CHAPTER THREE

Literature Review

This study is focused on an exploration of research leadership, with particular reference to research performance within public higher education institutions. In the light of this emphasis, the literature review will focus mainly on the two key descriptors, leadership and, research performance and productivity. The leadership field is expansive and for this reason, the literature review in this study will draw on a leadership typology that will focus briefly on the general leadership literature as an introduction and background. It will explore issues around definitions of leadership and trace broad developments of leadership theory. Secondly, the literature review will focus on academic leadership within the higher education context. Finally, the leadership literature will discuss research leadership as a specific category of academic leadership. The literature study, having been introduced with a discussion of leadership, will then focus on research productivity with specific reference to academic leadership roles.

3.1. Leadership

It has long been postulated that research productivity is unlikely to improve through efforts that rely on formulas, draconian pressures and threats of external intervention. The long- term war will be won by ***credible research leaders*** *who can apply disciplined intelligence and emotional capital in responding to opportunities… (Birnbaum, 1990).*

3.1.1. What is leadership?

Even though there is a vast literature on the topic of leadership, especially in organisational psychology and management studies, it is a concept plagued by debate.. Leadership is hard to define and effective leadership even harder. Leadership research itself seems to be plagued by confusion, criticisms of multiple definitions or lack of definition (Smith and Hughey, 2006; Middlehurst, 2008) and is dominated by trendy nonsense (Maddux, 2002), conceptual

incoherence and a disturbing lack of shared understanding of what leadership is or might be. The clarity of definition for each varies and there are many overlapping concepts (Richmon and Allison, 2003:32). Shattock (2003) is of the opinion that "leadership constitutes an ambiguous quality in universities since leadership style must be qualified by disciplinary cultures as well as by the nature of university organisations" (p.91). Bryman (2007) noted that higher education literature often does not distinguish the terms leadership, management and administration in a precise or consistent way, often polarising management and leadership at different ends of the organisational development spectrum

In addition, Bolden et al. (2008:3) suggest that "...there is (still) no common consensus on how best to develop leadership and leaders, and remarkably little evidence of the impact of leadership or leadership development on performance and productivity". Ball (2007), working with academics in hospitality management, found that an analysis of leadership definitions by academic leaders shows that three particular elements commonly feature. These are "goal-setting and achievement, group activities and influence on behaviour of others" (p.454). These elements are reflected in a definition used by Zuber-Skerrit (2007) when reflecting on experiences of leadership development in South African higher education where "leadership is defined as the ability to influence others towards the achievement of common goals that contribute to a worthwhile purpose…leadership in the new paradigm is principle-centred, collaborative and self-developed leadership in partnership with others" (p.987). Challenges of definition thus remain, as illustrated by the summary that 'across theories, leadership can be (and has been) understood as a process of exercising influence, a way of inducing compliance, a measure of personality, a form of persuasion, an effect of interaction, an instrument of goal achievement, a means for initiating structure, a negotiation of power relationships or a way of behaving' (Richmon and Allison, 2003:34). Leadership thus remains a contested concept (Middlehurst, 2008).

3.1.2. Theoretical foundations

The evolution of leadership theory and research is usually categorised into three eras; trait, behaviour and contingency and traditional definitions of leadership focus on leadership traits, functions and styles. Each era is characterised by a prominent research strategy and focus of interest (Tirimizi, 2002). These historical reviews seem to imply that leadership and the study thereof has progressed through a linear, predictable course and yet practical experience shows that this development is not linear. According to Smith and Hughley (2006) the main research approaches into the nature of leadership can be summarised as follows:

a) Trait ('great man') theory: Theory prominent in the early 20th century promotes the identification of specific traits in unique individuals who are considered to be effective leaders. Heroic individuals are thought to be gifted by heredity with unique leadership attributes. This theory supports the common assumption that "leaders are born".

b) Behavioural theory: This view examines particular actions and patterns of behaviour employed by individuals in leadership positions. In essence the focus is on what the leader does and the impact of the context on the behaviours of leaders and managers. Leadership definitions thus assume that leaders have specific functional duties and roles that set them apart from others in an organisation.

c) Situational/Contingency theory: This theory has been more prominent in the latter half of the 20th century. This view considers the unique contexts of environments in which leadership is practised. The key to the contingency approach to leadership is that the leader must analyse the situation to decide which style or combination of styles is appropriate, given the situation and the actors involved.

These three approaches were usually described as more traditional leadership theories and placed a strong emphasis on rational processes. The

leadership field then experienced a shift in focus, made necessary by social, economic and cultural factors that include issues such as the changing and diverse workforces. Thus the shift was from 'leader-centred' approaches (the leader is born with all the leadership skills) to an investigation of 'followership' and the dynamics of the relationship between leaders and followers. Descriptors such as vision, communication, character, charisma and integrity are more often used. The leadership approaches that followed from these changes are summarised below as:

d) Transactional theory: Transactional approaches define leadership as a set of roles and functions that develop because of the interactions between two or more people (Yukl, 1999). Transactional leadership deals with the management of resources, systems and structures and can be described as compromising mainly the day-to-day relations between employers and employees. This type of directive leadership is thought to be closely associated with needs and rewards for compliance as sources of motivation (contingent reward).

e) Transformational theory: (Lumby and Coleman, 2007) defined leadership in terms of the leader's effect on followers. The theory has a strong emphasis on values-based inspiration and is largely people-centred and morality-centred. This type of leadership is often described as a 'higher order' kind of leadership as it is seen to allow people to fulfil their true potential through intellectual stimulation, individualised attention and inspirational motivation. Lumby and Coleman argue that "the influence of transformational leadership is pervasive throughout much writing on leadership, and thereby acts as a powerhouse towards suggesting (that) alignment of values is a critical task of leadership" (p.71).

f) Distributed/dispersed theory (Bryman, 2007). This view emphasises leadership in operation at all levels and regions of an organisation, in a variety of both formal and informal leadership roles. Socio-cultural context is considered an integral, defining element of this type of leadership and involves trust and openness as a basis of interpersonal relationships. In a

review of the literature, Bennet, Wise and Woods. (2003) suggest that the concept of distributed leadership is based on three main premises:

1. Leadership is an emergent property of a group or network in interacting individuals;
2. There is an openness to the boundaries of leadership;
3. Variety of expertise is distributed across the many, not the few.

Distributed leadership clearly calls into question the traditional attachment of leadership roles to formal 'headship' posts or positions only.

These emerging theories have also attracted critical comment. It is felt that while the move to transformational leadership in the 1980's and 1990's went some way to recognising the need to engage followers, "its emphasis on vision and charisma possibly did more to reinforce than challenge the image of the heroic leader" (Bolden, Petrov and Gosling, 2008:360). In dispersed leadership for example there is still little agreement about the term, with almost no empirical studies of distributed leadership in action (Bennet et al., 2003). Issues of potential conflict over boundaries of decision-making in distributed systems remain unclear. Questions also arise about which leadership tasks are appropriate to disperse and who has the power to disperse tasks i.e. who distributes what to whom and under what conditions? (Bennet et al., 2003; Bryman, 2007; Jansen, 2007). Implicitly, this raises the question of whether distributed leadership is possible in a hierarchically ordered society.

There is also some concern that the key concepts in transformational and distributed leadership are 'consensus' and 'aligned' -layers of sameness; this may be achieved in many cases on the assumption that agreement is or could be un-problematically achieved (Lumby and Coleman 2007). In the view of Walker and Walker (in Lumby and Coleman, 2007) sameness permeates ideas for what makes a good leader, a good team, a good school despite the recognition of increasing diversity. Hence the move is towards attempts to find alternative theories of leadership that could be more genuinely inclusive.

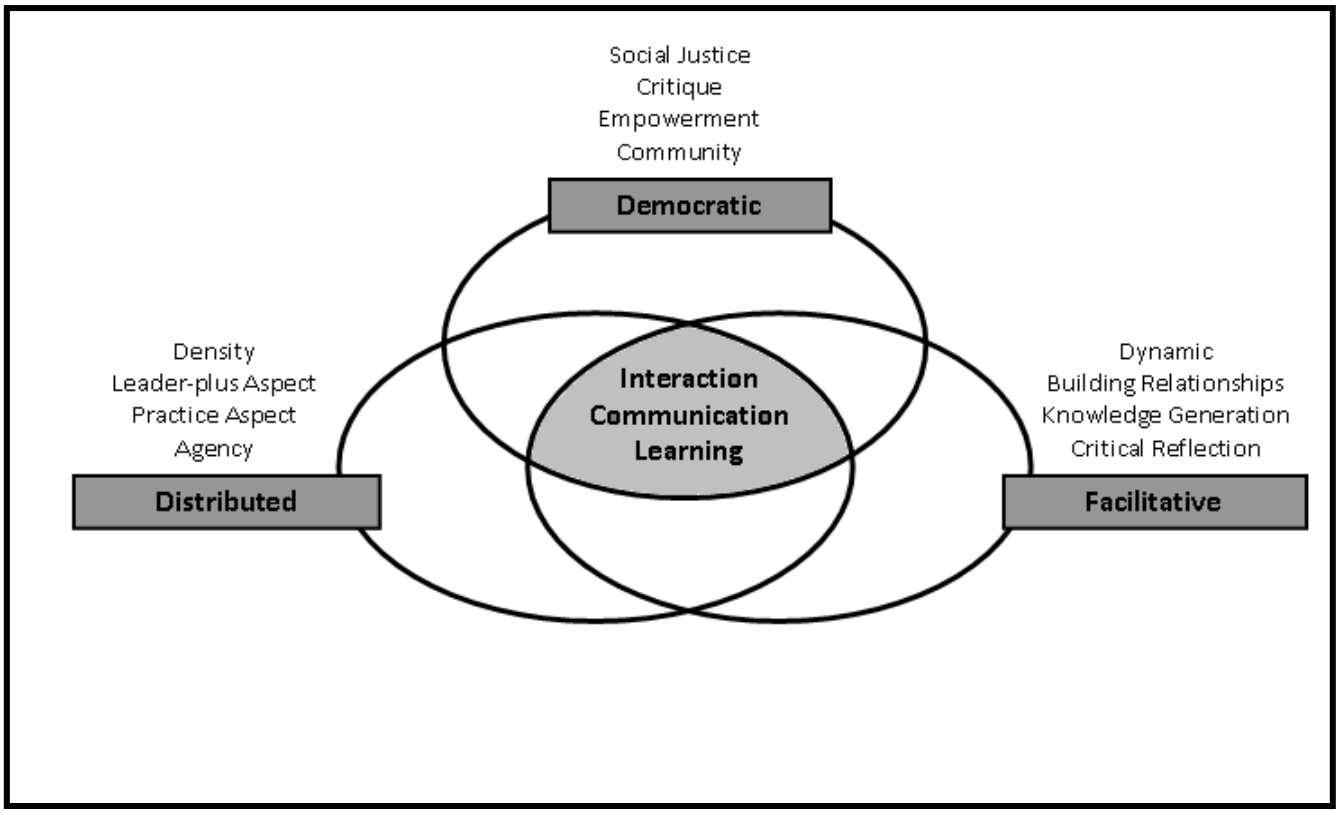
Issues of race and gender were highlighted in the preceding chapter as major challenges within a South African transitional higher education context. Leadership, for the most part, has been unchallenged in its assumptions of a homogeneous leadership. However, critical race theory has critiqued hegemonic notions of leadership, suggesting that the voice of minority ethnic educators is absent in its location. A body of critique of leadership theory constructed in relation to gender has also developed. Researchers in this area conclude that the conceptualisation of leadership is through a male perspective and that the effect of such theory is to create barriers to the entry of women into leadership roles and to undermine their practice when they arrive (Lumby and Coleman, 2007; de la Rey 1999; Chisholm, 2001). Post-apartheid South Africa, with a powerful agenda for social justice, saw a strong policy commitment to achieving greater gender equity, especially at leadership levels. Early research during this period showed that despite an overarching discourse of gender equity to which all subscribe, "discourses of leadership which were both raced and gendered structured the lived experience and identity of both men and women. The dominant construct of 'good leadership' was framed as being white, male, middle-class and heterosexual" (Chisholm, 2001:389). Chisholm felt that the entrenchment of a male-dominated leadership structure raises questions about the relationship between policy and practice and the conditions that continue to shape such events. Jansen (2006) however, in working in the post-apartheid South African school context, found that white school principals who radically decided to change their schools to become more racially inclusive and equitable actually challenged the notion of the great charismatic leader who has powerful visions and leads by him/herself.

The race and gender statistics for research and leadership within higher education discussed in Chapter two shows that transformation in this area has been slow.

Harris, Moos, Moller, Robertson and Spillane (2006), working mainly with school leaders, thus offered a framework of the alternate perspectives on leadership practice. This thinking is based on their premise that, as learning

institutions develop and change, different leadership approaches will inevitably be required and different sources of leadership will be needed to ensure that the development work keeps moving on. The framework links three perspectives of leadership, that, although presented as separate lenses on leadership practice, are linked by a common focus on interaction, communication and learning. As discussed previously, when leadership is viewed from a distributed perspective, the work of all individuals, regardless of position, is allowed for and taken into account. The focus of facilitative leadership is on the different roles of all members of the community in support of knowledge generation. From this perspective, leadership practice must facilitate relationship building.

Figure 6: Alternative Perspectives on Leadership.



Source: (Harris et al. 2006)

In this model the democratic perspective on leadership requires serious attention to the value base of leadership practice and the processes that create and sustain social justice, empowerment and community. Here the

leadership task is also about challenging the wider power structures in which organisations are embedded and committing oneself to work for social change. There is an emphasis on a concern for the welfare of others, including the dignity and rights of minorities and individuals (Harris et al. 2006). In the South African context, emerging leadership studies, although mainly at school leadership level, are increasingly seen to embrace leadership for social justice i.e. leadership that is framed by a quest for equity and redress in the transition of one kind of system to another (Phendla, 2004; Jansen, 2007). According to Jansen (2007), "generic statements about leaders and leadership clearly have limited significance in settings where, for example, racial reconciliation and social justice are demanded in the broader political context" (p.102). Amongst others, these studies are beginning to investigate how leadership practice relates to the core values and commitments of leaders as they lead for social justice in post-apartheid schools.

Hence, in summary, it can be argued that leadership is a complex relationship involving a number of variables including the characteristics of the leader and followers, the nature of the organisation and the external environment. It cannot be viewed (or researched) as a simple, technical, rational and logical frame approached through a toolbox of pre-determined, finite techniques. Ball (2007) quotes the work of Gunther (2001) who argues that leadership is not an 'it' from which we abstract behaviours and tasks, but is a relationship that is understood through our experiences consequently, leadership is highly political and is a struggle within practice, theory and research. This is echoed by Jansen (2005) in his work on South African academic leadership, where leadership is viewed as a "complex political and emotional process in which the outcomes are not always predictable and measurable" (p.325).

3.1.3. Academic leadership

Academic institutions present a different setting than private or public sector organisations, with leadership in academia complicated by the dynamic social, economic and policy contexts in which higher education institutions

operate. Issues of academic freedom are of great importance and relevance in the academic context. Traditionally, the academic department has been seen as the main organisational unit for the delivery of research, providing an organisational, administrative, cultural and intellectual home for both individual members of the academic staff or for research groups (Taylor, 2006). Conversely, the 'uniqueness' of individual departments that emerges from disciplinary authority sometimes has protected enclaves, that has resulted in institutional inertia and lack of change (Shattock, 2003). In the realms of research and scholarship, intellectual leadership is an expectation that is commonly associated with the professoriate who may exercise leadership within a disciplinary context either inside the institution or within the wider society (Middlehurst, 1997). Within the disciplinary context, senior academics have always had a duty to lead. It is often felt that the challenge of leadership is significantly different and arguably more difficult in the professional and collegial mode organisation (such as the university) since it involves persuading rather than commanding 'free, equal and expert' colleagues to join in a collective enterprise of change and development (Middlehurst, 1997).

According to a review of literature on research productivity by Bland and Ruffin (1992), one of the most persistent findings in the literature is the correlation between participative governance and research productivity (p389). One study of more than 100 colleges in the USA found that every one of the top 10 colleges with high morale and satisfaction had leadership that was aggressively participatory in both individual style and organisational structure (p.389). It is suggested that participative leadership, although not the best governance mode in every situation, is most effective for the following reasons:

- The requisite knowledge may be too extensive, the conglomeration of needed skill too complex, or the simultaneity of the decisions too considerable for anything but participative leadership;
- Such leadership heightens members' morale and self-esteem;

- It allows for diversity of perspective and variety of competencies that no one leader can possess;
- It accords opportunity to focus on the task at hand:
- It allows subordinates to have information that increases their abilities to contribute, and it reduces opposition to decision.

Leadership in the university context is usually dispersed in departments, research teams, among administrators or academic research support. Ramsden (2000) presents a series of principles of academic leadership at the dean or departmental level:

- Leadership is a dynamic process that involves creatively managing tensions; for example between tradition and change, having clear goals but giving people the freedom to pursue them, executive action and supporting colleagues, endorsing academic values but coping with external forces and so on.
- Leadership is focused on outcomes, i.e.“ to create conditions that enable high quality research and teaching, and to raise awareness of staff so that they can welcome change”.
- Leadership is relational: it occurs in situations and it must be colleagues who determine whether or not one is a leader.
- Leaders must also be learners about how to complete a task.
- Academic leadership must be transformative; it is about ‘helping ordinary people to do extraordinary things and as a leader “transforming one’s own performance (pp.126-7).

In his summary of research on academic leadership, Ramsden (2000) finds that academic work gets done better when leadership is “ enabling, coherent, honest, firm and competent; when the leadership combines efficient management of people and resources and when it blends a positive vision for future change with a focus on developing staff – a focus on helping them to learn” (p.365).

Universities are influenced by social, political and economic contexts and global changes within these contexts have exerted a major impact on the path of institutional restructuring and organisational change within universities. According to many researchers, the value placed on academic leadership in universities is changing. It is felt that the new corporate style of management seems to favour management over academic leadership within a hierarchical structure. (Smith and Adams, 2008; Johnson and Cross, 2006; Harman, 2002). This new management style has had significant influence on three major areas within universities. These are:

(a) Internal management structures, systems and practices;
(b) Professional academic cultures and identities;
(c) 'Re-imagining and re-imaging' of the university as a knowledge intensive organisation (Deem, Hillyard and Reed, 2007:26).

This opinion also seems to extend to leadership of major scientific facilities and the agencies that run them. According to Macilwain (2010:919) "today laboratory and research facility heads are often selected less for their intellectual brilliance than for being 'good' committee men or women who can cope with the bureaucracy now inherent to the task. The result is often mediocre management by individuals who can get by, but can't inspire". The former image of deans as scholarly leaders and custodians of collegiality has been replaced by an executive image of them as guardians of efficiency who are politically astute and economically efficient. (Johnson and Cross, 2006:34). Hence 'management teams' primarily consist of staff holding managerial positions who are not necessarily academic leaders. The defining characteristics of the modes of academic and managerial leadership in tertiary education institutions are summarised below.

Table 5: Characteristics of academic and managerial leadership in tertiary education.

Academic Leadership	**Managerial Leadership**
Leader is "**an**" authority based on	Leader is "**in**" authority based on
discipline knowledge	position in hierarchy
experience	job responsibilities
peer and professional recognition	control (e.g. budgets, resources)
expertise –teaching, research,	delegated authority
team acceptance	power
Leadership Context: Collegial	Leadership Context: Corporate
Formalisation: bestowed from below	Formalisation: bestowed from above
Leadership vested in the PERSON	Leadership vested in the POSITION

Source: (Yielder and Codling, 2004: 322).

It must be noted that very rarely do these two modes as represented by Yielder and Codling above show themselves as distinct and mutually exclusive leadership types in separate individuals. Senior leadership within the university usually needs to maintain a complex corporate academic web, balancing two, sometimes contradictory roles: "one firmly academic, concerning cross–institutional responsibility for core academic values and mission, the other more bureaucratic or executive, focusing on the burgeoning demands of accountability' (Smith and Adams, 2008 p340). "A key challenge is to train talented scientists in the mundane aspects of project management – without scaring them off or ironing out the personality traits that make them great leaders" (Macilwain, 2010:919).

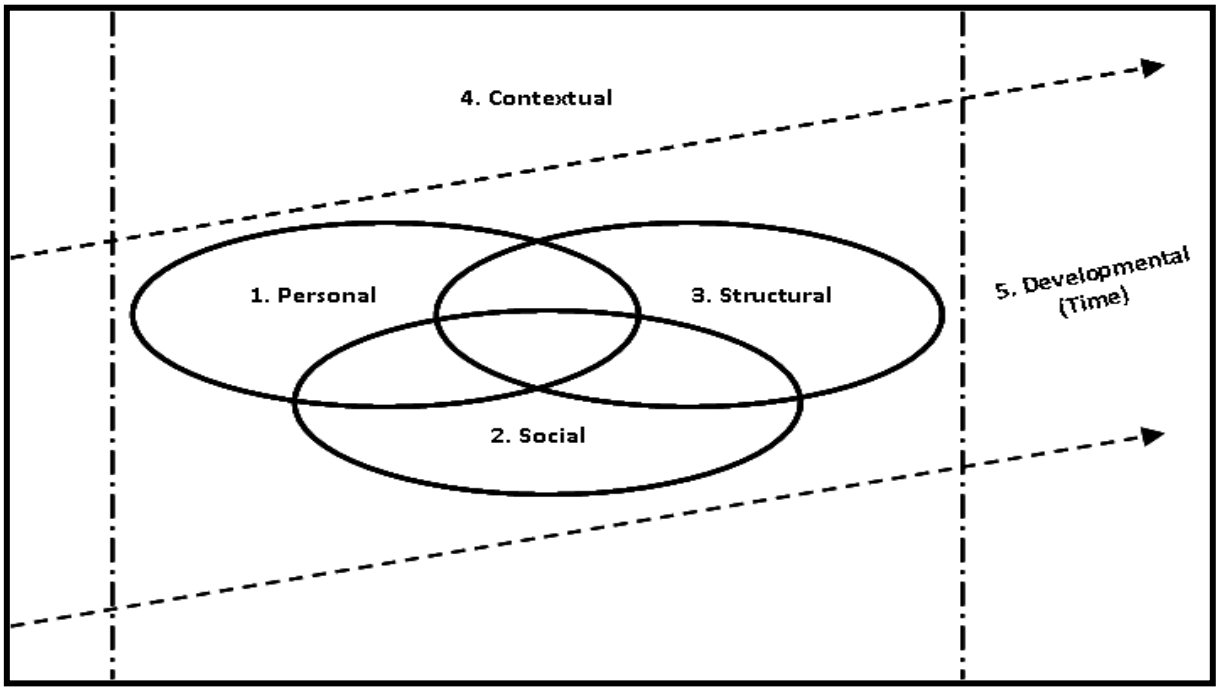
Higher education in South Africa faced a number of academic leadership pressures in the new dispensation. As Kulati and Moja (2002) point out, the different pressures set up tensions between equity and efficiency, leading and managing within a democratic context and maintaining academic autonomy on the one hand, while being responsive to national imperatives on the other.

The post 1994 period found that the wide institutional diversity and history of higher education in South Africa made it impossible to develop an ideal approach to leadership (Kulati and Moja, 2002). With regard to leadership and scholarship, the key challenges among these were the following:

- The creation of a credible class of black (and white) leadership in higher education i.e. 21st century leaders who are credible scholars, strong managers and ethical leaders;
- The building of a new class of researchers, scholars and intellectuals in higher education i.e. creating a new and resilient group of world class academics to sustain and increase the research prestige of South African institutions (Jansen, 2002).

Bolden, Petrov and Gosling (2008) undertook an investigation of leadership and leadership development in higher education in the United Kingdom (UK). The aim was to explore common and competing conceptions of leadership at different levels within universities. The main focus was on the leadership of the academic work of the university, including teaching, research and business and community engagement. The main unit of analysis was the school or department level "as this is seen as the main operational unit of universities, the primary source of future senior academic leaders and the main point of interface between leadership of the institution and leadership of the academic discipline" (p.363). The researchers used the model represented in Figure 16 below to show the multifaceted nature of leadership in higher education. Leadership is represented as a dynamic outcome of five inter-related factors.

Figure 7: Dimensions of leadership in higher education



Source: Bolden, Petrov and Gosling, 2008:232

Personal Dimension: This relates to the personal qualities, experiences and preferences of individual leaders. The research revealed consensus on a number of key personal leadership requirements summarised as follows:

- The need for academic or professional credibility;
- Consultation and openness;
- Desire for inspirational or visionary individuals, particularly in times of change or transition.

Social Dimension: This refers to both formal and informal networks and relationships within and beyond the institution (social capital) as well as the shared sense of identity and purpose within and between groups i.e. social identity (Bolden et al. 2008:366). The research findings reveal that at a personal level, identity tensions may arise from competing motivations and allegiances; for example, manager versus academic, discipline versus institution. This may inhibit the development of a sense of shared social identity with other managers.

Structural Dimension: This refers to the structural context in which leadership occurs and includes all organisational systems, processes and structures, especially those relating to finances, human resources, information technology, strategic planning and even the physical environment. The research findings supported the notion that structural aspects of the situation are an integral part of leadership.

Contextual Dimension: This refers to the external social, political and cultural environment as well as the internal organisational culture, history and priorities. The research findings recognised that, with regard to external contexts, the higher education sector is becoming increasingly politicised and subject to external pressures from competitive markets. An interesting internal context, which is highly relevant to the South African context, is the "finding that the organisation's recent and past history is significant in determining how it is perceived both by those within and outside it" (Bolden et al. 2008:369).

Development Context: This refers to the ongoing and changing developmental needs of individuals, groups and organisations and the research findings indicate a close interdependence between individual, group and organisational development.

The authors of this model argue that it extends the notion of academic leadership beyond the individualistic and managerialist forms most commonly accepted in the literature. A more relational understanding of academic leadership as presented recognises the multitude of forms in which it appears, the diverse array of factors that influences it and the competing priorities and objectives with which universities are faced. This model then is more in line with the central tenet of this leadership study, i.e. that context matters in the practice, understanding and study of leadership.

3.1.4. Leadership of research

A defining characteristic of a university is its commitment to scholarly activities leading to the production of knowledge and ideas. Both teaching and research are about transformation. University academics have always worked in the dual roles of educator and researcher. “Over the past two decades, the academic’s role as a researcher has become increasingly important, both as an indicator of how well the institution is perceived overall and how well the individual academic is compensated” (Macgregor, Rix, Aylward and Glynn 2006: 59).

MacGregor et al., (2006) point out some changes in the Australian research system as a result of changing policy imperatives for funding of research activities in the arts, humanities and social science. Although describing the Australian system, the observations are equally applicable to the South African research system. These include:

- Growth in the number of ‘centres of excellence’ that are seen as evidence of research strength in a particular field;
- Increased competition for research funding from agency grant schemes and research degree scholarships;
- Intensified competition for high quality national and international research students;
- Initiatives that seek to develop home-grown research capacities and encourage retention of skilled researchers as well as institutional rather than individual scholarship.

In his 2006 research study of six top UK research universities, Taylor reported on the importance of management of research. Taylor found that the research universities in the study were characterised by “powerful, visionary leadership, with a firm and unwavering commitment to the research-led mission, and devolved operational responsibility. This leadership needed to exist at the head of the university as a whole, but was also necessary within

academic departments" (p.13). Di Sarli (2002) in Taylor (2006) identified the following good practice at institutional level in the management of research:

- Clear definition of the mission of the university;
- Definition of priorities in research fields;
- Definition of policies to balance fundamental and applied research;
- Definition of policies to support local development;
- Definition of policies of social accountability and operational transparency in the use of public and private funding.

Within research contexts then, evidence from the limited research available suggests that leadership is important for the advancement of research in universities (Middlehurst, 1993; Ramsden, 1998; Taylor, 2006; Ball, 2007). But what form would such leadership take, given that the skill sets to be a good researcher requires slow, deliberate, measured acts built on an in-depth knowledge base that makes a researcher an expert in a particular field. In addition, research is carried out for the most part, in isolation or within small groups of extremely like-minded colleagues by individuals who thrive on independence and resent interference (Wolverton Ackerman and Holt, 2005:229).

Research leadership seems to suffer the same 'definition confusion' of the general leadership literature. This is illustrated by the work of Ball (2007) who conducted a UK research study that was concerned with the perceptions of academics about the nature of research leadership, the interpretation of the experience of leadership of individual research leaders and the experience of leadership on others. He found that despite variations, "the majority of definitions of research leadership by academic respondents focused on one of six aspects; the leader, the people involved, level, the purpose, the functions of research and the action/influence" (p.470). The overall view of research leadership that emerged from his study is represented in Table 6 below:

Table 6: The view of Research Leadership.

Leadership is both formal and informal and varies according to social systems.
Leadership is dispersed.
Self-leadership is a feature of academic researchers.
Leadership is complex and consists of many relationships.
Leadership is concerned with the leadership of people and the leadership of the subject.
Leadership is different from management but there is overlap.
Each leader possesses different characteristics and offers different services.
Leadership is important to the undertaking of research.
Context of leadership is complex but crucial.

Source: (Ball, 2007:p474)

According to Ball, the existence of self-leadership and the duality of leadership between the subject and the people are key elements that distinguish research leadership from leadership in general. Research leadership in this study is identified by the hallmarks of excellence in scholarly publication at the cutting edge of the discipline, extensive quality national and international research networks, personal scholarly recognition and prestige amongst peers, leadership of quality Master's and doctoral programmes, early researcher mentorship and the ability to garner research funding.

Research leadership in public universities under change is also faced with challenges for change. Some of these challenges emerge as governments place greater focus on science and technology disciplines, on the balance between basic and applied research, on knowledge and technology transfer activities and intellectual property. "Institutions able to match research priorities with national priorities, as determined by technology foresight studies, are well rewarded" (Hazelkorn, 2005:22). Many argue that these changing conditions in higher education have opened up possibilities to create other forms of organizing, and viewing new opportunities in new combinations of disciplines and practice. To this end, researchers such as

Hansson and Monstead (2007) are of the opinion that a new framework for entrepreneurial action among researchers has emerged. This framework is characterised as follows:

- Funding is tied to collaborative networks of researchers that cross both national borders and boundaries between universities and industry There is a much stronger emphasis on applied research, i.e. research that is relevant for industry and often co-funded by industry;
- Entrepreneurial researchers apply for large projects through which they establish research groups or centres with strong ties to external funding.

Kearney (2009) outlined additional activities that form part of these innovation systems where universities have expanded their research links with industry, commerce and government, as well as the community at large. These include:

- Incubation activities to foster innovative projects;
- Financing of innovative processes to facilitate the commercialisation of knowledge;
- Networking through markets and mechanisms with interactive learning amongst the institutions involved;
- Consultancy services for technology transfer and the legal and commercial aspects of innovative activities (p.7).

Hanson and Monstead report that dealing with this new framework in the university requires creative and innovative research leadership that covers the opening of new research perspectives, the emergence of new forms of networking and organising and the initiation of new types of collaboration with industry and public sector institutions (Hanson and Monstead, 2007). They thus 'redefine' the concept of "*research leadership as entrepreneurial leadership* (author italics) where dilemmas, uncertainty and complex relations to other managerial systems in the universities are in the forefront" (p.5) In research leadership they focus on two aspects: the role of networks and brokerage and organisational entrepreneurship In other words

"entrepreneurial leadership in research is viewed as a kind of knowledge management" (p.15). The understanding of the processes of research leadership is tied to the initiatives and entrepreneurship of researchers to generate new resources both externally and internally. The ability to create these opportunities becomes one of the most important leadership competences of research managers. Essential features would include economic aspects, efficiency and competitiveness. Their study of research leadership at the Copenhagen Business School demonstrated the need for special qualities for research leadership, such as:

- Personal qualities (scientific capital and charisma) in order to create respect and formulate research programmes;
- Ability to be a broker between networks in teaching and research;
- To be able to use the external contacts and dissemination of research for access to further research;
- To be able to use rules and negotiate in the bureaucracy and develop organisational openings in a creative way;
- To create an environment of self-management in a collective organised research group to mobilize young researches to take their own initiative.

A study by Hemlin (2006) of commercially embedded research groups in the biotechnology field, found that leaders and their behaviour are generally perceived as more important than organisational support factors for creativity and innovative processes in biotechnology. This result confirms a number of previous studies of research group performance in a variety of fields of learning, where leadership was found to be crucial. Some of the results of the study tend to agree with research policy literature (even in South Africa) that university research, and particularly fields like biotechnology have increasing applied capabilities.

Thus, given both traditional and emerging academic leadership models and the demands of the changing institutional landscapes as outlined above, research productivity that emerges under these contexts will follow.

3.2. Research Productivity

The outputs of an educational institution or an educational system are very much more than numbers of graduates or quantities of knowledge. The effects of higher education spread far and wide and touch the heart of human hopes and ambitions (Ramsden, 1998).

Productivity within higher education has an obvious multidimensional character as it relates to both knowledge production and knowledge dissemination through the various forms of research, teaching and outreach activities. However, defining research and measuring its output has become a somewhat controversial issue, as questions are being asked about which institutions should do research, what kind of research they should do and how the research performance will be assessed. Research productivity in particular has received a great amount of attention and critique and there exists a large world literature on research productivity and its correlates (Dunbar and Lewis, 1998; Babu and Singh, 1998; Smeby and Try, 2005). Ramsden (1994) drew four conclusions from the large body of early work on quantitative research productivity and these conclusions are still applicable to the current research context:

- There has been exponential growth in research output.
- The average output though is not very high and hard to estimate accurately.
- The output is extremely variable or skewed across institutions and individual academics.
- There are multiple effects on levels of productivity.

As research expenditures have risen and as sources of research funding have become more restricted, an increased emphasis on research productivity and the factors that promote research productivity has developed in research institutions. This occurs within the context of increased competitiveness and accountability of scientific performance and internationalisation of cutting-edge research activities. In the fast changing

global context of higher education, increasingly the keys to global competition are research performance and research reputation, that is partly fed by research performance (Marginson, 2007:132). Many user communities actively seek reliable intelligence about the whereabouts and characteristics of research excellence for strategic usage. Global rankings, despite their associated controversies, are less than three years old, but they have already reshaped the global context of higher education. Rankings have exacerbated competition for the leading researchers and best young talent, and are likely to drive up the price of high-performing researchers and research groups. Marginson points out that a rationale for using research performance data is that "arguably research is the most important single determinant of university reputation and widely accepted as merit based" (p.133).

3.2.1. Measures of research productivity

There are several possible ways of measuring research productivity and the influence or impact of research amongst peers and society in general. The selection of appropriate productivity or output measures usually must have meaning across all types of institutions, permit comparisons with previous research and be able to be used in promotion decisions at most research institutions. The unit of analysis for research productivity can be at individual, departmental or institutional levels, although even at these levels the literature has emphasised multi-dimensional measures of performance (Roy et al., 2003; Tijssen, 2003). Ramsden (1994) draws attention to the useful categorisation of evaluating research performance made by Harris (1990). These four related but distinct ways of evaluating research performance include:

1. *Quantity* – the simplest of measures and concerns the number of publications or pages produced.
2. *Impact* – a measure of influence of a piece of research and is evaluated by means of citation counts. There is a strong correlation between impact and quantity.

3. *Importance and 4. Quality* - evaluated through expert value judgements, typically using peer review. Neither importance nor quality can be captured through bibliometric indicators alone (p.208).

Tjissen (2003) works on the premise that "research excellence is a multi-dimensional phenomenon which is hard to define both conceptually and in operational terms, and is not directly measurable in a generally accepted valid manner" (p.93). He is of the opinion that no single indicator of research excellence can be used in isolation, but that "it is in the combination of many characteristics that research excellence is to be found" (p.95). He distinguishes "four broad performance dimensions associated with the major stages in the knowledge creation and dissemination trajectory":

- *Inputs*, in terms of funding, human capital, physical capital, infrastructure and social and intellectual environment;
- T*hroughputs*, processes that combine inputs activities and infrastructure to support or achieve outstanding results;
- *Outputs,* in terms of first order results such as breakthrough scientific findings or developing novel scientific techniques;
- *Outcomes*, in terms of second-order results and impacts of those achievements having a significant influence on user communities within or outside the immediate environment of the research entity directly involved (p.95).

By far the most commonly used measure – the gold standard for research productivity - is the number of faculty publications in selected outlets such as academic journals, or a summative index constructed from counts of conference papers, journal publications and books (Toutkoushian, Porter, Danielson, and Hollis, 2003; Pouris, 2003; Fairweather, 2002; Dunbar and Lewis, 1998; Babu and Singh, 1998). Research productivity is conventionally measured as the ratio of publications to number of programme faculty. Usually these are limited to a specific period of time and are not adjusted for prestige of publication source or multiple authorships. The availability of the

publication data from large databases such as ISI has increased the use of publications as a commonly used productivity measure. Empirical data should be reliable and informative to ensure sound metrics and is generally valuable as a first step in a search for centres of research excellence. Researchers who favour bibliometric indicators and patent analysis are of the opinion that the indicators are well defined and unambiguous, making sub-categorisation of scientific fields and international comparisons possible (Pouris, 2007:621).

Measurable research outputs increasingly determine the amount of public research funding received by an institution. South African universities receive research support from the Department of Higher Education and Training according to their research outputs. The Policy for Measurement of Research Output of Public Higher Education Institutions (Government Gazette, 2003) recognises, for the purpose of subsidy, three main types of research output viz. journals, books and proceedings. The list of outputs is designed to compare relative output between institutions of higher learning, across a selective sample of publications that meet prescribed criteria. The policy does not support differentiation within these types of outputs. Research papers are considered the most important output and researchers receive more than R120 000 for each article they produce. It is felt that the funding formula favours intrinsically prolific disciplines, even though attendant quality criteria do not distinguish between high impact and low impact articles. All articles in a list of accredited journals qualify for the same subsidy (Pouris, 2006). Faculties usually generate research funds through a process whereby a portion of the subsidy earned by each staff member for an accredited publication is paid into their respective central funds. There is a feeling that the pressure to produce significantly large numbers of publications for subsidy income and performance appraisal can lead to a numbers game or ‘game of publications’ without the concomitant focus on the quality of the research. In addition these practices underlie the tensions between the national policy imperative to increase research output while maintaining standards of excellence.

The analysis of journal articles is not without it's own set of problems and these relate to matters such as journal quality, types of publications and multiple authorship (Dunbar and Lewis, 1998). Use of scholarly journals only (e.g. from ISI indexes) excludes many other forms of publications such as books, book reviews, corrections, editorial material and letters. Hence a focus on journal articles only does not seem to take account of the considerable variation that exists regarding the determinants of research productivity among disciplinary categories. For faculty members in the fine arts, a related measure is the number of exhibitions or performances held. Thus the arts and humanities may appear less productive in such analyses, as these areas are thought to have traditionally placed less emphasis on publishing in scholarly journals (Toutkoushian et al., 2003). In addition, despite the impressive breadth of coverage of the ISI databases, some academic journals and publication outlets are not monitored by the institute. Journals in the developing countries, including South Africa, are not well covered in the ISI database simply because many of them are very local journals with small subscription bases and consequently very low international visibility (Mouton and Gevers, 2009:53).

In response to many of the criticisms, some scholars favour a count of the total number of citations the author received or relate the number of citations received to the number of items published (impact). Citation analysis is often used as a method for measuring the utility or the impact of the scientific work of individuals or groups. Hence the added value of citation impact indicators lies in the fact that they disclose the actual scientific influence of papers on the outside world – a key indicator of research excellence from a user-oriented point of view. Citation counts are also not without their concerns and limitations. A case study by Tijssen found that in a certain university faculty, many research articles in top journals were not very highly cited. It was thought that the targeted journals were possibly not the most appropriate outlets to reach the relevant scientific audiences that might cite the published work. This lead to a review of the publication strategy of the researchers concerned and an inclusion of citation measures (Tijssen, 2003). Factors such as reputation of the cited author and the visibility, prestige and

accessibility of the cited journal may affect, to a greater or lesser degree, the work the author chooses to cite (Jacobs, 1998).

Criticism of the use of publications counts abound since it is felt that several other factors that are likely to have an influence on and contribute to the research performance of departments are not considered. Assessments cannot be reduced to mere numbers without losing contextual information that is essential for proper interpretation of findings. These would include personal as well as organisational factors. Local promotion or annual review decisions usually use a broader definition of scholarly output than refereed publications. Fairweather (2002) identifies a number of productivity measures besides publications. These include:

- Principal investigator on an externally funded project is highly valued;
- Total research funds generated by researcher;
- Number of conference presentations or workshops held.

A case study of the evaluation of a public university faculty programme in the Netherlands included quality dimensions as listed below:

- Originality of approach and ideas;
- Coherence of the programme;
- Publication strategy in view of stated mission;
- Scientific publications (scientific impact);
- Distribution of published output over the team members;
- Significance of its contribution to the field;
- Prominence of the programme director;
- Prominence of other members of the research group.

From this diverse set of items it can be seen that some criteria relate to tangible, quantifiable aspects (publications) others to intangible features (originality) or a blend of both (prominence of senior researchers) (Tjissen, 2003).

Toutkoushian et al. (2003) argue that measures such as funding often represent the resources available for producing research rather than the quantity or quality of research actually produced by an institution (p.126). Nonetheless they do acknowledge that there is a very high correlation between the level of resources expended or received by institutions and the number of publications produced (p.143). Kraak (2006) identified two further measures of research activity and these include:

- Number of staff with PhDs;
- Number of postgraduate students enrolled for Master's and Doctoral programmes.

The number of postgraduate students that researchers attract to conduct research under them is also viewed as a measure of productivity. The researcher characteristics that they exhibit are personality, co-operation, recognition by peers as scientists in a particular field, commitment to a profession and willingness to share expertise with students (Jacobs, 1998). Earlier studies of doctoral programmes in the United States noted that reputation for scholarly excellence can, in turn, result in an increased capacity for attracting research and high–ability graduate students to the programme (Dunbar and Lewis, 1998). Although reputation is closely linked to research performance, it is also affected by other factors such as seniority and length of service. De la Rey (1999) draws on the work of King (1994) who is of the belief that reputations are not just simple translations of research productivity, but are cultural constructs.

However, there remain serious challenges in measuring research performance. The wide variety of measures used in assessments indicate that perceived results across institutions may be misleading owing to the existence of an alternate form or measure of research productivity. Traditional performance measures are found to be inadequate for Research and Development organisations where the nature of the outputs is often long-term and intangible (Roy, Nagpaul, and Mohapatra, 2003). The choice of an appropriate research and development (R&D) measurement metric depends

on the user's needs for comprehensiveness of measurement, the type of R&D being measured and the amount of effort the user can allocate to it. "More comprehensive and balanced assessments of research excellence require ample information on resources and size of faculty and departments, as well as their cognitive and organisational heterogeneity" (Tijssen, 2003:99). Studies of research productivity remain part of a highly contested debate.

3.3. Concluding remarks

The literature review on leadership makes it evident that leadership is essentially still a contested concept. Over time the field has seen moves away from the more traditional, individualistic models of leadership, towards more collective, flexible approaches that are seen to be more inclusive of the diversity of societies. There is a stronger focus in the research literature on the value base of leadership practice and the processes that create and sustain social justice, empowerment and community. Global changes in the knowledge economy have meant that leadership of higher education has become more multi-layered and multi-faceted, with tensions evident between traditional academic roles and increasingly entrepreneurial demands. Most recent models of academic leadership emphasise the fact that leadership is influenced by social, institutional and individual factors.

The literature also indicated that studies of research productivity remain part of a contested debate. The main debate centres on the choice of indicators or measures of assessment that are used as counts for productivity. Although the number of journal articles is the most commonly used measure of research performance, it has been shown that this does not take account of the variation that exists across disciplinary domains. Funding, number of postgraduate students and significance of research contribution to the field are increasingly accepted measurements towards indications of research productivity. Since research productivity (via measures agreed on) is variously used as the basis for academic promotions, funding decisions, or research assessment exercises of individuals, teams or institutions, an

exploration of leadership that influences research productivity is considered important.