Thuthuka Interventions –
Towards Increased Participation
Preliminary Information

Document Credits (No particular order)

Botha Claire (Dr.) Team Lead
Duze Siyasanga (Ms.) Contributor
Maré Irene (Ms.) Contributor
Thwala Nompumelelo (Ms.) Contributor

Human and Infrastructure Capacity Development
National Research Foundation

Tel: +27 (0) 12 481 4156
Fax: +27 (0) 12 481 4221
Email: claire.botha@nrf.ac.za

Prepared for:

Dr. G. Pillay
Deputy CEO: Research and Innovation Support and Advancement
Tel: +27 (0) 12 481 4286
Fax: +27 (0) 12 481 4162
Email: gansen.pillay@nrf.ac.za

Dr. T. Mgwebi
Executive Director (Acting): Human and Infrastructure Capacity Development
Tel: +27 (0) 12 481 4022
Fax: +27 (0) 481 4221
Email: thandi.mgwebi@nrf.ac.za

Submitted May 2014
Contents

1. Executive Summary .................................................................................................................. 6
2. Introduction .............................................................................................................................. 8
3. Background ............................................................................................................................... 9
3.1. Locating Thuthuka within the NRF ...................................................................................... 9
3.2. Resourcing Thuthuka .......................................................................................................... 10
3.3. Service Delivery .................................................................................................................. 11
4. Problem Definition .................................................................................................................. 12
4.1. Application-Award Conversion Rates ................................................................................. 12
4.1.1. Application In-box Analysis ......................................................................................... 12
4.1.2. Application Conversion ............................................................................................... 13
4.1.2.1. Internal Screening .................................................................................................. 13
4.1.2.2. Peer Review Conversion ....................................................................................... 16
4.2. Funding Patterns ................................................................................................................ 19
4.2.1. Average Individual Grant Size ................................................................................... 19
4.2.2. Race and Gender Distribution .................................................................................... 20
4.2.3. Geographical Distribution .......................................................................................... 22
4.2.4. Institution Type Distribution ....................................................................................... 24
4.3. Applications and Funding - A Clustered Approach .......................................................... 27
4.3.1. Applications by Cluster .............................................................................................. 27
4.3.2. NRF Rejection by Cluster ......................................................................................... 28
4.3.3. Peer Review Rejection by Cluster ............................................................................. 29
4.3.4. Funding Patterns by Cluster ..................................................................................... 29
4.3.5. Conclusion .................................................................................................................... 30
4.4. Findings ............................................................................................................................... 31
5. Interventions ........................................................................................................................... 32
5.1. Definition .............................................................................................................................. 32
5.2. Intervention 1: Attracting more black applicants .............................................................. 33
5.3. Intervention 2: Reducing NRF screening Rejection Rates - Conditions of Employment .... 33
5.4. Intervention 3: Reducing NRF screening Rejection Rates - Age Limit ......................... 34
5.5. Intervention 4: Improving Proposal Quality for proposals from Rural-Based Universities .. 34
5.6. Intervention 5: Increasing participation from the Universities of Technology.................. 36
5.7. Intervention 6: Facilitating more Equitable Geographic Funding Distribution .................. 37
5.8. Intervention 7: Re-establish Thuthuka as an authentic Research Grant ...................... 38
6. Notes on data .................................................................................................................. 40
Figures

Figure 1: Locating Thuthuka .................................................................................................................. 10
Figure 2: Thuthuka as a percentage of NRF Grants and Bursary Expenditure ..................................... 10
Figure 3: Thuthuka Budget 2010/11 - 2013/14 .................................................................................. 11
Figure 4: Composite Applications (%) by Institution Type ................................................................. 13
Figure 5: Application Rejection by Race: Screening Phase 2010/11-2013/14 ........................................... 14
Figure 6: NRF Rejected by Type of Institution 2011-2014 ................................................................. 14
Figure 7: Composite Rejection Rate (%) by Institution Type ............................................................... 15
Figure 8: Peer Review Rejection Rate by Race 2011-2014 ................................................................. 17
Figure 9: Composite Peer Review Rejection Rate by Institution Type ............................................... 17
Figure 10: Peer Review Rejected by Institution Type 2012-2014 ....................................................... 18
Figure 11: Average Individual Grant Size 2011-2014 ........................................................................ 19
Figure 12: Grants Awarded 2010-2014 ......................................................................................... 20
Figure 13: Race Target vs. Actual Funded ......................................................................................... 21
Figure 14: Gender Target vs. Actual Funded ..................................................................................... 22
Figure 15: Funding - Geographical Distribution ................................................................................ 23
Figure 16: Funding Distribution - Urban/Rural ................................................................................... 23
Figure 17: Awards by Institution Type 2010-2014 ............................................................................. 25
Figure 18: Applications by Cluster 2011-2014 .................................................................................. 28
Figure 19: NRF Rejections by Cluster 2011-2014 ............................................................................. 28
Figure 20: Peer Review Rejections by Cluster 2011-2014 ................................................................. 29
Figure 21: Composite Awards by Cluster 2011-2014 ....................................................................... 30
Figure 22: Thuthuka Interventions Visualised ................................................................................... 32
Figure 23: Proposed Thuthuka Grant Architecture ............................................................................. 39
# Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DHET</td>
<td>Department of Higher Education and Training</td>
</tr>
<tr>
<td>DST</td>
<td>Department of Science and Technology</td>
</tr>
<tr>
<td>HICD</td>
<td>Human and Infrastructure Capacity Development</td>
</tr>
<tr>
<td>NRF</td>
<td>National Research Foundation</td>
</tr>
<tr>
<td>RNA</td>
<td>Research Niche Area</td>
</tr>
<tr>
<td>SATN</td>
<td>South Africa Technology Network</td>
</tr>
</tbody>
</table>
1. Executive Summary

The Thuthuka Research Grant saw its last major overhaul in 2009 when the programme assumed the three-track architecture currently used, thus moving away from the preceding one-size fits all approach. The streamlined three-track architecture was introduced to level the playing fields between the previously disadvantaged researcher and his/her more privileged counterpart and to increase participation by the former.

The request by the National Research Foundation (NRF) management for the development of targeted interventions presents an opportune moment to reflect on the successes and challenges of the Grant for the past five years. Key in this regard, is the equity targets as set by the NRF and pursued by the programme during each funding cycle. A review of the actual achievements against the targets shows a mixture of successes with regards to the Gender Target whilst the Race Target remains evasive.

To understand why the race targets still present a challenge after five years an analysis was conducted with view to identify main barriers causal to the underrepresentation. This analysis entailed examining each stage of the funding cycle starting with the application stage up to the final award. At each stage an attempt was made to identify the main reasons for leakages and resulting loss of participation. A critical finding emanating from this, points to Thuthuka not attracting enough black applicants which renders the race target almost impossible. Another critical finding points to a prevailing Rural-Urban divide present in Thuthuka’s current funding pattern. According to this, Thuthuka’s funding is biased towards urban areas of the country severely impacting on Rural-based universities. Finally, it is noticeable that Thuthuka’s status as a proper research grant is being eroded and that there seems to be an over-emphasis on the human capital aspect of the grant. These are just some of the findings which are presented along with supporting data.

To address the challenges as contained in the findings seven interventions are presented for consideration. Each intervention is presented as an action required from the NRF together with its impact on the organization, a justification for its introduction and an initial implementation plan. The financial implication for each intervention was not assessed and should be taken into account before it is considered for implementation. Another aspect that has to be taken into account is the impact on the other business units within the organization.

The interventions recommended range from the rather simple, such as the amendment and change of an existing funding rule, to the more complex such the redesign of the funding instrument’s architecture itself.

Regardless of the proposed intervention’s complexity, each intervention has been developed with the following key considerations in mind. Each intervention must speak to

- the high failure rate of rejected applications from historically disadvantaged institutions – are screening processes designed to minimise applications falling through the cracks?
- capacity at institutions themselves - are applicants receiving enough support from their base institutions?
• It must provide direct capacity-building at the individual level – what processes and activities are in place to increase an applicant’s chance of a successful application?
• Geographic funding distribution - funding model must facilitate a more equitable geographic distribution of resources


2. Introduction

The National Research Foundation’s (NRF’s) Thuthuka Research Grant was created in response to South Africa’s emerging researcher challenge. Not dissimilar to other aspects of societal South Africa, the research landscape displays a distortion with historically disadvantaged individuals heavily underrepresented, both in terms of occupying research positions at research institutions and funding. The challenge was, and still is, to facilitate greater participation by designated individuals, thereby achieving a more representative research economy. The Thuthuka Research Grant was created as one of the NRF’s chief funding instruments towards addressing this challenge.

In setting out to address underrepresentation, the NRF formulated participation targets for designated individuals upfront. These targets form the key metrics against which Thuthuka’s performance is assessed. Thus, during every funding cycle over the past ten years, the NRF would go to great lengths to ensure that funding is allocated in accordance with the targets. Tracking performance over a number of years, it became clear that the targets would remain elusive if interventions beyond just the allocation of funding were not urgently introduced into the environment.

One such early intervention was the presentation of Research Proposal Writing and Research Project Management workshops. Based on the assumption that poorly presented research proposals were causal to poor participation, the workshops were conducted at institutions with poor participation rates. The end goal was simple - better proposals lead to better participation. The impact of the workshops was never really systematically reviewed post implementation. Also, the workshops, because of funding and other constraints, were not presented in a sustained manner thus the ad-hoc nature of the intervention. It is therefore difficult to assess the efficacy of the intervention. What is clear though is that the underrepresentation persists up to the present time.

Persistent underrepresentation prompted a relook at interventions aimed at increasing participation by designated individuals. This time however, the approach is to go beyond the quality of the research proposal as a reason for poor participation. Lessons learnt from the first iteration of interventions indicate that for it to have impact, it has to be comprehensive and sustainable. Comprehensively packaged interventions are well thought-through and take into account all the factors that might impact on lower participation rates. It takes into account the complete funding ecosystem covering the space from inviting applications to the final awarding of grants. All the business processes were scrutinised to detect possible leakage points. It takes into account the profile of the emerging researcher, the institutions where they might be residing as well as the NRF internal processes, all with the view to determine where and why emerging researchers are falling through the cracks. The key objective is to present the NRF with a set of interventions that can be introduced in a sustained and effective manner and which will ultimately result in higher participation rates.
3. Background

Understanding the environmental constraints under which the Thuthuka funding instrument operates is an essential prerequisite for any intervention proposed as a solution to the poor participation rates. Interventions designed without regard for these factors will almost certainly fall short of the mark, however, noble the intentions or novel the design might be. The following sections describe this environment, supported by data and analysed for its impact on the overall objective.

3.1. Locating Thuthuka within the NRF

Thuthuka resides within the Human and Infrastructure Capacity Development (HICD) domain (department) of the NRF. HICD is a container for all the NRFs funding instruments aimed at developing "institutional research capabilities and infrastructure in parallel with the appropriate human capital to drive the research and development strategies within the National System of Innovation." Within this context, Thuthuka, focusing on human capital development, seeks to promote the professional development of researchers from designated groups. Thuthuka exists alongside two other competitive/complementary funding instruments designed to support Emerging Researchers, viz:

- Sabbatical Grants to Complete Doctoral Degrees; and
- Institutional Research Development Programme (also known as Research Niche Area Grant (RNA)).

It should be noted that the RNA grant is being discontinued as from mid-2014. The recently introduced Sabbatical Grants is a special purpose vehicle, initially introduced as a once-off grant in 2010 but subsequently installed as a fully-fledged funding instrument. An important observation about Sabbatical Grants is that it provides funding for lecturer replacement costs while researchers are on sabbatical. Compare this with Thuthuka which provides the same support, but as part of an overall research grant. The difference is highlighted here as it might point to a possible duplication, something which is explored later in the document.
3.2. Resourcing Thuthuka

The Thuthuka Research Grant for 2012/13 accounted for 2% as a total of the NRF’s Grants and Bursary Expenditure of R1 132 072 000. The source for the Thuthuka grant is both the parliamentary budget and contract funding. See figure 2 below.

Since 2010, the Thuthuka Research Grant experienced significant year-on-year budget increases. Successive budget growth of 60%, 99% and 88% for the respective financial years 2011/12,
2012/13 and 2013/14 can be attributed to the supplementary funding from the Department of Science Technology (DST). This reflects the NRF’s priority in support of Thuthuka as one of the vehicles to grow and develop emerging researchers. See figure 3 below.

![Thuthuka Budget](image)

**Figure 3: Thuthuka Budget 2010/11 - 2013/14**

Using 2010/11 as the base year, the data displays a 504% increase from R7,6m to R45,9m in 2013/14. Whilst impressive, the dramatic increase in budgetary allocation did not result in an equal (proportional) increase in the number of grants awarded in 2013/14. The section on funding patterns below shows that the nominal number of grants awarded over the same period only increased by 58%. This can be explained by the fact that the 2013/14 budget not only funds new awards but also includes funding for grants awarded in the previous years.

### 3.3. Service Delivery

Operating within the NRF’s matrix organisational structure, Thuthuka delivers each funding round as a distinct project. A project team leader (manager) is appointed to oversee all the activities starting from assembling a project team, to placing the call for proposals, to screening and reviewing applications and the finally awarding of successful applications.
4. Problem Definition

4.1. Application-Award Conversion Rates

Hundreds of applications fail to advance to the final awarding stage during any given call cycle. Conversion rate represents all the awards expressed as a percentage of the initial applications. The higher this value, the more efficient the processes. It therefore follows that a low conversion rate points to problems in the call placing, application screening, and peer review and award process.

It is important that these problems, where they exist, are identified, analysed and addressed. This, not least because the failures might include applications from designated individuals which could impact negatively on programme targets. The following sections provide an analysis of conversion (or failures) at every step of the awarding process.

4.1.1. Application In-box Analysis

The purpose of this exercise is to determine exactly who applies for the Thuthuka Research Grant. It endeavours to establish whether the right applicants, considering the programme targets, are attracted.

For the period 2011 to 2014, the NRF received 1518 applications for the Thuthuka Research Grant. Out of this, 56% came from Black researchers and 62% of the applicants were female. It is clear that the 80% Black and the 60% gender targets are compromised from the outset. Also, the situation is further compounded considering that these are award targets and given that further screening processes will inevitably lead to diminished participation.

The question that arises from this is whether the targets are realistic or whether the programme is failing to attract appropriate candidates.
Another way to look at the applications is to consider where they originate from, i.e. considering the type of institution where the applicants reside. Using this method, it is noticeable that while the majority of the applications come from Research Intensive and Middle-tier universities, the programme is unable to attract significant applications from Rural-Based Universities (8%) and Universities of Technology (15%). Research Institutions and Research Councils will, due to the specialised nature of their work, submit fewer applications.

4.1.2. Application Conversion

Whereas the previous section focused on the application submission stage, this section considers what happens to applications once they reach the NRF. By analysing various internal screening and reviewing processes, it attempts to reveal why some applications do not convert into awards. In this regard it is important to explore any emerging patterns which might point to applications from specific institutions, institution types or geographies.

4.1.2.1. Internal Screening

The NRF internal screening failure rates for grant applications varies considerably across institutions. The screening is based on a basic verification check for the completeness of the application. This is to ensure that the application fulfils the conditions as set out in the call documentation. Figure 5 below present data collected on NRF screening rejection rates.
A race-by-race screening comparison rejection rate does not reveal significant differences between blacks and whites, except for the 2013/14 funding round. It should be noted that this review phase entails superficial and administrative criteria which is not linked to the substantive quality of the proposal.
NRF internal screening rejection rates fluctuated considerably over the years 2011/14. Rejection rates are significantly high in 2012 with rates hovering around 32% and 33% for middle-tier and Rural-Based Universities. The pattern is consistent in the subsequent years of 2013 and 2014 for Rural-Based Universities. With Rural Based universities still the worst performer, the failure rates start to taper off in 2013.

Significant fluctuations in rejection rates could point to a number of things e.g. possible deficiencies in the screening process and the most obvious, the quality of the screening.

![Composite Rejection Rate by Institution Type](image)

Figure 7: Composite Rejection Rate (%) by Institution Type

When the data is aggregated over the 4 year period and presented as a composite, a clearer picture emerges. The visualisation above indicates that Rural-Based Universities have the highest rejection rate over the period. This should be viewed in conjunction with the fact that they also have the lowest total number of applications (Councils and Research Institutions) for the same period.

Rejection at this stage is not related to the merit of the proposal, but rather to minor criteria linked to the eligibility of the applicant or some administrative requirement. More often than not, it involves an issue that could have been resolved at the institutional level. High rejection rates at this stage can therefore be interpreted as an institutional deficiency.
There is, however, other reason why applications fail to make it past this stage which is linked to the inherent funding rules of the instrument. Consider the table below which lists the common reasons for application failure. Significantly, 42% of the failures relate to budgeting issues while 16% are attributable to the applicant’s employment status. Another notable reason relates to the age limit contained in the funding rule. This accounts for 13% of all rejected applications. While issues such as the applicant’s funding history and citizenship cannot be modified, the rest can certainly be addressed through targeted interventions.

Table 1: Common reasons why Grant Applications Fail NRF Internal Screening

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>REASON</th>
<th>Frequency 2012</th>
<th>Frequency 2013</th>
<th>Frequency 2014</th>
<th>Total Frequency</th>
<th>Total Failure %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>Requested budget less than R25 000</td>
<td>11</td>
<td>16</td>
<td>1</td>
<td>70</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Requested budget /funding for less than 3yrs</td>
<td>16</td>
<td>32</td>
<td>35</td>
<td>70</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Incomplete</td>
<td>4</td>
<td>9</td>
<td>0</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Not provided in application</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Employment</td>
<td>Status not clarified/not suitable</td>
<td>2</td>
<td>5</td>
<td>11</td>
<td>20</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Temporary/contract less than 3yrs</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Funding History</td>
<td>Submitted same project as in previous funding obtained</td>
<td>4</td>
<td>15</td>
<td>11</td>
<td>30</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Do not qualify for another grant in this cycle</td>
<td>11</td>
<td>4</td>
<td>0</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Currently holds other funding</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Age limit</td>
<td>Above 45, no motivation provided in application</td>
<td>6</td>
<td>6</td>
<td>12</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Citizenship</td>
<td>Non-SA citizen/ no permanent resident status</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Do not qualify for another grant in this cycle</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>Unknown</td>
<td>No liaison officer comment/comment incomplete to fit into categories above</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

4.1.2.2. Peer Review Conversion

The peer review stage of the process is certainly a step up from initial screening as the process advances into the academic merit domain. Peer review is premised on the principles that grant applications submitted to the NRF are evaluated on the basis of a process that is fair, equitable, transparent and free of bias. Applications are subjected to rigorous review to determine whether
they are worthy of the intended investment. For this reason the rejection rates for this stage are considerably higher than that of the preceding stage.

![Peer Review Rejection Rate by Race](image)

**Figure 8: Peer Review Rejection Rate by Race 2011-2014**

The data visualisation in the figure presented above indicates that black applicants are 50% more likely to fail the peer review stage than their white counterpart. This is at least the case for years 2011/12 and 2012/13. Although the likelihood tapers off considerably in 2013/14, it remains significantly high.

![Peer Review Rejection Rate by Institution Type](image)

**Figure 9: Composite Peer Review Rejection Rate by Institution Type**
The visualisation above represents the peer reviewed rejection rates by institution type over three years ending 2012/14. It represents the total number of rejections expressed as a percentage of the total number of applications submitted for peer review.

Besides the rejection rate for research institutions (which is an anomaly since only 1 application was presented for peer review), the stand out rates are those for Universities of Technology (57%) and Rural-Based Universities (55%).

The peer review rejection rates fluctuate considerably for the years for which data is available. See figure 10 above. In 2012, there was a correlation in rejection rates for peer review and internal screening for the same institutions. Applications show a significant drop in the peer review phase with rates as high as 75 percent in 2012 for Rural-Based Universities followed by 58% for institutions such as Universities of Technology and Middle-tier. The pattern is consistent in the subsequent years of 2013 and 2014, however, in the succeeding years the worst performers are the Universities of Technology. This could point to a number of things e.g. possible deficiencies in the review process and the most obvious, the quality of the proposals.

As with the previous discussion, Rural-Based Universities are once again one of the standout numbers. An interesting and noteworthy observation is the high rejection rate for Universities of Technology. Unlike Rural-Based Universities where the result was perhaps predictable,
Universities of Technology is a surprise leader for this analysis. This group was also earlier, under the Application In-box section identified as one of the lower sources of applications.

4.2. Funding Patterns

4.2.1. Average Individual Grant Size

The average rand value of a Thuthuka grant increased from R115 278 in 2010/11 to R152 997 in 2013/14, reflecting a 33% increase. With 2011/12 being the exception there has been intermediate year-on-year increases in the average grant between subsequent years, for 2012/13 and 2013/14 which were 37% and 27% respectively.

Overall, the steady increase displayed by the average individual grant size is welcomed. However, further analyses of the average individual grant size, reveals that it consists mainly of grantholder-linked support (Human Capital Development). In 2014, this support constituted 82% of the average grant for that year. After, deducting the 82% from grantholder-linked support from the average individual grant, remaining (in nominal terms) is approximately R27 540 available to the researcher to carry out the research. This phenomenon has the following implications for Thuthuka as a Research Grant:

- It severely undermines Thuthuka’s authenticity as a Research Grant due to the fact that the funds available for the actual research constitute a fraction (20%) of the grant; and
- It inhibits the grantholder’s ability to achieve the objectives of the research project. It is noticeable that many grantholders, at end of their three-year Thuthuka funding cycle and with their research projects incomplete, apply for funding elsewhere in the NRF.

4.2.2. Race and Gender Distribution

As pointed out in the previous section, the Thuthuka average award has grown tremendously over the past four years to a level where the average grant realistically reflect the cost of an average research project. The analysis, however, does not give any additional insights into the key question, i.e. how can participation from designated individuals be improved?

Before attempting to answer this question, the following precursory issues require in-depth analysis:

- Who are being funded?
- Where are they located?

The figure 12 above illustrates how many grants were awarded during a specific granting cycle but does not reveal who has been awarded. A response to this question requires a deeper drill down into the data which is visualised in the graphics below.
The following key points emerge from this picture:

- Thuthuka consistently failed to achieve the 80% Black participation target over the four year period;
- Awards made to individuals from this group amounts to 72%, 44%, 60% and 54% respectively over the four year period;
- The closest target to actual awards happened in 2010/11. This coincides with the period when the average grant was at its lowest, i.e. R58,462;
- Subsequent years show significant deviations from the target, the highest of which was in 2011/12; and
- The average deviation from the target is approximately 28% for the last three years.

Contrasting the race target/actual with the gender target/actual, the following comes to the fore:

- Gender actual almost always hit the target, even surpassing it; and
- It should be borne in mind that the gender attribute includes white females which puts an interesting spin, when race is read in conjunction with gender, on the analysis; and
- That the gender target vs actual could be a distortion because of the previous observation.
4.2.3. Geographical Distribution

This question explores the geo-spatial distribution of the Thuthuka grant. Firstly, it takes account of the rural-urban divide in South Africa, understanding that geographical distribution has a direct link to the availability of resources. Secondly, it moves from the premises that, historically most of the targeted individuals reside in certain geographical areas.
The NRF offers over 100 types of Funding Instruments. Thuthuka grant recipients, 471 in total, constitute new and on-going grantees. These are distributed across Research Intensive Universities, Middle-Tier Research Universities, Rural Based Universities, Universities of Technology, Science Councils and Research Institutions\(^1\). The bulk of the grant recipients are university based researchers with the research intensive institutions receiving the largest number of Thuthuka grants.

Figure 15 shows the location of awards by province. Gauteng and the Western Cape have the highest concentration of awardees in terms of monetary value and total number of awards. This is not surprising given that these provinces are home to a higher number of Research Intensive Universities and Science Councils. The latter two types of institutions are also known for their strong and well managed administrative capacity. Figure 15 above is a graphical representation of the Thuthuka awards by province. Gauteng and the Western Cape account for R26,547,712 and R19,644,344 of the budget respectively. Collectively this represents 63% of the total Thuthuka awards. Gauteng and the Western Cape’s lion share of the budget can simply be explained by the higher number of researcher institutions and bigger researcher communities linked to these

\(^1\) Classification of institutions is a NRF construct.
areas. Further, comparing the average grant size of the Gauteng/Western Cape (R151 000) with the rest (R163 000) there does not seem to be much of a difference.

In fact, grantees from the rest of the country receive bigger Thuthuka grants per capita. Although this points to a possible distortion, the global disparities between the two geographies can be explained upon a closer analysis of their distinct characteristics.

The Gauteng and Western Cape provinces display the following characteristics which can be attributed to their higher participation in Thuthuka:

- They have more Research Intensive Universities (4), whose orientation is towards offering degrees at doctoral level, which translates into more applications.
- They have more Science Councils (8), almost exclusively research focused, which also contributes to higher participation.
- They have more Universities of Technologies (3), whose orientation is to produce career-orientated programmes at diploma level.
- They have greater resources in terms of its budget, human resources, and general administrative infrastructure to support applicants.
- The profile of the average applicant from these regions is that the applicant is black and female.

Juxtapose this with provinces such as Limpopo, North West and the Eastern Cape which have far fewer grantees. Noteworthy, institutions in these provinces share:

- They have mainly Comprehensive Universities (3) or what the NRF regard as Middle-tier Research Universities. The orientation of Comprehensive Universities is both on offering career-orientated diplomas and degrees that progress to doctoral level. Their orientation could therefore explain their lower participation in Thuthuka.
- Rural based Universities (4) which present their own peculiar set of challenges relating to population size, logistics and infrastructure, reside exclusively in these regions translates into fewer applications.
- Compared to Research Intensive Universities, Rural Based Universities have lesser financial resources which translates into diminished administrative capacity
- The profile of the average applicant from these regions is that the applicant is typically white, female and applicants drawn from the lower income section of the population.

4.2.4. Institution Type Distribution

The accumulated rand value for all Thuthuka awards made from 2010/11 hit the R80m mark in 2013/14. The data visualisation below shows how the amount was allocated using institution type as a basis for categorisation. Unsurprisingly, the 44% lion share going to Research Intensive Universities is completely in line with the trends detected under Application Conversion discussed above. This is also resonant with the geographical distribution pattern revealed in the previous section, given that most Research Intensive Universities are located in the Gauteng and Western Cape provinces of the country.
On the other end of the spectrum the data shows that Research Institutions cumulative received the smallest amount in funding for the period. It should be borne in mind that Research Institutions and Councils (Research Councils) are not regarded as training institutions as they do not confer academic qualifications. Also, the smaller number of applications and therefore awards emanate directly from their specialised or niche nature and the related data are consequently not regarded as significant influencers for purpose of this review.

Table 2: Funding Distribution by Institution Type

<table>
<thead>
<tr>
<th>Institution Type</th>
<th>Research Intensive</th>
<th>Middle-tier</th>
<th>Technology</th>
<th>Rural-based</th>
<th>Councils</th>
<th>Research Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share</td>
<td>44%</td>
<td>27%</td>
<td>10%</td>
<td>8%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>Number of Institutions</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Number of Grants Awarded</td>
<td>291</td>
<td>179</td>
<td>69</td>
<td>44</td>
<td>52</td>
<td>27</td>
</tr>
<tr>
<td>Average Grant per Award</td>
<td>R121 077</td>
<td>R121 481</td>
<td>R113 858</td>
<td>R148 866</td>
<td>R114 234</td>
<td>R128 832</td>
</tr>
<tr>
<td>Average Grant per Institution</td>
<td>R7 046 667</td>
<td>R3 106 441</td>
<td>R1 306 223</td>
<td>R1 301 023</td>
<td>R1 188 032</td>
<td>R 232 888</td>
</tr>
</tbody>
</table>

The data presented in the table above contains a significant indicator which illuminates a telling indicator. While all other indicators are displaying values in line with the trend revealed earlier, the Average Grant per Institution provides significant insight into Thuthuka’s funding patterns when considering the type of institution. Whilst Thuthuka awards R7m and R3m to each Research...
Intensive and Middle-tier University respectively, the average R1.3m grant awarded to Universities of Technology and Rural-Based Universities are significantly lower. This is as much as 538% lower in the case of Research Intensive universities and 238% lower in the case of Middle-tier universities.
4.3. Applications and Funding - A Clustered Approach

As far as institution type is concerned, the preceding discussion uses the NRF’s official classification system. In terms of this classification, institutions are divided into the following categories:

- Research Intensive Universities;
- Middle-Tier Research Universities;
- Universities of Technology; and
- Rural Based Universities.

An alternative way of presenting the data is through the “Clustered Approach”. This classification system was developed by the Department of Higher Education and Training (DHET) and classifies universities into three clusters – cluster X, Y and Z institutions. Universities are classified into a cluster based on academic staff inputs and outputs (as reflected in undergraduates and high level knowledge).

The main difference between the two classification systems is that the NRF’s classification system includes institutions other than universities whilst the DHET’s system is limited to universities only. Whereas it is not the purpose of this document to discuss the merits and demerits of these two systems, a view of the data using the DHET classification system is nonetheless presented below.

4.3.1. Applications by Cluster

The data visualised in figure 18 below indicates that the NRF received more than 50% of its applications from institutions in cluster X. On the other extreme, cluster Z submitted the lowest number of applications (19%). Cluster Z consists mainly of Universities of Technology. It also includes two Rural-Based Universities. The low application rate is not surprising and resonates with the discussion presented in section 4.1.1.

---

2 Note on Clusters

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Consists of 8 universities which have good academic staff inputs and outputs (as reflected in undergraduates and high level knowledge).</td>
</tr>
<tr>
<td>Y</td>
<td>Consists of 3 universities, 3 comprehensive universities and 2 universities of technology. While the output performance of universities at undergraduate and masters levels are mostly below targets set, they have tended to be close to the target. They also have a strong input indicator.</td>
</tr>
<tr>
<td>Z</td>
<td>Consist of 3 comprehensive universities and 4 universities of technology. Staffing inputs of these institutions are below target. Their output performance at undergraduate and masters levels are mostly also well below targets set.</td>
</tr>
</tbody>
</table>

3 The date used in the DHET classification is for the period 2008-2010. It is reasonable to assume that shifts could have taken place across the clusters.
4.3.2. NRF Rejection by Cluster

For the period, 2011-2014, the NRF rejected 136 applications in total from universities. These rejections happened at the administrative level i.e. applicants not meeting administrative requirements. It is therefore rejections before the scientific merit of the application is assessed. In this instance cluster Z, with an 18% rejection rate outperforms the other two clusters. However, this number is not significant as they submitted the lowest number of applications.
4.3.3. Peer Review Rejection by Cluster

Once again Cluster Z comes out top with the lowest peer review rejection rate. Despite, this and when compared with the NRF rejection rate, cluster Z shows an 11% increase from 18% to 26%. This means that Cluster Z has actually fared progressively worst. This is further accentuated by Cluster X showing improvement in this regard (from 48% to 37%). Cluster Y also shows a drop but this is not as pronounced as that for Cluster Z. Cluster Z’s poor performance in peer review is in line with the earlier observation about universities of Technology and Rural-based Universities.

![Peer Review Rejections 2011-2014 by Cluster](image)

Figure 20: Peer Review Rejections by Cluster 2011-2014

4.3.4. Funding Patterns by Cluster

Unsurprisingly Cluster X takes the lion share of the funds awarded by the NRF for the period 2011-2014. This is followed by Cluster Y with Cluster Z coming in at the bottom and accounting for 14% of the total. Once again this is in line with observations highlighted in the preceding sections which point to Universities of Technologies and Rural-based Universities as the worst funded.
4.3.5. Conclusion

The analysis by cluster presented above mimics the observations highlighted in section 3 rather closely. It follows the familiar pattern pointing to Universities of Technology and Rural-based universities as areas for interventions. It did not reveal any new insights and did not significantly alter the findings.
4.4. Findings

a) The Application In-box analysis shows that Thuthuka is not attracting Black applications in sufficient numbers which renders the race target almost impossible;
b) The gender target has been consistently met by the programme over the period and as such does not require any intervention;
c) Cumulatively applications fail the NRF initial screening process 29% of the time due to their employment contract (16%) and their age limit (13%);
d) Black applicants are significantly less likely to survive the peer review phase of the review process. Applications from black applicants have a 52% chance of suceeding this phase while that of their white counterparts is estimated at approximately 73%;
e) Applications from Universities of Technology have a 43% chance of successfully passing the review phase while for Rural-Based universities this drops down to 45%;
f) With grantholder-linked support making up 82% of the average grant the funds available for actual research is severely reduced.
g) Geographically, Thuthuka’s funding distribution is heavily skewed in favour of institutions located in the Western Cape/Gauteng provinces of the country; and
h) Institutionally Thuthuka has awarded Research Intensive Universities disproportionately more than Rural-Based Universities.
5. Interventions

5.1. Definition

For the purposes of this document, an intervention is defined as a dedicated and targeted management action introduced as a "coming between" a prevailing condition and a desired outcome where the prevailing condition is the current state and the desired outcome the future state of affairs. The purpose of the intervention is therefore to introduce measures into an environment that will facilitate the attainment of the desired outcome. In this particular case the prevailing conditions are discussed in the problem statement above and succinctly listed in the findings. The desired outcome is contained in Thuthuka’s strategic intent itself, i.e. to increase the participation of designated individuals by pursuing set targets. Figure 18 depicts the relationship between the prevailing conditions, the intervention (shown by the circle) and the desired outcome.

![Figure 22: Thuthuka Interventions Visualised](image)

Depending on their impact on the NRF’s operations and that of the client, interventions vary from modest to drastic (far-reaching). Low-impact interventions have modest or little impact on the NRF’s current operations and are generally easy to implement. They can be implemented without extensively engaging the client community and mostly entail subtle changes to issues like eligibility criteria. More complex to implement, High-impact interventions on the other end of the spectrum impacts on both the operations of the NRF and on that of the Research Institutions. Intermediate interventions are positioned between these two extremes, impacting the NRF and the individual researcher.

The sections below contains a number of actions, each recommended as an intervention towards the resolution of a particular problem and each targeting a specific outcome. Recommended interventions are also classified in terms of their impact on the NRF and the client community.
5.2. Intervention 1: Attracting more black applicants

**Action:** This intervention requires the NRF to establish a dedicated marketing effort aimed at attracting more black applicants.

**Impact:** Low

**Motivation:** It has already been alluded to that Thuthuka is not attracting sufficient applications from black applicants. This could be because there are not enough black applicants in the pipeline or that the NRF’s marketing efforts do not speak to potential black applicants. The assumption is that the latter case obtains, implying that a focussed recruiting of black applicants will lead to an increase in applications from this group.

**Implementation:** Pursuing black applicants require identifying the institutions where they reside and developing marketing efforts that targets these institutions with messages suited for the target market. It is recommended that the NRF, either through its existing Corporate Communications Directorate or through the newly established Institutional Engagement and Partnership Development Business Unit, introduce a sustained marketing campaign aimed at attracting more black applicants. The newly established directorate may be the best location for this effort as locating it in the Corporate Communications Directorate might not deliver the desired results, with the latter having a more corporate approach to communication while an acute understanding of the messaging is required. Communications should ideally be scheduled with the seasonal nature of the Calls for Proposals in mind. In other words, the communications should be scheduled before the Call for Proposals is placed. The communication media utilised should be appropriate for the intended communications targets but must, as a minimum include face-to-face communication. Finally, the budget for this intervention is perhaps best located in the newly created directorate.

5.3. Intervention 2: Reducing NRF screening Rejection Rates - Conditions of Employment

**Action:** This intervention requires the NRF to affect small changes to its Funding Rules which will impact significantly on the number of applications that make it past the initial screening phase thereby boosting the overall conversion rate.

**Impact:** Low

**Motivation:** Sixteen percent of the internal rejects are based on a disqualifying criterion which states that researchers should be in the full-time employ of institutions before they qualify for the grant. This conditionality is directly linked to Thuthuka being a three year commitment from the part of the NRF. It therefore makes sense that there exists an inherent risk in awarding applications where the applicant’s tenure is not secured beyond this period.

It should be borne in mind that the labour market is extremely fluid and that there is a tendency to appoint researchers on a temporary basis. With more and more researchers employed under
these conditions, this funding rule, as it stands currently, disqualifies numerous researchers, not because their project are not deserving, but because of a labour market configuration.

Changing this rule to conditionally award researchers appointed for less than three years might actually encourage institutions to amend the researcher's conditions of employment to a more permanent situation.

**Implementation:** Change the current funding rule to include temporary appointed researchers on a conditional basis, thereby incentivising institutions to appoint them on a more permanent basis. Applicants falling foul of this requirement should be awarded conditionally, pending a commitment from their base-institutions to amend their conditions of employment to align with the Thuthuka grant condition.

### 5.4. Intervention 3: Reducing NRF screening Rejection Rates - Age Limit

**Action:** This intervention requires the NRF to affect small changes to its Funding Rules which will impact significantly on the number of applications that make it past the initial screening phase thereby boosting the overall conversion rate.

**Impact:** Low

**Motivation:** There is currently no documented motivation for the existence of the rule which states that applicants must be younger than 45 to qualify for a Thuthuka Research Grant. Until proven otherwise, this funding rule is discriminatory at best and flies in the face of policies geared towards life-long learning. As it stands currently, this criteria works decidedly against individuals who might not have opportunities before and for whom opportunities came much later in their lives. These are mainly disadvantaged individuals which mean that this funding rule is against the very spirit of the Thuthuka Research Grant.

**Implementation:** Remove the requirement which states that applicants must be “generally under the age of 45 at time of first application”.

### 5.5. Intervention 4: Improving Proposal Quality for proposals from Rural-Based Universities

**Action:** This intervention requires the NRF to introduce programmes or projects that will significantly increase the chances of applications from Rural-Based researchers proceeding past the Peer Review phase.

**Impact:** Intermediate

**Motivation:** Applications from researchers located at Rural-Based Universities are appreciably not likely to survive peer review. Peer review ostensibly deals with the academic merit of the proposal. The data shows that proposals from this sector have a high probability of rejection at this stage.
This problem has been identified by the NRF before and resulted in the introduction of interventions directed at improving the quality of proposals from these applicants. It should be noted that these interventions, however valuable, were not conducted on a sustained basis. Rather, they assumed an ad-hoc nature with little dedicated budget or staff. A more permanent solution can be achieved if the intervention is provided on a more sustained and programmed basis.

**Implementation:** The first step towards instituting this intervention is to reactivate the Proposal Writing and Research Project Management activities offered by the NRF in the past. The difference this time would be that the sustainability is much more enhanced by developing a dedicated programme with predicable start and end dates, presented annually and reaching each of the target institutions.

The programme content should cover at least three topics:

- Research Proposal Writing;
- Research Proposal Budgeting; and
- Research Project Management.

The modalities of delivery depend on how the NRF chooses to approach fulfilment. Available options include self-fulfilment which entails the NRF delivering the service itself. This requires that the NRF establishes the capacity to deliver such a service, which is currently not the case. Choosing this option will require the appointment of dedicated staff or the retraining of existing staff. The alternative option is to outsource this activity. While outsourcing does not require the appointment of dedicated staff, it might require the re-orientation of existing staff. The particular competencies required with this option would be Project Management and Service Level Agreement Management. As to where this competency is situated, the NRF again has the choice between the newly created directorate and the existing programme.

Regardless of the NRF’s mode of implementation (i.e. outsourcing/insourcing), there is a critical requirement that a partnership model is followed. A partnership model will ensure co-ownership from all stakeholders involved. Specifically, co-ownership by the recipient institution is critical to the success of the intervention. The following lists the stakeholders involved with the roles and responsibilities allocated to each:

- **Client:** central and involved in the capacity development and training to craft good proposals, submit credible budgets etc.
- **Institution (site of intervention):** management administrative capacity of research office at universities and science councils etc.
- **NRF (external agent):** To ensure that these marginalised individuals are brought into the fold, it is incumbent upon the NRF to create channels for increased participation. We should know where these individuals are located, the capacity or non-capacity of the institutions, personal deficiencies that they may suffer from and the exact extent of their funding needs. Knowing this would put the NRF in a position to provide value added services to address these issues. If we are able to address these key challenges we would have designed business processes that are responsive to the needs of our clients. Critical
for the NRF is managing changes over time in the research funding landscape and the resource base within which the institutionalised programme is to be undertaken.

5.6. **Intervention 5: Increasing participation from the Universities of Technology**

**Action:** This intervention requires that the NRF introduce a dual Peer Review system with two differentiated processes running in parallel. It will consist of the current Peer Review process and an additional process specifically for proposals from Universities of Technology.

**Impact:** High

**Motivation:** Like their Rural-Based counterparts, Universities of Technology present very specific problems when looking at various metrics in the data. Consider the following metrics with regards to these institutions:

- It has the second lowest number of applications;
- It has the highest Peer Review Rejection Rate (57%); and
- Its average Funding per Institution type is amongst the lowest (**R1 306 223**), only surpassed by Rural-Based Universities for which this figure stands at **R1 301 023**.

Together the three metrics listed above points to lower than expected participation in Thuthuka by these universities. Whereas a dedicated marketing exercise could result in increased application, lowering the high Peer Review Rejection Rate presents a different challenge all together.

The high Peer Review rejection Rate is perhaps best understood when the nature of Universities of Technology is overlaid with that of the Thuthuka Grant’s peer review process itself. Universities of Technology have an Applied Sciences orientation whereas the Thuthuka Grant’s review processes are more suited for the basic sciences. Specific misalignments that emerge from this comparison include:

- Thuthuka’s Peer Review scoring system which is not designed to deal adequately with proposals from the Applied Sciences sector; and
- The composition of the Peer Review Panels which does not adequately reflect representation from the Applied Sciences. A balance of academic and industrial referees/reviewers will provide a balance of research expertise and commercial knowledge appropriate for assessing the grant application. Given the roles these institutions play in the innovation pipeline and drawing on the South African Technology Network who has a vested interest in the applied sciences, their participation on panels will be indispensable.

**Implementation:** Whereas the current Peer Review process consists of postal reviews and centrally convened review panels, it is proposed that the review panels for Universities of Technology be devolved to the universities themselves. A typical panel will consist of:
- The Deputy Vice-Chancellor (DVC) for Research or his/her proxy who will be required to convene the panel;
- The relevant Faculty Head/Head of Department;
- Industry specific experts (assess the application for its scientific and commercial impact); and
- A NRF representative who will provide administrative support and who will serve as a liaison between the committee and the NRF.

For this intervention to be implemented successfully the NRF will be required to:

- Allocate dedicated staff to help with the creation of the panels and who will serve as a liaison between the NRF and the institutions. It is proposed that one staff member be appointed per institution.
- With regards to financing the activities of the panels, two options exist:
  a) the NRF can transfer the required funds to the institutions or
  b) the NRF can administer the payment for the activities centrally.

In line with the idea to capacitate the institutions, the first option is preferred over a centrally administered system.

5.7. Intervention 6: Facilitating more Equitable Geographic Funding Distribution

**Action:** This intervention requires that the NRF introduce "Region" as a criterion when deciding on which proposals to award. Proposals are currently awarded based a ranking system that considers race, gender and disability attributes ahead of the Peer Review score. It is proposed that the region attribute be inserted for ranking ahead of score attribute.

**Impact:** High

**Motivation:** As alluded to earlier, Thuthuka's funding pattern displays a geographical bias toward the Gauteng/Western Cape provinces of the country. This impacts negatively on institutions based in the other regions, creating an ever increasing rural-urban divide. Urban universities are able to leverage their funding by attracting even more funding and better human resources. Rural universities become a less attractive employment option for researchers, leading to depopulation. The multiplying effect that lesser resources have on these universities causes them to increasingly fall behind their urban counterparts.

**Implementation:** In activating this intervention, the NRF will rely heavily on the current Peer Review and Awarding processes used in Thuthuka. The Peer Review process already uses a very sophisticated scoring system which is used as a basis for ranking fundable proposals. This is further refined by overlaying the scores attained during Peer Review with other ranking criteria such as race, gender and disability. The process employs a progressive ranking technique whereby proposals are ranked first by race, then by gender followed by disability and finally the score attained. To achieve a more equitable geographical distribution, the regional element can be inserted into the ranking scheme just before the score element. This will ensure that
proposals from a specified region will be considered for funding ahead of a proposal from a less favoured region.

5.8. **Intervention 7: Re-establish Thuthuka as an authentic Research Grant**

**Action:** This intervention requires that the NRF re-establish Thuthuka as a proper Research Grant-in line with its original intent. Additionally, it requires that the programme expands its current horizontal diversification (the three tracks), by including a vertical dimension to its design. The vertical dimension distinguishes two levels at which Thuthuka can be awarded, i.e. Research Project Level and Small Grant Level.

**Impact:** High

**Motivation:** An analysis of the funding patterns reveals that Thuthuka is increasingly losing its research-orientation and that it is gravitating more towards human capital development. This is evident from the human-capital operations ratio reflected in the average individual grant. This ratio stood at approximately 80/20 in 2013/14 which means that 80% of the individual award is spent on grantholder-linked support with only 20% available for research project activities. Supporting human capital development, while simultaneously promoting research activities, are not mutually exclusive objectives. The key is to find a proper balance between the two elements.

Whilst there is no international standard that prescribes an acceptable ratio between human capital development and research activities, it is certainly unacceptable for the human capital element to crowd-out the research activities to an extent where the research itself is compromised. A more acceptable way to fund research is to base the funding on economic full costing, a methodology, which is widely used by leading international research funders.

It is also not unusual to find applicants who do not apply for the human capital component of the grant. These are applicants who are more interested in accessing funding for specific research activities such as sabbatical grants, pilot or feasibility studies, collection of preliminary data, secondary analysis of existing data, small, self-contained research projects, development of new research technology, etc. Also notable, in this context is that the funds are normally required for periods less than three years.

**Implementation:** Taking into account the current three-track-design and adding to it the two vertical levels suggested above, a redesigned Thuthuka will look as follows:
As depicted, it will consist of the current three tracks forming the basis of the design. The innovation is reflected by the grant now being available in two flavours – Research Award and Small Award.

**Research Awards**

Research Awards are intended to fund fully fledged research projects in an end-to-end fashion. This means funding research activities from project initiation to project close-out. As is currently the case the funding cycle will remain unchanged at three-years. The size of the award will be based on full economic cost of the project rather than on a prescribed itemised shopping list. All business processes utilised in the current version of the grant, such as peer review, awarding, reporting and appeals will be implemented in their current form.

**Small Awards**

Small Awards are intended to provide funding for researchers who do not necessarily require funding for the whole research project. Instead, they are looking for partial funding covering specific research activities such as sabbatical grants, pilot or feasibility studies and the like. These grants are small in nature and will be made available for periods between one and two years. With regards to the size of the grant the current funding categories and types of support will be used to determine the size of the grant. The current business processes will be utilised as is, except for Peer Review. Excluding peer review from the processes will significantly reduce the funding decision cycle and the administrative overhead costs.
6. Notes on data

Data was collected via a range of tools and methods, including (i) online databases, (ii) web-based and desk studies and (iii) participatory approaches. Every effort was made by the research team, to provide a complete and comprehensive picture as far as possible. Secondary analysis was further supported by conducting semi-formal qualitative interviews. This involved engaging co-workers deemed eligible and better informed, and thus a source of good quality information.

The data underpinning the calculations presented in the tables in the report are derived from NRF Online Submission System for the period 2011-2014.

Additional data sources consulted: NRF’s Online Submission System, (Statistics Thuthuka 2011 Call; Statistics Thuthuka 2012 Call; and NRF’s Management Information System (MIS); the Thuthuka grants and expenditure data 2011/12; 2012/13; 2013/14 NRF’s Annual Performance’s Report; Phoenix Reports). The data sources at times had a number of discrepancies, however, every effort has been made to provide the most reliable and accurate picture.