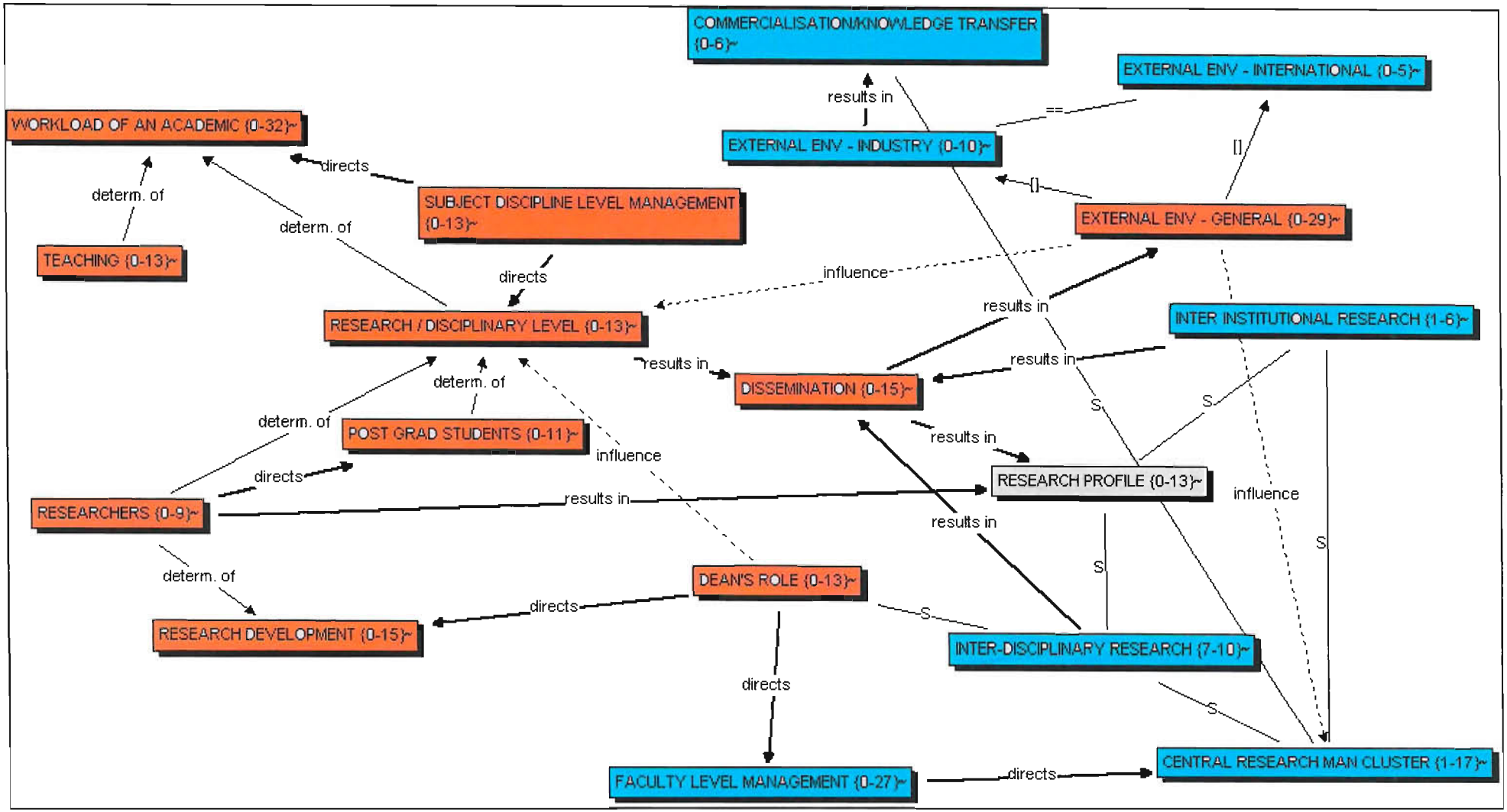

Figure 5-5: Tangible research management factors

5.3.1 CODE 'RESEARCHERS'

Code name: RESEARCHERS {0-9}~

Number of quotations linked to this abstract code: 18

Code comment: Factors that are tangible (can be seen) relating to the academics who actively conduct research at the institution.

A tangible factor that was discussed by interviewees in relation to researchers was that productive researchers were experienced. These experienced researchers[116] were responsible for the quick delivery of PhD students[117] as well as other forms of research output and are the people who are mentors[118] in a research development capacity. For research development to occur, researchers need institutional support and experienced as well as young researchers.[119]

The experienced researchers act as champions[120] in their area of speciality. This is the most important form of research leadership as there is passion about the research area and the champion inspires fellow colleagues and students regarding research.

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P 4: (112:115)
". . . but I still think that your big stimulus for
research, in different environments, is certain
individuals. Somebody who is ready and feels like
doing research. Such a person, over time, pulls
colleagues along and then it becomes a facilitative
unit/team . . . specific individuals with a specific
research orientation . . ."
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[116] Code: Experienced researchers {4-2}

[117] Code: Experienced researchers – quick delivery of PhDs {1-1}

[118] Code: Experienced researchers – mentors {18-5}

[119] Code: Support – young and good potential researchers {12-1}

[120] Code: Champion {12-7}

Research champions are regarded as the heart of research within the different research disciplines and interviewees were clear that the loss of champions,[121] especially through a lack of research funds, would have dire consequences for the institution.

> P 7: (288:288)
> ". . . you take one or two people often [sic], out of such an equation . . . and then the ratings drop."

Research is said to begin with postgraduate students[122] and the improvement of academic staff members' qualifications.[123] These two factors were emphasized by interviewees and imply that if the institution wants to initiate research as an activity amongst staff members, it would have to seriously invest in the improvement of their qualifications, whilst at the same time retaining the university's good reputation for postgraduate studies, thereby encouraging postgraduate students to enrol at the merged university.

Another tangible that was mentioned as a factor that stimulates research for researchers was the use of research groups. These were described in various ways:[124] as formal centres that exist within subject disciplines[125]; groups that are formed through faculty-based formal policy, i.e. programme groups; or spontaneous groups that form around an interest in a particular area of research speciality.[126] Research groups have a definite research focus[127] and were described by interviewees in different ways: as broad themes, research focus areas, focus groups, research themes, etc.

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[121] Code: Champions {12-7}, Code: Champions – lack of funds = loss of champions {1-2}

[122] Code: Research begins with postgraduate students {9-6}

[123] Code: Research begins with own qualification improvement {14-4}

[124] Code: Research groups – definition {3-1}

[125] Code: Support units that conduct research within departments {1-1}

[126] Code: Research groups – dynamic and spontaneous forming of... {4-1}

[127] Code: Research groups – give focus to research {6-0}

P12: (207:211)
"Research group - it is a focus group. A Centre in this university has a definition and you have to go a long way to get it approved . . . it has regulations . . . research groups, [on the other hand] if the dean approves them, then they are founded. You then have a normal audit procedure. There is a trust fund allocated to it and the research groups report to the research committee which actually reports directly to the dean."

Although faculties differed in their formalization of research groups, the emphasis remained on deriving the research focus areas from the researchers themselves and steering clear of red tape[128] in the process of setting up and recognizing such a research group. It was also emphasized that researchers in the research group should have autonomy in the way they used their group's funds.[129]

P12: (217:218)
"That group is also democratic. The group chooses the leader . . . money is managed and then you get research outputs . . ."

Other tangible factors that the interviewees described in connection with researchers was that rotating professorships and research fellows,[130] as well as the involvement of librarians[131] in the full research process, enhanced research output.

Researchers are what *drives* research (refer to figure 5-5) and their research output is enhanced by interaction with postgraduate students, whom they coach in the research process but also through whom they learn. Researchers therefore *direct* the tangible factor 'Post grad students', and this *results in* a research profile for the institution.

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[128] Code: Red tape – too much work involved {2-5}

[129] Code: Funds – individual researcher autonomy of use {1-0}

[130] Code: Rotating professorship, research fellow stimulates research {1-1}

[131] Code: Librarian – assist with teaching, searchers and evaluation of theses {2-0}, Code: Librarian – research focus and vested interest in research {1-0}

The time researchers have available to conduct research at the institutions under investigation, however, is determined by an interaction between time spent on teaching and general teaching practices as a *determinant of* the workload of an academic. Teaching is discussed next.

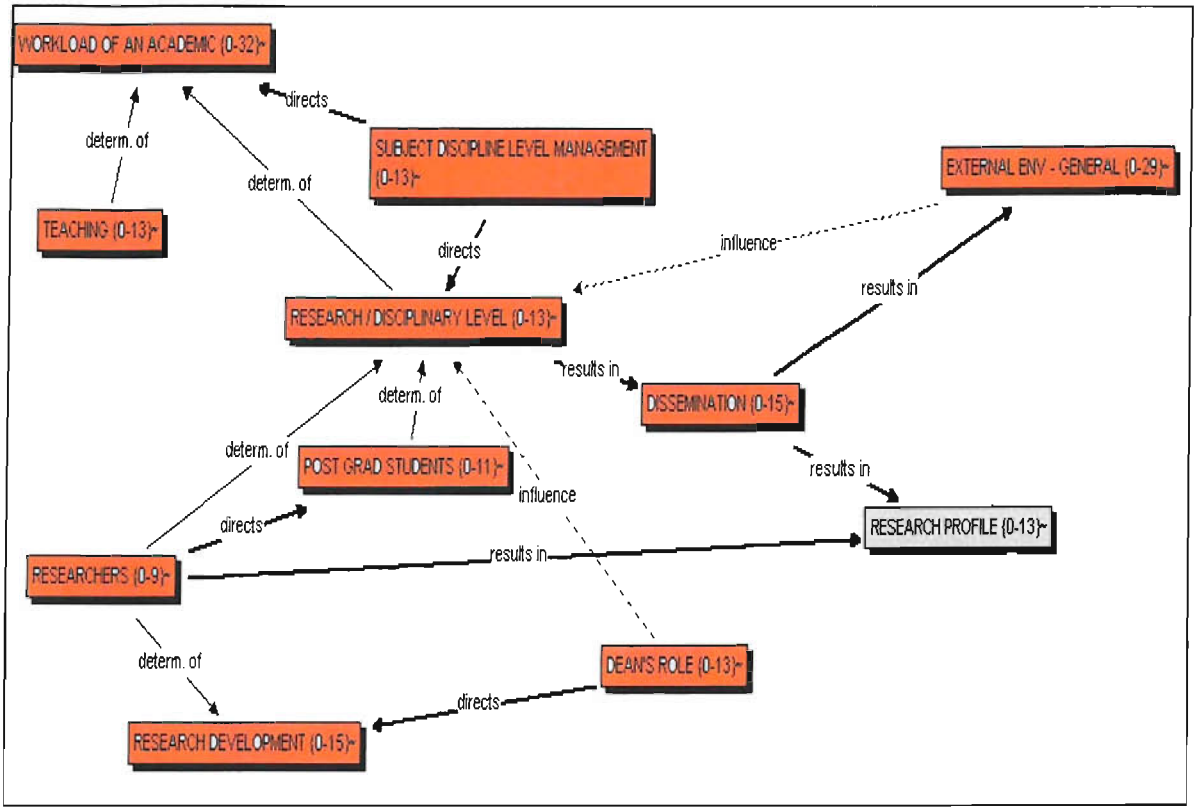

Figure 5-6: Excerpt of tangible research factors – essential factors

5.3.2 CODE 'TEACHING'

Code name: TEACHING {0-13}~
Number of quotations linked to this abstract code: 28
Code comment: All aspects relating to teaching including practices, teaching workload, teacher characteristics and teaching effectiveness.

The interconnectedness of the teaching and research functions of a higher education institution was emphasized in all of the interviews. Participants emphasized the inter-

connectedness of teaching and research through the influence that teaching and research have on the quality of work[132] of each as well as through the impact that both teaching and research have on the workload of an academic.[133]

> P14:(16:19)
> ". . . and I am of the opinion that an active research culture is very closely connected to quality work, not only in research, but also with regard to teaching, within a faculty. I think the two are inextricably interwoven."

With regard to the influence that both teaching and research have on academics' workload at the institutions, participants indicated that teaching loads have increased tremendously over the last few years [134] as a result of the intake of many undergraduate students, old-fashioned notions of teaching[135] as well as over-teaching – specifically at the technikon.[136] The high teaching load *causes* the workload of an academic to increase and detracts from the time available to conduct research (refer to figure 5-6).

Where departments are small, the involvement of all academics in both teaching and research seems more prevalent. There was no clear opinion as to whether a good researcher is a good teacher or that a good researcher is a poor teacher,[137] which indicates that the evaluation of teaching quality cannot be directly linked to a person's ability to conduct research. The majority of participants did feel, however, that

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[132] Code: Teach – research leads to fresh teaching perspectives {2-4}, Code: Teaching assists you in keeping up with research {1-3}

[133] Code: Teaching load – increased {1-5}

[134] Code: Impede research activity – student numbers {6-7}

[135] Code: Teaching improvements necessary {7-2}, Code: Teaching practices – emancipated = good perf. Students {1-2}

[136] Code: Over teaching {4-9}

[137] Code: Teach – good researcher not equal to good teacher {1-3}, Code: Teach – good researchers = good teacher {1-3}

researchers should be involved in undergraduate teaching,[138] since this stimulated students' interest in furthering studies in a particular subject discipline.

> P14: (329:333)
> ". . . I just mentioned that the two things [teaching and research] are actually, to my mind, connected and I am of the opinion that you should actually have more experienced personnel, your researchers, especially in the lower classes because I think a student's interest is around the first year, second, third year. That's where a person arouses a student's interest in a specific area."

Participants did indicate that institutions place too much emphasis on external imperatives, such as government funding and government's incentives regarding the massification of higher education, and this *causes* a drift of focus for academics into teaching instead of research.

To return now to the 'quality of work' dimension expressed by participants about teaching, it was felt that excellence in teaching informs the research process.[139] Acknowledgement was given to the need for recognition of teaching excellence[140] and how this supported the balance between teaching and research.

Teaching (including teaching quality) is therefore a *determinant of* workload for an academic, which brings us to the code 'Workload of an academic'.

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[138] Code: Teach – good researchers undergraduate teaching {3-2}

[139] Code: Teaching assists you in keeping up with research {1-3}

[140] Code: Rewards – teaching excellence {1-1}

5.3.3 CODE 'WORKLOAD OF AN ACADEMIC'

Code name: WORKLOAD OF AN ACADEMIC {0-32}~
Number of quotations linked to this abstract code: 52
Code comment: All aspects that influence the general workload of an academic staff member, excluding aspects regarding teaching specifically.

The workload of an academic greatly *influences* an academic staff member's capacity to conduct research, although, as previously explained in detail under the code 'Definition of an academic job – connection between teaching and research' in the intangibles section, the workload of an academic was explained as including both teaching and research.

Measurable elements that influence the load of an academic were cited as the following:

Staff ability to conduct research and teach.[141] Some staff members do not have the skills to conduct research or teach effectively. For those who do not have the right skills, development has to take place. Staff development does however place a burden on the staff members who support the developing member since the developing member is not able to carry a full load.

Student numbers.[142] Certain subject disciplines have very high levels of undergraduate and postgraduate student numbers. Different levels of expertise are necessary to service the needs of these levels of students. High student numbers at an undergraduate level leads to high levels of assessment work. High levels of undergraduate student numbers were indicated at both institutions (between 250 to 3000 students per undergraduate subject). Each subject would have one academic staff member allocated to it.

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[141] Code: Research expectation – threatening {4-2}

[142] Code: Impede research activity – student numbers (6-7}

High levels of postgraduate students lead to high research supervision loads. High student numbers at a postgraduate level were indicated as 50+ students in a postgraduate programme with as many as 300 students per programme at a Master's degree level.

Staff numbers.[143] The university followed a staff efficiency model with a preference for hiring part-time lecturers. The efficiency model did not keep pace with the growing student numbers, and this led to very few permanent academic staff members for the institution and very high student-to-staff ratios for certain subject disciplines.

Number of external imperatives such as external quality assurance, committee work,[144] etc. External factors within the higher education sector have influenced the functioning of institutions tremendously. Influences have emerged through external quality assurance bodies such as the South African Qualifications Authority (SAQA), mergers of higher education institutions such as the one in which these two institutions are engaged, etc. Participants indicated that these imperatives drained away time that academics could have spent on teaching or research.

Time available.[145]

The influence of postgraduate students on research is discussed next.

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[143] Code: Impede research activity – staff numbers {4-6}

[144] Code: Impede research activity – management, merger, committee work (2-4}, Code: Impede research activity SAQA {1-2}

[145] Code: Impede research activity – lack of time {6-4}

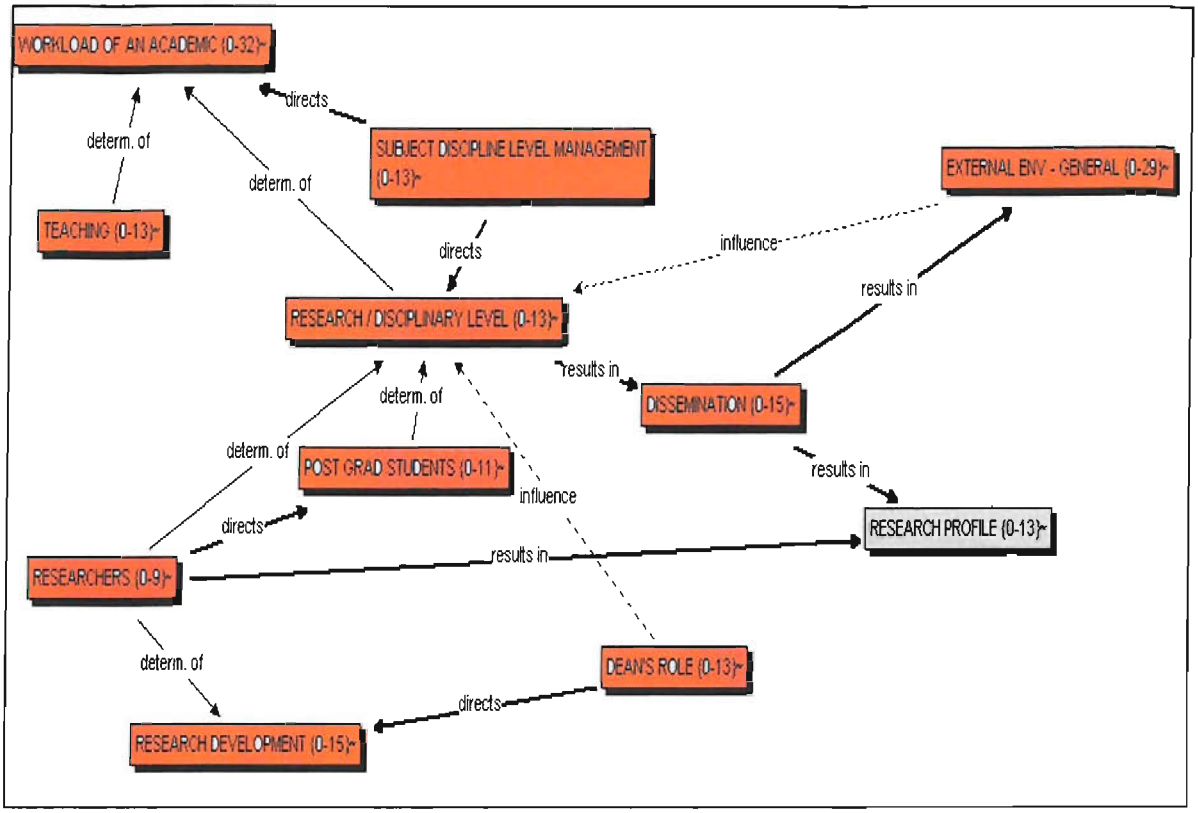

Figure 5-6: Excerpt of tangible research factors – essential factors

5.3.4 CODE 'POST GRAD STUDENTS'

Code name: POST GRAD STUDENTS {0-11}~
Number of quotations linked to this abstract code: 19
Code comment: Grouping of tangible factors into codes associated with postgraduate students in their role as students being coached and directed by researchers.

Interviewees commented that research at a higher education institution starts with the academic personnel of the institution improving their own qualifications and secondly with the availability of postgraduate students.[146] This has definite implications for the planning of student intake at the institution, since a high priority should be placed on recruitment of postgraduate students in order to maintain a good research profile.

[146] Code: Research beings with post grad students {9-6}

Postgraduate teaching is furthermore linked to teaching specializations,[147] which once again emerge from the subject disciplinary level. These specializations should however be known to the outside world so that they can attract the attention of potential postgraduate students.

The management of postgraduate students and their specific requirements was discussed, and in faculties in which many postgraduate students were registered there was an indication that a separate management unit should be responsible for them.[148]

High postgraduate student numbers do not automatically translate into research output and even if postgraduate students do graduate,[149] research subsidy income can further be enhanced through a practice of insisting that before a student can graduate, a publishable research article should be delivered.[150]

> P11: (65:66)
> ". . . you know research is only useful if you take the results and publish it . . ."

The conversion of high postgraduate student numbers into research output requires a set of good researchers at the institution and a healthy research environment for research that occurs at the subject disciplinary level. The combination of researchers and postgraduate students is a *determinant of* research that occurs at the subject disciplinary level (refer to figure 5-6 code 'Research/Disciplinary level'), therefore research has to be managed by the 'Subject disciplinary level management'. 'Subject discipline level management' therefore *directs* the 'research that occurs at subject disciplinary level'.

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[147] Code: Postgrad teaching linked to research specializations {1-2}

[148] Code: Postgrad number high – full time person to manage (2-2}, Postgrad numbers – high – managed differently from high undergrad stud # {1-2}

[149] Code: Post grad – transform into outputs {2-2}

[150] Code: Postgrad – publication required to get degree, Code: Postgrad – transform into outputs

A discussion of 'Research at subject disciplinary level' follows next.

5.3.5 CODE 'RESEARCH / DISCIPLINARY LEVEL'

Code name: RESEARCH / DISCIPLINARY LEVEL {0-13}~
Number of quotations linked to this abstract code: 39
Code comment: Quotations associated with the occurrence of research at subject disciplinary level as opposed to the management of research at subject disciplinary level.

A micro-level research process was not probed during interviews, although research at subject disciplinary level and the importance of the management of operations at subject disciplinary level were mentioned frequently. This gave rise to the identification of an abstract code called 'Research / Disciplinary level'.

The major difference between research at the subject discipline level at the technikon and the university is found in the decentralized manner in which the university manages research operations at the subject discipline level. The academics are totally responsible for all the facets of managing postgraduate students and their own research at this level. In the technikon, research operations are centralized under the research manager at faculty level and thereafter further centralized at institutional level. Research at the university is well established and therefore even technikon interviewees commented that research is driven from the subject discipline level, the locus of research for the institution.[151] The emphasis was placed on a bottom-up approach to the creation of research energy for the institution instead of a top-down push from the institutional level.

The process of research at disciplinary level is totally dependent on the manner in which management at subject disciplinary level is done (hence figure 5-6 indicates

[151] Code: Disciplinary level – research & RM done within micro discipline {16-6}

that subject discipline level management *directs* research at disciplinary level). This is as a result of the fact that the management of academics at subject discipline level *directs* all the aspects[152] of the workload of an academic.[153] The workload determines whether academics have time for research and research development. Human resource management practices also have a great impact on the management of academics at the subject discipline level since interviewees indicated that the lack of talented individuals who could potentially join academia could lead to the death of important disciplines[154] at the institution and within South Africa.

The most important aspect regarding the code 'Research/Disciplinary level' is that the majority of interviewees strongly indicated that the locus of research was at the subject disciplinary level.[155] This means that an interest in research, a passion for research and the commitment to research originates from the subject disciplinary level and not the institutional level.

> P11: (364:365)
> ". . . if [research is managed] . . . in a department, it gets driven, and it goes [sic] even better . . ."

Subject discipline level management is discussed next.

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[152] Code: Comprehensive management of all aspects of a discipline {2-2}

[153] Code: Staff capacity – management task {0-5}

[154] Code: Lack of talent – death of disciplines {1-3}

[155] Code: Disciplinary level – research and RM done at disciplinary level {16-6}

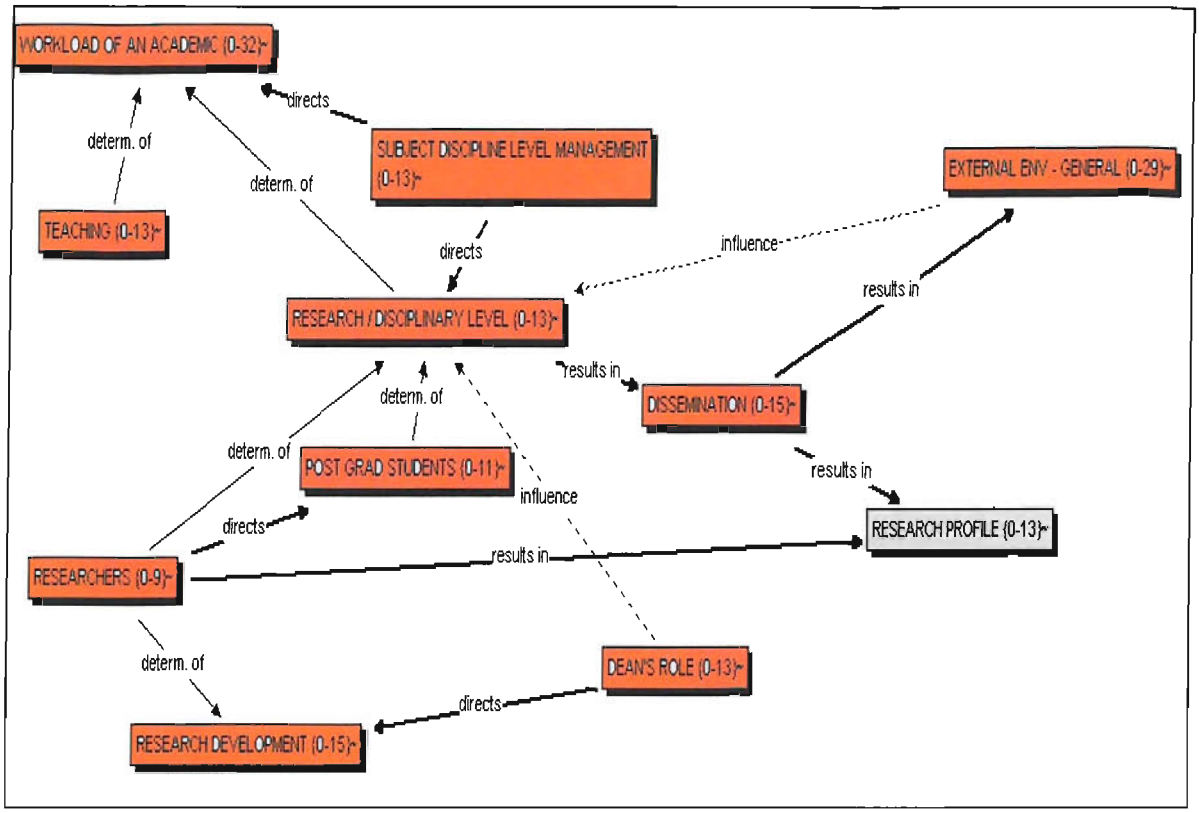

Figure 5-6: Excerpt of tangible research factors – essential factors

5.3.6 CODE 'SUBJECT DISCIPLINE LEVEL MANAGEMENT'

Code name: SUBJECT DISCIPLINE LEVEL MANAGEMENT {0-13}~

Number of quotations linked to this abstract code: 30

Code comment: The organizational hierarchical level at the subject discipline level and its associated management roles and responsibilities.

Tangibles that were derived from the interview data about subject discipline level management roles and tasks related directly to the creation of research opportunities for researchers at the subject discipline level.[156] This *directs* the workload of an academic since it is where research predominantly takes place within the

[156] Code: Create research opportunities {1-0}

institution.[157] An assumption of the interviewees was also that all subject disciplines were striving to be the best in their field internationally.[158]

Departmental leadership was discussed at length as *part of* the subject discipline level management and was strongly indicated as a very important *part of* the institutional research environment since research at subject discipline level is the locus of research. Departmental or subject discipline level leadership is headed by a senior academic and should be supported by a deputy departmental leader(s).[159] Departmental leaders are academics who have research experience[160] but are not necessarily the best researchers in a department.[161] Research management activities that occur at departmental level are:

- Career planning of academic staff members;[162]
- The creation of a research culture predominantly through encouraging research and placing emphasis on the importance of research;[163]
- Performance management;[164]
- Research fund allocation and management;[165] and
- Mentorship and research development.[166]

Research development is therefore *caused* by a need for more researchers (refer to figure 5-6) and is discussed next.

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[157] Code: Disciplinary level – research and RM done within micro discipline {16-6}

[158] Code: Striving to be best in discipline internationally {1-0}

[159] Code: Departmental leadership – senior personnel {1-1}, Code: Deputy departmental leader – succession planning and training {1-1}

[160] Code: Departmental leadership – research experience {2-1}

[161] Code: Departmental leadership – not the strongest researcher {2-1}

[162] Code: Departmental level – career planning {1-1}

[163] Code: Departmental level – encouragement {1-2}

[164] Code: Performance consequences {8-1}

[165] Code: Decentralized research funds to departments {1-1}, Code: Empower academics with control over own funds {1-1}

[166] Code: Departmental leadership – mentorship {1-1}

5.3.7 CODE 'RESEARCH DEVELOPMENT'

Code name: RESEARCH DEVELOPMENT {0-15}~
Number of quotations linked to this abstract code: 34
Code comment: Actions to be taken in order to develop research.

The university's notion that research development happens naturally is built on the assumption that academics are employed to conduct research and teach, and that the rules of promotion in academia are explained to them upon entering the academic world.[167] In reality, academics are sometimes employed to teach only, and the rules of academia are in most instances not explained at all,[168] so research development does not necessarily happen 'naturally'[169] in a modern university.

Research development was furthermore described as 'something more than the training of researchers'.[170] It was described as inclusive of development of young and potentially good researchers (inexperienced researchers) as well as senior and experienced researchers (experienced researchers). For inexperienced researchers the research development focus would be on research training and ensuring that there are research opportunities within a developmental research environment where they can safely practise their research skills in collaboration with more senior researchers. In terms of research development for senior researchers, a developmental environment, in which people are allowed time and resources,[171] has to exist, where the researchers would be more directive in identifying their own research development needs in comparison to the inexperienced researchers. Research development therefore has to be valued in the research environment by ensuring that there is congruence between all the environment factors regarding its value – e.g. that performance criteria support

[167] Code: Explain the rules of academia {2-1}

[168] Code: Explain the rules of academia – they will soon learn what the rules are {1-2}

[169] Code: Research development – does not happen naturally {1-0}

[170] Code: Research development – not just training of researchers {2-1}

[171] Code: Research development support fund – supports teamwork and external funding {1-1}

development, etc. It is a continuous process within the research environment and should be supportive of all researchers within the environment.[172]

An interviewee explained that inexperienced researchers should not be removed from the subject discipline and placed into a separate research unit to try to fast-track their research development process since the mentorship of a particular subject discipline lies within the subject discipline at departmental level[173] and this mentorship is part of the maintenance of a research culture. Removing researchers from their subject discipline would suggest that research is separate from all the other academic activities in that discipline.

> P2: (236:240)
> ". . . [academics] want to begin to study further, some of them want to become involved in research, and at this stage at [the other institution] . . . [research development] is done by removing such people from a department and placing them in a small institute . . . this is wrong, those people should remain in the departments. [Within the department] there will be a natural form . . . of mentorship. . . . in their departments . . . You encourage [inexperienced] researchers . . . you support them by giving them advice . . ."

Researchers are therefore cultivated and developed through mentorship and a great deal of exposure to the research culture of the subject discipline.[174] The mentorship of inexperienced researchers in the new university may lead to an overload of experienced researchers who also have to *support* postgraduate students in their research efforts,[175] and the training of inexperienced researchers may also lead to a

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[172] Code: Research development – training of researchers – continuous {5-1}

[173] Code: Research development – inexperienced researchers must remain in dept. {1-0}

[174] Code: Cultivate right people through mentorship and culture {1-2}

[175] Code: Experienced researchers – overloaded {1-0}

short-term increase in workload for colleagues since the trainee has to be given development time.[176]

Interviewees suggested various ways in which research development could occur, namely:

- Co-supervision between experienced and inexperienced researchers of postgraduate research students;[177]

> 12: (115:121)
> "If you can draw in a younger or a new colleague to do research with you, as a co-study leader, firstly I think it creates new relationships, because a new colleague feels strange and then you ask him - he feels good and you feel good because you only have half the work . . . I even ask persons that don't have a doctorate degree to be a co-study leader . . . and I have a feeling that [the co-study leader] feels he has a purpose to help lead this student and something else happens, he gets ideas for his own doctorate degree."

- Collaboration on research projects with inexperienced researchers;[178]
- Providing opportunities where inexperienced researchers can be exposed to other researchers external to their institution where they get the opportunity to judge their worth against other researchers.[179] These opportunities are usually created through conferences and other networking sessions;
- Holding formal discussion forums, which are intellectual discussions held internally, to provide a platform where researchers can present their research and listen to research presentations by their colleagues;[180]

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[176] Code: Research development – short-term increase workload other academics {1-0}

[177] Code: Co-supervision junior academics – heart of research stimulation {2-1}

[178] Code: Research development – collaborate with young researchers {5-1}

[179] Code: Research development – exposure to other researchers/env. To measure up {4-1}

[180] Code: Research development – formal discussion forums {1-1}, Code: Research development – in-house conference presentation {1-1}

- Opportunities to publish in in-house journals as a stepping stone to publishing more widely later-on;[181] and
- Systemically beginning research development with research training at an undergraduate level.[182]

Owing to the fact that research development is so important in promoting a research culture within the institution, a dean of a faculty, who is the manager of a collection of similar subject disciplines, becomes a figure who *directs* research development through his/her management decisions and the priorities that he/she emphasizes (refer to figure 5-6). The dean furthermore *influences* management at a subject disciplinary level through his/her management initiatives at faculty level.

[181] Code: Research development – in-house journals good for researcher development {5-1}

[182] Code: Research training – start at undergraduate level already {1-0}

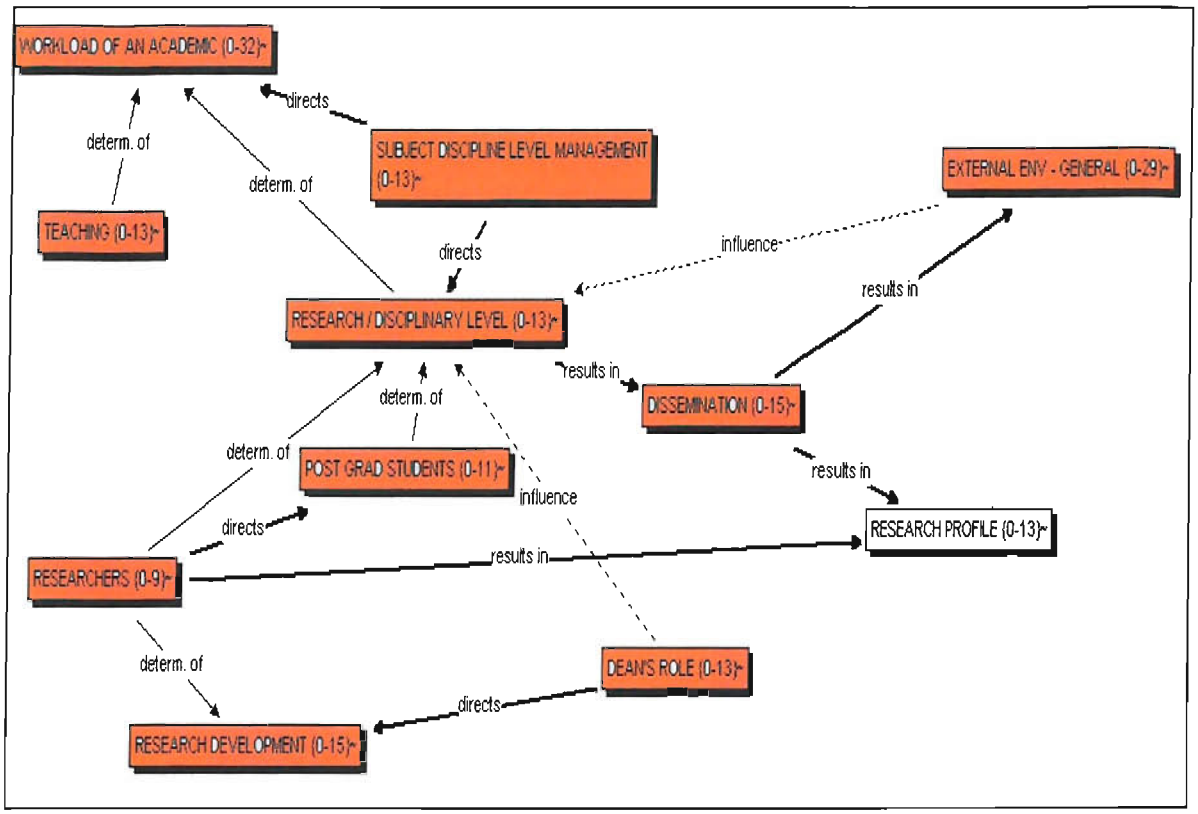

Figure 5-6: Excerpt of tangible research factors -- essential factors

5.3.8 Code 'Dean's role'

Code name: DEAN'S ROLE {0-13}~
Number of quotations linked to this abstract code: 24
Code comment: The role that the dean plays or should be playing regarding research management.

Interviewees indicated that the dean is ultimately the driver of a research culture[183] within a faculty since the dean is closer to subject disciplines[184] than a centralized research management structure. Interviewees indicated, however, that deans should not dictate to the subject discipline level what type of research should be

[183] Code: Dean driver of research culture {12-3}

[184] Code: Deans closer to discipline-based stakeholders {2-3}

conducted[185], but should rather set an example through their own research careers and communicate[186] the importance of research through the research practices that they place emphasis on or value.

> P 9: (187:189)
> "A dean has a very important role as far as research is concerned. If you're at an academic institution and you're the leader and you set the tone as far as research is concerned you need to drive research.
>
> P 11: (432:434)
> ". . . I think it's essential that deans are strong drivers in research [sic] in what they've done themselves in their own careers because then they set an example . . . people will follow."

Interviewees indicated that where deans are not research-orientated,[187] research will not flourish and that deans at the merged university will be the ones to drive research, not the research managers[188] at faculty level.

Figure 5-6 illustrates the point that the dean therefore *influences* 'Subject discipline level management' and *directs* 'Research development' that occurs at subject discipline level through setting an example and placing emphasis on research. As the head of a faculty the dean *directs* 'Faculty level management' and does or does not *support* inter-disciplinary research through her/his management decisions and actions.

The rest of the explanation of codes will continue with the codes indicated in orange on figure 5-6, as part of the absolute essentials in a research environment and will proceed with the code 'Dissemination' followed by the codes 'Research profile' and 'External Environment – general'.

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[185] Code: Dean – role not to dictate what research has to be done {1-2}

[186] Code: Communicator {1-1}

[187] Code: Dean not research-orientated {2-6}, Code: RM – hands-off approach by dean – RM must see to it {3-3}

[188] Code: Dean drives research not R manager {1-1}

5.3.9 CODE 'DISSEMINATION'

Code name: DISSEMINATION {0-15}~

Number of quotations linked to this abstract code: 23

Code comment: Quotations associated with the actions or practices of dissemination of research results.

Dissemination of research results is a key tangible factor in any research environment. Figure 5-6 shows that 'Dissemination' *results in* a link between the institutional research environment and the 'External environment in general'. 'Dissemination' also *results in* a 'Research profile' for the institution since this is the portal through which research produced by researchers at the 'subject discipline level' is made available to the external environment for various actions such as peer review, the Department of Education evaluations linked to research subsidy, funding bodies such as the National Research Foundation to evaluate the status and standing of researchers, etc. 'Research at subject discipline level' therefore *results in* a need for dissemination and so does 'Inter-disciplinary research' and 'Inter-institutional research'.

Interviewees described dissemination in various ways and two main clusters emerged indicating that particular subject disciplines either had[189] or did not have[190] good dissemination mechanisms available to them. Examples of dissemination mechanisms were:

- Conferences and exhibitions;[191]
- In-house publications;[192]
- Academic journals;[193] and
- Networking opportunities.[194]

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[189] Code: Support – dissemination mechanisms {1-1}

[190] Code: Research dissemination – no mechanisms {2-1}

[191] Code: Research dissemination – conferences {2-1}, Support – conferences {3-1}

[192] Code: Research dissemination – in-house publications {8-1}

[193] Code: Research dissemination – journals external to the institution {2-1}

Interviewees indicated that researchers would not be given funding support to disseminate research internationally if they have not disseminated nationally[195] and that publication in Afrikaans as a language medium[196] hampered the international dissemination of results. This practice by implication influenced the status of South African research in the eyes of the international research environment, since the results were not accessible to all.

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[194] Code: Support – opportunity to network {1-2}

[195] Code: Research dissemination – first present locally then internationally {2-1}

[196] Code: Research dissemination – in Afrikaans a limitation to status {1-1}

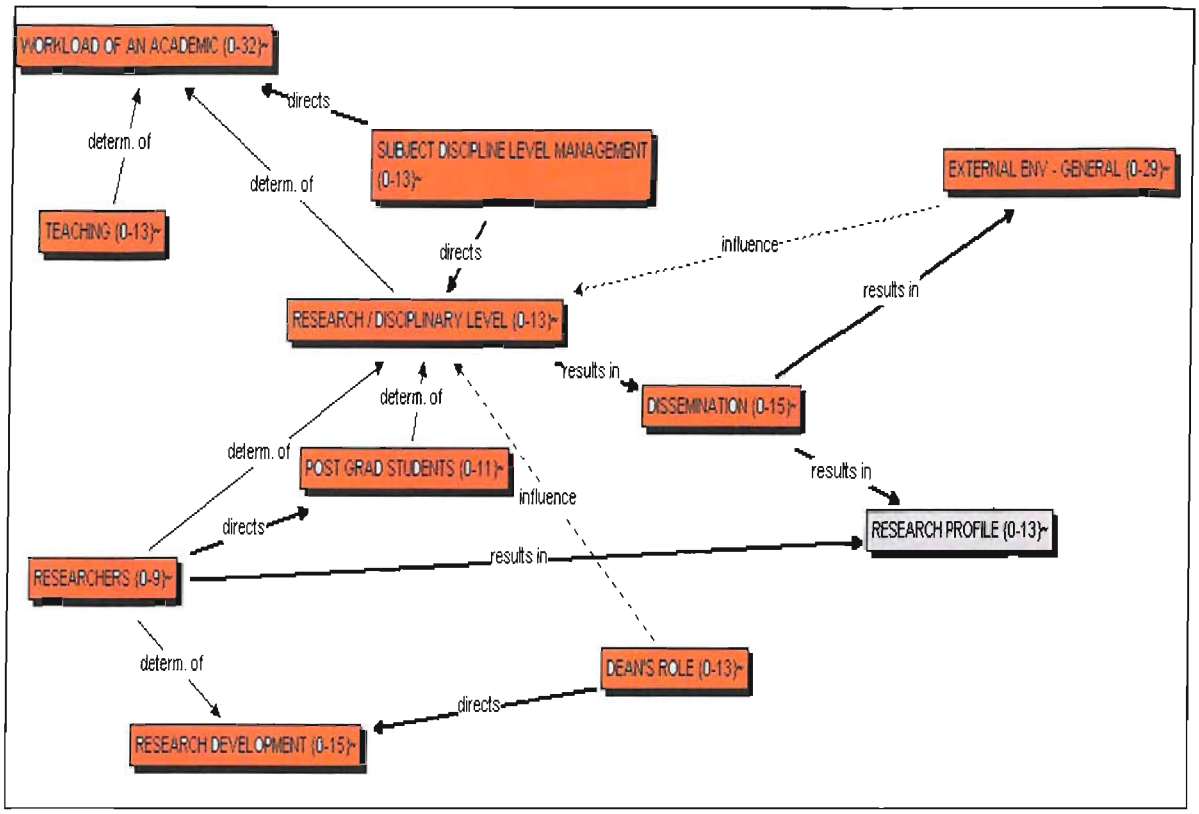

Figure 5-6: Excerpt of tangible research factors – essential factors

5.3.10 CODE 'RESEARCH PROFILE'

Code name: RESEARCH PROFILE {0-13}~

Number of quotations linked to this abstract code: 27

Code comment: Quotations associated with the occurrence of research at subject disciplinary level as opposed to the management of research at subject disciplinary level.

Research profile has already been discussed under the section on intangibles. The tangible part of an institution's research profile is the extent to which it can be measured. This links to the external environment.

5.3.11 CODE 'EXTERNAL ENVIRONMENT – GENERAL'

Code name: EXTERNAL ENV - GENERAL {0-29}~
Number of quotations linked to this abstract code: 26
Code comment: Aspects relating to the general external environment including various sources of funding. The 'external environment – general' does not contain quotations specifically relating to the industry or international environment.

The general external environment is made up of various role-players such as the Department of Education, the NRF, various other research funding agencies, other higher education institutions, etc. The external environment has two specific role-players that were indicated by interviewees as very important – namely, industry and the international environment. These two role-players were mentioned so frequently and specifically that they have been indicated as two separate abstract codes in the tangible research management environment (figure 5-6) although they are a *part of* the general external environment. The general external environment is furthermore a factor included in the absolutely essential factors necessary for a research environment to exist (codes indicated in orange in figure 5-6). The 'general external environment' has an *influence* on 'research at the disciplinary level' through government policy and subsidy and research funding criteria. Interviewees indicated that the workings of an institutional 'central research management cluster' and the 'external environment' would *influence* research at subject disciplinary level as well as at central institutional level.

Interviewees described the general external environment as constantly changing[197] and as a producer of competition[198] and regulation.[199] The 'transformation agenda' of

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[197] Code: Change – university 'business' has also changed {1-1}

[198] Code: Competition with other institutions {2-1}

[199] Code: External env influence – regulation from HE sector {1-0}

government regarding employment equity[200] and the drive for external quality assurance[201] were indicated as influences by the external environment on the institutional research environment. External quality assurance was associated with a certain amount of gate-keeping by external bodies such as professional societies.[202]

South Africa was discussed as the context of the external environment. More specifically, the lack of importance assigned to research in the South African context[203] and the effect of the brain drain on the research productivity decline in the country[204] were discussed.

The NRF was indicated as one of two important external stakeholders in an institution's research environment. The other stakeholder is the Department of Education. Opinions about the success of the NRF and whether it was fair in its evaluation and fund allocation processes, varied according to subject disciplines, with no clear verdict[205] other than the fact that the NRF was an important external role-player for additional research funding in the merged university. The SAPSE subsidy system also came under fire for the inequitable manner in which research outputs between various subject disciplines were measured[206] and subsidized.

As far as partnerships with other external role-players went, interviewees indicated that the institution first had to determine what it could offer the external world[207] before it embarked on marketing its research services. However, partnerships were

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[200] Code: External env influences – transformation agenda {1-2}, Code: Transformation – equity {5-2}

[201] Code: External bodies – QA {1-3}

[202] Code: Gate-keeping – external bodies {2-2}

[203] Code: Impede research activity – SA national culture not supportive of research {1-2}

[204] Code: External influence – SA research productivity decline {1-0}

[205] Code: NRF – perception of NRF good {1-2}, Code: NRF – perception unfair NRF process {2-2}

[206] Code: SAPSE subsidy – formulas will change in future {2-2}, Code: SAPSE subsidy – only certain disciplines {3-2}

[207] Code: Get house in order before going externally {1-2}, Code: Know what institution can offer {1-3}

discussed in terms of the institution reaching out[208] to its immediate external community,[209] industry and international funding bodies. An explanation of the international environment as part of the external environment follows.

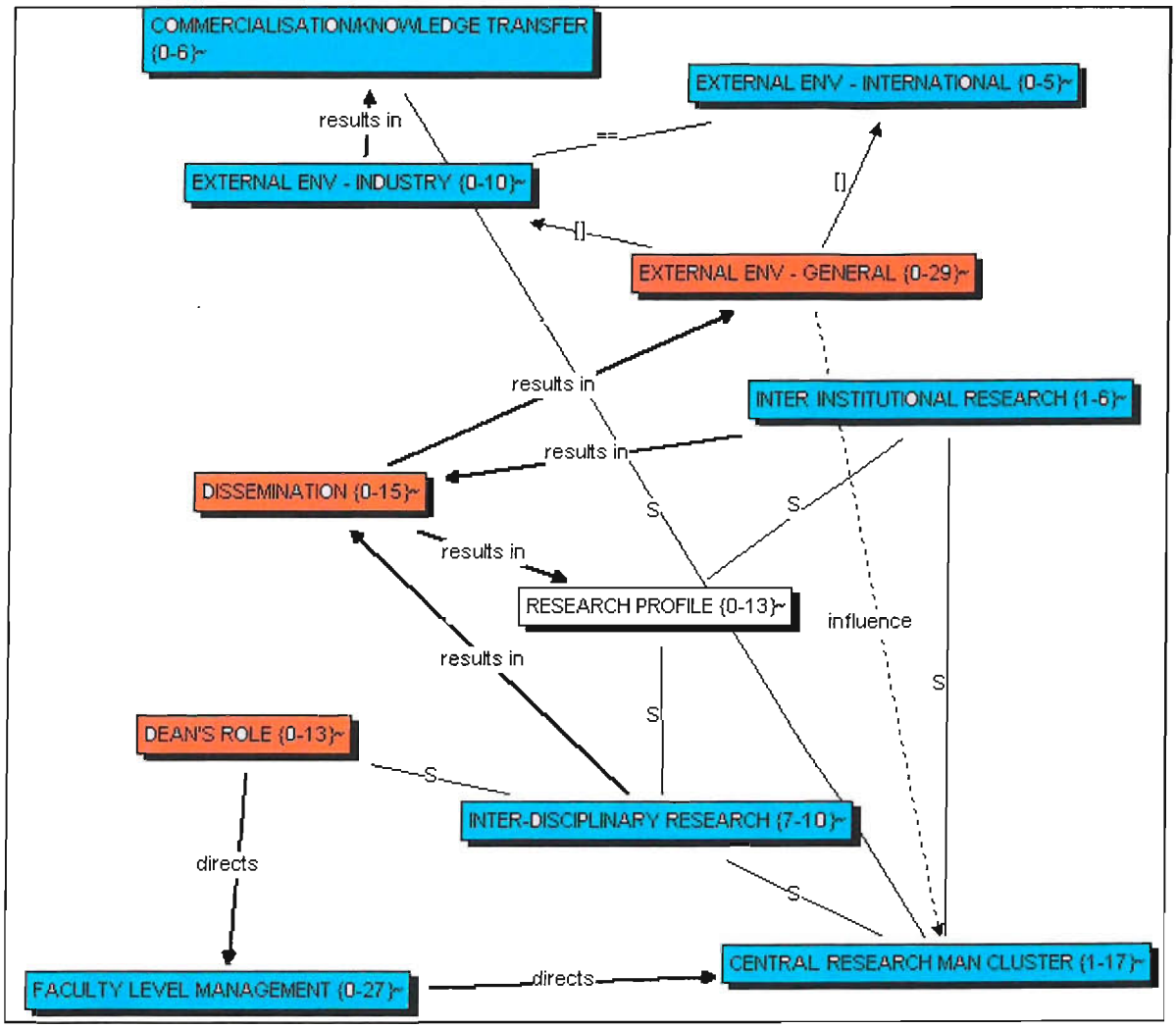

Figure 5-7: Excerpt of tangible research factors network – right-hand side

[208] Code: Partnership through outreach {1-2}

[209] Code: Reach out to communities/industries {3-3}

5.3.12 CODE 'EXTERNAL ENVIRONMENT – INTERNATIONAL'

Code name: EXTERNAL ENV - INTERNATIONAL {0-5}~
Number of quotations linked to this abstract code: 6
Code comment: Aspects of the external environment specifically relating to the international research environment, and funding agencies as a role-player in research.

The international environment is *associated with* the industry environment since the industry environment could also be international (refer to figure 5-6). There was no discussion regarding international competition, indicating that the interviewees did not presently consider international higher education institutions as competitors but instead the international environment was described as partners to the merged university's research environment. In this regard international networking was frequently mentioned – i.e. attendance of international conferences,[210] etc., as well as research done in international teams by way of the internet.[211]

An explanation of the industry environment as *part of* the external environment follows.

5.3.13 CODE 'EXTERNAL ENVIRONMENT – INDUSTRY'

Code name: EXTERNAL ENV - INDUSTRY {0-10}~
Number of quotations linked to this abstract code: 9
Code comment: Aspects of the external environment specifically relating to the industry as a role-player in research.

South African industry – i.e. the private and public sectors – was indicated as a strong partner of the two institutions.[212] Industry links were weaker in certain subject

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[210] Code: International networking {4-1}, Code: Support – opportunity to network {1-2}

[211] Code: International team research through internet {1-0}

[212] Code: Industry links – strong {3-1}

disciplines but many of the subject disciplines were described as inseparable from industry contact. Hence, a great deal of importance was assigned to the interest of industries in the research that occurs at a university as well as the applicability of research topics and work to industry.[213] Interviewees noted the interaction and the mutual benefit of industry links by stating that both industry-based students and industry research work led to more industry contracts.[214]

Following on figure 5-6 the code 'External env – Industry' *results in* 'Commercialization/Knowledge transfer', since the commercialization of research results is done in partnership with industry. The code 'Commercialization/Knowledge transfer' is discussed next.

5.3.14 CODE 'COMMERCIALIZATION/KNOWLEDGE TRANSFER'

Code name: COMMERCIALIZATION/KNOWLEDGE TRANSFER {0-6}~
Number of quotations linked to this abstract code: 15
Code comment: All aspects relating to the steps from research results to earning of additional income for the institution from the research results.

Very little emphasis was placed on the commercialization of research results or the transfer of knowledge into a viable commercial enterprise. This could be indicative of the early phases of research development that the two institutions are in. The debate about the challenges to academic freedom and ethics when an external party funds the research did, however, surface.[215] Intellectual property was mentioned as an important area for development in this regard.

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[213] Code: Industry interest and applicability {3-1}

[214] Code: Industry-based students lead to industry contacts {1-1}, Code: Industry work leads to industry contacts {1-1}

[215] Code: Pay for research – have vested interest – challenge academic freedom {1-0}

Interviewees indicated that entrepreneurial activity always occurred where academics could follow their passion in research[216] and that you had to combine academics with business-minded people if you intended to commercialize any research.[217] The business-minded people would ensure that partnerships with external stakeholders would be formed where synergies exist[218] and would be knowledgeable about intellectual property rights and patents.[219] This seemed to dominate all discussions about commercialization.

Moving from the external environment back into the internal environment within an institution, the explanation of codes will continue with a clarification of the two remaining organizational levels within this research environment as presented by the interviewees, namely 'Faculty level management' and the 'Central research management cluster'.

5.3.15 CODE 'FACULTY LEVEL MANAGEMENT'

Code name: FACULTY LEVEL MANAGEMENT {0-27}~
Number of quotations linked to this abstract code: 59
Code comment: Research management functions that occur at faculty level.

Organizational levels of research management were discussed in detail during the interviews not only because they form the policy execution structure within an institutional research management environment but also because the interview participants were in the process of designing the organizational research structure for the merged university. In all instances the positions of the interviewees were influenced by the new research management structure.

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[216] Code: Passion research areas leads to entrepreneurial activity {1-1}

[217] Code: Combine researchers with business-minded people {4-3}

[218] Code: Partnership – where synergies exist {3-1}

[219] Code: Intellectual property and patents {6-2}

All three organizational levels, as presented in the tangible research management environment, namely 'Subject discipline level management', 'Faculty level management' and 'Central research management cluster' are involved in a power-play as discussed under the intangible code 'Power/Control/Ownership'. This power-play is best illustrated through the five pulls on the organization theory of Mintzberg (1983, p.154), which was discussed in chapter 2.

The majority of interviewees indicated that the faculty level of research management was what *directs* the research agenda at each institution via the *direction* of the dean (refer to figure 5-7). Interviewees placed a lot of emphasis on the direction from the faculty to the central research management cluster and not from the central cluster to the faculty level. This was very significant to interviewees since they felt that research was driven from the subject disciplines and that the faculty level management, via the dean, represented collections of subject disciplines at the central institutional level. Thoughts were that if the central research management cluster were given the opportunity to direct the research efforts of the faculties, the uniqueness, entrepreneurship and passion originating from the subject disciplines would be crushed by red tape and compliance with central policy.[220] The strong emphasis on the role of the dean should be seen in the light of the dean being a seasoned researcher and a research leader instead of a research manager.

Tangible research management functions, roles and tasks that were placed at the faculty level by interviewees had to empower researchers[221] and were:

- Providing support to researchers regarding research proposal writing and funding applications.[222] This role was discussed the most (refer to footnotes at the bottom

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[220] Code: Faculty level – authority to execute {1-0}

[221] Code: Faculty level – research office – 'empowerment office' {2-1}

[222] Code: Faculty level – complete 50% of application for researchers {1-2}, Code: Faculty level - projects and logistical support {6-2}, Code: Faculty level – technical/financial advice {6-1}, Code: Faculty level – write skeleton proposal for researcher {1-2}, Code: Research project management specialist {1-1}, Code: Support – admin, application assistance {2-1}, Code: Faculty level – research manager – lessen admin burden on researchers {1-4}

of the page) and was given the greatest importance in terms of research support at faculty level;

- Challenging the status quo[223] in terms of research practices, research output and teaching practices that were taking up research time;
- Eliminating research duplications;[224]
- External liaison and research business generation;[225]
- Overview of research in the faculty and long-term planning role;[226]
- Management of postgraduate students for the faculty's subject disciplines;[227]
- Selection of the right combination of research and teaching academic staff;[228]
- Setting of research performance benchmarks to be used during performance management that are sensitive to subject disciplinary differences;[229]
- Providing financial support to researchers;[230]
- Directing research development via the dean – to initiate this where it is not occurring and support where it is occurring;[231] and
- Support for inter-disciplinary research so that researchers are freed from their disciplinary silos[232] (refer to figure 5-6).

In order for the above roles and tasks to occur, the interviewees proposed that each faculty have an administrative research manager to execute the tasks.

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[223] Code: Faculty level – challenge status-quo {3-2}

[224] Code: Faculty level – eliminate research duplication {2-2}

[225] Code: Faculty level – external liaison and business generation {6-1}

[226] Code: Faculty level – overview and long-term planning role {7-1}

[227] Code: Faculty level – postgrad students separate management {1-1}

[228] Code: Faculty level – selection of right academic staff {3-1}

[229] Code: Faculty level – set performance benchmarks {1-1}

[230] Code: Faculty level – support – financial {3-1}

[231] Code: Faculty level – research manager – research development (training) {1-1}, Code: Faculty level – RM & research fellow also drives research {1-1}

[232] Code: Faculty level – interdisciplinary research – elevates people from their silos {1-1}

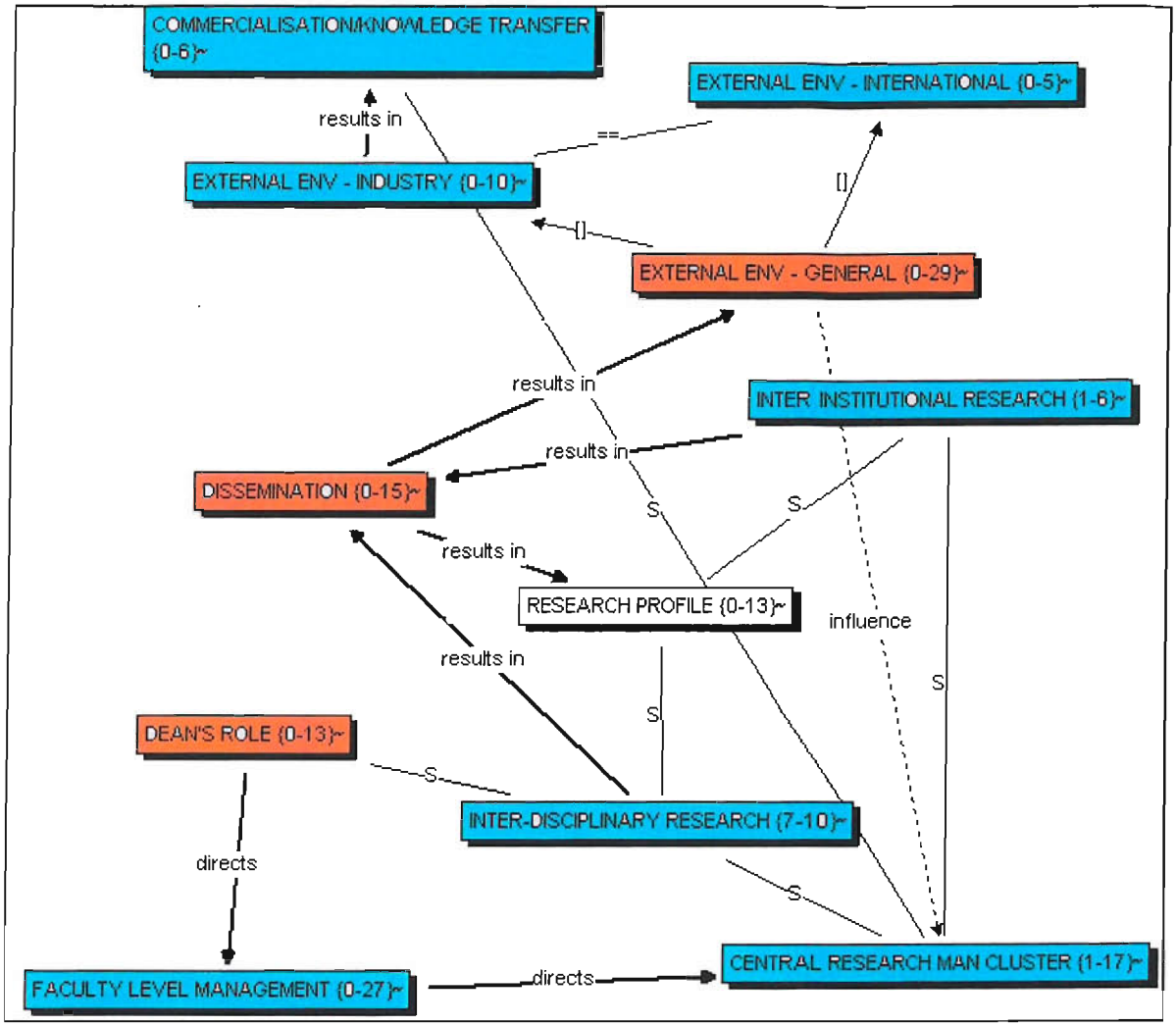

Figure 5-7: Excerpt of tangible research factors network – right-hand side

5.3.16 CODE 'CENTRAL RESEARCH MANAGEMENT CLUSTER'

Code name: CENTAL RESEARCH MANAGEMENT CLUSTER {1-17}~

Number of quotations linked to this abstract code: 37

Code comment: The central level within the organizational hierarchy that oversees research for the whole institution.

As with the code 'Faculty level management', the code 'Central research management cluster' will be discussed in terms of the tangible functions, roles and tasks that the

interviewees assigned to this organizational level of research management. Once again, the majority of interviewees placed emphasis on the support that the central research management cluster should provide to the faculty level management[233] and not the other way around.

Tangible research management functions, roles and tasks that were assigned to the faculty level by interviewees had to empower researchers[234] and were:

- Administration and co-ordination of institutional research information;[235]
- Allocation of additional central institutional research funds to top up faculty level funds,[236] based on transparent allocation criteria;[237]
- External networking and outreach to important stakeholders such as government and funding agencies;[238]
- Co-ordination of research at institutional level (overview and long-term planning);[239]
- *Support of* inter-disciplinary and inter-institutional research[240] (refer to figure 5-6); and
- Standardizing of necessary research policy for the institution to level the playing-field.[241]

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[233] Code: Central research cluster – add value to faculties and not the other way around {1-0}

[234] Code: Central research cluster – empowerment role {6-2}

[235] Code: Central research cluster – admin and coordination of inst. research inf. {3-1}

[236] Code: Central research cluster – allocation of funds {1-1}, Code: Central research fund – additional source of easy funds {4-1}

[237] Code: Central research fund – needs transparent allocation criteria {2-1}

[238] Code: Central research cluster – external networking {1-0}, Code: Central research cluster – external outreach function {1-0}

[239] Code: Central research cluster – institutional coordination and support {1-0}, Code: Central research cluster – overview of research at institution {4-1}

[240] Code: Central research cluster – inter-disciplinary research {1-1}, code: Inter-disciplinary research not funded by faculty due to PQM and faculty's focus {2-1}

[241] Code: Standardization of policy at university level {4-2}

The purpose of creating a central research management cluster at the institutional level is to ensure better co-ordination of research information at institutional level, improved communication with external stakeholders regarding research matters and easy access for researchers to top-up funds at institutional level for their research projects.[242]

The codes 'Inter-disciplinary research' and 'Inter-institutional research' are rendered in blue on figure 5-7, which indicates that they are *part of* the additional tangible factors that are present in some, but not all, research environments. These two code explanations conclude the discussion on the tangible research management factors.

5.3.17 CODE 'INTER-DISCIPLINARY RESEARCH'

Code name: INTER-DISCIPLINARY RESEARCH {7-10}~
Number of quotations linked to this abstract code: 18
Code comment: Research that occurs across disciplines and also includes trans-disciplinary research (where there is a supra research paradigm used instead of a particular discipline's preferred paradigm).

Inter-disciplinary research is *supported* by both the faculty level and the central research management cluster since these management levels are elevated above the singular subject discipline level and are able to fund research across disciplines.[243] The outcome of inter-disciplinary research is research results which *result in* the necessity for the dissemination of research results. Inter-disciplinary research furthermore *supports* the formation of a research profile of the institution and usually enhances such a profile.

Interviewees spoke more about inter-disciplinary research than about inter-institutional research. Perhaps this can be explained by the fact that at both institutions

---

[242] Code: Central research structure – places obstacles in researcher's way {3-2}

[243] Code: Inter-disciplinary research not funded by faculty due to PQM and faculty's focus {2-1}

the occurrence of inter-disciplinary research was low and only just emerging, and inter-institutional research, except for the natural sciences, seldom occurred.

Inter-disciplinary research receives funding more easily from external funding bodies[244] and therefore subject disciplines are encouraged by faculty level management to embark on such research initiatives. Opportunities for inter-disciplinary research are also created by combining non-traditional subject disciplines together in an organizational cluster – e.g. a school.[245] Through inter-disciplinary research, inter-disciplinary communication occurs, which enriches the research culture of an institution.[246] Inter-disciplinary communication leads to the necessity for information or knowledge mapping so that research findings can be shared and contribute to further research in other disciplines.[247]

5.3.18 CODE 'INTER-INSTITUTIONAL RESEARCH'

Code name: INTER-INSTITUTIONAL RESEARCH {1-6}~
Number of quotations linked to this abstract code: 6
Code comment: Aspects relating to inter-institutional research as part of the external environment.

Inter-institutional research *results in* the need for research dissemination (refer to figure 5-7) and supports and enhances the research profile of the institution.

In comparison to inter-disciplinary research, interviewees indicated that inter-institutional research occurs as a result of specializations within subject disciplinary silos within an institution.[248] According to one interviewee, researchers only have the

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[244] Code: Inter-disciplinary research – easier funding {3-1}

[245] Code: Inter-disciplinary research – combination of non-traditional disciplines in faculty stimulates this research {2-1}

[246] Code: Inter-disciplinary communication – learning and growth in institution {2-2}

[247] Code: Information/knowledge mapping – supports inter-disciplinary research {1-0}

[248] Code: Inter-institutional research – result of non-discourse and specializations {3-3}

need to search for inter-institutional research opportunities if their institution does not offer the opportunity for inter-disciplinary research.

> P 2: (173:180)
> ". . . [a researcher] . . . does not have to have a lot of people in a department that work together . . . it is actually better, as far as I'm concerned, . . . to involve people external to your university and external to your department in your research . . ."

A memo that I made regarding this finding was as follows:

> MEMO: Non-teamwork in disciplines leads to inter-institutional research->11:78
>
> Date: 10/08/04 Time: 08:46:39
>
> Memo Type: Commentary
>
> Memo contents:
>
> "No teamwork in a discipline leads to researchers reaching outward to other institutions. Non-discourse between researchers at the same institution leads to the same outcome.
>
> Perhaps this is only the case with established researchers? Perhaps young researchers will just stop researching in a particular area if they do not have colleagues who can assist in discourse and interaction about their type of research within an institution because very often they do not have an established network external to their institution.

Inter-institutional collaboration[249] was described as collaboration between institutions to share research infrastructure and equipment and did not necessarily lead to inter-institutional research.

---

[249] Code: Inter-institutional collaboration {2-2}

This concludes the explanation of figure 5-6, namely the tangible research management factor network. The last of the three networks called 'Tools for organizing people and resources' will be discussed next.

5.4 TOOLS FOR ORGANIZING PEOPLE AND RESOURCES NETWORK

The previous two networks, namely the 'Intangible research management factors' and the 'Tangible research management factors', provided insight into the tangible and intangible factors within the institutional research management environment as explained by interviewees. The network that will be explained next focuses on management tools that are used to organize people and resources for research management purposes. The management tool factors that were identified from interview data are:

- Strategic management;
- Funds;
- Human Resource Management instruments and practices;
- Research focus or niche areas; and
- Infrastructure, facilities, equipment and tools.

The above factors were described by interviewees in the context of management tools, and throughout the analysis process I was constantly reminded that, depending on the viewpoint of the interviewee, any of the above factors could be used in a facilitative or a controlling manner. This led me to compose a memo in which I noted that the above five factors were not static factors in the research management environment but were in fact a separate set of factors that managers use to *direct* the interaction between the tangible and intangible factors in the research management environment. These management tools or instruments can be used in order to *direct* the outputs of researchers (people) and/or to *direct* the utilization of other resources such as infrastructure. More so, they are management tools that can and should be used at every level within the organizational hierarchy and therefore could not be placed in either the tangible or intangible network. The third network could therefore be seen as the filling between two layers, namely the tangibles and intangibles.

In figure 5-8 the tools for organizing people and resources are indicated in green, tangible factors are indicated in orange and intangible factors are indicated in grey. The tangible and intangible factors were brought into the network to illustrate the interaction of these factors and their impact on the management tools.

Figure 5-8 shows that the intangible factor 'Control/Power/Ownership' and the politics and power that are *associated with* this factor ultimately *result in* the tangible delineation of organizational levels for research management purposes. 'Control/Power/Ownership' dictates what roles and tasks are allocated to the different organizational levels and which persons are selected as managers. The people who are placed in positions on those different organizational levels, together with their allocated roles and tasks, *direct* the factor 'Strategic management'. 'Strategic management' with its associated planning and implementation *directs* how 'Funds' are allocated and used. Owing to the fact that funds are normally scarce and usually obtained from external bodies, which in many instances have their own criteria for the allocation of funds, 'Funds' are *determinants of* the development of strategic research 'Focus/niche areas'. 'Focus/niche areas' *directs* how 'Infrastructure, Facilities, Equipment and Tools' are allocated, maintained, purchased and used. 'Focus/niche areas' are furthermore *directed* by strategic management and strategic priorities of the institution, therefore 'Strategic management' by implication also *directs* 'Infrastructure, Facilities, Equipment and Tools'. 'Strategic management' furthermore *directs* 'HRM instruments and practices' and together with the allocation of 'Funds' and 'Infrastructure, Facilities, Equipment and Tools', according to 'Focus/niche areas', these factors create a policy framework that aims to *direct* the behaviour of researchers (people within the research environment). The behaviour of people, however, is always unpredictable and is constantly *influenced* by 'Control/Power/Ownership' struggles which, by implication, *influence* all five management tool factors. Research 'Focus/niche areas', for which the institution becomes known *results in* a 'Research profile' of the institution.

A discussion of the different factors on this network commences with the code 'Strategic management'.

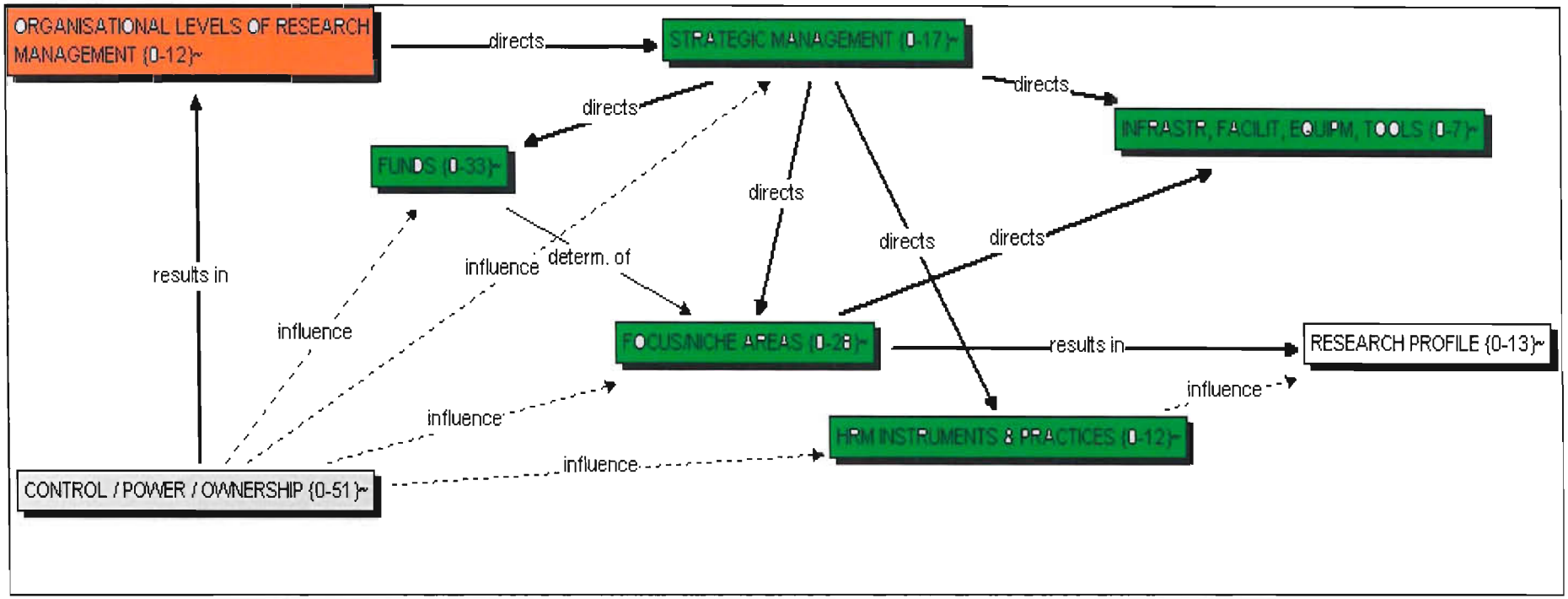

Figure 5-8: Tools for organizing people and resources

5.4.1 CODE 'STRATEGIC MANAGEMENT'

Code name: STRATEGIC MANAGEMENT {0-17}~

Number of quotations linked to this abstract code: 11

Code comment: Grouping of all quotations and associated codes relating to strategy, strategic planning and general planning as these are interpreted by interviewees.

As previously explained under the codes 'technikon' and 'university' under the intangibles network, the technikon interviewees indicated that they participated in the classical form of strategic planning[250] and the university interviewees indicated that, although they believe that strategic planning is important, most of the faculties did action planning around issues as they arose. The rationale for the integration of strategic planning as a factor of the research environment of the new university is that the merged university will be dealing with very complex issues during the merger, and strategic imperatives are therefore necessary to guide decision-making and prioritization.[251]

The potential for conflict emerges from the interaction between 'Power/Control/Ownership' and 'Organizational levels of research management' because those at the central institutional level consider the institutional research strategy more important than that of the faculties.[252] The faculties, on the other hand, consider their research strategy as the highest level of research planning and indicated that the central level was merely there as a support office. Some interviewees also indicated that strategic planning for research should occur at subject disciplinary level.[253] Tension could also emerge from the notion that research can be strategically

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[250] Code: Strategic management – done top-down {1-4}, Code: Strategy – research linked to strategy minutely examined and monitored {1-4}

[251] Code: Strategic imperatives more important during transformation {1-1}

[252] Code: Strategy – institutional research strategy more important than disciplinary strategies {1-5}

[253] Code: Strategic planning – at disciplinary level {1-2}

driven for the institution and placed before individual autonomy,[254] since researchers want to respond to tangible institutional strategic imperatives,[255] thereby implying that researchers have a need to belong to an institution that has goals that they can reconcile with. Strategic planning as a concept was nevertheless indicated as imperative in the new institution.[256]

Interviewees indicated that strategic positioning of the institution in terms of its research profile was important and that positioning happened through external networking and political astuteness[257] as well as with external role-players at the subject disciplinary level[258].

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P10: (140:141)
". . . clever strategic positioning of the institution
externally with regard to external stakeholders. . . .
both financial as well as political . . ."
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5.4.2 CODE 'FUNDS'

Code name: FUNDS {0-33}~
Number of quotations linked to this abstract code: 97
Code comment: Collection of codes and quotations relating to the generation, management and allocation of funds for research.

Although funds were mentioned in 97 different quotations, it emerged that funds (for personal gain or institutional coffers) were not the main driver of research output.[259]

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[254] Code: Strategy – research strategically driven for institution before individual autonomy {1-4}

[255] Code: Strategy – researchers want to respond to tangible strategic imperatives {1-2}

[256] Code: Strategy – imperative {1-0}

[257] Code: Strategic positioning – external, political {2-1}

[258] Code: Strategic positioning – external disciplinary {1-1}

[259] Code: Funds – not main driver of research output{3-7}

Personal gain: P14: (242:246)
"A few years ago I dramatically increased the amount of money that we give researchers and colleagues were quite interested in it - because it is good to receive more money [when you deliver more research outputs]. But my honest conviction is that, even if you give people three times more money it won't lead to a dramatic improvement in research outputs."

Institutional coffers: P11: (297:300)
"The technikons have been favoured massively over the universities [regarding government funding for research] in the last couple of years. [Government has] . . . really been chucking money at technikons. It has shown, it should, but considering how much has been thrown at a place like the technikon, I think the shift [in producing research output] was too slow."

Funds were indicated as a very important factor in the research management environment[260] since funding creates research opportunities[261] and ensures that the institution is able to retain its research champions.[262] It was acknowledged that research funding was not abundantly available[263] and, when available, quite difficult to secure.[264] Formal research management at a central institutional level was indicated as a way in which the institution could obtain more external research funds.[265] Importantly, all interviewees were in agreement that the management of funds had to be transparent and according to audit regulations.[266]

The discussion about funds was once again infused with issues around 'Power/Control/Ownership'. In this regard discussion centred on the ownership of

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[260] Code: Support – financial {12-1}

[261] Code: Funds – create research opportunities {4-1}

[262] Code: Champions – lack of funds = loss of champions {1-2}

[263] Code: Funds – shortage for research {2-2}

[264] Code: Funds – difficult to get {1-1}

[265] Code: Funds – research management leads to more external funds {1-0}

[266] Code: Funds – good management {10-1}

personal trust funds in the merged university and the institutional centralization of research funds. Proponents of the decentralization of research funds into personal trust funds argued that the centralization of trust funds would take away ownership, thereby inhibiting research,[267] and that personal trust funds are an incentive[268] that leads to research development and empowerment of researchers.[269] They furthermore argued that a strong publication culture rests on rewarding individual researchers, which in turn leads to strong personal trust funds.[270]

> P 5: (250:252)
> "Absolutely, absolutely - but we also have a wonderful system, for each newly appointed person, whether you are a professor or a junior lecturer, we give an amount - into the personal trust fund - for empowerment and for use for research visits, etc."

Proponents of the centralization of funds into institutional funds argued that individual researchers were holding on to funds for their own personal use, whereas the funds should be shared for research purposes.[271] Proponents of centralization furthermore felt that transparent fund allocation criteria[272] would dispel feelings of disempowerment if personal trust funds were centralized.[273] The main argument for the centralization of trust funds was based on the equitable redistribution of funds throughout the new university so that certain subject disciplines were no longer excluded from receiving funds as a result of the government's inequitable research subsidy system.[274]

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[267] Code: Funds – centralization of trust funds inhibits research {2-1}

[268] Code: Funds – incentive {2-1}

[269] Code: Funds – trust funds lead to research development (not just training) {6-1}

[270] Code: Rewards – strong publication culture = strong trust funds {1-1}

[271] Code: Funds – own generated should be shared for research {3-2}, Code: Funds – own-generated – hold on to for own use

[272] Code: Funds – allocation criteria {3-1}, Code: Funds – merit criteria {1-1}

[273] Code: Funds – allocation – transparency {2-3}, Code: Funds – generation – transparency {1-3}

[274] Code: Do not continue exclusion through no internal funds {2-6}

P 7: (59:60)
"We [disadvantaged discipline] inherit [sic] a history, where we are penalized [by not getting research subsidy] and now we are going to continue to be penalized [if the institution does not redistribute internal research funds]."

Cross-subsidization[275] was mentioned by one interviewee as an option for the redistribution of internal research funds, although other interviewees felt that cross-subsidization should only occur for capital-intensive subject disciplines.[276]

The allocation of internal research funds was another contested topic, with many interviewees indicating that personal trust funds free researchers from red tape and lengthy approval processes.[277] These interviewees felt that if the research approval process were centralized it would become too long and difficult, and academics would lose interest.[278] At the university, the approval of research projects and funds was predominantly based on a peer-review system.[279] This was also the case with applications for external funding and interviewees indicated that the institution had to assist researchers in their external funding application efforts.

Various sources of research funds were mentioned: the NRF,[280] extra-curricular (for profit) programmes in which short courses are run,[281] the government[282] and industry.[283]

Research focus or research niche areas will be discussed next.

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[275] Code: Cross-subsidization must occur {1-3}

[276] Code: Cross- subsidization for capital intensive disciplines {1-1}

[277] Code: Easy quick funding process vs. red tape {4-1}

[278] Code: Funds – too long and difficult – lose interest {5-1}

[279] Code: Research approval/permission process – based on peer-review system {1-2}

[280] Code: Funds – source – NRF {6-1}

[281] Code: Funds – source – ExCur {5-1}

[282] Code: Funds – source – government {3-1}

[283] Code: Funds – industry – not reliant on gov. {3-1}

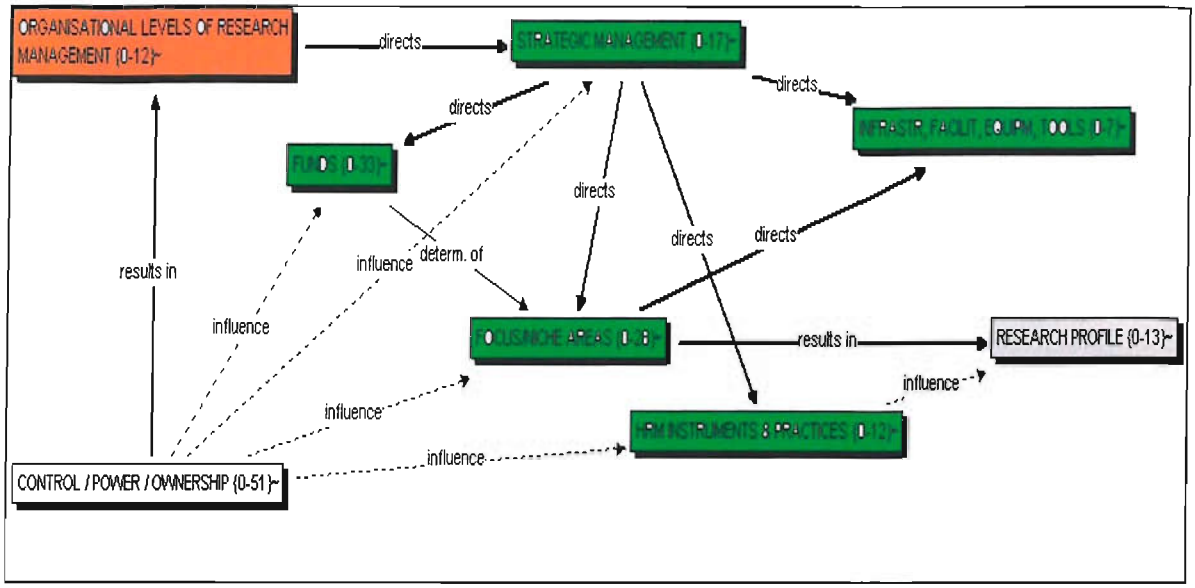

Figure 5-8: Tools for organizing people and resources

5.4.3 Code 'Focus/niche areas'

Code name: FOCUS/NICHE AREAS {0-28}~
Number of quotations linked to this abstract code: 36
Code comment: Collection of codes referring to the need or non-support of the notion of institutional as well as subject discipline level research focus or niche areas.

Research focus or niche areas are broad themes in which research, from different angles and subject disciplines, can be approached in order to fall within the broad theme.[284] These focus areas are used as a management tool to *direct* management decisions, especially in circumstances where there are scarce resources such as funding. The factor 'Focus/niche area' was described by interviewees as a management tool that was used formally in the case of the technikon, and informally

[284] Code: Focus areas – broad disciplinary themes with different angles from which research occurs within the discipline {1-1}

in the case of the university. Interviewees expressed varied opinions about the manner in which research focus areas should be determined, formally or informally.

Many interviewees were not comfortable with the notion of formally identifying research focus areas. They felt that a formal process places obstacles in the way of research creativity since it places boundaries on research activity[285] and creates another system of elitism and exclusion.[286] Continuing with this argument, interviewees indicated that institutional research focus/niche areas were a short-term strategy that could only be viable in situations where there was a scarcity of resources because a lot of good knowledge-creating ideas were sometimes not supported[287] because of the 'management' argument that those topics did not fall within the institutional research focus areas. This form of stringent management according to pre-determined focus areas could lead to a potential weakening of the institutional knowledge base.[288]

> P 8: (478:485)
> ". . . to say that you would only support a researcher if he is part of a niche area, . . . is philosophically flawed because if you are looking at an open research environment - if someone has an absolute brilliant idea, you are saying, 'sorry we can't support you because you have to be part of a niche area'. And so, if you are not part of a niche area, you are gone. And you might be an Einstein or a Hagel or one of the top philosophers, and we've just lost all that knowledge. . . . to me that is contra to [the purpose of] research . . ."

Although these interviewees did not agree with the formal identification of research focus areas, they did indicate that focus areas arose naturally around the

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[285] Code: Focus areas – obstacles to research creativity {1-2}

[286] Code: Focus areas – exclusion mechanism {1-3}

[287] Code: Focus areas – short-term strategy {1-2}

[288] Code: Focus areas – long-term weakening of potential knowledge base {1-2}, Code: Focus areas – not centrally determined and centrally enforced {4-1}, Code: Focus areas – not stringently and indiscriminately applied {1-3}

specializations and research passions[289] of senior and experienced researchers,[290] as well as around topics that brought in a lot of money, and therefore focus areas do exist. Proponents of informal focus area formation felt that researchers had to have autonomy of choice[291] regarding research specializations.

> P 2: (184:192)
> ". . . what does happen is that [research focus areas] happen naturally, they are not enforced. You for example have a good PhD student, who starts giving class part-time. Such a person applies for a post and then often a focus areas develops naturally, because this person does [research similar to] your type of research . . . but . . . in no way do we prescribe and enforce focus areas by artificially creating them at faculty level, never. Some [research] that brings in a lot of money creates a natural cluster for research."

Focus areas according to the proponents of informality are therefore determined by individual and disciplinary needs[292] and research groups that form around a particular topic of interest.[293] The institution should therefore not attempt to prescribe research focus areas in the minutest detail.[294] One interviewee cynically indicated that the formal planning of research focus areas was done merely to impress external funding agencies and keep the institutional image in line with external guidelines and requirements.[295]

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[289] Code: Focus areas – from passion {4-2}

[290] Code: Focus areas – exist around senior/experienced researchers {3-1}, Code: Focus area – incl own studies, postgrad studies and other forms of research {1-0}

[291] Code: Focus areas – autonomy of choice {1-1}

[292] Code: Focus areas – determined by disciplinary needs {2-1}

[293] Code: Focus areas – determined by research groups {1-1}

[294] Code: Focus areas – inst. Not prescribe in minutest detail {1-2}

[295] Code: Focus areas – for external image only {1-1}

Proponents of formal focus area formation indicated that focus areas could be determined centrally for the institution, through a formal process[296] of participation by various committees and stakeholders linking the focus areas to the institutional strategy[297] as well as central fund allocation mechanisms. Research funding and support decisions at the institutional level would be guided by the research focus areas, via the institutional strategy[298] and the institutional strategy would provide structure to researchers.[299]

> P10: (16:17)
> "I think that [researchers] also need to and would like to be able to appreciate how their research fits into the institutional strategy."

The rationale for the formal identification of research focus areas for the institution was based on the argument that the external funding agencies[300] were demanding research to be done on particular topics and that the government's Department of Education, via the PQM, were enforcing focus areas in all disciplines, whether they agreed with this or not. Furthermore, proponents of formal focus areas indicated that formal focus areas would ensure that the allocation and use of institutional resources were done efficiently and could be accounted for in a transparent manner.[301]

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[296] Code: Focus areas – formal process to determine {1-1}

[297] Code: Focus areas – acceptance of strategic focus {1-4}, Code: Focus areas – for strategic planning purposes {1-1}

[298] Code: Focus areas – for strategic planning purposes {1-1}

[299] Code: Focus areas – know how research fits into institutional strategy {1-2}

[300] Code: Focus areas – disciplinary focus need driven by external funding {6-1}

[301] Code: Focus areas – ensure appropriate use of resources {1-2}

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P 5: (106:111)
"At the moment [research focus areas] are driven
through funds. Because you get good funding for
projects that are broad - in the sense that it is not
- not just a small aspect - it is a focused [research]
project, but it has many dimensions."
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The discussion of the network continues with the code 'Infrastructure, Facilities, Equipment and Tools'.

5.4.4 Code 'Infrastructure, Facilities, Equipment and Tools'

Code name: INFRASTR, FACILIT, EQUIPM, TOOLS {0-7}~
Number of quotations linked to this abstract code: 8
Code comment: Collection of codes referring to infrastructure, facilities, equipment and tools that are integral to conducting effective research such as the library holdings, etc.

The importance of infrastructure, facilities, equipment and tools to research is evident when you consider that research in certain disciplines cannot occur without these.[302] Equipment includes capital-intensive and modern equipment. These resources are therefore very subject discipline-specific[303] and have to be up to date, with the latest technology, for research to remain competitive.[304] The library holdings stood out as one of the most important facilities at the merged university[305] and have to be serviced across five campuses.

The code 'Human Resource Management instruments and practices' will be discussed next.

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[302] Code: Support – facilities and infrastructure {3-1}

[303] Code: Support – resources (discipline specific) {2-2}

[304] Code: Infrastructure – up to date {1-2}

[305] Code: Library holdings {2-2}

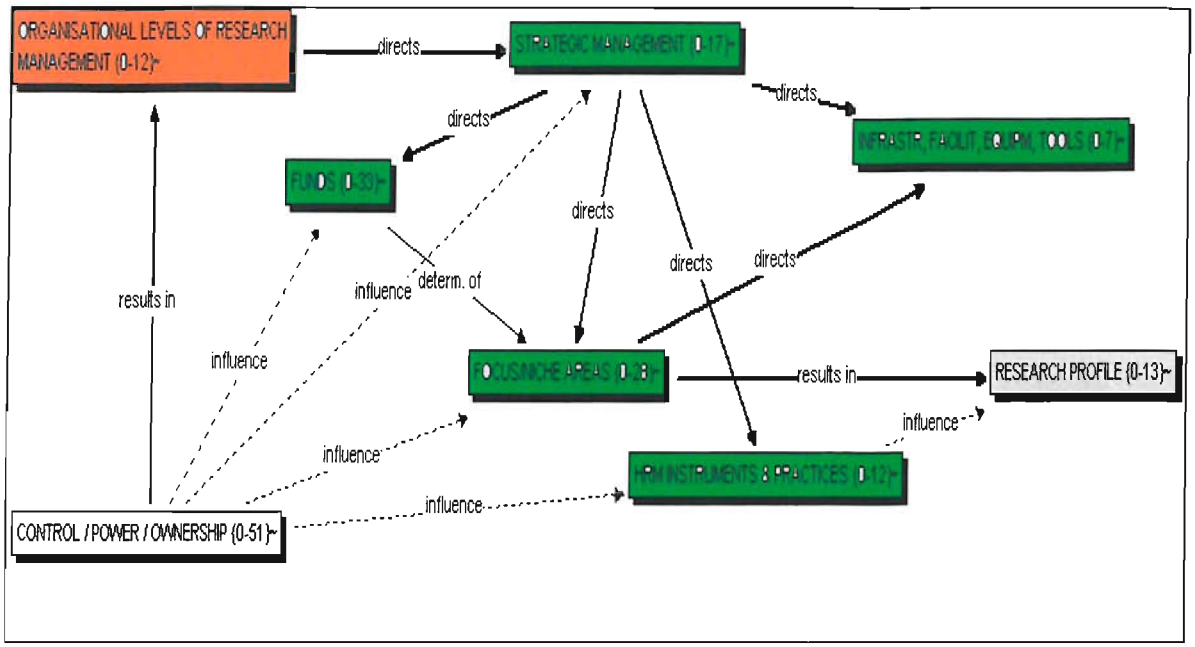

Figure 5-8: Tools for organizing people and resources

5.4.5 CODE 'HRM INSTRUMENTS AND PRACTICES'

Code name: HRM INSTRUMENTS AND PRACTICES {0-11}~

Number of quotations linked to this abstract code: 187

Code comment: Grouping of all quotations and associated codes relating to human resource management functions. Functions reflected are: recruitment and selection, performance management, remuneration and rewards, promotions, as well as staff retention.

The importance of the abstract code 'HRM instruments and practices' is evident from the number of quotations that are linked to the code, namely 187. Each of the sub-codes that make up this abstract code is discussed below. These sub-codes are:

- Recruitment and selection;
- Performance management;
- Remuneration and rewards;
- Promotions; and
- Staff retention.

5.4.6 CODE 'RECRUITMENT AND SELECTION'

Code name: RECRUITMENT AND SELECTION {0-10}~

Number of quotations linked to this abstract code: 27

Code comment: All human resource aspects relating to recruitment and selection.

Interviewees indicated that, as a result of the South African national skills shortage, inordinately high salary packages were offered in the private sector. Other factors that negatively influence the attractiveness of academia are:

- The academy's relatively uncompetitive ability to meaningfully remunerate academics;[306]
- The drive for employment equity transformation relating to the previously disadvantaged groups;[307]
- The lack of talented people available to join academia[308] due to the brain drain; and
- Government's accountability interventions, which caused academic jobs to become less flexible,[309] which was once a strong attraction for talent.

Although there is a severe skills shortage among researchers in the South African marketplace, interviewees nevertheless felt that specialists in subject disciplines had to be recruited[310] and research-based people appointed[311] in order for a research culture to be sustained and expanded. In order to achieve this goal there had to be additional incentives for researchers to join the academy.

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[306] Code: Incentives to join academia {2-3}

[307] Code: Transformation – equity {5-2}

[308] Code: Lack of talent {5-5}

[309] Code: Lack of talent – flexible conditions of employment {1-3}

[310] Code: Recruit specialists {2-2}

[311] Code: Appoint research-based people to influence research culture {5-1}

Concerning the selection of academic candidates in order to maintain a research culture at the institution, interviewees indicated that, although the first prize was to select research-strong academics,[312] mainly though head-hunting, the academy had to build long-term research capacity by selecting people with research potential[313] as well as people who had a minimum of a Master's degree.[314] Interviewees did, however, indicate that there had to be a balance between selecting research-strong academics and teaching-strong academics.[315] One interviewee indicated that in order to accomplish this balance, the managers who were involved in the selection process had to be well informed about the needs of higher education.[316]

Recruitment and selection were indicated as the most crucial part of the human resource management cycle because once a wrong person is appointed that person is in the organizational system and it is very difficult to right a wrong once he or she is part of the system. Although there are probation periods, the South African labour law prohibits uncomplicated dismissals.

> P 6: (9:13)
> ". . . any intuition's research quality is eventually fundamentally dependent on the quality of people who are appointed. So if you make a mistake at appointment, by appointing people who are not already good researchers, or that [sic] in your opinion could develop into good researchers, then you have a problem to start off with."

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[312] Code: Selection and promotion – research-strong academics {2-0}

[313] Code: Selection – people with research potential {5-1}

[314] Code: Selection – people with at least Master's degree {3-0}

[315] Code: Selection and promotion – balance between research and teaching staff {1-0}

[316] Code: Selection and promotion – managers must know HE {1-0}

5.4.7 CODE 'PERFORMANCE MANAGEMENT/MEASUREMENT'

Code name: PERFORMANCE MANAGEMENT
/MEASUREMENT {0-20}~
Number of quotations linked to this abstract code: 71
Code comment: All aspects associated with performance criteria, management and measurement.

Performance management and its associated performance measurement activity was the code with the most quotations linked to it (71) out of all the human resource management codes. The code 'Remuneration and rewards', which follows after the discussion of the code 'Performance management/measurement' had the second-highest number of quotations (namely, 55) and was frequently coupled with performance management, indicating that interviewees favoured a system of performance management that results in rewarding of academics who do well in research but also in teaching.

Although performance management was discussed in great detail in the majority of the interviews, the technikon participants felt that the manner in which it was practised at their institution was too bureaucratic[317] and with the intention of controlling instead of developing people.[318] This form of performance management was therefore strongly disfavoured. Performance management had to be practised with the intention of developing and encouraging people to produce good teaching and research output[319] in a transparent environment.[320] Transparency at the university was qualified,[321] however, and this indicates that total transparency was not part of the culture at this institution.

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[317] Code: Performance management – too bureaucratic {2-1}

[318] Code: Performance management – control instead of dev. {2-2}

[319] Code: Research output – missing {2-2}

[320] Code: Performance transparency {5-1}

[321] Code: Performance transparency – qualified {3-1}

P12: (235:238)
". . . [research income and outputs] would not appear in our annual report [report available to all]. Most probably [they would appear] in the dean's annual report to the rector [report not available to all]. . sometimes this type of [information] has the potential to impact negatively [on academics] . . ."

The quality and status of research output was questioned[322] and performance monitoring[323] was suggested as a way in which research quality could be assured. In order for performance monitoring to occur, performance benchmarks as well as performance criteria had to be in place. Performance criteria were largely discussed in the context of internal arrangements.

Performance benchmarks were described as those standards that were set by investigating the research output of other institutions external to the merged university. This would include a comparison of research output per subject discipline of national as well as international competitors,[324] and would result in minimum benchmarks against which the subject discipline could uniquely[325] peg itself in order to determine the quality of its research output.

Performance criteria, on the other hand, were referred to as the minimum criteria that had to be negotiated annually with each individual academic. These criteria would serve as the minimum outputs that each individual academic had to deliver, and had to be monitored[326] throughout the year. There was a strong indication from interviewees that performance criteria for each academic at the merged university had to contain an element of a research expectation.[327] In other words, all academics had to have some

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[322] Code: Quality and status of research conducted questioned {5-1}

[323] Code: Performance monitoring {7-1}

[324] Code: Performance benchmarks – external & international benchmarks important {2-1}

[325] Code: Performance benchmarks – unique per discipline {5-1}

[326] Code: Performance monitoring {7-1}

[327] Code: Performance criteria – research expectation {16-3}

form of research as part of their annual output. Interviewees indicated that performance criteria could not rest on teaching output only,[328] as is mainly the case at the technikon, although there should be flexibility between teaching and research output criteria,[329] depending on the nature of the subject discipline. The research output had to be qualified, however, and had to be flexible enough to recognize:

- subject disciplinary differences;[330]
- team-based research output;[331]
- differences in research types[332] as well as non-traditional research output;[333]
- development criteria[334] where mentorship could be encouraged and young academics could receive recognition for their development outputs; and
- quality as well as quantity of research outputs.

Naturally, the setting of performance criteria would not be effective if there were no consequences[335] for not meeting the set criteria. One of the consequences that was cited was peer pressure,[336] although non-participation in reward schemes was strongly indicated as a consequence of academics not meeting their negotiated outputs.

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[328] Code: Performance criteria – measures teaching only {3-4}

[329] Code: Performance criteria – flexible emphasis on teaching and research output {4-1}

[330] Code: Performance criteria – be best in clinical world if not publish {1-2}

[331] Code: Performance criteria – team based output {1-1}

[332] Code: Performance criteria – recognized diff in research types {1-2}

[333] Code: Performance criteria – need for recognition of non-traditional output {1-2}

[334] Code: Performance criteria – development criteria set and recognized {1-2}

[335] Code: Performance consequences {8-1}

[336] Code: Performance consequences – peer pressure {1-1}

5.4.8 CODE 'REMUNERATION AND REWARDS'

Code name: REMUNERATION AND REWARDS {0-20}~
Number of quotations linked to this abstract code: 55
Code comment: All quotations that reflected remuneration and rewards as part of the human resource function.

As explained under the previous code, remuneration and rewards were throughout the interviews described as interwoven with performance management and measurement. Thus, part of the success of a performance management system would be the rewards[337] that could be attached to the achievement of performance criteria (therefore performance criteria had to be monitored). In addition, there could be an increase in remuneration, which is usually associated with promotions. The bottom line regarding rewards was that they had to incentivize[338] academics who met their performance criteria.[339] Interviewees did indicate that the remuneration system of the merged university should be separated from the traditional system of job seniority levels.[340] This could provide greater flexibility in remunerating people according to their market-related and scarcity levels, thereby giving the new university greater flexibility in attracting the right candidates for the job.

Various examples of reward schemes that should be linked to performance management were mentioned, such as paying researchers a portion of the research output subsidy that the institution earns from government subsidy. Research subsidy is allocated through internal resource allocation. Different philosophies of encouragement existed at the technikon and the university. The practice of rewarding academics by paying out cash rewards[341] versus paying rewards into a personal trust

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[337] Code: Rewards – leads to increased research output {2-2}, Code: Rewards – stimulates interest in research {1-0}

[338] Code: Reward = incentive {2-1}

[339] Code: Reward good academics {12-1}

[340] Code: Remuneration system not based on job seniority level {1-1}

[341] Code: Rewards – article subsidy in researcher's pocket {2-2}, Code: Rewards – in pocket stimulates interest in research {2-1}, Code: Rewards – staff – study money in pocket {1-2}

account held by the institution[342] were the main differences. The intention of the first was to make it personally lucrative for academics to meet their research outputs, but is flawed in the sense that the institution is not guaranteed of any return on that reward as the academic is not obliged to reinvest that money in research. The second example intends to stimulate an interest in research by focusing on the autonomy and the freedom that an individual academic has to reinvest the reward according to his/her personal research development needs, but does not pay out the reward in cash.[343] Interviewees argued for a balance between the two philosophies and practices[344] since the university interviewees felt that academics also had a personal life outside the institution in which they had personal needs that could be fulfilled[345] through working harder at their research output whilst at the same time reinvesting in their research development for the benefit of the institution. Quite a few interviewees felt that the manner in which article subsidy is to be allocated to researchers had to be left up to the subject discipline level to decide; therefore institutional criteria should not dictate terms at the subject discipline level.[346]

Rewards were, however, framed by the question – what is in it for the academics to meet and exceed their performance criteria?[347] Therefore, rewards had to have variety: examples of non-cash rewards to academics were sabbaticals[348] and travel benefits.[349]

For a research rewards system to be effective, it has to be meaningful, i.e. not too superficial in the opinion of academics,[350] and it has to be transparently monitored and

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[342] Code: Rewards – in trust funds – not in personal pocket {5-2}

[343] Code: Rewards – not in researcher's pocket – plough back into research {3-3}

[344] Code: Rewards – article subsidy – sliding scale {1-2}

[345] Code: Rewards – article subsidy must compare well with other income options {1-1}

[346] Code: Rewards – article subsidy – criteria managed by departments {3-2}

[347] Code: Rewards – what is in it for you? {2-1}

[348] Code: Sabbatical {1-1}, Code: Sabbatical – used to complete post grad studies {2-1}

[349] Code: Rewards – travel benefits {4-1}

[350] Code: Rewards – too superficial {8-3}

not be in tension with other workload factors such as teaching.[351] Although the interviews centred on the topic of research, the rewards system would not be complete without rewards for teaching excellence.[352] This would ensure that the tension between research and teaching output is eliminated.

5.4.9 CODE 'PROMOTION'

Code name: PROMOTION {0-9}~
Number of quotations linked to this abstract code: 22
Code comment: Grouping of aspects relating to promotion as a human resource function.

The promotion of academic staff is a very traditional and deeply engrained process within universities. The highest level of specialization that any academic can achieve within the South African higher education system is the level of full professor. As described under the intangible code of 'university', a promotion to this level results in an academic becoming one of the 'equals' within the context of 'first amongst equals' leadership. Attaining this level of promotion is therefore a huge motivation to many academics but is also associated with high levels of gate-keeping[353] ensuring that the title of full professor remains reserved for a select few. The criteria used to promote academic staff members are determined centrally at the institutional level[354] and an important aspect of these, and one that protects the rank of full professor, is a high research expectation[355] of individual academics. Although the criteria are centrally determined, the uniqueness of individual disciplines has to be kept in mind when academics are evaluated.[356]

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[351] Code: Rewards – tension with workload {1-1}

[352] Code: Rewards teaching excellence {1-1}

[353] Code: Gate keeping – professorial title {7-2}

[354] Code: Promotion criteria – centrally determined {2-1}

[355] Code: Promotion criteria – high expectancies {2-1}

[356] Code: Promotion criteria – uniqueness of discipline {2-1}

The title of full professor can only be attained through both teaching and research – with the main emphasis placed on research. Research is so important in the promotion to full professorial level that interviewees argued that a career pathway for researchers who do not engage in teaching[357] should be developed. Individuals who are motivated through the human resource practice of promotions are therefore individuals who focus on producing research output and are very strong in research.[358] Furthermore, the research output of the individual should be honed in one area of expertise and specialization.[359] Those academics who are not motivated through the incentive of promotions are usually the academics who are not active in research.

5.4.10 CODE 'STAFF RETENTION'

Code name: STAFF RETENTION {0-7}~
Number of quotations linked to this abstract code: 12
Code comment: All quotations associated with the retention of academic staff members.

The research profile of the institution is based on the number of successful researchers it has and whether the institution is able to retain these researchers.[360] Academics who have made a decision that academia is a viable career choice for them[361] are already committed to higher education as their preferred career choice, and are retained at a particular institution through guarantees of academic autonomy where they can pursue their passion,[362] have access to outstanding research facilities[363] and sufficient funding without red tape.[364]

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[357] Code: Promotions – research career path missing {2-2}

[358] Code: Attitude – interested in research – enforced through promotions {1-0}, Code: Promotion – research strong academics {3-2}, Code: Promotions – enforces interest in research {4-3}

[359] Code: Promotions – hone research outputs in discipline to get promoted {2-1}

[360] Code: Retention staff {4-1}, Code: Retention of staff – successful – staff remain here long time {1-1}

[361] Code: Career – academic a formal viable career choice {1-1}

[362] Code: Retention staff – based on autonomy and passion {1-2}

[363] Code: Retention staff – facilities for research {1-2}

[364] Code: Retention staff – funding {1-2}

5.4.11 CONCLUSION CODE 'HRM INSTRUMENTS AND PRACTICES'

The sub-codes that have been discussed and collectively form part of the abstract code of Human Resource management instruments and practices are:

- Recruitment and selection;
- Performance management;
- Remuneration and rewards;
- Promotions; and
- Staff retention.

These codes should, if planned as part of the research environment, *direct* the workload of an academic in the sense that they *give direction* to what an academic should do and what an academic should be focusing on. HRM instruments and practices therefore provide the 'carrots and sticks' with which the institution can *direct* the behaviour of academics and their associated academic output.

5.5 SUMMARY OF STATISTICS IN QUALITATIVE DATA

As mentioned at the beginning of this chapter, the intention in presenting the data is neither to statistically compare nor to statistically generalize the qualitative data. However, a powerful tool within the Atlas.ti programme is the Codes-Primary-Documents table where all the codes created by the researcher, through the identification of quotations and assignment of specific codes to them, are tabulated statistically. An excerpt of this table is provided in table 5-2. In table 5-2 the columns represent a number that is linked to each primary document (interview transcripts) and all the codes used during analysis are listed in the rows. The table gives a quick glimpse of the codes that are the most *grounded.* I have decided to include excerpts of this table to illustrate the themes that were talked about by the majority of interviewees before including the themes into abstract codes.

Table 5-2: Codes-Primary-Documents-table

Codes-Primary-Documents-Table

Code-Filter: All
PD-Filter: All

CODES	PRIMARY DOCS 1	2	4	5	6	7	8	9	10	11	12	13	14	Tot
Subject disciplinary differences	0	0	1	2	1	4	4	1	0	2	2	0	3	20
Experienced researchers - mentors	0	2	0	4	2	0	1	4	0	3	2	0	0	18
Disciplinary level - research and RM done here	0	5	0	1	0	0	2	3	1	4	0	0	0	16
Performance criteria - research expectation	1	2	0	0	1	0	3	5	1	1	0	2	0	16
Facilitative leadership instead of prescriptive	0	0	6	1	0	0	3	0	0	1	4	0	0	15
Abundance - funds and decision-making	5	1	0	1	0	1	2	0	0	0	2	2	0	14
Research begins with own qualification improvement	0	0	0	0	0	0	1	5	2	5	0	0	1	14
Emphasis placed on importance of research	0	0	1	0	6	0	1	2	1	1	0	1	0	13
Champions	0	0	1	0	0	1	1	0	0	3	5	0	1	12
Dean driver of research	0	0	0	0	0	0	0	3	3	5	1	0	0	12
Employed to teach	0	0	0	0	1	2	1	3	1	4	0	0	0	12
Support - financial	0	2	0	0	1	1	1	2	3	0	2	0	0	12
Reward good academics	0	7	0	3	0	0	0	0	0	0	2	0	0	12
Support - young and good potential researchers	0	2	0	1	1	1	0	4	0	0	2	0	1	12
Ownership - individual academics	1	0	0	1	0	0	1	3	0	0	3	0	2	11
Set example	0	0	0	0	0	0	1	5	0	5	0	0	0	11
Academic job - never just teaching	0	2	0	2	0	0	2	2	2	0	0	0	0	10
Funds - good management	0	0	0	0	0	0	0	1	0	0	5	0	4	10
Teamwork and collaboration	0	1	0	2	0	0	0	2	4	1	0	0	0	10
Research begins with post grad students	0	0	0	0	0	0	0	1	2	2	1	0	3	9
Support - time	0	3	0	0	0	0	0	2	3	0	0	0	1	9
Need for broader clarification of research definition	0	0	1	0	0	2	1	3	1	0	0	0	0	8
Performance consequences	3	3	0	0	0	0	0	1	0	0	0	1	0	8
Research dissemination - in-house publications	0	0	1	0	2	0	0	2	0	0	0	0	3	8
Rewards - too superficial	0	0	1	1	0	0	4	0	0	0	2	0	0	8

5.5.1 MOST GROUNDED CODES

On table 5-2 the codes that were most **grounded** indicate the following:

1. An over-simplification and standardization of research management is not possible due to intense subject disciplinary differences. Additionally, due to these differences, the clarification of research 'output' and what is considered as 'research' is necessary for the institution.
2. For a productive research environment, subject disciplinary differences was the factor repeated by most interviewees. In this light the need for broader clarification of the definition of research, as well as the clarification of the definitions of an academic job and associated degrees of scholarship, are imperatives in the merged university. These three aspects lie at the heart of a productive research management environment.
3. The researchers are the champions of research and the key people in the research management environment, and they are the mentors to other academics and postgraduate students.
4. The locus of research is at the subject disciplinary level, where researchers operate. Research emanates, and is sustained from, the subject disciplinary level and this is where the ownership of, and passion for, the research process lies.
5. Experienced researchers are the mentors, champions, stimulators and sustainers of a productive research culture. Therefore they should be managed in a facilitative, trusting and encouraging (as opposed to controlling) manner. A facilitative management style is not laissez faire but includes placing an emphasis, or expectation, on the importance of research output, which culminates in rewarding researchers for research output. Rewards should be significant as judged by researchers. There should be a monitoring of research outputs and associated consequences for non-performance.
6. Within a combined level of subject disciplines i.e. faculty level, the dean is the driver of research and should set an example (in other words a dean should manage and drive research from her/his own research experience).

7. Research begins with the improvement of the skills of academics within the merged university, however, this is only sustained when experienced researchers act as mentors for young and less-experienced researchers.
8. Once the researcher skill levels have been improved, research output is best advanced (increased) through collaboration with post graduate students.
9. Research flourishes and is energised when there is an abundance of funds with associated copiousness in funding decision-making. This once again underscores facilitative management although copiousness in funding decision-making should be strongly backed by good financial management.
10. Time for research, if it is seen as a priority at the merged university, should be created by elimination of over-teaching, masses of students and poor academic-to-student ratios.

5.5.2 MOST DENSE CODES

The **densest** codes, as extracted from the interviews came from the intangible and management tools networks and listed are in order of highest to lowest density:
University {1-54}
Control/Power/Ownership {0-51}
Technikon {0-40}
Funds {0-33}
Workload of an academic {0-32}
External environment – general {0-29}
Research culture – 'the way we do things' {0-29}
Focus/Niche areas {0-28}
Faculty level management {0-27}
Assumptions/Mindsets {0-24}
Definition of an academic job {0-21}
Researcher intangibles {0-21}
Subject disciplinary differences {20-11}

The above list of codes illustrates that tangible factors were not the most important factors as a combined representation of the thoughts of interviewees. Instead, intangible factors and how these factors were going to be managed were highlighted repeatedly. Given the nature of the merger, the factor 'Control/Power/Ownership'

overshadowed all interviews and was used in relation to management tools such as 'Funds' and 'Focus/niche areas'.

5.5.3 FACTORS TABLE

A comparison between the factors that influence a productive research environment, as derived from the qualitative phase of the study and depicted in the network diagrammes of this chapter and the literature from chapter 2, as well as the results of chapter 4, is provided in Appendix IV.

Conclusion

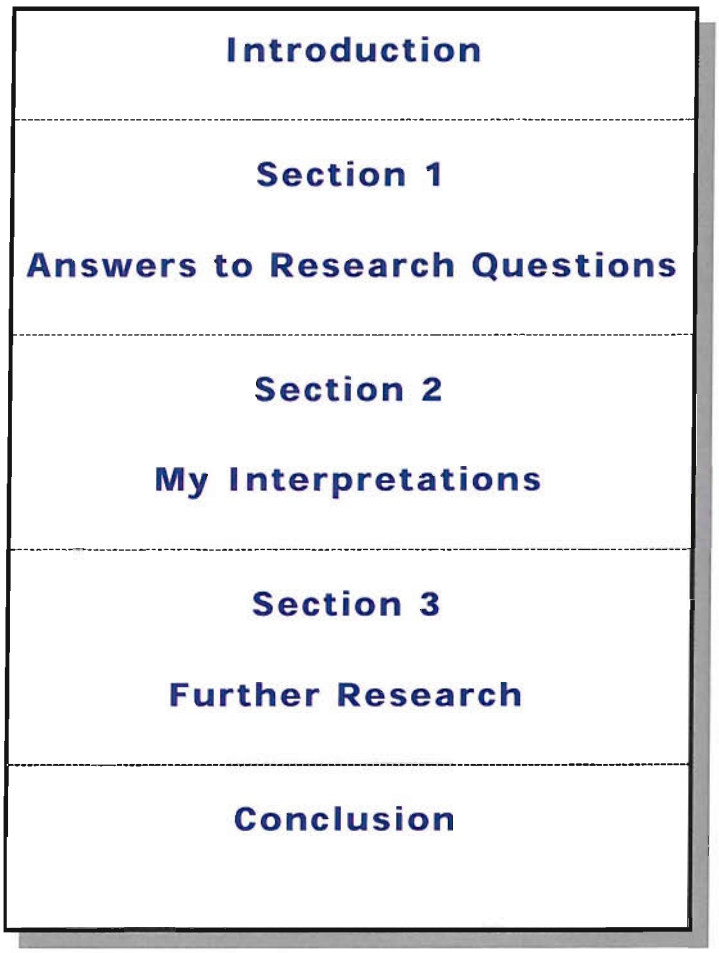
The presentation of qualitative data in three networks, namely the Intangible research management factors, the Tangible research management factors, and the final network that indicates Tools for organizing people and resources in a research management environment, provides a rich description of the interviews and follow-up interviews that were conducted for this study. Both the intangible and tangible factors primarily interact through the Tools for organizing people and resources. The tangible factors do not operate without the dynamics of the intangible factors and all of the factors presented in the three networks are now present in the merged university's research management environment.

The next chapter discusses the implications of the study's findings and results.

CHAPTER 6

Discussion

Layout of Chapter 6



Introduction

The chapter has three purposes, namely (1) to draw research questions and results together, (2) to discuss the implications of these in terms of contributions to the field of higher education management, and (3) to point towards further research. The chapter commences with a short discussion of the research questions and how these were answered. This is followed by my own interpretation of how these results contribute to the field of higher education management, with specific reference to the case institutions. Pointers for further research conclude the chapter and the thesis.

Section 1

6.1 ANSWERS TO RESEARCH QUESTIONS

The main research question of the study, namely "*What are the factors that influence a productive research environment at two merging higher education institutions?*" is answered in chapters 2, 4 and 5. In order to draw the factors from these three chapters together a table, called the factors table, is presented in Appendix IV in which I compare the factors that were identified in the qualitative phase of the study to the factors identified in the literature study, and the factors that were identified in the quantitative phase of the study. Factors that were identified include intangibles such as 'research culture', 'definitions of research/scholarship', 'control/power/ownership', and 'research profile'. Intangible factors are difficult to quantify and measure; they are difficult to imitate by competitors, and are not tracked through accounting. Other factors in the table are grouped under 'tangible factors' and 'tools for managing people and resources'. Tangible factors represent the measurable and observable factors such as the 'workload of academics', 'researchers', 'teaching', 'post grad students' and forms and mechanisms of research 'dissemination'. Five factors were grouped under 'management tools', namely 'strategic management', 'funds', 'human resource management tools and instruments', 'research niche areas' as well as 'infrastructure, facilities and equipment'.

The factors table can be used in conjunction with the network diagrams by research leaders in the development and maintenance of a university's research management system. The factors networks provide an overview of factors that should be considered during planning and execution of research management. Institutional policy should cover all factors in order to ensure that a comprehensive research system is established at the merged university. In this sense the factors table (Appendix IV) and the networks (chapter 5) become a checklist that research managers can use to guide planning, policy formulation and research execution.

The second question, namely "*What are the tangible as well as intangible factors that influence the delivery of research two merging higher education institutions?*" is answered through the factors table (Appendix IV) as well as the network diagrams

presented in chapter 5. Although the theory on tangible and intangible factors is well established, as was illustrated by the literature review in chapter 2, the empirical model that is derived from my study (refer to figure 6-1) strengthens the argument that both types of factors exist in a research environment.

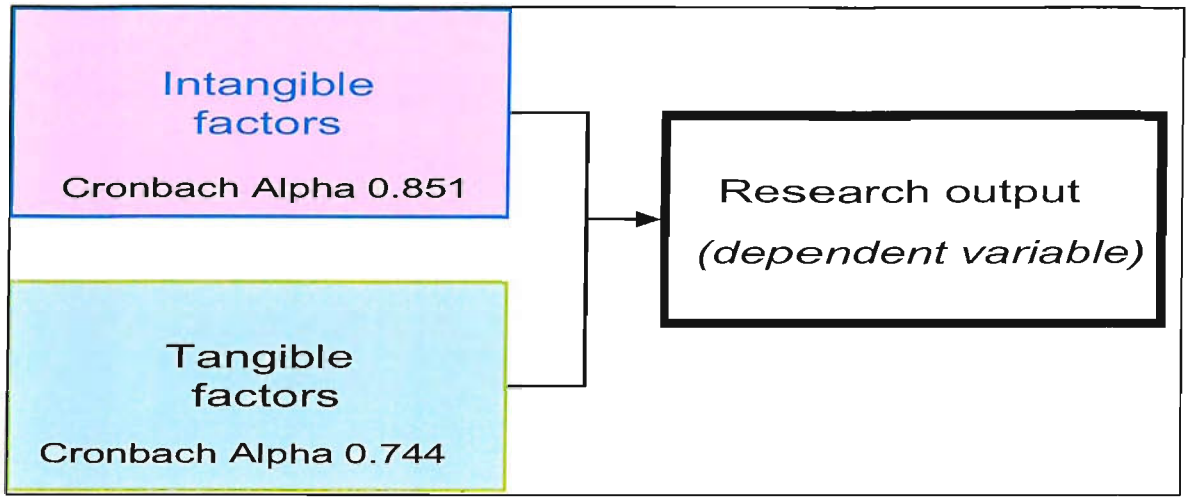


Figure 6-1: Empirical model

Furthermore, the tangible and intangible factors play a different role in predicting research output, as illustrated in chapter 4. The tangible factors are predictors of research output for non-research-active academics, which means that the research-active academics are motivated to produce research output by factors other than tangible factors. When linking this quantitative finding back to the qualitative networks of the case institutions, one can argue that tangible factors have to be in place before non-research-active academics can begin to produce research output. However, at an institution where there are many research-active academics, an over-emphasis on the tangible factors can lead to frustration on their part and will not increase research output. Therefore, in applying these findings to the merged university, the tangible factors (as illustrated in the tangible factors network) have to be in place for the large number of academics that are not currently research-active. The institution should, at the same time, also focus on putting in place the unique combination of intangible factors that will ensure competitive advantage, to ensure that the academics who are already research active are encouraged to produce more research output.

A secondary question probing *what the systemic interactions between the tangible and intangible factors are* is explained by the network diagrams in chapter 5. Of importance in the explanation of the diagram called the 'Tangible research management factors network', is the fact that some tangible factors are essential for the existence of research or a research environment at a university, and other factors are non-essential. This is explained in detail in chapter 5. Triangulation results of the quantitative empirical model (figure 6-1) of chapter 4 once again also answer this question by indicating that the tangible and intangible factors are strongly correlated; they function in tandem.

Linking to the notion of the interactions between factors is another secondary question, namely "*Which factors are predictors of research output?*" The results in chapter 4 address this question directly, where a theoretical (figure 4-5), as well as an empirical model (figure 4-4), provides a one-way indication of factors that influence 'research output'. Furthermore, chapter 4 provides two research output prediction models, namely a theoretical prediction model (figure 6-2) and an empirical prediction model (figure 6-1). The theoretical research output prediction model highlights the fact that factors associated directly with researchers, namely their 'professional activities' (83.46%) and 'individual skills and competence' (94.52%) are the predictors of research output. The high prediction rate of participation in 'professional activities', which includes international conferences, supports the Teodorescu (2000) study which indicated that international networking stimulates research for academics in developing countries.

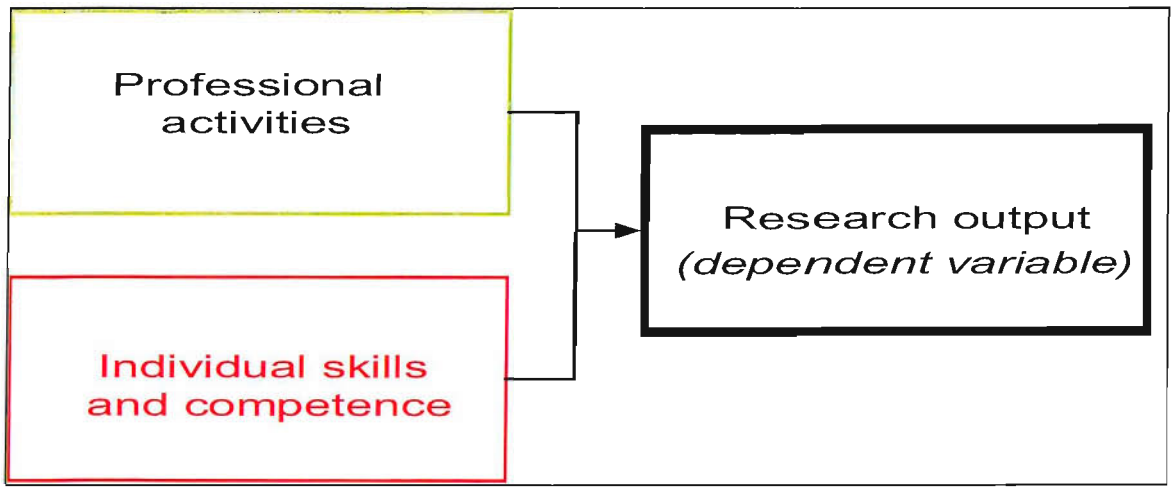


Figure 6-2: Theoretical research output prediction model

Apart from the institution's provision of opportunities for participation in professional activities or opportunities for the development of skills and competence, the theoretical model indicates that the factors that predict research output are up to an individual researcher and not institutional management. Once again, intangible factors are at play since there is little an institution can do to impose pressure on individuals to do research if they do not wish to become involved in research. The very high prediction rate of 94.52% of 'individual skills and competence' indicates that staff development in research skills should be very high on a university's priority list when stimulating research.

The question whether *certain factors vary according to different disciplines or between different staff groupings (e.g. by age, or gender)* is also answered by the results of chapter 4 with specific reference to the Chi-square test results stated under the inferential statistics section of that chapter. In brief, 'gender' and 'age' are two demographic groupings that showed the majority of differences. Female academics tended to be more confident than their male counterparts about their ability to provide study guidance and conduct independent research. Females also indicated that there were negative consequences when they did not conduct research, whereas their male counterparts indicated that there were few negative consequences in the same instance. The age group 40–49 years, which is also the group with the highest research output, felt that academic careers should be community service-free, were happy with the research opportunities that the institution provided and belonged to more professional societies than their younger counterparts.

Another secondary question – *whether there are different purposes for the research management function and, if so, what the dynamics between these purposes are* – is answered by the fact that there are three network diagrams: the tangible, the intangible and the management tools diagrams. The management tools diagram serves as a conduit through which the tangible and intangible factors interact with each other. A research environment can exist with tangible factors alone but not only with intangible factors. However, competitive advantage is achieved by combining tangible and intangible factors via the tools for managing people and resources factors. This combination leads to unique permutations of intangible factors that give the institution an edge over its competitors. The management tools factors can

furthermore be used in a controlling or facilitative manner and this will depend on the background and style of individual managers. Tools for managing people and resources can therefore not in themselves create competitive advantage and are thus distinguished from the intangible network.

The last secondary question – "*Do these factors correspond with any particular organizational levels in an organigram*?" – is answered in chapter 5, where participants clearly indicated that, in these particular institutions, there are three organizational levels: the disciplinary level, the combination of disciplines level (usually called schools or faculties), and the institutional level. Detail about the responsibilities that these case institutions allocated to each level is provided in chapter 5. The responsibility triangle, presented later-on in this chapter, provides a further answer to this question.

Next, I discuss the implications of the results and findings for the field of higher education management – noting that although these findings cannot be directly generalized to other contexts, they may be of relevance to other institutions that are similar to the two case institutions and situated in developing nations. I start by discussing a responsibility triangle and end with a typology of institutional research development phases.

6.2 MY INTERPRETATIONS

6.2.1 THE RESEARCH RESPONSIBILITY TRIANGLE

Intangible factors and management tools were discussed more than tangible factors by interviewees, as illustrated on the code list indicating the densest codes at the end of chapter 5. This means that, collectively, factors such as 'Control/Power/Ownership' {0-51} and 'Funds' {0-33} were on the minds of senior management more than the overall goal of a university (in terms of research management), namely increasing its 'Research profile' {0-13} through a productive research environment which leads to research output.

Given this skewed emphasis as a result of the merger and the completely different research cultures of the two institutions as illustrated by the codes 'University' and 'Technikon', a completely new research management system has to be designed. The design should be based on:

a. A unified overall strategic goal to *increase research output* through the creation of a productive research environment;
b. Principles that take into consideration the factors mentioned in chapter 5 as the densest, - this creates an underpinning *philosophy* for the new system; and
c. Policies that flow from the above.

In order to achieve the above, a responsibility triangle is suggested as a way in which organizational structure and consequent decision-making powers for a research management system can be designed. Responsibility is a policy-based obligation which a person or unit is handed and therefore has to oversee. Responsibility may be delegated to another competent individual or group of individuals. Responsibility in the case of the study consists of three elements: research governance, organizational research support and research ownership. These three elements are represented in figure 6-3, called the 'Responsibility triangle'.

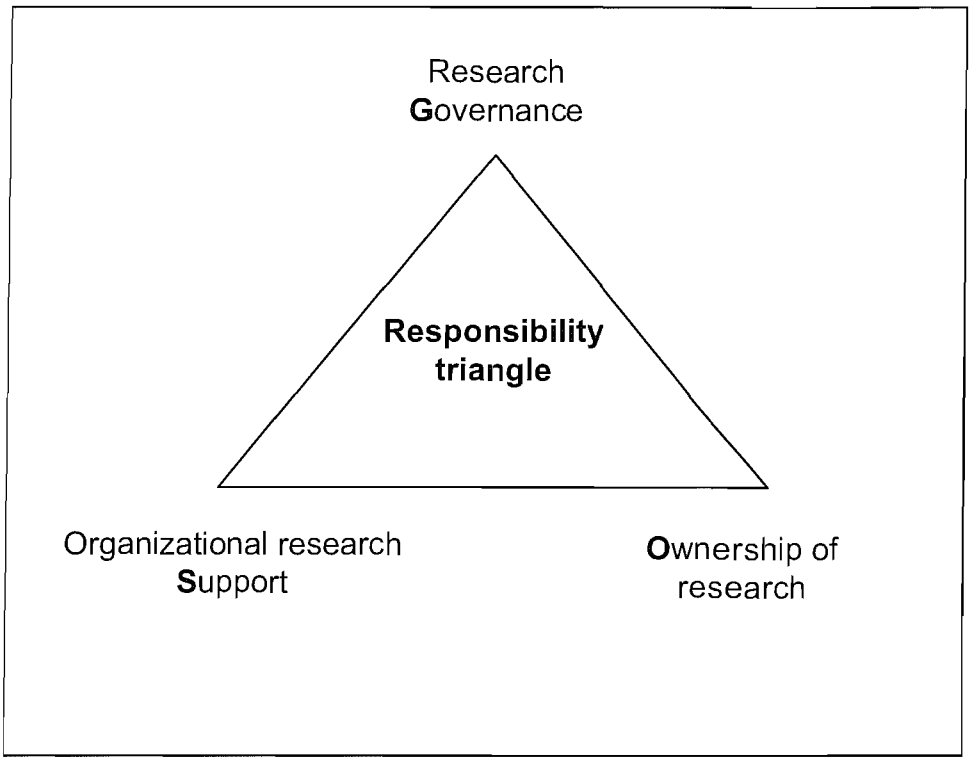


Figure 6-3: Responsibility triangle

Meaning associated with elements of responsibility in figure 6-3:

- Responsibility is made up of governance, organizational support and ownership.
- Research governance refers to ultimate accountability, control and strong influence over institutional strategic direction, which includes research strategy. Accountability is an absolute and inalienable obligation that a person has as a result of his/her position's powers and is entrenched in governance. Accountability cannot be delegated.
- Organizational research support refers to the promotion of the interests of research through the maintenance and strengthening of organizational aspects that underpin research activity. Responsibility for research support represents responsibility for the life-support activities that form the foundation of a research management system.
- Research ownership refers to the full possession of or influence over and control of the detailed planning and execution of actual research projects, based on academic discipline specific knowledge. Research ownership does not refer to the intellectual property rights of research results or outcomes.

6.2.1.1 Application of triangle of responsibility in organizational structure

The design of the new research management system should be guided by the responsibility triangle. Depending on the structural configuration of the research management system, as depicted by Mintzberg's five pulls (discussed in chapter 2), different elements from the responsibility triangle carry greater or lesser prominence. The three aspects of the triangle are applied differently in the five constellations of an organizational structure (the sharpest point indicates highest level of responsibility for a particular aspect) – refer to figure 6-4.

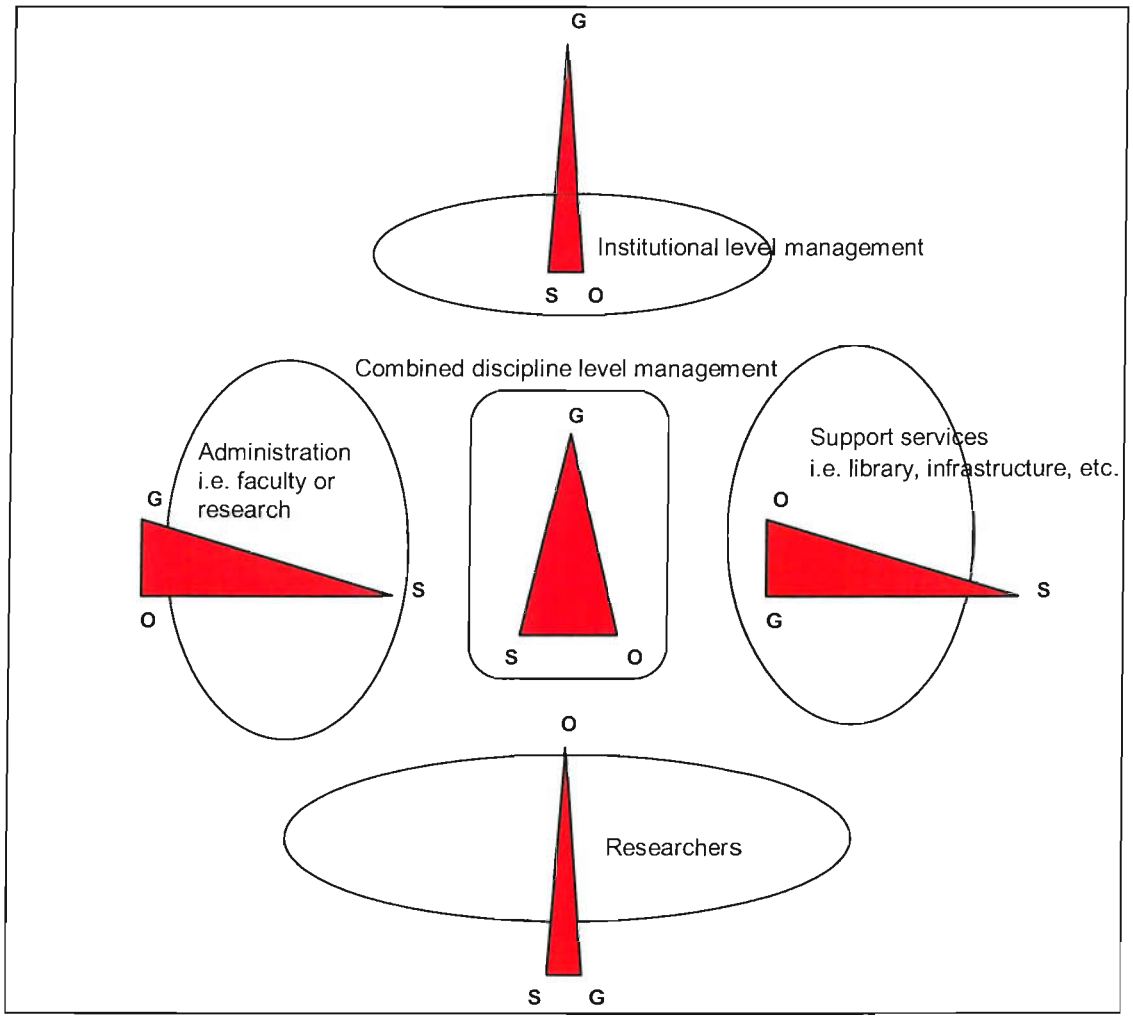


Figure 6-4: Responsibility triangle application within organizational structure

If figure 6-4 is used to design the decision-making powers for the new institution, the responsibility levels for each of the elements of the responsibility triangle will emerge as explained in table 6-1.

Table 6-1: Depth of responsibility according to responsibility triangle

Strategic apex	(Institutional management and Senate) Very high governance responsibility Low ownership responsibility Low support responsibility
Middle line	(Combined discipline level management – also referred to as the Deanery) High governance responsibility Some support responsibility Some ownership responsibility
Technostructure	(Administration – e.g. Faculty or Research administration) High support responsibility Some governance responsibility Low ownership responsibility
Support staff	(e.g. library, infrastructure, etc.) High support responsibility Some ownership responsibility Low governance responsibility
Operating core	(Researchers) High ownership responsibility Low governance responsibility Low institutional support, but high researcher development support i.e. mentorship responsibility

The factors illustrated in the tools to organize people and resources network (chapter 5) should now be implemented within each of the organizational constellations, according to the level of responsibility indicated for that particular constellation (refer to figure 6-4 and table 6-1). The factors of the tools for managing people and resources are:

- Strategic planning and management;
- Funds;
- Focus or niche areas;
- Infrastructure, facilities, equipment and tools; and

- Human Resource Management instruments and practices.

In order to illustrate with examples what is meant by implementing the management tools factors for each organizational constellation, table 6-2 indicates under which element the primary responsibility for typical research management activities falls (as taken from chapter 2 and chapter 5).

Table 6-2: Research activities according to responsibility triangle elements

Research governance (High responsibility levels at strategic apex and middle line)	**Organizational research support (High responsibility levels at technostructure and support services)**	**Ownership of research (High responsibility levels at operating core level)**
Research mission	Institutional research support services (to the operating core constellation in particular) including assistance with grant applications, etc.	Market awareness
Research strategy, which also covers: • Clarification of what is meant by research for the institution • Balance between applied and fundamental research • Research support for local development • Social accountability in use of public and private funding	Promotions, publicity and marketing of research	Research priority planning
Research policies, including, but not limited to: Operational transparency in use of public and private funding	Corporate sponsorships	Partnership/alliance building
Capital investment programme for research facilities and tools	Research information and communications technology system (interlinked with institutional system)	Research quality and ethics management
Decisions and policy regarding research resource allocation (including funding and bursaries)	Business intelligence	Research evaluation and judgements – research peer review, proposal approval, etc.
Research development targets and aims	Research tools and equipment – procurement, maintenance, management	Research stimulation and development – mentorship, coaching, co-supervision, seminars, conferences

Research governance (High responsibility levels at strategic apex and middle line)	Organizational research support (High responsibility levels at technostructure and support services)	Ownership of research (High responsibility levels at operating core level)
Research commercialization strategy and policies	Execution of relevant policies	Research projects
Monitoring of research performance, with appreciative and corrective actions		Research teaching, including decisions about postgraduate matters

6.2.2 TYPOLOGY OF PHASES OF INSTITUTIONAL RESEARCH DEVELOPMENT

On the basis of the thick description of the codes 'University' and 'Technikon' in chapter 5, I could determine that there are differences in institutional research development between the two case institutions. Therefore, I propose that there are three main phases of institutional research development, as illustrated by figure 6-5.

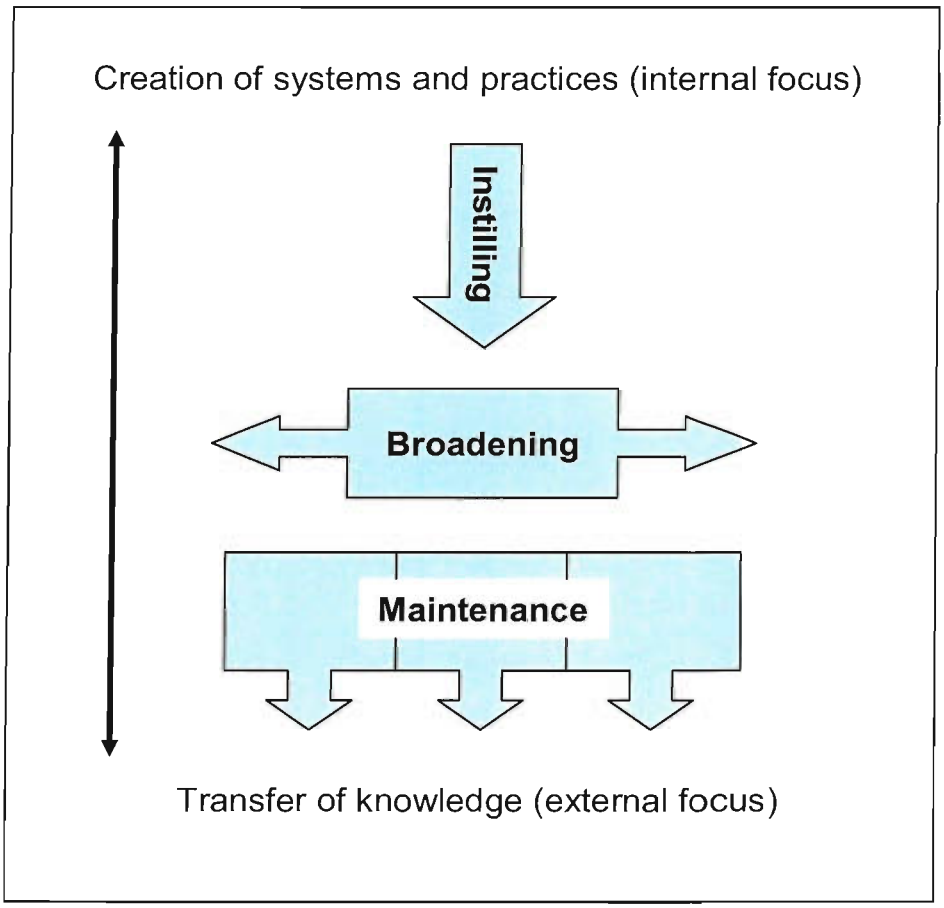


Figure 6-5: Phases of institutional research development

Referring to figure 6-5, the first phase, namely the *Instilling phase*, is where an institution has no or very little existing research activity, and has made the decision to include research activities as part of its mission. It therefore has to instil research into the institutional mission and functioning. There is an acute internal focus to instil a research system and practices into the institution. The research focus is on stimulating research activity.

In the second or *Broadening phase*, an institution already has some noteworthy research activity and strong research outputs. The research focus is on the generation of knowledge. The research activity could predominantly occur in silos (centres for excellence) or could be more widely spread among the majority of academic departments. An institution in the second phase is, however, not highly rated externally for its research quality or excellence, although there might be some units of the university that are recognized externally. The institutional mission is strongly focused on research and teaching, and the institution is aiming at increasing its research output but also its research profile through the enhancement and broadening of research quality and the types of research activities that it engages in. The institution therefore focuses internally, with some external focus.

Institutions in the third or *Maintenance phase* have exceptionally high research activity and output, as measured against their peer institutions, nationally and internationally. The institution's research profile is of world-class standing. Academics at these institutions are engaged in research as a predominant activity. Research permeates the institution with few if any units or departments not engaged in research. Research development tends to move into a maintenance phase, despite the fact that the institution is constantly identifying new research opportunities and expanding on its existing research base. The institution is strongly externally focused on the transfer of knowledge, as opposed to merely producing knowledge.

Institutions that are presently in one of the three institutional research development phases have other characteristics (presented in table 6-3). Institutions that wish to move a phase forward, such as the merged case institution on which this study was based, should consult table 6-3 and determine what it should put in place, in order to

move on. The table should be used in conjunction with the factors networks. Of importance is the fact that this study also pointed out that the best manner in which research output can be predicted is through 'individual skills and competence' and by giving opportunities for academics to participate in 'professional activities'. Research management should therefore not discount the individual academic and associated human resource management aspects in planning and executing research management practices. The arrow on the left-hand side of figure 6-5 indicates that although institutions generally move from the instilling to the maintenance phase of research development, the inverse could also occur. Institutions in the maintenance phase who become predominantly focused on internal issues (such as the creation of systems and practices) e.g. during a merger, could move back towards the broadening phase of institutional research development.

Table 6-3: Characteristics of institutions for each of the phases of research development

Dimension	Instilling phase	Broadening phase	Maintenance phase
Factors networks	None of the tangible, intangible or management tools networks are in place.	Tangible networks are in place. Broaden intangible factors as well as management tools.	Tangible, intangible and management tools networks are in place.
Management approach	Detailed and controlling management (holding the hands of the researchers).	Broad policy guidelines. Evaluation of research outputs becomes increasingly important.	Existence of good quality research is assumed, therefore management is facilitative in creating more and new research opportunities.
Post graduate students	Very few post graduate students.	Post graduate students in every discipline.	Institution known for its post graduate qualifications and prestige associated with studying at the institution.
Research leadership and activity	Research leaders and activities are based in a few disciplines.	Research leaders and activities at discipline and combined discipline levels.	Research leaders and activities at discipline, combined discipline and institutional levels.
Teaching and research	Teaching more important than research.	Teaching and research of equal importance.	Teaching is not equal in standing to research or research is more important than teaching.
Research evaluation and performance management	Evaluation of quality of research done by centralized administrative unit that drives research for the institution. Performance management criteria based on quantity of research *activities* rather than on quality or number of *outputs*. Output measured by activities.	Evaluation done by peers (internal and external to the institution). Performance management criteria based on quantity of research output (not activity) and moving towards focusing on quality of research output. Output measured as any formally recognized output (national criteria).	Evaluation done by peers and organizational mechanisms. Benchmarks are external to the organization. Performance management based on quality of research output. Output measured by quality of formally recognized outputs (international criteria).
Academics' mindset towards research	Research is a threat (unknown).	Research is important and therefore academics strive towards becoming researchers.	Research is the mark of a 'true' academic and the raison d'être of the institution.

Dimension	Instilling phase	Broadening phase	Maintenance phase
Research stimulated from . .	. . . the top down.	. . . academic disciplines to the institution.	. . . disciplines and institutional research management through inter-disciplinary and inter-institutional collaboration.
Research development	Begins with the improvement of the academics' own qualifications through institutional intervention.	Staff qualification improvement still integral but attraction of many postgraduate students becomes important.	Focus on the recruitment of the best postgraduate students. Recruitment of best researchers (head hunting) since researchers at institution are already established.
Career pathways	Teaching pathway well established Research is an add-on. Some specialist researcher categories created to initiate research.	Combined pathways of teaching and research are well established.	Teaching and research pathways well are established. Research-only pathways well established. Teaching-only pathways exist with mounting pressure to be afforded the same level of status to research pathways (Boyer's concept of scholarship).
External links	Predominantly with national funding bodies.	Predominantly with national and international funding bodies. Some industry links but this does not permeate through the institution.	National and international funding bodies. Strong industry links that permeate the institution.
Number of researchers	Very few active researchers.	Critical mass of active researchers.	Active researchers outweigh non-active researchers.
Participation in professional activities	Extremely low.	Critical mass of activities.	All academics of the institution are members of professional or scientific societies and partake in other membership activities.

Dimension	Instilling phase	Broadening phase	Maintenance phase
Researcher skills and competence	Only a select few have the necessary research skills and competence.	Broad base of academics have research skills. Employment increasingly based on research skills.	Research skills are prerequisite for entry into academia and therefore all academics at these institutions have a high level of researcher skills and competence.
Commercialization of research results	Very low and in some instances non-existent.	Low institutional priority but pockets of excellence emerge.	High on institutional priority list.

A further observation that can be made in relation to the two case institutions is that the development approaches of the institutions were different. The technikon case, which falls under the instilling phase, did not have deans or other academics who were drivers of research. Research development for the institution was therefore driven from the top down by a centralized unit. At the university case institution, there was a sufficient number of researchers who were leaders in their fields, and they were the drivers of research. As research grew in strength at the institution a need for overall coordination at institutional level became evident. The university case is in the broadening phase. Projecting these findings into the maintenance phase, the scale of research activities for an institution in this phase becomes so wide that institutional support is imperative, especially in terms of intellectual property and other specialist research functions. Research management is therefore in this phase of research development, driven from the subject discipline level, but also strongly from a centralized institutional support base.

6.3 FURTHER RESEARCH

This study identified the factors that influence a productive research environment at two merging institutions. Findings can be tested in *other institutional contexts*, especially at non-merger institutions as well as institutions with highly developed research management systems and institutions in the developed world. This can be done by quantifying the qualitative networks and thereby testing the theory with specific attention to the interactions of factors.

The *quantitative survey* can be refined to include more of the factors identified in the qualitative phase of the study and to investigate the predictive power of the factors for research output. The theoretical model indicated that institutional characteristics are not predictive of research output. The factor analysis showed that, for research active academics, there are certain alienation factors that inhibit research output. The influence of infrastructure on research output could not be determined due to low responses to these items. Infrastructure is frequently cited as an inhibitor of research in developing countries. Further attention should be given to these aspects of the questionnaire by expanding on the number of items that cover 'Institutional research management practices', 'Alienation factors' and 'Infrastructure'. The influence of 'Work conditions' on knowledge workers as included in the tangible factors network, especially in the South African context, is also an area that deserves further investigation.

Further testing and refinement of the phases of institutional research development typology and model should be done in order to strengthen the typology items and to determine generalizability across institutional types and nations. Evaluation research into the effectiveness of the responsibility triangle and its use in the design of an organizational research management structure should be conducted.

Conclusion

This case study investigated the topic of research management at two merging higher education institutions in South Africa. The overall goal of the study focused on identifying the factors that influence a productive research environment at these two institutions in order to assist the merged institution to design a new research management system. Practical work on system design is continuing at the institution and the factors identified in this study should aid institutional management in making informed decisions, covering all the relevant factors that have an impact on a productive research environment.

The combination of quantitative and qualitative research proved challenging at a paradigmatic level, although the results of the study prove that through triangulation these two research approaches supported the overall findings. At the same time the two approaches ensured that all the relevant actors in the two case institutions were given an opportunity to contribute to the redesign of the new research management system. This will create a solid platform for acceptance and buy-in in the future.

The findings of the research, although directly applicable to the two case institutions and the merged institution, provide insights into the design of a new research management system, through the factors networks, the research output prediction models, the responsibility triangle as well as the typology of the phases of research development. These are new contributions to the field of higher education management and can be practically implemented. The study furthermore indicates where additional research should be undertaken in order to generalize findings.

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APPENDICES

7.1 APPENDIX I

SURVEY ON THE STATE OF RESEARCH AT CAMPUS A & C

Dear Colleague,

Please complete and forward to . . . by . . .

Estimated completion time: 20 minutes.

Preamble:

Research as a mission and an activity has traditionally distinguished a university from any other form of higher education institution. In order to determine the state of research at campus A and to be able to support an environment that encourages excellent research output, a Research Management Task Team as part of the strategic initiatives of campus A, was established.

The Task Team is investigating the state of research at campus A and will conduct their research in three phases, namely:
A survey on the state of research at campus A (attached);
Interviews with deans of faculties and other research managers;
Benchmarking of findings.

The aim of the research is to inform campus A management about the most appropriate manner in which research can be managed at campus A. We are very aware of the implications that the integration of campus C and the merger with campus B hold for research management. Permission to include campus C and campus B amongst the respondents has been requested.

We request that all **academic staff members and staff members who are engaged in research as part of their job tasks** complete the attached questionnaire on the *State of Research at campus A*. Data obtained from the questionnaire will be used to inform the Task Team of the current research environment as well as impediments to achieving optimal research output at the institution.

Individuals will remain anonymous and results will not be used to identify individual, but rather institutional needs. Results will be shared with you via electronic means to keep you informed. Your participation is encouraged, since the retention and support of a research culture is of utmost importance to retain university status.

Instructions for completion of questionnaire:

Please read each question carefully and mark the response that best represents your answer. Some responses require a cross in the relevant block, others require that you cross all the applicable answers, while some require a written response in the space provided. Your responses to these questions will be kept confidential. Individuals will not be identified.

EXAMPLE of how to complete this questionnaire:	
What is your gender? If you are female:	
Male	1
Female	2 X

SECTION A - PERSONAL INFORMATION

In this section we are seeking information about you and your personal background.

Although we are aware of the sensitivity of the questions in this section, the information will allow us to compare groups of respondents.

1 What is your gender?

Female	1
Male	2

2 In which age category do you fall?

Less than 25 years	1
25-29 years	2
30-39 years	3
40-49 years	4
50-59 years	5
60-65 years	6
65+ years	7

3 In which faculty/division do you work?

Academic support divisions such as library, etc.	1
Faculty of Arts	2
Faculty of Economic and Management Sciences	3
Faculty of Education and Nursing	4
Faculty of Engineering	5
Faculty of Law	6
Faculty of Sciences	7

4 What is your highest academic qualification?

Higher Education Diploma(s) or equivalent	1
B-degree(s) or equivalent	2
Post graduate Diploma(s) or equivalent	3
Honours Degree(s) or equivalent	4
Master's Degree(s) or equivalent	5
Doctoral Degree(s) or equivalent	6
Other: please specify	7

5 a) Are you currently working towards furthering your academic qualifications?

Yes	1
No	2

If yes:

b) Please specify type of qualification

Higher Education Diploma or equivalent	1
B-degree or equivalent	2
Post graduate Diploma or equivalent	3
Honours Degree or equivalent	4
Master's Degree or equivalent	5
Doctoral Degree or equivalent	6
Other: please specify	7

c) Indicate where you are studying

Campus A	1
Other national institution	2
Other international institution	3

6 a) Did you apply for an NRF rating during 2002?

Yes	1
No	2

b) *If yes*, what NRF rating was awarded?

No rating obtained	1
"C" level	2
"B" level	3
"A" level	4

7 How many years, in total, have you been employed IN higher education? (include current year)

8 How many years, in total, have you been involved in professional work OUTSIDE of higher education?

9 What is your current job seniority level?

Junior lecturer/ researcher/ assistant	1
Lecturer/ researcher/ assistant	2
Senior lecturer/ researcher / assistant	3
Professor /departmental chairperson /divisional head	4

10 What are the characteristics of your employment agreement at campus A in terms of:

a) working hours?

Full-time	1
Part-time	2

b) terms of employment?

Permanent	1
Contract for a fixed period	2
Other contract: please specify	3

SECTION B – WORKING CONDITIONS

One of the unique qualities of the academic profession is the working environment at universities. The following questions concern time commitment, workload and general working conditions affecting the academic climate.

11 How many full-time academics/research staff (including yourself) work in your department/ division?

Number of personnel	

12 Indicate the average percentage of time that you spend on the following activities. **Please note that the total percentage of time allocated should add up to 100%.**

Study material preparation (paper or web-based study guides, SAQA documen-tation)	**Teaching** (preparation, classroom or web-based instruction, advising students, reading and assessing student work)	**Research** (reading literature, writing, conducting experiments, fieldwork)	**Service** (Services to clients and/or patients, paid or unpaid consulting, public or voluntary service)	**Management or Administration** (committees, department meetings, faculty specific documents, paperwork, management of people)	**Other academic activities** (attending conferences, professional activities not clearly attributable to any of the categories above)	
						100 %

13 Which of the following represents your current teaching responsibilities?

(choose one option only)

No teaching responsibilities	1
Undergraduate teaching only	2
Some undergraduate, some graduate/professional teaching	3
Graduate/professional teaching only	4

If you currently have teaching responsibilities, kindly answer questions 14-16. If you have no current teaching responsibilities, proceed to question 17.

14 How many modules are you currently teaching?

Number of courses	

15 How many part-time academics/research staff (excluding student assistants) assist you with your teaching workload?

Number of personnel	

16 How many part-time academics/research staff assist you with your assessment workload?

Number of personnel	

17 Where on the continuum of *'no research responsibilities'* versus *'full-time research'* would you place yourself in terms of your current job responsibilities?

No research responsibilities				Full-time research
1	2	3	4	5

18 How many honours degree students do you provide research supervision to (either individual or small groups of e.g. 3-4 students)?

Number of students	

19 How many master's and doctoral degree students do you provide individual research supervision to?

Number of students	

20 Indicate which activity of research you spend most of your time on **(choose only one)**:

a	No research activity as part of my job	1
b	Research supervision of postgraduate students culminating in the production of a thesis/ mini- dissertation / dissertation	2
c	Research supervision of postgraduate students culminating in externally recognised publication(s)	3
d	Individual research culminating in externally recognised publication(s)	4
e	Research with colleagues culminating in combined externally recognised publication(s)	5
f	Contract research for firms at a fee	6
g	Other (please specify)	7

SECTION C – RESEARCH OUTPUT

This section is aimed at gathering more information about your research. We would like to learn more about your research activities and results, as well as the funding and institutional support available to you.

21 How many South African disciplinary/scientific/professional societies do you currently belong to?

Number	

22 How many international disciplinary/scientific/professional societies do you currently belong to?

Number	

23 During the past three years (including this year), how many disciplinary/ scientific conferences did you attend nationally?

Number	

24 During the past three years (including this year), how many disciplinary/ scientific conferences did you attend internationally?

Number	

25 Cross the block that represents the number of scholarly contributions you completed in the *past three years (including current year).*

		0	1 – 2	3 – 4	5 – 6	7+
a	Scholarly book(s) you authored	0	1 – 2	3 – 4	5 – 6	7+
b	Scholarly book(s) you edited	0	1 – 2	3 – 4	5 – 6	7+
c	Nationally: Article(s) published in an academic book(s) or journal(s)	0	1 – 2	3 – 4	5 – 6	7+
d	Internationally: Article(s) published in an academic book(s) or journal(s)	0	1 – 2	3 – 4	5 – 6	7+
e	Research report(s) written for funded project(s), excluding contract research	0	1 – 2	3 – 4	5 – 6	7+
f	Research report(s) for privately funded (contract research) project(s)	0	1 – 2	3 – 4	5 – 6	7+
g	Nationally: Paper(s) presented at a scholarly conference(s)	0	1 – 2	3 – 4	5 – 6	7+
h	Internationally: Paper(s) presented at a scholarly conference(s)	0	1 – 2	3 – 4	5 – 6	7+
i	Professional article(s) written for a newspaper(s) or magazine(s)	0	1 – 2	3 – 4	5 – 6	7+
j	Patent(s) secured on a process or invention(s)	0	1 – 2	3 – 4	5 – 6	7+
k	Computer programme(s) written for public use	0	1 – 2	3 – 4	5 – 6	7+
l	Video(s) or film(s) produced	0	1 – 2	3 – 4	5 – 6	7+

26 a) Please indicate whether you as an individual or as part of an academic group have received any grants or special funding support for research in the *last three years (including this year)*?

Yes	No
1	2

b) If yes, which of the following sources provided these research funds? ***(indicate one or more).***

campus A	1
Government entities such as the NRF/ THRIP/ MRC/ WRC etc.	2
Business firms/companies	3

Private foundations	4
International organisations	5
Other (please specify)	6

SECTION D – YOUR OPINION

In this section we want your opinion and perception relating to academic matters.

27 To what extent do you integrate your research *findings* with your teaching activities? Cross "not applicable" if you do not teach or you do not conduct research.

Very little integration				Integrated to a great extent	Not applicable
1	2	3	4	5	6

28 Please rate the current facilities and resources at campus A. If you do not utilise a facility or resource, please cross "not applicable".

		Poor				Excellent	Not applicable
a	Laboratories	1	2	3	4	5	6
b	Research equipment and instruments	1	2	3	4	5	6
c	Computers	1	2	3	4	5	6
d	IT network access and availability	1	2	3	4	5	6
e	Library holdings e.g. books, paper- based journals	1	2	3	4	5	6
f	Electronic journals	1	2	3	4	5	6
g	Office space	1	2	3	4	5	6
h	Secretarial support	1	2	3	4	5	6
i	Research support staff (excluding student assistants)	1	2	3	4	5	6

29 Based on your experience at campus A, how would you assess the following aspects?

		Poor				Excellent
a	The intellectual atmosphere e.g. academic standards and status of the institution	1	2	3	4	5

b	Relationships between the academics and departmental management	1	2	3	4	5
c	Relationships between academics and faculty management	1	2	3	4	5
d	Relationships between academics and university management	1	2	3	4	5
e	Academic morale e.g. positive attitude	1	2	3	4	5
f	Clarity on the new institutional vision	1	2	3	4	5
g	Your sense of belonging	1	2	3	4	5

30 To what extent do you believe that an academic career can be research free?

No extent				Great extent
1	2	3	4	5

31 To what extent do you believe that an academic career can be community service free?

No extent				Great extent
1	2	3	4	5

32 To what extent do you believe that an academic career can be teaching free?

No extent				Great extent
1	2	3	4	5

33 Rate the influence that each of the following has on your commitment to campus A?

Use a 5 point scale where:

1 = strong negative influence, and

5 = strong positive influence.

		Strong negative influence				Strong positive influence
a	Physical resources and infrastructure	1	2	3	4	5
b	Flexible workplace arrangements e.g. can work from home	1	2	3	4	5
c	A safe and secure working environment	1	2	3	4	5
d	Family commitments	1	2	3	4	5

e	Opportunity to earn extra income	1	2	3	4	5
f	Social relationships at work	1	2	3	4	5
g	Opportunity to network nationally and internationally	1	2	3	4	5
h	Academic reputation of institution	1	2	3	4	5
i	Opportunity to realise personal goals	1	2	3	4	5

34 Please **RANK in order of importance** the following affiliations according to the importance that they have to you as an individual. Indicate your answer using the following 5 point scale where:

1 = least important, and

5 = most important.

NOTE THAT EACH POINT ON THE SCALE MAY ONLY BE ALLOCATED ONCE.

		Order of importance
a	My academic discipline	
b	My institution (campus A)	
c	My role in my community	
d	My profession	
e	My department/division at campus A	

35 With specific reference to research at campus A, which one of the following faculties, in your opinion, enjoys the highest status? **(choose only one)**

Faculty of Arts	1
Faculty of Economic and Management Sciences	2
Faculty of Education and Nursing	3
Faculty of Engineering	4
Faculty of Law	5
Faculty of Sciences	6

36 In your opinion, which one of the following definitions most closely defines "scholarship"?

a	The creation, development and maintenance of the intellectual infrastructure of subjects and disciplines, in forms such as dictionaries, scholarly editions, catalogues and contributions to major research databases.	1

b	The creation, development and maintenance of the intellectual infrastructure of subjects and disciplines, through unity between research, teaching and service.	2

37 When conducting research, do your primarily use:

a	Qualitative methodology	1
b	Quantitative methodology	2
c	A combination of quantitative and qualitative methodologies	3
d	I do not conduct research	4

To what extent do you agree with the following statement:

38 "A good research supervisor is a good researcher".

Strongly disagree				Fully agree
1	2	3	4	5

To what extent do you agree with the following statement:

39 "A good researcher is a good research supervisor".

Strongly disagree				Fully agree
1	2	3	4	5

40 To what extent, in your view, is research supervision of master's and doctoral students a research output or a teaching output?

Research output				Teaching output
1	2	3	4	5

41 Indicate what, in your view, constitutes meaningful research?

Fundamental research				Applied research
1	2	3	4	5

42 Considering the type of research that you do, to whom does it hold primary, immediate relevance? **(choose only one.)**

a	The academic and research community including my profession	1
b	The social community at large	2
c	The business community	3
d	I do not conduct research	4

43 To what extent is there opportunity to get involved in research across academic disciplines at campus A? (interdisciplinary)

No opportunity				Many opportunities
1	2	3	4	5

44 To what extent is there opportunity to get involved in research across institutions? (inter-institutional)

No opportunity				Many opportunities
1	2	3	4	5

45 How capable do you rate yourself to conduct independent research?

Not capable				Very capable
1	2	3	4	5

46 How confident are you about your ability to provide study guidance to postgraduate students?

Not confident				Very confident
1	2	3	4	5

47 How many research opportunities are there at campus A where you can hone your research skills?

Very few				Plentiful
1	2	3	4	5

48 Indicate your agreement with the following statements relating to academic research.

		Strongly disagree				Strongly agree
a	A strong record of successful research activity is important in an academic's evaluation	1	2	3	4	5
b	In my department/division it is difficult for a person to achieve promotion if he/she does not publish	1	2	3	4	5
c	An academic's promotion is based on quantity, not quality, of research output	1	2	3	4	5
d	I would rather teach than do research	1	2	3	4	5
e	Research funding in my field is easier to get now than it was five years ago	1	2	3	4	5
f	Contract research in exchange for a fee is valued at this institution	1	2	3	4	5
g	A academic's international network is important in an his/her evaluation at this institution	1	2	3	4	5

SECTION E – RESEARCH MANAGEMENT PRACTICES

In this section we would like to gauge your opinion on the research management practices at campus A. Research management practices refers to the dealings of management, at various levels of the institution, that are aimed at supporting and enhancing research outputs of the institution.

49 How informed are you about campus A's research performance relative to that of other academic institutions?

Poorly informed				Well informed
1	2	3	4	5

50 How informed are you about your faculty's/division's research performance relative to that of other faculties/divisions at campus A?

Not informed				Highly informed
1	2	3	4	5

51 How much do you know about your faculty's/division's research policy?

Not much				Fully informed
1	2	3	4	5

Concerning research focus areas:

(Research focus areas are pre-identified niche areas in which research activity takes place in a focused and exclusive manner).

52 How important are research focus areas for your <u>department's/division's</u> research functioning?

Not important				Very important
1	2	3	4	5

53 How important are research focus areas for the <u>university's</u> research functioning?

Not important				Very important
1	2	3	4	5

Concerning performance management of an individual's research outputs:

(Performance management refers to the mutually agreed upon outputs (quantified) that are contracted between you and your manager (or co-ordinator) for a particular

period of time – usually one year - and the processes used to ensure that those outputs are realised).

54 How specific have research outputs been contracted with you?

Not specific				Very specific
1	2	3	4	5

55 How often are there negative consequences (e.g. withholding of research funds) if you do not produce research outputs?

Never				Always
1	2	3	4	5

Concerning income generation from research results:

(Generation of income refers to any form of income that campus A or the researcher may generate from the results of research).

56 How important is it that research results are used to generate income for the university?

Not important at all				Very important
1	2	3	4	5

57 In your opinion, what would be the long-term impact on your academic discipline if research results are used to generate income?

Negative impact				Positive impact
1	2	3	4	5

Concerning research structures and support services at campus A:

58 If you had to describe the research committee in your faculty/division, which of the following most characterizes the committee? (Mark one only)

a	To my knowledge there is no research committee.	1
b	There is a committee, but it scarcely has the know-how and resources with which to assist researchers.	2
c	There is a committee that offers budgetary support, methodological guidance and support, as well as encouragement to publish findings.	3
d	The committee offers assistance as in the previous case, but also reaches out. It actively encourages researchers to apply for funding, initiates efforts for fundraising and offers further services such as guidance, data processing and editing, etc.	4

Question 59 on next page

In your opinion, what are the services that should exist at different levels of the university that will support a productive research environment at campus A?

For each statement you may indicate a maximum of two levels. Should you regard none of the first four options as necessary, please cross "not applicable".

		Departmental level	Faculty level	University level	Separate, centrally located support function	Not applicable
a	Planning the physical and material conditions under which research may flourish	1	2	3	4	5
b	Improving the dissemination of research results to the outside world	1	2	3	4	5
c	Providing an integrated information and communications system to report on research	1	2	3	4	5
d	Assistance with compilation of research grants and contracts	1	2	3	4	5
e	Development of a research mission and strategy	1	2	3	4	5
f	Delineation of broad research focus areas to guide research priorities and fund allocation	1	2	3	4	5
g	Development and implementation of a research policy	1	2	3	4	5
h	Ensuring statutory compliance of the research function	1	2	3	4	5
i	Allocation of research resources including people and funds	1	2	3	4	5
j	Promotion, publicizing and marketing of research services	1	2	3	4	5
k	Planning of the capital investment programme in research facilities	1	2	3	4	5
l	Wooing of corporate sponsors	1	2	3	4	5

m	Partnership/alliance building	1	2	3	4	5
n	Conducting research quality assurance	1	2	3	4	5
o	Other (please specify)	1	2	3	4	5

Thank you for your participation and the time taken to complete this questionnaire.

SURVEY ON THE STATE OF RESEARCH AT CAMPUS B: OPINIONS OF ACADEMICS

Dear Colleague,

As you will know, research is a key distinguishing feature of higher education institutions. As part of the preparations for the merger with campus A, the two institutions are undertaking a survey of the state of research at campus B and campus A. The purpose of the survey is to provide guidance on the kind of environment necessary to support and encourage excellent research output at the merged university.

The aim of the research is to inform the merged university's management team about the most appropriate manner in which research can be managed at the new institution. We request that all **permanent academic staff members** complete the attached questionnaire on the *State of Research at campus B*.

Individuals will remain anonymous and results will not be used to identify individual, but rather institutional needs. Main findings will be shared with you via electronic means to keep you informed.

The questionnaire has already been administered at campus A and yielded a 50% response rate. Let's take up the challenge and produce a higher response rate at campus B! **Your participation is encouraged, since the retention and development of a research culture is of utmost importance to university status.**

Please respond by *28 April 2004* and return the completed questionnaire to your Faculty Research Manager's office. Office details below:

Estimated completion time: 20 minutes.
Thank you very much for your assistance.
Sincerely,
(Dean: Research)

Instructions for completion of questionnaire:

Please read each question carefully and mark the response that best represents your answer. Some responses require a cross in the relevant block, others require that you cross all the applicable answers, while some require a written response in the space provided. Your responses to these questions will be kept confidential. Individuals will not be identified.

EXAMPLE of how to complete this questionnaire: What is your gender? If you are female:	
Male	1
Female	2 X

SECTION A - PERSONAL INFORMATION

In this section we are seeking information about you and your personal background.

Although we are aware of the sensitivity of the questions in this section, the information will allow us to compare groups of respondents.

1 What is your gender?

Female	1
Male	2

2 What is your race group?

Black	1
Coloured	2
Asian	3
White	4
Other	5

3 In which age category do you fall?

Less than 25 years	1
25-29 years	2
30-39 years	3

40-49 years	4
50-59 years	5
60-65 years	6
65+ years	7

4 In which faculty do you work?

Faculty of Art, Design & Architecture	1
Faculty of Business Management	2
Faculty of Engineering	3
Faculty of Health Sciences	4

5 In which department do you work? **(choose only one.)**

FACULTY OF ART, DESIGN AND ARCHITECTURE

Ceramic Design	1
Clothing Technology	2
Fine Arts	3
Graphic Design	4

Industrial Design	5
Interior Design	6
Jewellery Design	7
Product Design	8

FACULTY OF BUSINESS MANAGEMENT

School of Information Technology	
Business Information Systems	9
Laboratories and EUC	10
Office Management and Technology	11
Software Development	12
School of Operations Management	
Business Administration	13
Entrepreneurial Studies	14
Human Resources Management	15
Management	16
Production and Operation Management	17
School of Education and Communication Management	
Business and Educational Studies	18

School of Accountancy	
Accounting	22
Auditing and Taxation	23
Banking and Credit Management	24
Cost and Management Accounting	25
Law and Corporate Administration	26
Hotel School	
Food and Beverage Management	27
Hospitality Management	28
Hospitality Operations	29
School of Applied Marketing	
Logistics and Transportation Management	30

Business Communication	19
Communication Skills	20
Public Relations Management	21

Marketing and Retail Management	31
Tourism and Sport Management	32

FACULTY OF ENGINEERING

School of Electrical and Computer systems Engineering	
Communication Engineering	33
Computer Systems Engineering	34
Digital Engineering	35
Instrumentation and Control	36
Power Engineering	37
School of Mines	
Geology	38
Mine Surveying	39
Mining	40
School of Built Environment	
Civil Engineering	41
Construction Management and Quantity Surveying	42
Real Estate	43
Town and Regional Planning	44

School of Process and Mechanical Engineering	
Chemical Engineering	45
Engineering Metallurgy	46
Extraction Metallurgy	47
Industrial Engineering	48
Mechanical Engineering	49
School of Applied Sciences	
Analytical Chemistry	50
General Chemistry	51
Laboratory Services	52
Mathematics	53
Physics	54
Statistics	55

FACULTY OF HEALTH SCIENCES

Turn to next page.

FACULTY OF HEALTH SCIENCES

School of Bio Sciences	
Anatomy and Physiology	56
Biomedical Technology	57
Biotechnology	58
Food Technology	59
Optometry	60
School of Public Health	
Emergency Medical	61

School of Clinical Sciences	
Biokinetics	65
Chiropractics	66
Homeopathy	67
Radiography	68
Somatology	69

Care	
Environmental Health	62
Nursing Sciences	63
Podiatry	64

6 What is your highest academic qualification?

M+3, e.g., National Diploma / first Bachelors degree, N Dip, BA degree, etc.	1
M+4, e.g., B Tech, NH Dip, Honours degree, etc.	2
M+5, e.g., M Tech, M Dip Tech, MSc, M Phil, etc.	3
M+6, e.g., D Tech, Laur Tech, PhD, D Phil, etc.	4
Other: please specify	5

7 a) Are you currently working towards furthering your academic qualifications?

Yes	1
No	2

If yes:

b) Please specify type of qualification

M+3, e.g., National Diploma / first Bachelors degree, N Dip, BA degree, etc.	1
M+4, e.g., B Tech, NH Dip, Honours degree, etc.	2
M+5, e.g., M Tech, M Dip Tech, MSc, M Phil, etc.	3
M+6, e.g., D Tech, Laur Tech, PhD, D Phil, etc.	4
Other: please specify	5

c) Indicate where you are studying

campus B	1
campus A	2
Other national institution	3
International institution	4

8 How many years, in total, have you been employed IN higher education? (include current year)

9 How many years, in total, have you been involved in professional work OUTSIDE of higher education (include current year)?

10 What is your current job seniority level?

Junior lecturer	1
Lecturer	2
Senior lecturer	3
Professor / HOD / HOS / Dean	4

11 What are the characteristics of your employment agreement at campus B in terms of:

a) working hours?

Full-time	1
Part-time	2

b) terms of employment?

Permanent	1
Contract for a fixed period	2
Other contract: please specify	3

SECTION B – WORKING CONDITIONS

One of the unique qualities of the academic profession is the working environment at universities and technikons. The following questions concern time commitment, workload and general working conditions affecting the academic climate.

12 How many full-time academics (including yourself) work in your department?

Number of personnel	

13 Indicate the average percentage of time that you spend on the following activities. **Please note that the total percentage of time allocated should add up to 100%.**

Study material-preparation (paper or web-based study guides, SAQA documen-tation)	**Teaching** (preparation, classroom or web-based instruction, advising students, lab duties, reading and assessing student work, monitoring experiential learning)	**Research** (reading literature, writing, conducting experiments, fieldwork)	**Service** (services to clients and/or patients, paid or unpaid consulting, public or voluntary service)	**Management or Administration** (committees, department meetings, faculty specific documents, paperwork, management of people)	**Other academic activities** (attending conferences, professional activities not clearly attributable to any of the categories above)	
						100 %

14 Which of the following represents your current teaching responsibilities? **(choose one option only)**

No teaching responsibilities	1
Undergraduate teaching only (up to and including B Tech)	2
Some undergraduate, some postgraduate teaching	3
Postgraduate teaching only	4

15 How many formal lecture hours (including tutorials and lab duties) do you currently have each week?

Number of hours	

16 How many formal student support hours, excluding formal lecture hours (above), do you currently have each week?

Number of hours	

17 How many formal hours do you spend on postgraduate student contact each week?

Number of hours	

18 How many part-time academics assist you with your assessment workload?

Number of personnel	

19 Where on the continuum of *'no research responsibilities'* versus *'full-time research'* would you place yourself in terms of your current job responsibilities?

No research responsibilities				Full-time research
1	2	3	4	5

20 How many B-Tech and M-Tech course work students do you provide research supervision to?

Number of students	

21 How many research master's and doctoral degree students do you provide research supervision to?

Number of students	

22 Indicate which activity of research you spend **most** of your time on **(choose only one)**:

a	No research activity as part of my job	1
b	Research supervision of postgraduate students culminating in the production of a thesis / mini- dissertation / dissertation	2
c	Research supervision of postgraduate students culminating in externally recognised publication(s)	3

d	Individual research culminating in externally recognised publication(s)	4
e	Research with colleagues culminating in combined externally recognised publication(s)	5
f	Contract research for firms at a fee	6
g	Other (please specify)	7

SECTION C – RESEARCH OUTPUT

This section is aimed at gathering more information about your research. We would like to learn more about your research activities and results, as well as the funding and institutional support available to you.

23 How many South African disciplinary/scientific/professional societies do you currently belong to?

Number	

24 How many international disciplinary/scientific/professional societies do you currently belong to?

Number	

25 During the past three years (2001-2003), how many disciplinary/scientific conferences did you attend nationally?

Number	

26 During the past three years (2001-2003), how many disciplinary/ scientific conferences did you attend internationally?

Number	

27 Cross the block that represents the number of scholarly contributions you completed in the *past three years (2001-2003).* If you have completed more than 4 contributions, please write the number of contributions under the "other" block.

		0	1	2	3	4	Other e.g. 7
a	Scholarly book(s) you authored	0	1	2	3	4	
b	Scholarly book(s) you edited	0	1	2	3	4	
c	Nationally: Article(s) published in an academic book(s) or journal(s)	0	1	2	3	4	
d	Internationally: Article(s) published in an academic book(s) or journal(s)	0	1	2	3	4	
e	Research report(s) written for funded project(s), excluding contract research	0	1	2	3	4	
f	Research report(s) for privately funded (contract research) project(s)	0	1	2	3	4	
g	Nationally: Paper(s) presented at a scholarly conference(s)	0	1	2	3	4	
h	Internationally: Paper(s) presented at a scholarly conference(s)	0	1	2	3	4	
i	Professional article(s) written for a newspaper(s) or magazine(s)	0	1	2	3	4	
j	Patent(s) secured on a process or invention(s)	0	1	2	3	4	
k	Computer programme(s) written for public use	0	1	2	3	4	
l	Video(s), film(s) produced, artifacts or exhibitions	0	1	2	3	4	

28 a) Please indicate whether you as an individual or as part of an academic group have received any grants or special funding support for research in the *last three years (2001-2003)*?

Yes	No
1	2

b) If yes, which of the following sources provided these research funds? ***(indicate one or more).***

campus B	1
Government entities such as the NRF/ THRIP/ MRC/ WRC etc.	2
Business firms/companies	3
Private foundations and development agencies	4
International organisations	5

Other (please specify)	6

SECTION D – YOUR OPINION

In this section we want your opinion and perception relating to academic matters.

29 To what extent do you integrate your research *findings* with your teaching activities? Cross "not applicable" if you do not teach or you do not conduct research.

Very little integr ation				Integrated to a great extent	Not applicable
1	2	3	4	5	6

30 Please rate the current facilities and resources at campus B. If you do not utilise a facility or resource, please cross "not applicable".

		Poor				Excell ent	Not appli- cable
a	Laboratory space	1	2	3	4	5	6
b	Standard laboratory equipment	1	2	3	4	5	6
c	Research equipment and instruments	1	2	3	4	5	6
d	Computers	1	2	3	4	5	6
e	IT network access and availability	1	2	3	4	5	6
f	Library holdings e.g. books, paper- based journals	1	2	3	4	5	6
g	Electronic journals	1	2	3	4	5	6
h	Office space	1	2	3	4	5	6
i	Secretarial support	1	2	3	4	5	6
j	Research and technical support staff (not the Research Development Unit)	1	2	3	4	5	6
k	Postgraduate student registration processes	1	2	3	4	5	6
l	Faculty-level research/postgraduate student related administration	1	2	3	4	5	6

31 Based on your experience at campus B, how would you assess the following aspects?

		Poor				Excel-lent
a	The intellectual atmosphere e.g. academic standards and status of the institution	1	2	3	4	5
b	Relationships between the academics and departmental management	1	2	3	4	5
c	Relationships between academics and faculty management (including HOS's)	1	2	3	4	5
d	Relationships between academics and technikon management	1	2	3	4	5
e	Morale amongst academics e.g. positive attitude	1	2	3	4	5
f	Faith in the future of the new university	1	2	3	4	5
g	Your sense of belonging at campus B	1	2	3	4	5

32 To what extent do you believe that an academic career can be research free?

No extent				Great extent
1	2	3	4	5

33 To what extent do you believe that an academic career can be community service free?

No extent				Great extent
1	2	3	4	5

34 To what extent do you believe that an academic career can be teaching free?

No extent				Great extent
1	2	3	4	5

35 Rate the influence that each of the following has on your commitment to campus B?
Use a 5 point scale where:
1 = strong negative influence, and
5 = strong positive influence.

		Strong negative influence				Strong positive influence	Not able to com-ment
a	State of physical resources and infrastructure	1	2	3	4	5	6
b	Flexible workplace arrangements e.g. can work from home	1	2	3	4	5	6

c	A safe and secure working environment	1	2	3	4	5	6
d	Accommodation of family commitments	1	2	3	4	5	6
e	Opportunity to earn extra income	1	2	3	4	5	6
f	Social relationships at work	1	2	3	4	5	6
g	Opportunity to network nationally and internationally	1	2	3	4	5	6
h	Academic reputation of institution	1	2	3	4	5	6
i	Opportunity to realise personal goals	1	2	3	4	5	6

36 Please **RANK in order of importance** the following affiliations according to the importance that they have to you as an individual. Indicate your answer using the following 5 point scale where:

1 = least important, and

5 = most important.

NOTE THAT EACH POINT ON THE SCALE MAY ONLY BE ALLOCATED ONCE.

		Order of importance
a	My academic discipline	
b	My institution (campus B)	
c	My role in my community	
d	My profession	
e	My department at campus B	

37 With specific reference to <u>research status</u> at campus B, which one of the following faculties, in your opinion, enjoys the highest status? **(choose only one)**

Faculty of Art, Design & Architecture	1
Faculty of Business Management	2
Faculty of Engineering	3
Faculty of Health Sciences	4

38 In your opinion, which one of the following definitions most closely defines "scholarship"?

a	The creation, development and maintenance of the intellectual infrastructure of subjects and disciplines, in forms such as dictionaries, scholarly editions, catalogues and contributions to major research databases.	1

b	The creation, development and maintenance of the intellectual infrastructure of subjects and disciplines, through unity between research, teaching and service.	2

39 When conducting research, do your primarily use:

a	Qualitative methodology	1
b	Quantitative methodology	2
c	A combination of quantitative and qualitative methodologies	3
d	I do not conduct research	4

To what extent do you agree with the following statement:

40 "A good research supervisor is a good researcher".

Strongly disagree				Fully agree
1	2	3	4	5

To what extent do you agree with the following statement:

41 "A good researcher is a good research supervisor".

Strongly disagree				Fully agree
1	2	3	4	5

42 To what extent, in your view, is research supervision of master's and doctoral students a research output or a teaching output?

Research output				Teaching output
1	2	3	4	5

43 Indicate what, in your view, constitutes meaningful research?

Fundamental research				Applied research
1	2	3	4	5

44 Considering the type of research that you do, to whom does it hold <u>primary, immediate</u> relevance? **(choose only one.)**

a	The academic and research community including my profession	1
b	The social community at large	2
c	The business/industry community	3
d	I do not conduct research	4

45 To what extent is there opportunity to get involved in research across academic disciplines at campus B? (interdisciplinary)

No opportunity				Many opportunities
1	2	3	4	5

46 To what extent is there opportunity to get involved in research across institutions? (inter-institutional)

No opportunity				Many opportunities
1	2	3	4	5

47 How capable do you rate yourself to conduct independent research?

Not capable				Very capable
1	2	3	4	5

48 How confident are you about your ability to provide study guidance to postgraduate students?

Not confident				Very confident
1	2	3	4	5

49 How many opportunities are there at campus B where you can improve/hone your research skills?

Very few				Plentiful
1	2	3	4	5

50 Indicate your agreement with the following statements relating to research.

		Strongly disagree				Strongly agree
a	A strong record of successful research activity is important in an academic's evaluation	1	2	3	4	5
b	In my department it is difficult for a person to achieve promotion if he/she does not publish	1	2	3	4	5
c	An academic's promotion is based on quantity, not quality, of research output	1	2	3	4	5
d	I would rather teach than do research	1	2	3	4	5
e	Research funding in my field is easier to get now than it was five years ago	1	2	3	4	5
f	Contract research in exchange for a fee is valued at this institution	1	2	3	4	5
g	An academic's international network is important in an his/her evaluation at this institution	1	2	3	4	5
Comments:						

SECTION E – RESEARCH MANAGEMENT PRACTICES

In this section we would like to gauge your opinion on the research management practices at campus B. Research management practices refer to the dealings of management, at various levels of the institution, that are aimed at supporting and enhancing research activities at the institution.

51 How informed are you about campus B's research performance relative to that of other academic institutions?

Poorly informed				Well informed
1	2	3	4	5

52 How informed are you about your faculty's research performance relative to that of other faculties at campus B?

Not informed				Highly informed
1	2	3	4	5

53 How much do you know about the campus B research policy?

Not much				Fully informed
1	2	3	4	5

Concerning research focus areas:

(Research focus areas are pre-identified niche areas in which research activity takes place in a focused and exclusive manner).

54 How important are research focus areas for your faculty's research activity?

Not important				Very important
1	2	3	4	5

55 How important are research focus areas for the technikons research functioning?

Not important				Very important
1	2	3	4	5

Concerning performance management of an individual's research outputs:

(Performance management refers to the mutually agreed upon outputs (quantified) that are contracted between you and your manager (or co-ordinator) for a particular period of time – usually one year - and the processes used to ensure that those outputs

are realised).

56 How specific have research outputs been contracted with you?

Not specific				Very specific
1	2	3	4	5

57 How often are there negative consequences (e.g. withholding of promotion) if you do not produce research outputs?

Never				Always
1	2	3	4	5

Concerning income generation from research results:

(Generation of income refers to any form of research income that is generated from the results of research or through research activities).

58 How important is it that research generates income for the technikon?

Not important at all				Very important
1	2	3	4	5

59 In your opinion, what would be the long-term impact on your academic discipline if research were used to generate income?

Negative impact				Positive impact
1	2	3	4	5

Concerning research structures and support services at campus B:

60 If you had to describe the research development unit at your technikon, which of the following most characterizes the unit? (Mark one only)

a	To my knowledge there is no functional research development unit.	1
b	There is a research development unit. Research is occurring at the technikon, but is not actively encouraged by the unit. The unit has insufficient resources with which to assist researchers.	2
c	The research unit development controls research resources and make significant research possible. The unit meets those ongoing research and evaluation needs of the technikon and issues periodic reports. There is a research culture in the institution but it is not the domain of the majority.	3

d	The research development unit of the technikon has substantial resources in terms of personnel positions, administrative assistance and budgets. Staff members of the unit have strong research skills. The prominence of research activity in the unit influences and promotes research throughout the institution. The scope and style of the research unit is highly influential but it does not have an exclusive role in moulding the institutional research culture.	4
Comments		

Question 61 on next page

61 In your opinion, what are the services that should exist at different levels of the technikon that will support a productive research environment at campus B?

For each statement you may indicate a maximum of two levels. Should you regard none of the first three options as necessary, please cross "not applicable".

		Departmental level	Faculty level	Separate, central Technikon level	Not applicable
a	Planning the physical and material conditions under which research may flourish	1	2	3	4
b	Improving the dissemination of research results to the outside world	1	2	3	4
c	Providing an integrated information and communications system to report on research	1	2	3	4
d	Assistance with compilation of research grants and contracts	1	2	3	4
e	Development of a research mission and strategy	1	2	3	4
f	Delineation of broad research focus areas to guide research priorities and fund allocation	1	2	3	4
g	Development and implementation of a research policy	1	2	3	4
h	Ensuring ethical adherence of research activities	1	2	3	4
i	Allocation of research resources including people and funds	1	2	3	4
j	Promotion, publicizing and marketing of research services	1	2	3	4
k	Planning of the capital investment programme in research facilities	1	2	3	4
l	Wooing of corporate sponsors	1	2	3	4

m	Partnership/alliance building	1	2	3	4
n	Conducting research quality assurance	1	2	3	4
	Other (please specify)				
o		1	2	3	4
p		1	2	3	4
q		1	2	3	4
r		1	2	3	4

Thank you for your participation and the time taken to complete this questionnaire.

7.2 APPENDIX II

RENUMBERING OF QUESTIONNAIRES

DEMOGRAPHIC VARIABLES

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Demographic variables	Gender	1	1	1	
Demographic variables	Race group	-	2	2	
Demographic variables	Age	2	3	3	
Demographic variables	Organizational unit – (Faculty / division)	3	4	4	
Demographic variables	Organizational unit – (Department)		5	5	
Demographic variables	Highest qualification	4	6	6	
Demographic variables	Further formal study - formal research development	5,a, b, c	7 a, b, c	7 a, b, c	
Demographic variables	NRF rating	6 a, b	-	-	
Demographic variables	Employed in HE – career pattern	7	8	8	
Demographic variables	Employed outside HE – career pattern	8	9	9	

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Demographic variables	Job seniority level	9	10	10	
Demographic variables	Employment contract – part-time or full-time (ignore)	10 a, b	11 a, b	11 a, b	

PROFESSIONAL ACTIVITIES

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Professional activities	# conferences and memberships	21, 22, 23, 24	23, 24, 25, 26	23, 24, 25, 26	Q28

Work conditions

Parcel: FACTUAL INFORMATION

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Work conditions	Staff complement for work unit	11	12	12	
Work conditions	% Time spent on academic activities	12	13	13	
Work conditions	Type of teaching responsibility according to student seniority level	13	14	14	
Work conditions	Workload – teaching load	14	-	-	

Work conditions	Workload – teaching hours (workload)	-	15	15	
Work conditions	Workload – student support hours (workload)	-	16	16	
Work conditions	Workload – post grad student hours (workload)	-	17	17	
Work conditions	Workload – level of assistance with work	15, 16	18	18	
Work conditions	Academic work responsibility (teaching or research)	17	19	19	
Work conditions	Workload – post grad supervision load	18, 19	20, 21	20, 21	
Work conditions	Type of research activity time is spent on	20	22	22	
Work conditions	Teaching or research preference	48 d	50 d	50 d	Q18d
Work conditions	Ease of obtaining research funding	48 e	50 e	50 e	Q18e
Work conditions	Valuing of contract research	48 f	50 f	50 f	Q18f

Parcel: FACILITIES

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Work conditions	Facilities	28 (9 items)	30 (9 items)	30 (9 items)	Q 4

Important note: Question 30 on questionnaire 3 and questionnaire 2 numbers (b), (k) and (l) are additional items. These do not appear on questionnaire 1 question number 28. Items b, k and l (question 30) are excluded from parcel reliability calculation.

Parcel: RELATIONSHIPS

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Work conditions	Relationships at work (workplace climate)	29 (7 items)	31	31	Q4

Important note: Question 29 (f) on questionnaire 1 and question 31 (f) on questionnaire 2 and 3 do not have the same wording.

Excluded from reliability calculation.

Parcel: COMMITMENT

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Work conditions	Commitment to institution	33 (9 items)	35 (9 items)	35 (9 items)	Q8

Parcel: OPPORTUNITIES

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Work conditions	Opportunity to get involved in research (interdisciplinary)	43	45	45	Q13
Work conditions	Opportunity to get involved in research (inter-institutional)	44	46	46	Q14

Work conditions	Institutional research opportunities available to researchers (to hone their research skills)	47	49	49	Q17

Parcel: PROMOTION CRITERIA

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Work conditions	Promotion criteria	48 a, b, c, g	50 a, b, c, g	50 a, b, c, g	Q18abcg

Parcel: INDIVIDUAL SKILLS AND COMPETENCE

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Individual skills and competence	Independent research capability	45	47	47	Q15
Individual skills and competence	Study guidance confidence	46	48	48	Q16

Parcel: ATTITUDES TOWARD TEACHING AND RESEARCH

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Attitudes towards teaching and research	Integration of teaching and research practices	27	29	29	Q2

Attitudes towards teaching and research	Components of an academic career (teaching, research, community service)	30, 31, 32	32, 33, 34	32, 33, 34	Q5-7
Attitudes towards teaching and research	Researcher and research teacher relationship	38, 39	40, 41	40, 41	Q9-10
Attitudes towards teaching and research	Definition of research or teaching outputs	40	42	42	Q11
Attitudes towards teaching and research	Meaningful research (applied or fundamental – knowledge paradigm)	41	43	43	Q12

Institutional research management practices

Parcel: COMMUNICATION

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Research management practices	Communication (about research performance and research policy)	49, 50, 51	51, 52, 53	51, 52, 53	Q19-21

Institutional research management practices

Parcel: FOCUS AREAS

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Research management practices	Research focus areas – importance for unit functioning	52	54	54	Q22
Research management practices	Research focus areas – importance for institutional functioning	53	55	55	Q23

Institutional research management practices

Parcel: PERFORMANCE MANAGEMENT

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Research management practices	Performance management – output contracting	54	56	56	Q24
Research management practices	Performance management – consequences	55	57	57	Q25

Institutional research management practices

Parcel: INCOME GENERATION

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Research management practices	Income generation from research – importance for university	56	58	58	Q26
Research management practices	Income generation – impact on academic discipline	57	59	59	Q27

Dependent variable

RESEARCH OUTPUT

		Campus A	Campus B	Campus C	Renumbered
Construct of model	Variable	Question #	Question #	Question #	
Research output	# scholarly contributions	25 (12 items)	27 (12 items)	27 (12 items)	Q1

Important note: questionnaire 1 – **question 25** has nominal scales and on questionnaire 2 and questionnaire 3 the same question (**number 27**) was changed and respondents were asked to indicate their exact number of publications.

7.3 APPENDIX III

Table 7-1: Item descriptive statistics for factor analysis

Statistics						
Renumbered according to Appendix	N	Number of items in renum-bered cluster				
	Valid		Mean	Std. Deviation	Skewness	Kurtosis
Q2	309	1	3.59	1.335	-.543	-.878
Q4A	351	1	3.31	1.021	-.224	-.452
Q4B	353	1	3.44	1.070	-.505	-.265
Q4C	351	1	3.14	1.063	-.247	-.444
Q4D	350	1	2.82	1.119	.009	-.690
Q4E	354	1	2.81	1.062	.070	-.556
Q4G	354	1	3.25	1.136	-.331	-.580
Q5	359	1	1.67	1.073	1.531	1.306
Q6	361	1	2.45	1.290	.480	-.885
Q7	360	1	1.93	1.184	1.109	.197
Q8A	352	1	3.15	1.259	-.169	-.926
Q8B	344	1	3.72	1.313	-.734	-.638
Q8C	356	1	3.61	1.279	-.644	-.622
Q8D	337	1	3.43	1.158	-.378	-.468
Q8E	330	1	3.08	1.236	-.020	-.916
Q8F	347	1	3.42	1.105	-.257	-.572
Q8G	346	1	3.68	1.118	-.563	-.370
Q8H	354	1	3.75	1.047	-.467	-.431
Q8I	347	1	3.72	1.173	-.729	-.294
Q9	359	1	3.65	1.172	-.476	-.692
Q10	360	1	3.06	1.241	.132	-1.010

Statistics						
Renumbered according to Appendix	N	Number of items in renum-bered cluster				
	Valid		Mean	Std. Deviation	Skewness	Kurtosis
Q11	358	1	2.94	1.165	-.051	-.744
Q12	356	1	3.58	.985	-.308	.013
Q13	348	1	2.93	1.128	.263	-.787
Q14	350	1	2.92	1.170	.253	-.838
Q15	355	1	3.90	.976	-.578	-.326
Q16	354	1	3.73	1.172	-.766	-.225
Q17	355	1	2.98	1.194	-.022	-.858
Q18A	354	1	3.78	1.181	-.672	-.491
Q18B	347	1	3.75	1.329	-.772	-.553
Q18C	348	1	3.14	1.384	-.174	-1.188
Q18D	354	1	2.51	1.378	.482	-.976
Q18E	337	1	2.77	1.167	.076	-.709
Q18F	320	1	2.66	1.103	.233	-.347
Q18G	333	1	3.34	1.176	-.277	-.713
Q19	356	1	2.59	1.296	.281	-1.084
Q20	356	1	2.60	1.253	.302	-1.010
Q21	355	1	2.84	1.270	.052	-1.038
Q22	348	1	3.32	1.233	-.296	-.842
Q23	347	1	3.52	1.097	-.424	-.357
Q24	338	1	2.14	1.255	.789	-.463
Q25	326	1	2.78	1.372	.218	-1.074
Q26	351	1	3.84	1.078	-.663	-.296
Q27	350	1	3.61	1.275	-.645	-.589

Descriptive Statistics		
	N	
Valid N (listwise)	216	

7.4 APPENDIX IV

Table 7-2: Factors table

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
INTANGIBLES	Intangibles are difficult to quantify and are therefore not easy to measure; they are difficult to imitate by competitors, are not tracked through accounting	• Mazzarol & Soutar, 1999 • Cohen & Levinthal, 1990, Prahalad & Hamel, 1990, Zander & Kogut, 1995, Hall, 1992, Walsh & Ungson, 1991 cited in Sanchez, Chaminade & Oleas, 2000 • Becker et al, 2001 • Celimi cited in Galbreath, 2002 • Hussi & Ahnonen, 2002 • Santos, 2002	
Institutional type differences (codes University and Technikon)	Institutional character, culture, history, management philosophies and practices.	• Patterson 1997 • Harman 2001	
Employment contract type i.e.		• Altbach & Lewis, 1996	

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
Employed to teach Employed to teach and research		• Hazelkorn, 2003a	
Assumptions and mindsets (of managers)	Assumptions and mindsets upon which managers base their opinions and actions about people and management practices.	• Ringer 1992 cited in Wacquant, 1995	
Control / Power/ Ownership	Expressions of the positive as well as negative relating to an individual actor's power, control and ownership relating to research.	• Bland & Ruffin, 1992 • Slaughter & Leslie 1997 • Leadbeater 1999 cited in Evans, 2003	
Accountability and regulation	The need and push for internal and external accountability and its associated perceived regulation. Both accountability and regulation are viewed positively as well as negatively. Accountability also includes ethics.	• Braun & Merrien 1999 • Sporn 1999 • Barnett 2000	
Subject disciplinary differences	The notion that there are vast differences in	• Franscati 1992 • Trowler 1997 • Henkel 2000	

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
	research practices, criteria and assumptions across subject disciplines.	• Wanner, Lewis and Gregorio 1981; Finkelstein 1984; Fox 1985; Cresswell 1985; Waworuntu 1986; McGee and Ford 1987; cited in Teodoresu, 2000 • Becher & Trowler 2001 • Gumport & Snydman 2002	
Definitions of research	Various definitions for research. Different opinions about what constitutes research.	• Jantsch 1972 • Gibbons et al. 1995 • Karqvist 1999 • Bushaway 2003 • DoE 2004 • Jarvis 2003	
Degrees of scholarship	Degrees of scholarship which are also associated with promotion criteria and selection of academic staff.	• Boyer 1990 • Rice 1992 • Kreber 2000 • Serow 2000 • Koch et al 2002	
Definition of an academic job	Various opinions regarding the definitions of an academic job and the associated teaching and	• Blaxter, Hughes & Tight 1998 • Gottlieb & Keith 1997 • Enders and Teichler 1997;	

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
	research nexus.	Lacy and Sheenan 1997; Poole, Bornholt and Summers 1997; Takekazu 1998; Welch 1997, 1998; cited in Teodorescu, 2000 • Coate et al 2001 • Serow et al 2002 • Hazelkorn 2002 Hazelkorn 2003b	
Researcher intangibles • Attitudes o Passion o Interest o Pride o Request help when necessary o Not intellectually compliant • Motivation for research work o Passion o Intrinsic value of research • Work environment o Entrepreneurial environment o Free of	Intangible characteristics of individual researchers who are willing, positive and able to conduct research.	• Bland & Ruffin 1992 • Henkel 1999 • Teodorescu 2000 • Winter & Sarros 2002 • Wissing et al 2002	

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
cumbersome red tape o Research leaders – direction o Dean – direction (where no research leaders exist) o Teamwork and collaboration o Autonomy is guarded o Setting of research example o Environment allows error as part of learning		• Bland & Ruffin 1992 • Bland & Ruffin 1992 • Boice 1992; Luna & Cullen 1995 cited in Kreber, 2000	
Research culture – the way we do things	The intangibles associated with the creation and maintenance of a research culture. The way research is encouraged, fostered, organized and maintained.	• Bland & Ruffin 1992 • Leadbeater 1999 cited in Evans 2003	
Research profile	The institutional as well as individual factors that influence a research profile. Research	• Long & McGinnis 1981 • Hazelkorn 2003b • Shattock 2003	

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
	profile is the status that is afforded to an institution or an individual regarding their research performance.	• Ball & Butler 2004	
TANGIBLES	Tangibles are easy to quantify and are therefore measurable; they are easy to imitate by competitors, and can be tracked through accounting	• Mazzarol & Soutar, 1999 • Cohen & Levinthal, 1990, Prahalad & Hamel, 1990, Zander & Kogut, 1995, Hall, 1992, Walsh & Ungson, 1991 cited in Sanchez, Chaminade & Oleas, 2000 • Becker et al, 2001 • Celimi cited in Galbreath, 2002 • Hussi & Ahnonen, 2002 • Santos, 2002	Tangible factors that are directly associated with the action of research or supportive of research activity were predictive of the research output of non-research-active academics.
Researchers – including research groups, professional activities	Factors that are tangible (can be seen) relating to the academics that actively conduct research at the institution: This includes age,	• Bland & Ruffin 1992 • Fox 1992 • Teodorescu 2000 • Di Sarli 2002	One-way predictors of research output o 'Age'; o 'Years employed in HE'; o 'Job seniority level'; o 'Commitment';

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
	gender, etc.		○ 'Individual skills and competence'; and ○ 'Professional activities' The theoretical output prediction model indicates that 'Professional activities' and 'Individual skills and competence' are predictors of research output. The empirical output prediction model indicates that tangible factors are predictive of research output for non-research-active researchers.
Teaching	All aspects relating to teaching including practices, teaching workload, teacher characteristics and teaching effectiveness.	• Teodorescu 2000 • Serow et al 2002 • Wissing et al 2002	
Workload of an academic	All aspects that influence the general workload of	• Whitelaw 1994 • Blaxter et al 1998	

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
	an academic staff member, including aspects regarding the 'teaching' factor.	• Wissing et al 2002	
Postgraduate students	Tangible aspects of postgraduate students in their role as students being coached and directed by researchers.	• Bushaway 2003	
Research at disciplinary level	The occurrence, or activity, of research at subject disciplinary level as opposed to the management of research at subject disciplinary level.	• Bland & Ruffin 1992 • Knight & Trowler 2000 • Shamai & Kfir 2002	
Research development including individual skills and competence	Tangible actions to be taken in order to develop research. Tangible knowledge and skills of researchers.	• Wojtas 1997 • Sanders 2000 • Schepers 2001 • Liefner 2003	
Dean's role	The role that the dean plays, or should be playing, regarding research management.	• Pratt & Margaritis 1999	
Dissemination	The actions or practices of dissemination of research results.		

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
External environment - general	The general external environment of the institution, including various sources of external funding.	• Bottomore & Rubel 1963 • Schuller 1996 • Braun & Merrien 1999 • Smith & Langslow 1999 • Sporn 1999 • Henkel 2000 • Howells & Roberts 2000 • Barnett 2000 • Oakley 2001 • Owen 2002	
External environment - international	Aspects of the external environment specifically relating to the international research environment and international funding agencies.	• Altbach & Lewis 1996	
External environment – industry	Aspects of the external environment specifically relating to the industry as a role-player in research.	• Hazelkorn 2003b • Hellström & Husted 2004	
Commercialization/ knowledge transfer	All aspects relating to the use of research results to earn additional		

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
	income for the institution.		
Levels of management (organizational structure) Subject discipline level management Faculty level management Central research management cluster (institutional level management)	Various hierarchical levels within the organizational structure created specifically for the management of research.	• Mouton 2000 • Coate et al 2001 • Coaldrake & Stedman 1999 cited in Hazelkorn 2002 • Di Sarli 2002 • Shamai & Kfir 2002 • Bushaway 2003 • Hazelkorn 2003a • Ball & Butler 2004	
Inter-disciplinary research	Research that occurs across disciplines.		
Inter-institutional research	Research that occurs between institutions including non-academic institutions.	• Landry et al 1996 • Shaw et al 2004 • Van Looy et al 2004	
MANAGEMENT TOOLS	Management tools that are used to organize people and resources for research management purposes.		
Strategic management	Aspects relating to strategy, strategic planning and	• Henkel 1999 • Rowley 1999 • Bushaway 2003	

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
	general planning, for research purposes.	• Drummond 2003 • Shattock 2003	
Funds	The generation, management and allocation of funds for research.	• Boyer & Cockriel 2001 • Di Sarli 2002 • Saleh 2002 • Bushaway 2003 • Hazelkorn 2003b • Shattock 2003 • Pfeffer & Salanick 1979 cited in Viner *et al.* 2004	
Focus/niche areas	Pre-identified niche areas in which research activity takes place in a focused and exclusive manner.	• Hazelkorn 2003a	
Infrastructure, Facilities, Equipment and Tools	Collection of codes referring to infrastructure, facilities, equipment and tools that are integral to conducting effective research such as the library holdings, buildings, information technology, etc.	• Fox 1992 • Teodorescu 2000 • Shaw et al 2004	
HRM instruments and practices	Human resource management		

Factors that influence a productive research environment (as identified in networks)	Definition of factor	Literature review chapter. References to factors relating to research matters	Quantitative findings
	functions.		
Recruitment and selection	All human resource aspects relating to recruitment and selection.	• Bland & Ruffin 1992 • Goddard 1996 • Liefner 2003	
Performance management/ measurement	All aspects associated with performance criteria, management and measurement.	• Kreber 2000 • Terenzini and Pascarella 1994 cited in Coate at al., 2001 • Jansen 2002 • Sutherland & Wolhuter 2002 • Liefner 2003	
Remuneration and rewards	Aspects associated with remuneration and rewards as part of the human resource function.	• Bland & Ruffin 1992	
Promotion	Grouping of aspects relating to career promotion as a human resource function.	• Henkel 2000 • Roworth-Stokes 2000 • Teodorescu 2000	
Staff retention	Human resource practices associated with the retention of academic staff members.		