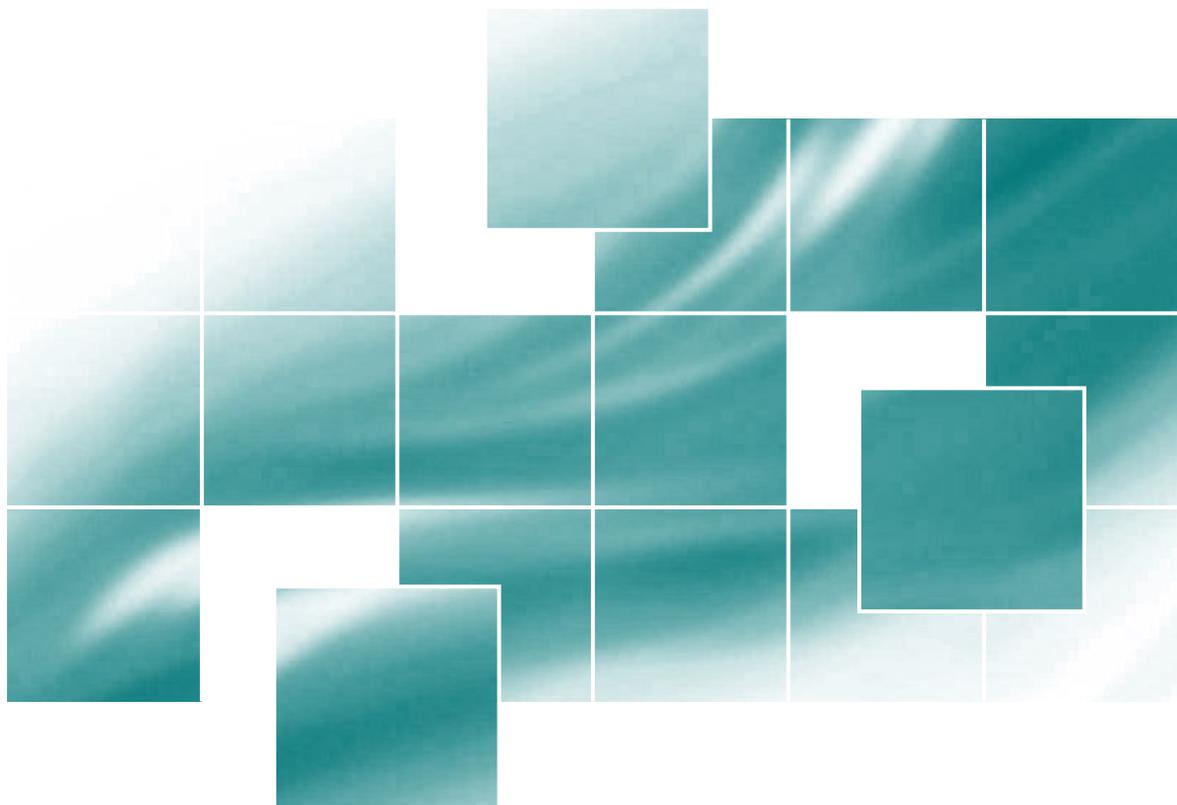


RIMIAC

Regional and Thematic Papers
on Research Management
2009–2013

Research project management in African universities

Karin Dyason and Jonathan Harle





RIMI4AC stands for the Improvement of Research and Innovation Management Capacity in Africa and the Caribbean for the Successful Stimulation and Dissemination of Research Results.

The RIMI4AC project ran from 2009 to 2013, and aimed to strengthen the two research and innovation management associations in southern and West Africa, SARIMA and WARIMA, while supporting the establishment of similar associations in Central Africa, East Africa, and the Caribbean, namely, CARIMA, EARIMA and CabRIMA.

In the process, the RIMI4AC project provided training to members of the regional associations, and established an information and communications network, including customised websites that provide resources and support for research managers and administrators.

This document is one of a series of five papers published on themes related to research management practice, provision and development in Africa and the Caribbean. For a list of the other papers in the series, see the back cover of this document.

The RIMI4AC project ran from 2009 to 2013, and was funded by the European Union's Africa, Caribbean and Pacific Science and Technology Programme (ACP S&T).

Contents

1. Introduction	3
2. Project management in a research context	4
What is a project?	4
The project triangle	5
What is project management?	6
Why does project management matter?	7
Who is a project manager?	8
The 'scientific' project manager	8
The 'administrative' project manager	8
Generic stages in project management	10
Justification and planning (J <u>P</u> ACE)	10
Activation (J <u>P</u> ACE)	12
Control phase (J <u>P</u> ACE)	12
End of the project (J <u>P</u> ACE)	13
Methodologies and tools for project management	13
3. Perspectives on research project management from universities and funders	15
Perspectives from institutions	15
Project management in a research context	15
Who manages projects?	16
How much experience do project managers have?	16
Recognising project management and emphasising its value	17
Perspectives from funders	18
The challenges in research project management	18
Project planning	18
Budgeting	19
Risk	19
Managing people	19
Training needs	23
The most challenging tasks	23
4. Case studies	25
University case studies	25
Case study 1: University of Dar Es Salaam, Tanzania	25
Case study 2: University of Ibadan, Nigeria	26
Case study 3: Central University of Technology, South Africa	27
Funder case studies	28
Case study 1: Global Health Research Initiative, IDRC, Canada	28
Case study 2: Research Cooperation Unit, Sida, Sweden	30
Case study 3: National Research Foundation, South Africa	31
5. Conclusion	34
Strengthening approaches to research project management	34

For individual project managers	34
For institutions	34
References	36
Acknowledgements	38
The papers in this series	39
Boxes	
Box 1: Definitions of a project	4
Box 2: Definitions of project management	6
Box 3: Examples of project management tools	13
Figures	
Figure 1: The project triangle	5
Figure 2: The plan–do–review cycle	6

1. Introduction

Project management in a research context is an important but difficult concept. On the one hand, university research is becoming ever more complex. With multiple partners, often distributed across a country, region or even across the world, and with funders requiring more detailed planning and reporting – there are logical frameworks to develop, budgeting rules to adhere to, policies to obey, reports to be submitted and evaluation to be done – effective planning and management of research projects becomes all the more important. But on the other hand, scientific research is by its very nature hard to plan, characterised by often serendipitous discovery, rarely proceeding in the direction that may have initially been envisaged and redefined as new data emerges. While some researchers feel a real need for greater support to manage projects, others resist it fiercely, believing planning models – with their tendency towards linearity – to be entirely incompatible with the scientific process.

This paper recognises the importance of research project management and attempts to understand some of the current perspectives on research project management and the challenges of undertaking it in the university environment in Africa. Through a series of case studies it offers some words of advice to those grappling with these challenges.

The paper is divided into three main parts. Section 2 offers a basic grounding in project management thinking in a research context. It explores the components of project management, the role of the project manager, generic phases of project management and examples of selected project management tools. Section 3 presents the perspectives of project managers in the African region who participated in the project questionnaire, with an emphasis on the challenges that are encountered. Section 4 suggests some potentially useful approaches to research project management, drawn from case studies with both universities and funders.

The intended readership of this paper are those in either ‘younger’ universities still seeking to build up their research systems, or those in more established universities that are less well resourced, and/or where research centres and teams are less able to directly administer and manage research and have a greater need for support from a central research office.

To access the perceptions and challenges of research project managers, a questionnaire was developed and was distributed at RIMI4AC events, through the Association of Commonwealth Universities’ (ACU’s) research management network, Research Africa newsletters and the regional research management associations. Research project managers across the sub-Saharan African region were invited to participate.

Some 80 staff responded, ranging from heads of university research divisions, to academics managing individual research projects, to research support staff or project co-ordinators. The respondents reported varying years of experience in project management (22.7% reported one to two years’ experience in project management; 20.2% reported three to five years’ experience; 18.9% reported six to ten years’ experience; 20.2% reported ten to fifteen years’ experience and 17.7% reported over fifteen years’ experience in project management). The respondents were from a range of African countries: Botswana, Cameroon, Central African Republic, Chad, Gabon, Ghana, Kenya, Lesotho, Mozambique, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Zambia and Zimbabwe.

Even though the response rate was relatively low and most responses were received from South Africa (41%), the results allowed the authors to establish general trends and challenges in research project management, which were corroborated by selected interviews and the case studies.

2. Project management in a research context

Project management is far from a new concept. It has been recognised as a professional activity since the mid-twentieth century, and much has been written on it in the intervening years, particularly by engineers needing to develop more effective ways of managing large infrastructural projects.

The skill to manage and deliver on projects is an important skill for any researcher. Competency frameworks for researchers, such as the Researcher Development Framework from Vitae,¹ which sets out the skills, knowledge and other attributes that are required to be a successful researcher, clearly identify key aspects of project management, including project planning and delivery, financial management, people management, communication, risk management and time management.

What is a project?

Although the term 'project' is widely used, it is often employed fairly loosely to describe a set of activities. Defining it more precisely can help to identify the need for these activities to be managed more effectively. There are many definitions available, some of which are given in Box 1.

Box 1: Definitions of a project

'A unique, transient endeavour undertaken to achieve a desired outcome' (Association for Project Management, 2012).

'A project is a temporary endeavour with a defined beginning and end [usually time-constrained and often constrained by funding or deliverables]' (Chatfield and Johnson, 2007).

'It is undertaken to meet unique goals and objectives' (Nokes, 2007).

'Planned set of interrelated tasks to be executed over a fixed period and within certain cost and other limitations' (Business Dictionary, 2012).

'A temporary endeavor, undertaken to create a unique product or service' (Project Management Institute, 2004).

'Any combination of a noun and verb together constitute a project' (O'Connell, 2001).

'Any required result that requires more than one action step' (Allen, 2002).

From these definitions, a set of key characteristics of any project emerges:

- It is unique – no other project is doing exactly the same thing, in the same way, at the same time.
- It is an instrument of change.
- It is temporary with a definite beginning and end.
- It has to achieve a particular purpose (achieve a goal, have an outcome).

¹ Vitae is a network-based organisation, consisting of a central team based in Cambridge, UK and a series of eight regional hubs throughout the UK as well as international networks (www.vitae.ac.uk).

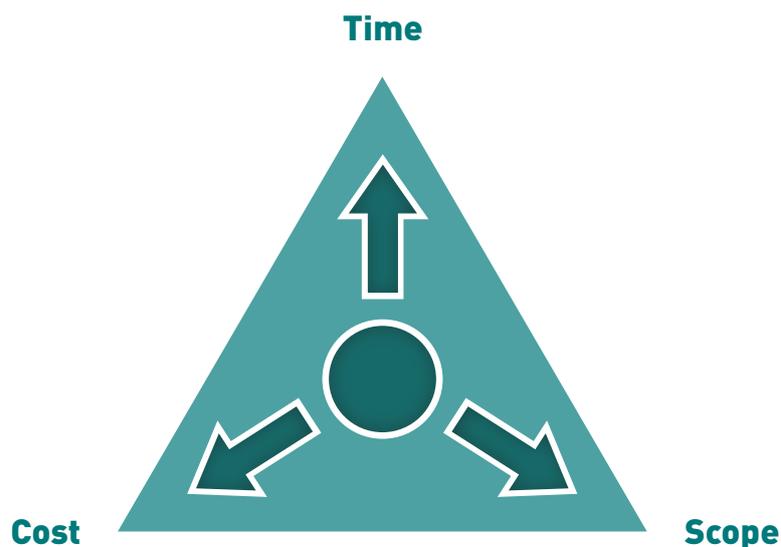
- It involves cost, a variety of resources, skills, and time.
- It is planned and controlled.
- It involves some degree of risk.

Projects are different from the ongoing operations of any organisation; they do not continue indefinitely but are temporary, with a defined beginning and end. Projects can also be understood as differing from programmes; the latter are composed of smaller projects, while projects are composed of tasks. While a research project focuses on questions emerging from the exploration of scientific theories and hypotheses, many if not all of the key characteristics applicable to a generic project are also relevant to research projects.

The project triangle

Every project core is generally affected by the three interrelated constraints of time, cost, and scope – the so-called project triangle.

Figure 1: The project triangle



Source: Adapted from Taylor, 2011

If any one dimension of the triangle is adjusted, be it the project's scope, timeframe or the cost available, it will affect the other two dimensions of the project. For a successful project, the dimensions of the triangle should ideally remain in balance. Maintaining the balance is an important part of the project manager's role. For example, if you apply for a grant and the allocated budget is less than the amount that was applied for, and the 'cost' point of the triangle is fixed (there is no additional funding available to make up the shortfall) it implies that as a project manager you will have to adjust the time (duration) and/or the scope (e.g. number of activities) of the project to maintain the balance.

What is project management?

The need for stronger project management within universities grows as research projects become more complex. Research projects often follow a consortium model, are multi-disciplinary and multi-institutional and as a result, are often carried out at multiple sites. In many cases they will be funded by large international funding agencies that are likely to attach stringent compliance requirements. Nevertheless, whether a project is complex or not, it should still be managed appropriately.

Many definitions for project management can be found in the literature. Three of these definitions are provided in Box 2 below.

Box 2: Definitions of project management

'The application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder needs and expectations' (Project Management Institute, 2004).

'The discipline of planning, organizing, securing, and managing resources to achieve specific goals' (Weber & Mosley, undated).

'The exercise of responsibility and decision-making about a project, the authority to execute within the boundaries of the project, and the accountability to deliver the results of a project in the context of agreed-upon customer expectations, commitments and constraints' (Mullaly, 2003).

What the definitions above show – particularly if we think of them in relation to the project triangle – is that the principal objective of project management is to control change within a project and to keep it within specific boundaries. Project management is a continuing and iterative process and follows a 'plan-do-review' cycle. Plans must regularly be adjusted in the light of developments in the project. Project management is thus by its nature a responsive role.

Figure 2: The plan-do-review cycle



Source: Adapted from Duncan, 2007

Project management is multi-faceted; it requires skills and awareness of planning, organising tasks and activities, staffing, leading and directing people and teams, and monitoring human, financial and technological resources. All research studies – even small-scale studies with only one researcher – require some degree of management. As the University of Strathclyde’s guide to managing research projects explains, ‘Sometimes the crucial difference between a successful and an unsuccessful piece of research lies in the quality of (project) management rather than in its intellectual excellence’ (University of Strathclyde, 2012).

In a university environment it is important to understand your own context well if you are to be a successful project manager. Institutional structures and systems and the culture of the institution (for example, attitudes to flexible working hours and staff working off-site) will most certainly have an influence on the project manager and his/her project management strategies.

Why does project management matter?

The consequences of not managing projects effectively can be devastating. Poor planning, lack of organisation, poor implementation, lack of control – any single one or combination of these will most likely result in delays or even project failure.

Failure is often not so much about the quality of the research or the science, but about successfully negotiating the complexities of bringing together groups of people to complete a range of interdependent tasks, within a given period of time and with a limited amount of available funding. The place of project management – and the project manager – is therefore to assist the research team, to help them create an appropriate process and structure to realise their scientific thinking, cope with the inherent uncertainties of research, and to ensure they follow the necessary policy guidelines and don’t fall foul of any legal or institutional requirements. Project management is not about over-complicating or obstructing research.

To some extent – and academics/researchers would be forgiven for thinking this – project management can appear as an attempt by institutional managers (in turn, at the behest of funding agencies) to install a form of linear administrative control, measured in distinct stages, over the creative process of discovery and investigation that is academic research, characterised as it is by high degrees of uncertainty and unpredictability, where events do not happen in a neatly phased sequence. Many of the methods and tools of project management can seem unduly process-orientated and restrictive, designed to ensure compliance to pre-determined systems and policies, and by doing so serving to restrict rather than enable the generation and exploration of knowledge. But research – seen as a business – increasingly has universities relying on external funding and competitive grants from a range of funding bodies (state and non-state), each with very different timetables and expectations, and requiring compliance with a dizzying array of policies, laws, and reporting requirements. All of this generates a heavy administrative burden for researchers, interfering with the fundamental pursuit of research, and forcing experienced investigators to devote more time to managing staff and managing finances. These challenges are only increased when projects are collaborative, spanning institutions and even countries (combining different languages, cultures and ways of working), drawing on the

support of multiple funders, and with budgets in a range of currencies. For example, over a third of the articles published in the Scopus-indexed journals are now jointly authored by researchers from more than one country, compared to 25% some 15 years ago; these rates are even higher when looking exclusively at African research² (The Royal Society, 2011). More effective project management – and more effective project managers in the research support environment – can therefore help to reduce the burden on scientists, ensure contractual requirements are met, and enable research to thrive in a demanding funding environment.

Who is a project manager?

A generally accepted definition of a project manager is ‘the person that is assigned to ensure that project objectives are achieved’; the project manager is the person responsible for the day-to-day management of the project and all of its elements.

In the university environment there are generally two types of project manager involved in a particular piece of research: first, the researcher/principal investigator who leads the scientific investigation and takes responsibility for overall project management, and second, an administrative project manager who takes care of administrative and financial issues, and supports the scientific leader and the research team.

The ‘scientific’ project manager

The ‘scientific’ project manager, in brief, decides on the methodology and techniques for conducting the research, and leads the development of research instruments. This person is responsible for reviewing research fieldwork, validating any data collected, authoring scientific reports, communicating across various research constituencies, co-ordinating study teams, managing research project timelines and deliverables and conducting post-research analyses and evaluations.

The ‘administrative’ project manager

In general the ‘administrative’ project manager has two primary objectives. The first is to relieve the administrative burden on the researcher, and the second is to ensure accountability and compliance; a grant is normally awarded to an institution and not to an individual, so the administrative manager must ensure that the institution is compliant with all of the funders’ policies and requirements. The role of the administrative project manager will depend on the institutional setup, but may include aspects such as co-ordinating communication with the funder, negotiating funding contracts, tracking finances, monitoring deliverables and ensuring that reporting deadlines are met. Administrative project management is not necessarily taken care of by a single individual for a specific research project; it may involve a number of people, each taking care of a specific aspect of the project.

² Figures are drawn from Elsevier’s Scopus database and include social sciences and humanities, although these represent a relatively small proportion of papers (around 8.95% it reports).

There are also situations where administrative project managers are responsible for the overall management of wider, institutional research projects. This person might, for example, co-ordinate a project involving different departments within the institution as well as external collaborators. This person would not be the scientific expert but would need to manage and co-ordinate the contributions of the scientific teams and take overall responsibility for project deliverables.

The strength of the relationship between all the parties involved in the management of different aspects of a research project is vital. There should be institutional policies and guidelines to help shape these relationships and to instill a good understanding of the various roles and responsibilities of each team member. The successful planning, execution, monitoring, control and closure of a research project are the result of the combined efforts of each person involved in its management.

In some environments a project manager is a formal job title; in the higher education sector being a project manager usually forms part of a broader range of responsibilities. There doesn't seem to be a clear pattern as to when administrators are appointed to support the running of a project and when administrators are appointed to direct the running of a project. However, in both cases, these administrators consider themselves 'project managers' or would at least say they do 'project management' work. Generally most training for project management in a research environment is 'on the job' and not through formal training and development. Considering the breadth of skills and expertise required to set up and manage large-scale collaborative projects, institutions should ensure that project management is included in the overall skills development framework for both researchers and research managers/administrators. Successful project managers would typically have some of the following competencies (Duncan, 2007):

- Strong analytical abilities.
- Intelligence.
- A proactive approach.
- The ability to move between different levels of the project and understand how it all fits together.
- Persuasive skills.
- Good interpersonal skills and the ability to communicate with stakeholders from diverse functional areas.
- The ability to maintain aims and clear focus.
- Creative problem-solving skills.
- Flexibility.
- An understanding of their own responsibilities and strengths.
- Superb planning, co-ordination, and leadership skills – they need to inspire others to work.

Generic stages in project management ³

Projects tend to have a number of distinct phases. There are various approaches to managing projects, but one, the JPACE (justify, plan, activate, control, end) methodology offers a useful framework to illustrate the important stages of a project management life cycle (Duncan, 2007; Project Management.com, 2013).

The JPACE method recommends that each aspect at each stage is considered for every project, even if it is just to confirm their relevance to a particular project. It is important to note that project management is not a linear process and that there will be overlap between the stages as well as iterative loops as the project progresses.

The JPACE methodology provides a disciplined prescription in order to:

- Obtain project buy-in.
- Define the project scope, plan, schedule, budget, resources and risks.
- Secure the resources, motivate the players and launch the project.
- Monitor project activities and deliverables against a plan, track issues and communicate progress.
- Capture the successes and lessons learned for future projects.

Justification and planning (JPACE)

In some instances, justification and planning can be two separate processes where in other cases, it is combined. For example, a funder might require a pre-proposal, or concept note, where the project is justified by, among other things, translating the overall objective into a scientific, business or benefits case. Approval of the concept note or pre-proposal will most likely consider issues such as alignment with existing strategies, integration or conflict with other projects, resource requirements and risks. If approved, the researcher can then proceed with the development of a detailed project plan.

Planning is about more than setting high-level timelines. It requires the researcher to define the project and to design a detailed project plan (providing as much detail as possible for the particular research project). This plan will eventually have to be approved and accepted by the funder. It is important, especially in the case of research projects, not to view the project plan as an inflexible blueprint; instead, the plan provides structure and options which enable the project manager and the team to deal with the unpredictable nature of their research project.

When defining a project the following elements should be considered:

- **Research question:** The point of departure for the project must be clearly defined.
- **Stakeholder analysis:** Who are the stakeholders, what do they expect and what will they consider as project success?
- **Objectives:** What do you want to achieve? This should be broken down into smaller chunks.

³ Duncan (2007) is acknowledged for the information provided in this section.

Objectives should also be SMART: specific, measurable, agreed, realistic and time-limited.

- **Scope:** What will be done and what will not be done in the context of addressing the research question?
- **Deliverables:** What are the tangible and/or intangible outputs of the project e.g. project results, papers published, reports, products etc.?
- **Critical success factors:** What are the critical factors required for project success? If these are absent (e.g. funding, availability of a specific piece of equipment, or facilities, etc.), the project will not be able to achieve its objectives.
- **Methodology:** What process will you follow to gather information to solve the research problem? This could include phases, tasks, methods, tools and techniques.
- **Research approach:** Is your approach qualitative, quantitative, or action research?
- **Risks:** What might go wrong in the course of the project and what might your mitigation strategies be? For example, if the risk identified is poor quality data the mitigation strategies could be to perform pilot experiments and to review data frequently.

When developing the project plan the following should be considered:

- **Critical periods:** Is travelling required and at what stage of the project? Is training required before the project can commence? Is specific equipment required that has to be purchased? Are there specified times for data collection – for example, in summer/winter only etc.?
- **Define the work breakdown structure:** The overall plan should be prepared in as much detail as possible, but because of the unpredictable nature of research a fine degree of advance detail is not always possible and a phased approach is often more useful. The overall project plan is therefore broken down into smaller parts and the detail of the plan updated on a rolling basis as the project progresses.
- **Define milestones:** These are road markers to denote progress. Milestones must be clearly recognisable as being complete or incomplete. Elements of a milestone include: the state to be achieved; the criteria necessary to achieve this desired state; and an estimated target date.
- **Allocate resources and responsibilities:** Who should be involved? You will need to identify the expertise required to perform activities. Consider the project team and allocate roles and responsibilities. Facilities and equipment requirements will also need to be considered.
- **Schedule activities:** Make a summary of activities, milestones and deliverables against time (target dates).
- **Budget:** All direct and indirect costs need to be considered. Direct costs might include personnel costs, equipment, running costs, travel and bursaries; indirect costs might include financial administration, water and electricity, insurance, access to libraries and information sources, maintenance, external audit fees, etc. The budget must be realistic and must correlate with the work plan. ESSENCE on Health Research⁴ has produced a good practice guide that can provide valuable information in the budgeting process (ESSENCE, 2012).

⁴ ESSENCE is a consortium of funders of health research aiming to scale up co-ordination and harmonisation of the research capacity investments (<http://apps.who.int/tdr/svc/partnerships/initiatives/essence>).

Activation (JPACE)

It is during the project's activation phase that resources are mobilised. This includes making the project public (e.g. stakeholders informed, participants/team briefed and expectations set); equipping the project (e.g. acquire facilities, install equipment) and training the project team.

Important project management components during the activation phase include:

- Informing the stakeholders.
- Launching the project (e.g. having a kick-off meeting).
- Setting expectations.
- Training the project team; they should understand the objectives, the plan and their role.
- Equipping the project.
- Structuring meetings (e.g. to discuss progress).

It may, in some cases, be necessary to review the justification and planning phase as part of the activation phase. The justification and planning phase can sometimes be very far removed, in time, from the actual resource allocation – for example, where the outcome of grant proposals are known only a year after the date of submission. The project could have been overtaken by events and it is then crucial to go back and revisit the justification and planning phases and make the necessary changes to ensure that the project can deliver.

Control phase (JPACE)

The primary aim of project control is to ensure project progress and to become aware of problems or potential problems as soon as possible. The important elements of project control include:

- Motivating the team – promoting individual development, creating incentives for teamwork, monitoring and acknowledging performance.
- Tracking project progress – assessing the state of the project, diagnosing the situation, determining corrective action, reporting status to the sponsor.
- Revising the project plan if necessary – evaluating alternatives, assessing project risks, preparing plan revisions, obtaining approval for revisions.

The important project management components during this phase are:

- Managing activities.
- Tracking issues.
- Managing change.
- Managing scope.
- Managing expectations.
- Monitoring status.
- Managing risks.
- Managing resources (team, budget).

It is the responsibility of the project manager to continuously monitor, evaluate, and correct the project in this phase, by following the plan–do–review cycle.

End of the project (JPACE)

The aim of project end is to bring the project to an orderly conclusion. It can involve the development of a completion report (summarising the results, lessons learnt, project metrics etc.), hand-over of the results (e.g. archiving deliverables, handing over subsequent responsibilities such as IP and commercialisation, gaining acceptance for project results and project sign-off) and project resource release.

Important project management components during this phase include:

- Report writing.
- Conducting a post mortem to ensure that the team learn from what worked and what did not.
- Reviewing resource performance.
- Suggesting how to follow up the project through successive activities.

Methodologies and tools for project management

A critical aspect of successful research project management is to find an approach or methodology which balances the need to be enabling and supportive of research with the need to ensure that the conditions of the funder are satisfied, without installing a process which is too rigid to accommodate the flexibility that research needs. Methodologies and tools for project management are an area of rapid development. There are many available, each with their own particular sets of principles, but all are based around a small core of common sense values. The methodology and tools that you choose should be relevant to your own context and should support rather than restrain you. Project management is a means to an end, not a goal in itself – often a very simple approach or tool can be sufficient for a particular project. This section summarises selected examples of project management tools.

Box3: Examples of project management tools

Mind maps

- 'A mind map is a graphical way to represent ideas and concepts. It is a visual thinking tool that helps structuring information, helping you to better analyze, comprehend, synthesize, recall and generate new ideas' (Litemind, undated).
- Mind mapping allows for 'visual thinking' and can be applied very effectively during brainstorming sessions.
- 'A mind map converts a long list of monotonous information into a colourful, memorable and highly organized diagram' (Mindmapping.com, 2012).
- There is a good deal of commercial mind mapping software available (e.g. MindGenius, SmartDraw, Visual Mind, Mindjet MindManager, iMindMap) as well as some free open-source (e.g. FreeMind, MindManager, XMind) software.

Further reading: Mindmapping.com available from: <http://www.mindmapping.com/>

Milestone planning

- The use of milestones implies a clear focus on delivery and decision, rather than simply on activities.
- Milestones are road markers to denote progress.
- One of the key benefits of milestones is that they allow you to track progress towards the desired objective.
- If milestones are too far apart in time, then they will not assist in tracking progress to the extent necessary.

Continued...

- This implies that you may need to define some milestones in addition to those that are directly linked to deliverables.
- Milestones should:
 - Represent important decisions/deliverables
 - Flow naturally
 - Be controllable
 - Be limited in number
 - Occur at useful intervals
 - Focus on the 'what' and not on 'how' the work should be done.

Further reading: Bright Hub Project Management available from <http://www.brighthub.com/office/project-management/articles/68427.aspx>

Gantt charts

- A Gantt chart is a simple but useful graphical representation of your project schedule.
- When applied to projects, it has a horizontal axis based on time and a vertical axis based on the activities or tasks within a project.
- Tasks are shown as solid bars between the estimated start and end dates.
- Arrows linking tasks can be used to show dependencies.
- Other drawing conventions are the use of a filled diamond shape to indicate a milestone or a filled circle to indicate a meeting date.
- Gantt charts are useful tools for planning and scheduling projects:
 - They allow you to assess how long a project should take
 - They show the order in which tasks need to be carried out
 - They help manage the dependencies between tasks
 - They assist in determining the resources needed for a project.
- Gantt charts are useful tools when a project is in progress:
 - They show you what should have been achieved at a point in time
 - They allow you to see how remedial action may bring a project back on course
 - Gantt charts can be done in Excel or by using specialised software such as Microsoft Project.

Further reading: JISC InfoNet available from: <http://www.jiscinfonet.ac.uk/infokits/project-management/gantt-charts>;

ASQ available from: <http://asq.org/learn-about-quality/project-planning-tools/overview/gantt-chart.html>

RACI charting

(RACI = Responsible, Accountable, Consulted, Informed)

RACI charting is a technique used to identify activities or decisions and the individuals or groups involved in these activities or decisions, answering the questions:

- What has to be done?
- Who must do it?

RACI charting is useful for translating decisions into actions. It helps to discuss, agree and communicate roles and responsibilities.

- Responsible: person who performs an activity or does the work.
- Accountable: person who is ultimately accountable and has yes/no veto.
- Consulted: person that needs to feedback and contribute to the activity.
- Informed: person that needs to know of the decision or action.

Further reading: Morgan R (2008) How to Do RACI Charting and Analysis. Available from Project Smart at <http://www.projects smart.co.uk/how-to-do-raci-charting-and-analysis.html>

3. Perspectives on research project management from universities and funders

As part of this paper, we invited project managers and others involved in project co-ordination and administration at universities in the sub-Saharan African region to provide their perspectives on project management and in particular to identify the most significant difficulties that they face in project management.

This was not a 'scientific' survey with rigorous sampling. Instead it was designed to 'take the temperature', with respect to research project management, of as many universities as possible. We therefore do not quote direct figures emerging from the survey as these would likely be misleading. In addition around 41% of replies were from South Africa. The discussion presented here is an attempt to share these perspectives, rather than offer an authoritative account of what project management is in a research context and how it should be done.

Given that the survey was widely circulated – via Associated Commonwealth University networks, via Research Africa and via the regional research associations – it is tempting to speculate as to whether the pattern of responses is an indication of the degree to which project management is a meaningful concept: only those institutions and individuals which recognised it as being of interest replied. It may, of course, simply reflect the bias of existing networks and contact lists.

While far from a robust sample, the responses nevertheless enable us to begin to tease out some of the key issues and concerns that those managing research projects face. These responses were supplemented by more detailed conversations with individual project managers.

The questionnaire responses and the case study interviews showed three key drivers for research project management, namely:

- 1) The need to report to external research funders, and in some cases to report to multiple funders, on progress in the areas/aspects each are funding.
- 2) The need for researchers to understand how to deliver on an academic project.
- 3) The need to integrate postgraduate research (at master's and doctoral level) into the way a research project is conceived.

Perspectives from institutions

Project management in a research context

It is notable that when asking people to talk about project management, most describe research management more broadly – the two often do not seem to be distinguished from each other, and evidence of research management structures and systems are thus cited as evidence that project management is taken seriously. A university that has built or is building its research management infrastructure may nevertheless not have addressed the day-to-day needs of *project* management that fall within this – there may be structures to help researchers find and win grants, or to meet the reporting requirements of the funding body, but the extent to which the management of a project is supported as a discrete activity may be low. The specific challenges and tasks associated with managing a single project – the responsibilities and duties of an individual research team or

investigator – may thus be overlooked in favour of a wider ‘institutional level’ perspective on the collective management of research projects within the institution. While research management needs an institutional approach, each individual project also needs to be managed. Although most projects appear to be national endeavours, the scale of collaborative research work across countries is growing, adding a further level of complexity to project management.

Who manages projects?

Project management may be becoming increasingly critical in research, and more professionalised as research management as a field becomes more professionalised, but projects are still led by a range of people – academic and administrative staff – each of whom consider themselves to be project managers. This is an important point, since it draws attention to the different levels at which projects are managed, and the different responsibilities of various types of project manager, as well as the different scales of project that universities are involved with. Some project managers are active researchers – responsible for both leading the scientific investigation as well as managing the overall project and its finances, funders and people. Others are faculty or departmental project managers – taking some of the administrative and financial duties away from principal scientific investigators – while others manage research projects at an institutional level, as part of a central research management department, often taking responsibility for multiple projects at any one time.

For some, being a project manager is a transitory role – dependent on specific projects for which they have lead responsibility – whereas for others it may be more of a permanent job, particularly in the administrative or non-scientific roles. In many cases there is no such thing as a project manager in terms of a formal job title; rather, it is a project-specific role. Project co-ordinator or administrator roles – held by non-academic members of the university – undoubtedly reflect the increasing ‘professionalisation’ of research administration, with a greater need to both relieve academic leads of the onerous reporting and management tasks, and to ensure that these are undertaken by skilled administrators with a strong understanding of the different reporting requirements of funding bodies.

How much experience do project managers have?

Project management is generally speaking an emergent role in many African universities. People who manage projects have just a few years of prior experience in these types of role. The flow of greater levels of external research funding into universities – from major bilateral and multilateral funders – has brought with it more complex reporting requirements, and the challenges of participating in, or managing, aspects of multi-institution projects. In South Africa, project management roles are more established – perhaps unsurprisingly, given the relatively greater strength of national research funding agencies and thus a longer tradition of monitoring and reporting on research in this way – with many project managers, particularly in the historically better resourced institutions having a decade of experience or more. Over half of the South African respondents had more than a decade of experience as project managers and almost 80% more than five years of experience. By contrast, only a quarter of other respondents indicated more than a decade of experience and under half had more than five years of experience. These gaps are of course unsurprising, given the different trajectories of universities. This sketch of experience is the picture that emerged from our survey; similarly, anecdotal evidence suggests that universities outside of South Africa have come to rely more heavily, as a proportion of all research funding received, on external (i.e. non-domestic) agencies, meaning that they are almost always reporting to overseas funders, with varied requirements (Kirkland and Ajai-Ajagbe, 2013).

Recognising project management and emphasising its value

Universities and the researchers who work within them encounter not insignificant problems when trying to manage projects, but it is also clear that recognition of the importance of project management – and the need for professional project managers – is growing within institutions. As one technology transfer office from South Africa explained, 'Project management is becoming a stand-alone, recognised profession and increasing numbers of institutions are seeking formal project managers to facilitate operational management and implementation of deliverables in a wide variety of technical fields.' A Nigerian project director pointed to the emergence of new posts in research management as a sign that institutions were increasingly aware of the importance of effective project management to their research operations, and of the need to separate this responsibility from oversight of the scientific elements of the project. But while institutions are coming to recognise the importance of project management, individual academics may not always appreciate it. This may not simply be due to a resistance to project management approaches – although this no doubt occurs in some instances – but instead be related to awareness of their work as a 'project' and their role therefore as a 'project manager'. While researchers may appreciate that projects need to be well managed, they may not recognise a piece of research as being a project in this sense, and thus not recognise it as something needing to be project managed. As one research manager in South Africa explained, a priority for the research office was to sensitise academics to what research project management involved and why the work that they were engaged in needed to be understood in these terms. Many academics will, in fact, be managing and implementing their projects by following a plan in some form, but do not think of this in the language of project management, or consciously apply any of the tools or methodologies associated with this.

It is tempting to imagine that academics would be inclined to resist attempts to introduce stronger project management processes on their research, seeing it as an example of university bureaucracy efforts to direct the way in which they work. However, rather than project management being resisted as a bureaucratic intrusion, it may be that resistance is in response to, or the fear of, the additional regulation that it imposes, and the restrictions which this thus brings. The more a research project is 'fixed' according to a project plan, the harder it may be to deviate from this. This is likely to be particularly the case when it involves budgets and the ability to migrate spending across budget lines. Researchers in the natural and physical sciences, dealing with complex laboratory-based projects, are likely to recognise the value of research project management – and perhaps derive greater benefit from it – than those in the humanities and social sciences.

For research offices seeking to introduce stronger project management in their faculties, it is likely to be important to emphasise its advantages, and its potential to facilitate the research process and strengthen quality, rather than to base the motivation on ensuring adherence to rules and regulations. As one research manager explained, showing that a piece of research has been organised as a project helps to provide important evidence for those who might fund it, or who are already funding it. A project plan offers a good basis on which to build and submit an application for funding, can help to show the funding body that progress is being made when they ask (rather than researchers having to mine their memories or records of what has happened since the last time the funders asked), and assure them that the work being done is of high quality. It provides the oversight bodies – government agencies and research councils – with the information they need and can, more generally, offer researchers themselves a more systematic understanding of the overall process of research, helping to ensure

it proceeds in a less haphazard fashion. In doing so, it has the potential to improve the prospects for research by helping researchers to build their personal and institutional reputations as safe stewards of funders' investments, thereby helping them to continue to attract funding in the future.

Perspectives from funders

Universities' ability to secure continued funding for their research will depend heavily on the strength of their relationships with funding agencies. Showing that good project management processes are in place can help to reassure funders that the money they commit is well used and well managed. Good research project management is thus integral to the partnership with funders who, thus reassured, are in turn more likely to take a flexible approach to a given project, allowing it to deviate from its initial plan or adjust budget lines as necessary. As the accounts from both the Global Health Research Initiative (GHRI) of the International Research Development Centre (IRDC) and the Swedish International Development Cooperation Agency (Sida) (see section 4) indicate, funders are often increasingly willing to put their money directly into African universities, providing there is evidence that it will be well managed. As Sida shows, this is not simply a case of bypassing institutions where management structures and systems are insufficiently developed, but rather a case of working with the university to identify the gaps and to find ways of addressing these so that they are able to access funding. The GHRI will give an institution judged as higher risk more regular reporting dates. What is clear from both accounts is that an institutional approach is vital: a strong research team will suffer if their institution is not able to demonstrate strong management to match. Funders are likely to be reassured where a project is given a dedicated project manager, other than the scientific lead, who understands the research process, but who is also able to meet reporting deadlines and provide all the information that the funding agency expects.

The challenges in research project management

Project planning

Starting with a good project plan is undoubtedly critical to later success, and it is thus unsurprising that this emerged as one of the top areas of concern for many project managers. As one respondent commented, 'At the project plan preparation stage so many consultations have to be made. Sometimes a pilot scheme should be put in place to cross-check accuracy and feasibility, and try to overcome limitations.'

Experience clearly plays an important role here: while some project managers appear to find the project plan relatively straightforward, others find it fairly challenging. Similarly, identifying appropriate milestones and including these within project plans is something with which some are relatively comfortable while others find it particularly challenging. In many cases, project plans are likely to be developed without reference to a particular set of principles or guidelines, which may limit their value as frameworks for a project going forward. While the specific methodology for planning that is adopted may not matter, a clear and shared understanding of the concept behind planning is likely to be helpful.

Budgeting

Creating – and sticking to – a budget is critical for any project, and ensuring that a project team sticks to its budget is one of the most difficult tasks for any project manager. This was certainly confirmed by the survey responses where well over half of project managers found this difficult. Budget line items may not have been written alongside the original project plan, and budgets may thus end up being spent before all tasks are completed. One research project manager, commenting on the reality of project financing, explained: 'There is never enough money to do the research fully, so it becomes a matter of cutting the cloth to fit the budget.' In some cases, budgetary difficulties were felt to be down to a lack of expertise or capacity within the central finance office, or poor institutional processes, rather than any issues within the research team. One project manager noted that 'budgeting and financial planning is more challenging at my institution due to poor performance of the financial office and also poor auditing which results in poor management of finances' while another complained that their 'financial system [is] not research-friendly'.

Understanding how to cost research properly is also important to ensure the long-term financial sustainability of a research unit or department, and indeed, the university as a whole. However, many researchers, and even central research offices, are unfamiliar with proper research costing methods and do not consider both direct and indirect costs when they develop project budgets. As a result, elements of a project – the cost of overheads, of staff time including technicians, of consumables, travel and facilities for example – are not accounted for properly. As several responses indicated, difficulties in predicting the costs – in time and resources – and budgeting accordingly means that when unanticipated events arise they cannot be dealt with. This is further compounded by exchange rate differences, where the end value of a grant may be significantly less than was originally anticipated.

On the other hand, researchers often feel that those with responsibility for financial oversight within a university don't appreciate the inherently dynamic nature of research, and what this means for the way in which it is funded – the process of scientific discovery is by its nature exploratory and experimental and thus may not lend itself easily to well-defined budget lines, clear predictions of how much time something will take. As one project manager explained, 'Allocating budgets which are time-based for research is difficult as it is impossible to anticipate how much time a task is going to take – as it is new ground that is being walked.'

Risk

Funding applications typically require researchers to identify the risks inherent in their project, and propose ways in which these will be mitigated. Many project leads encounter problems here. Risks can be hard to define, and thus hard to accommodate and plan for. Risk management is especially complex when a project has multiple partners, in different locations. In some cases there may be concerns that revealing the true risks to a project may result in funding not being granted in the first instance. This may be particularly true where the external economic and political environment is relatively unpredictable, as one Nigerian project manager noted.

Managing people

Research projects are essentially about people and the relationships between them, particularly when these are collaborative, multi-site or inter-disciplinary projects. Managing people is arguably

one of the most complex and challenging parts of managing a project. It was the set of tasks most often mentioned by those responding to the survey or offering experiences through case studies, and an area where experience, rather than technical know-how, is clearly paramount. 'People' in this context includes, not only fellow researchers and project or departmental administrators, but in many situations, also postgraduate students.

One project manager felt that the most important skill project managers could gain to improve their management of projects would be people skills and how to influence people. For those grappling with this and finding their projects frustrated by it, the challenge is heightened by the fact that there is no single clear process or methodology to be followed; people skills develop from experience in dealing with the complex interactions of individual personalities.

Managing people involves many different elements. At the project planning stage, roles need to be agreed and clarified to ensure that all partners are clear about their particular responsibilities, that all are happy with their allocations, and that, in the words of one project manager, they are fully 'on board' with the project. Project managers therefore need, not only the 'technical' skills of project planning, budgeting and management, but also the 'soft' interpersonal skills which enable them to relate to people and keep them focussed and motivated for the duration of the project. Empathy and tact, negotiation and communication skills and the ability to demonstrate leadership and authority are all facets of the ideal project manager.

Motivation and incentives

The most commonly found texts on managing and motivating people come from Europe or North America, and reflect understandings of and approaches to people management within these regions. While there isn't room here to examine different approaches in any depth, it is perhaps worth noting that relatively less common – outside of the academic literature at least – are publications which derive specifically from African countries (outside of South Africa).⁵

Similarly, while there may be texts on managing people within university environments, these are less likely to reflect an appreciation of the particular constraints which many researchers encounter, or on differing reward and incentive systems.⁶ Some project managers indicated that members of their teams may be more motivated by the money attached to a project than an interest in achieving its intended outcomes and delivering results. As Johann Mouton has argued, the consultancy and contract modes of research which prevail in many departments have led to an individualisation and de-institutionalisation of research, with more than two-thirds of academics involved in consultancy work of some sort (Mouton, 2010), while as Wight (2008) demonstrates, many researchers in Uganda have effectively

⁵ This is not to imply a dichotomy between Euro-American and African working styles and practices, or to suggest homogeneity in African universities or organisational environments.

⁶ There is huge variation within the continent and between countries, and 'national cultures' may have a greater impact on organisational practices. African universities (drawing on their Anglophone or Francophone antecedents respectively) also follow similar structures to those in Europe or America, and the university form may therefore account for more than their specific location, as may the particular institutional culture of a university. Researchers are in any case internationally mobile, participating in and drawing experiences from universities in several countries in many cases.

become consultants 'for hire'. (The incentive systems within which university academics work are relatively poorly understood, beyond anecdotes, but these are currently being investigated as part of the HERANA research programme.⁷)

Managing teams

Research projects – certainly in the natural sciences, engineering and technology – typically involve multiple researchers. Sometimes they will share the same laboratory; sometimes they will work in the same institution; but increasingly they will be dispersed across a country, region or even across the world. Managing project teams is thus a considerable challenge – and particularly where most of this co-ordination must be done remotely, via email or over the phone. 'From a distance, keeping people focussed can be difficult,' one project manager commented. Members of a research team, many respondents suggested, may not be 100% committed to the project in hand, and may be easily distracted by other things which 'pop up' – professional or personal – as a result. As one researcher commented, 'Micro-management of researchers on a project can be cumbersome and waste a lot of time. I have started to appoint project managers to take care of minor tasks, but they don't share the sense of responsibility for the project outcomes.'

The team may also cut across existing institutional structures, reporting lines and hierarchies, and this can create particular obstacles. One project manager noted, 'A project requires a temporary structure [to be put in place] but partners find it difficult to relinquish their ordinary standing in the institution to take their directives from another.' For some researchers who have become project leads, and project managers as a result, managing research teams is an area in which they feel particularly inexperienced. One of the questionnaire respondents explained that, such was their own busy schedule, that they found it 'daunting and nauseating to have to supervise what others are doing'.

The basic people capacity of a department is also a major stumbling block for many project managers. A number indicated that simply finding enough good researchers to involve in a project could often prove difficult, particularly since, given the emphasis on consultancy within many institutions, many researchers would only be interested in a project to the extent that there was an opportunity to earn additional income. One respondent commented that supervising staff or project partners proved particularly difficult because 'most of the scientists I work with have little experience and are still learning. One has to supervise almost everybody individually'.

In a research world largely dependent on project grants, a very real difficulty that research leaders face is in keeping a research group going beyond the life of an individual project or grant.

Securing buy-in

The first 'people' step in any project is to ensure that everyone who needs to be involved is on board – namely that they understand the project and its schedule, understand the aspects for which they are responsible, and are engaged in and committed to ensuring that it proceeds on time. This is particularly

⁷ See HERANA research programme at <http://chet.org.za/programmes/herana-ii/incentivisation-african-academics>

critical when one person's tasks depend on another's being completed, or at least being underway. Of course this is easier said than done. Many project managers explained that it can prove incredibly difficult to ensure buy-in to a project, and to make sure each member of the team completes tasks on time. As one commented, it is 'very cumbersome to "run" after staff all the time. Many [are] not totally committed but want to be part of [the] project'.

The comments gathered from respondents suggest that communication between the members of a project team is likely to be one of the most important factors in a project's success, and managers need to actively ensure that everyone is talking and regularly updated on progress, what needs to be done, and any difficulties being encountered. This is even more important when some team members are at a distance from the project lead or principal investigator. Especially when there may be day-to-day things which remote team members are simply not aware of, the importance of constant communication updates cannot be underestimated. While email and phone- or video-conferencing are useful in facilitating communication with remote team members, there are times when emails will perhaps go unanswered for a few days or a couple of weeks due to travel commitments, for example. Thus sharing diaries and forward plans of when the team are likely to be available may be crucial to help to ease communication frustrations.

Competing pressures

Team members are likely to be under pressure from other duties and responsibilities in the institution, and in some cases, other research projects. It isn't uncommon for project time plans, created to meet an application deadline or to secure funding, not to take full account of existing workloads – team members may not actually have the time available that the project needs. As one project manager commented, 'Co-ordinating activities of different staff or project co-ordinators presents a challenge because staff have engagements that pop up during project implementation' while another noted that the project in question might actually be a relatively lower priority for members of the team where 'everyone is running other activities than the project'. This highlights the importance of paying due attention to the project team from the earliest stage of the project. Of course this may not always be possible, and whether the result of poor planning, or best plans gone awry, the project manager may instead be forced to adapt the project accordingly.

Keeping to time

Keeping projects running on time is one of the most difficult aspects of project management, and an area where problems are commonly reported. A project plan may have been developed, but things rarely happen as intended – the disbursement of funding may be late, (or more likely, the institution receiving the grant may be slow in releasing the funds to the research team in question) or there may be difficulties in co-ordinating project partners to deliver their work according to schedule, causing knock-on delays. The pressures of teaching and administration, with insufficient time being allocated to research, often cause problems for project schedules. As one academic commented, 'The workload at [the institution] doesn't support research activity and projects are not on time.'

Better project planning at the outset is likely to help overcome some of these problems. However, there may still be unforeseen events and issues to respond to (for example, some universities in northern West Africa have suffered disruptions to their academic timetable due to the political instability in the

region in recent years). Nonetheless, a better plan will help to control for some of these – and might help to show how best to respond if unforeseen events do occur (which elements can be re-scheduled or delayed, for example, and what the knock-on effects are likely to be). A major difficulty is simply knowing how to schedule work appropriately. How long will it take to achieve a particular task? What is a realistic schedule? How does this fit with other workloads among the team? These are questions the project manager must grapple with.

The policy environment

Several project managers explained that keeping abreast of the external or internal policy environment, the implications for the project, and any rules which needed to be followed, proved particularly challenging. In some cases they lacked time to keep up-to-date with all the notes emanating from university meetings, through which new guidelines or policies were communicated, or struggled to locate up-to-date policy directives on the websites of national or international research and funding agencies. As one noted, the policy documents of some major funders are ‘often quite voluminous and require a lot of time to go through’. In some cases, policies were felt to be inconsistent, too vague, or too high level, with little accompanying guidance on how they should be implemented. One respondent commented, ‘university policy can be process-oriented, not product- or output-oriented’ and hence quite bureaucratic and not serving to enable research.

Training needs

Many staff with responsibility for managing and co-ordinating projects – at various levels – lack any type of formal training in project management. Around a third of those with project management roles indicated that they had had no project management training – this was true of all countries. Around half of project managers – and a third of those in South Africa – had received some form of workshop-based training. A number indicated that they had certificates or diplomas in project management, and some, particularly in South Africa, noted degree level training in this area. Where project managers do have some training, this has often not been provided by their institution, but been gained during previous roles, or through other qualifications. The more senior managers have often gained experience on the job through their successive academic and research roles, but many feel that they lack the requisite formal understanding of project management approaches to be as effective as they would like to be. One senior project manager, with 20 years’ experience of running substantial research projects commented, ‘I have never been on a project management course and would like to know all concepts.’

The most challenging tasks

Our survey offered a glimpse of the challenges that researchers and administrators face in managing projects; it also indicated some of the differences between South Africa and other countries on the continent. For example, while South African universities had no trouble tracking project income, universities elsewhere on the continent appeared to struggle with this. Similarly, budgeting did not appear to be a major problem in South Africa, but was often noted as a problem elsewhere. Tracking expenditure, however, appears to be a challenge for all universities and this perhaps indicates a gap in the day-to-day financial project support available to researchers, even in South Africa.

Generally speaking, some of the more administrative tasks – writing reports for example – appear to present few problems to South African universities, but are felt to be considerably more challenging by

others. This may reflect an uncertainty about donor requirements when it comes to reporting, but also the difficulty of pulling together good records – financial and progress-based – when the systems and processes for capturing this information are insufficiently developed. They cannot simply be pulled off a central database or reporting system, for example.

Issues which rely much more fundamentally on people and university processes –keeping the project on time, and on the external environment – managing risks, are challenges for all universities.

4. Case studies

University case studies

Case study 1: University of Dar es Salaam, Tanzania

At the University of Dar es Salaam, it is the principal investigator who typically takes the lead in managing a project, rather than a separate, non-academic project manager. In some situations, project management duties fall to the head of the department or faculty, but this tends to be where a significant part of the project is concerned with the development of the department or institution as a whole. Project managers aren't formally assigned or named; instead, project management is considered part of the wider leadership duties of senior academics and departmental heads. To date, no training has been provided for project managers; instead, the skills are learnt on the job, and by a process of trial and error.

One project, which aims to build a language atlas for Tanzania, and to document the grammar and vocabularies of each of the country's languages, will have been running, once it is complete, for twelve and a half years. It has a budget of just under €1.6 million, funded by Sida, and is being undertaken in partnership with the University of Gothenburg, with a total of 15 team members from across the two universities.

The project lead identified three principal challenges: managing people, meeting the requirements of funders and auditors, and ensuring that the work produces the intended outputs, or where relevant, IP is secured and the products are commercialised.

Each language requires the skills of a particular linguist, but strict deadlines are hard to enforce because of the complexity of the project, and the need for the linguist to learn new things along the way. Despite the difficulty of enforcing deadlines on the team member responsible however, the end product must still be produced. Managing this process proved challenging, and was achieved with a combination of 'constant nagging and prodding' and the organisation of dedicated writing and editing retreats for team members. In the end a firm communication from the project manager was required, with the instruction: 'no more editing – you must submit your work'.

In terms of outputs, the early phase of the project had an 80% success rate – 3 of 20 manuscripts were never delivered, and one got stuck during the final stages of editing for technical reasons. The project manager exercised more caution as a result, and in the next round requests for funding were screened much more carefully, leading to a smaller team. In addition, funding was used to support those who already had work in progress which needed to be further developed, rather to support those who sought funding to undertake initial fieldwork. The lesson from this was clear: 'Don't dish out all the money to the researchers at the beginning!'

Another challenge encountered was in meeting funders' requirements for reporting and evaluation, which can often involve a considerable amount of time, and must be put together in particular ways. While the project manager had to simply learn to gather and provide this information, in order to retain the funding, one particularly valuable development was a central university mandate requiring all funding to be centrally managed within the research directorate, and from a single bank account, rather than the multiple accounts that had previously been the norm. The research directorate would then also

handle the auditing, rather than each account holder having to do this separately. The project manager commented, 'Although our audit report was very good after those first four years, the work involved in this management of accounts was rather stressful. The subsequent arrangement has been more efficient both for the individual projects and for the university generally.' It is vital, the project manager notes, to learn the rules of the particular project, funder and institution. 'You are at your best when there is nothing to hide!' he added.

A further difficulty encountered by the project was in ensuring final outputs. A major component was the production of the language atlas – the first such in Tanzania. But there was no clear way in which to achieve this, and a good degree of experimentation was needed. Some pilot work was undertaken which led nowhere, but the failures did offer valuable lessons to the project as they sought to refine their approach. Mistakes can certainly be useful, providing they are used as opportunities to learn and to refine the project in subsequent phases. As the project manager notes, it can be necessary at times to look beyond your own circle when seeking assistance to solve a particular problem. Others outside of your immediate group of colleagues may be able to offer valuable advice or suggest new approaches.

(Professor Josephat Rugemalira, Department of Foreign Languages and Linguistics, University of Dar es Salaam, Tanzania)

Case study 2: University of Ibadan, Nigeria

Until a few years ago, projects at Ibadan University were generally led by individual academics, but with the establishment of a research management office, there is now a central co-ordinating function for all project management. The principal investigators within a project still perform the duties of project managers, but a research co-ordinator is usually in place to assist them. The university also offers project management training to its staff.

An experienced project manager at the university identified four principal challenges that they encountered: budgeting, managing people, dealing with risks, and the complexities of international and intercultural projects. One current project is being undertaken with the Indiana University School of Medicine in the US, and is investigating dementia and Alzheimer's disease in elderly Yoruba and African Americans, in order to tease out possible gene-environmental interactions. Funded by the NIH's National Institute of Aging, the project spans 20 years, with a budget of US\$126,000 per year, and with more than 20 team members involved.

Budgeting proved a particular challenge, but was accomplished by a combination of prudent spending and accountability to the funder. 'Never go outside approved budgeted amounts,' the project manager advises, 'and ensure that quarterly reports are submitted, and the work achieved within a given period is accounted for.'

People management was also highlighted as a challenge, given the range of people involved in the project, and the tendency for difficulties to arise between colleagues with different backgrounds. Demonstrating understanding and counselling team members were important in managing people well, and, as the project manager notes, it is important not to allow individual issues to interfere with performance. Disputes must be settled amicably, and all team members treated fairly and equally.

One of the risks that this particular project encountered was quite unique, but illustrates the varied difficulties that project managers will need to overcome. In this instance, elderly patients had to be transported to hospital, and extreme care was needed with them and their families. Patients also expected some kind of payment to cover their time, a cost which had to be met by the project. It was vital therefore that the project had dedicated and caring staff who regarded safety measures as mandatory.

Further challenges were related to its nature as a collaborative study, crossing countries and cultural backgrounds. It was important, therefore, that potential cultural biases be limited when participants were assessed, and that the research project methods and procedures could be replicated. Sound methods and strict compliance with research procedures ensured this, as did monitoring inter-observer effects. It was important that instruments used were validated, without cultural bias, and that reliable field staff were engaged and properly trained. Equally vital, the project manager commented, was the need to be 'open with international collaborators and identify challenges'.

(Professor Adesola Ogunniyi, College of Medicine, University of Ibadan, Nigeria)

Case study 3: Central University of Technology, South Africa

Academics at the Central University of Technology are actually planning and implementing projects according to a plan of some form, but often they don't recognise this as being 'research project management', or they lack a developed understanding of what research project management is, so don't have this in mind when they put it together. Natural and physical scientists and engineers tend to be more interested in project management, with those in the humanities and social sciences much less so. Part of the problem is that while researchers may recognise that project management techniques can be valuable, they don't actually see research as constituting a project. The issue is therefore one of awareness, rather than of deliberate resistance, although resistance does sometimes exist, particularly where project management is seen to create additional forms of regulation that restrict what they as academics can do – for example, that they may not deviate from a specified budget. The research office at the university is trying to make staff more aware of research project management as a discrete area of practice and as increasingly important in externally funded research.

There are a number of drivers which are helping to push towards more structured project management in research. Universities need to report to their external research funders – and often to multiple funders for a single project – to show where and how their money has been spent, and how they are progressing in meeting the outputs expected from the project. Academics themselves also need to understand how to deliver on an academic project, in the sense of how they identify what is to be achieved, the timeframes for this, and the costs associated with doing so. Finally, there is also a need to fit research undertaken by master's and doctoral students more formally into the research work of the university, and to see these students' research work as projects with timeframes and costs. This is important: if student research projects don't fit into the specific cost (and time) frames, there are likely to be cost implications for the university.

For academics, formulating research in project terms can be valuable. Conceptualising a piece of work as a project offers several important benefits: it helps to provide evidence of planning at the

application stage, and evidence of progress (both internally, to relevant persons within the institution, and externally, to funders) as the work is undertaken. It can also help to engender a more systematic understanding of the research process, ensuring that research is undertaken in a less haphazard manner.

The university does not prescribe a particular system or piece of software for project management, but instead has sought to build a clear conceptual understanding of what research projects are and of the deliverables that they seek to promote. Internal training for research project management is provided, with funding for staff to attend, although this tends to be in less demand than training in the doing of research itself – such as research methods and publishing. It is important that good project management and the doing of research are understood to be intertwined, and that the former is not separated out from the latter. The concept of a research project may be good, but if resources and timelines are not planned then it is unlikely to deliver appropriately or maximise its academic outputs. For the university, research project management is about forging a partnership with funding agencies and science councils – building a reputation and showing that the institution can be trusted to deliver. When funding agencies have a good understanding of the project and the university has a good reputation, then the funder is more likely to be happy for the project to deviate from its initial course. Academics tend, however, to be more interested in their partnerships with other academics, or with industry. Getting people on board thus requires careful personal engagement; faculties each have different ways of assessing performance, and ‘rubbing the hard conditions under people’s noses’ can be counterproductive.

(Professor Laetus Lategan, Dean of Research, Central University of Technology, South Africa)

Funder case studies

Case study 1: Global Health Research Initiative, IDRC, Canada

The Africa Health Systems Initiative (research component) is a 10-year programme, supported by the Canadian International Development Agency (CIDA), and currently funding 10 research projects, each of around C\$300,000 (US\$292,000). It was a requirement for each grant that the principal investigators be both an African researcher and an African decision-maker, and there was also no requirement for a Canadian partner to be involved. As a result, in most cases an African university, research institute or NGO manages the grant. In addition to supporting research, grants can also be used to develop researchers, to support master’s or PhD programmes, or workshops on areas such as proposal writing. The International Development Research Centre (IDRC) and the Global Health Research Initiative (GHRI) also make additional funding available to sponsor capacity strengthening activities amongst its grant recipients.

Under the Africa Health Systems Initiative, the GHRI deals mainly with the principal investigator, but the grant contract is always signed with the institution, and usually with the research office. The principal investigator acts as the main point of liaison, so in addition to filing their own technical reports, they are responsible for ensuring that the finance or research office supplies the financial reports on time. The Africa Health Systems Initiative is a competitive programme, with a call targeted to particular countries,

and with external peer reviewers used to assess applications. As a result, it is typically the stronger institutions who receive grants – those able to put together good proposals, and with a greater ability to design budgets and project plans effectively. Nevertheless, difficulties are still encountered in the way research projects are managed within the institution, and this can delay progress.

Risk assessments are undertaken for each institution with which the IDRC works. These are usually informed by how long the IDRC has been working with the institution, and so a newer grantee institution will typically be given a higher risk rating. Institutions classed as higher risk will still be funded, but will be asked to report more regularly. A medium-risk institution would report every six months, for example, but a low-risk institution only once a year. Risk ratings are essentially about the institution building a relationship with IDRC, and earning its trust as a grantee. Strong project management is thus particularly important, and an ability to demonstrate this will reduce the reporting burden for future grants. A strong research team may therefore be frustrated by weaker systems and processes within the institution, while a new research team in an institution well known to the GHRI is likely to be rated as low risk. The GHRI has been very pleased with the success of the Africa Health Systems Initiative – research teams are strong and are doing well – but financial management has proved a major problem. Usually technical reports arrive in good time, but central research or finance offices are often not tracking the money adequately, and it can often take many months for the financial reports to arrive as a result of delays in the central office. While the science may be excellent and proceeding well, the IDRC is unable to release the next tranche of a grant until the financial reports have been approved.

Where central offices are stronger, financial reports usually require little additional work once submitted, but in some cases, even submitted reports require a degree of back-and-forth between the IDRC and the grantee before they can be signed off, because they haven't been prepared in the correct way, or information is lacking. An inception workshop is typically held for new grantees to explain the IDRC's reporting requirements, but usually this is attended by principal investigators. The GHRI suggest that in future, it might be more useful to provide this training directly to research or finance office staff.

A common difficulty that projects encounter is an inability to spend the full grant. The IDRC only pays the balance when releasing additional tranches, so an underspend of C\$20,000 would mean that C\$20,000 would be deducted off the next instalment. Many institutions do not expect this, not having understood the rules of the grant properly, and are surprised not to receive the full amount. Many research teams struggle with putting together budgets for subsequent years too, and typically work on the basis of what was spent in the previous year.

Where money is remaining unspent at the end of a grant, the IDRC is often happy to allow the institution to retain this, if they can propose new activities, or extend the existing project in line with the original grant, although this is not explicitly advertised to grantees at the outset.

Something that causes problems for many projects is having the principal investigator also play the role of principal grant co-ordinator and point of contact with the IDRC. The IDRC have suggested to research teams that putting in place a research co-ordinator – either an administrative member of staff, or a junior researcher – to handle day-to-day project needs could make things much easier, relieving the burden on the principal investigator, and splitting the duties of technical scientific lead and project lead

into two roles. In the experience of the Africa Health Systems Initiative, where research teams have done this, projects tend to proceed much more smoothly.

(Renée Larocque, Global Health Research Initiative, International Development Research Centre, Canada)

Case study 2: Research Cooperation Unit, Sida, Sweden

The Swedish International Development Cooperation Agency (Sida) does not directly fund research projects or support individual scientists in sub-Saharan Africa, but it does fund a number of African organisations, including universities and research organisations, who themselves make research grants to African researchers. In recent years it has also begun to support national research councils, such as the Commission for Science and Technology (COSTECH) in Tanzania.

Although Sida is therefore not responsible for managing relationships with individual investigators, its institutional relationships – with universities and research organisations in receipt of funding – means it has a strong interest in how they manage research funds and disburse these as grants to individual teams.

Sida's principal goal with its research funding is to generate good research, but it recognises that institutions need to get better at managing it too. As far as possible, it deals with the research office, or in some cases the school or directorate of postgraduate research. When providing funding to organisations which will then manage the call and grant-making process, Sida looks for grant management structures which are transparent and fair, and for evidence that the organisation has the right mix of expertise to manage a call appropriately as well as to track and report on the grants it disburses each year.

Good research project management means systematising things as part of a university's institutional structure. This needs the development of strategies and the design of implementation plans, with clear policies to guide staff as they undertake projects. For Sida, it is important that the university recognises the role that project managers play, in addition to, and independently of the principal investigator. This is something that universities cannot afford to overlook – to be able to satisfy a funder's requirements, and to manage a research project effectively, researchers must have some basic level of support at an institutional level. For Sida, this means designated staff who have a proper allocation of time to undertake the various aspects of project management, and who are 'service-minded' – striving to meet reporting deadlines on time. It is unreasonable to expect individual researchers to manage their own projects, particularly the financial aspects.

Where universities have recognised that project management support is needed, many have tended to appoint a member of administrative staff, rather than someone with a proper understanding of the research process and the cycle of a research project. This has begun to improve, with a more serious and professional approach to project management emerging, and where skilled people are appointed.

At the same time, principal investigators also need to understand the job of a project manager. They also need to be more realistic about what support is available to them and how they can access this. They need to ensure that they deliver the parts of a project that they are responsible for, on time. They

need to prepare their reports in good time – and make their requests to the research office in good time too, rather than, as is often the case, coming to them at the last minute with gaps to be filled.

Funders also have responsibilities, and Sida sees itself as a genuine partner in research – demanding that certain requirements are met, but also seeking to assist the universities to fulfil these requirements and sharing its own experience. When a university is seeking or is offered money from a funder it naturally doesn't want to show its limitations – what skills or capacity it might be missing to manage the grant successfully. But it is important that universities are upfront about this, so that Sida can work with them to find ways of addressing these gaps. It is a confident institution that can be open about its limitations and seek additional support for this, but this is an important first step.

Before Sida agrees to support an institution it undertakes an institutional analysis to explore some of these issues. Sida is prepared to put its funding into institutions where some of the systems and processes are weaker than others. It uses this initial analysis as the basis for discussions with the organisation, to identify where additional support is likely to be required and how this might be provided. Reporting and audits help Sida to track progress, and additional assistance is made available where it is needed to bolster research management. An institutional approach is key here – the aim is to take things away from personal abilities or experience, and to see that the institution is taking these duties on board.

Sida has been supporting several of the universities it works with as they undertake major reform processes to make research possible. Central to these efforts has been a shift towards results-based management, helping these institutions to understand why particular things are being done. In doing this, Sida hopes that its support can act as a catalyst, encouraging other funders to make investments too. In the past, funders have been part of the problem, bypassing African institutions as a result of concerns over their management capabilities. Some of this scepticism has been warranted, but these limitations need to be addressed rather than denying African institutions access to direct funding via Northern partners. In recent years more funders have shown themselves prepared to put funding directly into African institutions, such as the US National Institutes of Health.

(Professor Hannah Akuffo, Deputy Head of Research Cooperation Unit, Swedish International Development Agency)

Case study 3: National Research Foundation, South Africa

The Thuthuka programme, initiated in 2001, is central to the National Research Foundation's (NRF) human capital development strategy in so far as it relates to advancing the equity and redress agenda within the research sphere. The programme is located within the Institutional Capacity Programme, which falls within the Human and Institutional Capacity Development (HICD) directorate of the NRF. Operating within the ever-evolving higher education landscape, the programme aims to develop human capital and to improve the research capacities of designated researchers. Thuthuka is funded through a parliamentary core grant as an intervention targeting redress and increased access to research funding opportunities. To date, the Thuthuka programme has invested approximately R257.7 million in research.

The programme, which is open to South African citizens or permanent residents, is structured along

three tracks:

- A PhD track for master's degree holders wishing to obtain a PhD within the funding period.
- A post-PhD track for PhD holders seeking to become established researchers by strengthening their research capabilities and academic output records.
- A NRF rating track for PhD holders looking to apply for NRF rating⁸ within the six-year total funding period.

Thuthuka is a co-funding partnership programme. The institution at which the applicant is employed must commit to a 1:1 funding partnership with the NRF. This amount is based on the total approved operating cost of the proposal. For this reason the proposal must be endorsed by the institution prior to submission. The endorsement process is handled by the research office of the institution concerned. Although the final 'Condition of Grant' is signed by the researcher, all communication with regards to the grant is co-ordinated through the research office.

The research office makes a contribution with regard to research project management after the project has been awarded. Accountability is usually boosted when the research office actively participates in the monitoring and evaluation of research project deliverables and finances. The ability of the research office to carry out its financial responsibility hinges on its human resource capacity in finances. Does it have the right number of, and appropriately skilled resources available to cover this function? Experience shows that research offices with dedicated financial resources or with financially skilled grant managers, perform this function better.

The research office can also make a contribution to monitoring project deliverables. Traditional project management as it relates to fields such as engineering and information technology is well established and widely implemented. However, research project management, i.e. conceptualising a full project management cycle as researchers plan and execute the project, is often a challenge.

In the Thuthuka programme, researchers often have difficulties rooted in project management problems, particularly unspent funding and deliverables that are not met. The deliverables spelled out in the Conditions of Grant Agreement and the content of the annual progress reports often do not speak to each other. It is believed that this is to a great extent due to inadequate project planning, budgeting and tracking. This lack of project management compromises project deliverables, leads to under-spending and frequently results in researchers having to request that the funding be transferred to the next year ('carry forwards'). This is not ideal, as it is believed that it should be possible to spend funding in the year for which it has been allocated, if the project is properly planned and managed.

To overcome these problems and because the programme is focussing on early-career researchers, Thuthuka introduced interventions promoting the use of project management principles in research

⁸ NRF ratings are allocated based on a researcher's recent research outputs and impact as perceived by international peer reviewers. The rating system encourages researchers to publish high-quality outputs in high-impact journals/outlets. Ratings are used as the basis for benchmarking in the National System of Innovation/Higher Education Institutions and NRF funding programmes. It is also a way to ensure that the next generation of researchers in higher education are supervised and trained by established researchers.

projects. These are designed to assist in particular with project organisation, project scheduling and project budgeting. It has taken some time to make researchers understand why these tools are needed and what the benefits are. Although the full impact of the tools is still to be measured, the benefits, to both the NRF and the grant holder, are already visible. Although these interventions have gone a long way in making an impact they are reactive, stop-gap measures. A feasible long-term and more structured solution is required. Postgraduate students should be exposed to research project management principles much earlier in their training.

The Thuthuka programme offers value-adding interventions in addition to the grant. This includes, for example, mentorship and proposal development support. The NRF attempts to address these challenges and needs as far as possible to ensure that the programme achieves its strategic objectives and fulfils its mandate.

(Dr Claire Botha, Programme Director: Institutional Capacity Programme, National Research Foundation, South Africa)

5. Conclusion

The need for stronger project management within universities continues to grow as research projects become more complex. This is because universities are taking on more applied and more collaborative research projects (which typically have greater and more varied requirements in terms of timetables, budgets and evaluation) and thus how research projects are managed is becoming as important as delivering the actual research objectives and outputs.

This paper outlines a generic project management approach and examples of tools typically employed by project managers. It also outlines a few case studies from funders and universities alike, which provide insight into some of the challenges and highlights encountered when managing research projects. However, the paper also emphasises that successful project management is not about utilising certain techniques – it is about getting a job done to specific requirements. Thus in order to successfully manage a research project, an understanding of the local institutional context is necessary – and any project management method used, must be adapted to the specific institutional context.

Strengthening approaches to research project management

For individual project managers

Taking into consideration the information gathered from the case studies and the survey, the following strategies may be useful to individual project managers:

- As the principal investigator, appoint a project co-ordinator to assist you with day-to-day tasks.
- Ensure that the project is based on sound research methods and complies with ethical and other requirements.
- Develop a clear and shared understanding of the concept behind project planning.
- Develop the budget and the plan together, so that you don't end up 'cutting the cloth to fit the budget'.
- Never go outside approved budgeted amounts.
- Acquaint yourself with the institutional policy and guidelines on indirect costs.
- Remember that successful projects hinge on people working together – there is no method to follow here, but a lot of intuition and careful people management is needed.
- Ensure that every partner is clear about and agrees with their role, at the outset.
- Strive to communicate often and clearly throughout the project – if things are going off track, talk about it. Ensure team members feel free to share their own concerns.
- Learn the rules of the particular project, funder and institution.

For institutions

Also based on information gathered from the survey and the case studies, the following approaches may be helpful for institutions:

- Invest time in establishing and improving the central systems – it will make things much easier in the long run.
- Develop clear policies to guide staff, and ensure these are clearly communicated and easily located.

Support researchers to understand and adhere to these.

- Ensure policies are output-orientated, not process-orientated, so that they enable research.
- Be clear how you are supporting researchers and easing their workload, so that they don't see project management as simply creating additional regulation.
- Grant appropriate time for research and balance workloads appropriately.
- Develop a cadre of project managers/co-ordinators, who have a clear understanding of the research process, at central university or faculty level.
- Stipulate that research projects should have both a technical and an administrative lead and appoint a co-ordinator for strategic collaborative projects.
- Provide training in project management skills and techniques to researchers and administrative staff alike. If this expertise is not available internally, investigate other options, such as the regional research and innovation management associations.
- Require that all funding is centrally handled and disbursed so that reporting and audit requirements can be met.
- Learn the rules of particular funders.

References

Allen D (2002) *Getting Things Done and the Art of Stress-free Productivity*. London: Penguin

ASQ (undated) *Gantt Chart*. Accessed online 2 November 2013, <http://asq.org/learn-about-quality/project-planning-tools/overview/gantt-chart.html>

Association for Project Management (2012) Accessed online 12 January 2012, <http://www.apm.org.uk/content/project>

Bright Hub Project Management (2012) Accessed online 2 November 2013, <http://www.brighthub.com/office/project-management/articles/68427.aspx>

Business Dictionary.com (2012) Accessed online 14 February 2012, <http://www.businessdictionary.com/definition/project.html>

Chatfield C and T Johnson (2007) *A Short Course in Project Management*. Accessed online 13 January 2012, <http://office.microsoft.com/en-us/project-help/a-short-course-in-project-management-HA010235482.aspx>

Duncan A (2007) Research Project Management. Slide presentation provided to the Southern African Research and Innovation Management Association (SARIMA) for training purposes.

ESSENCE (2012) *Five Keys to Improving Research Costing in Low- and Middle-income Countries*. Accessed online 2 November 2013, http://www.who.int/tdr/publications/five_keys/en/

JISC InfoNet (2013) *Gantt Charts*. Accessed online 2 November 2013, <http://www.jiscinfonet.ac.uk/infokits/project-management/gantt-charts>

Kirkland J and P Ajai-Ajagbe(2013)*Research Management in African Universities: From Awareness Raising to Developing Structures*. London: The Association of Commonwealth Universities. Accessed online 2 November 2013, [http://carnegie.org/fileadmin/Media/Publications/PDF/ACU - Research Management in African Universities Report - 2013.pdf](http://carnegie.org/fileadmin/Media/Publications/PDF/ACU_-_Research_Management_in_African_Universities_Report_-_2013.pdf)

Litemind (undated) *What Is Mind Mapping? (And How to Get Started Immediately)*. Accessed online 14 March 2012, <http://litemind.com/what-is-mind-mapping/>

Mindmapping.com (2012) *Mind Mapping*. Accessed online 14 March 2012, <http://www.mindmapping.com/>

Morgan R (2008) *How to Do RACI Charting and Analysis*. Accessed online from Project Smart 2 November 2013, <http://www.projects smart.co.uk/how-to-do-raci-charting-and-analysis.html>

Mouton J (2010) *The State of Social Science in sub-Saharan Africa*. Background paper for 2010 UNESCO/ISSC World Social Science Report: Knowledge Divides. Accessed online 2 November 2013, <http://unesdoc.unesco.org/images/0019/001906/190659e.pdf>

Mullaly M (2003) *Project Management: A New Definition*. Accessed online 6 October 2013, <http://www.projectmanagement.com/articles/183068/Project-Management--A-New-Definition>

Nokes S (2007) *The Definitive Guide to Project Management*. 2nd edn. London: Financial Times/Prentice Hall

O'Connell F (2001) *How To Run Successful Projects III: The Silver Bullet*. Harlow, Essex: Addison-Wesley Professional

Project Management.com (2013) *Process/Project JPACE – JPACE Project Management*. Accessed online 10 September 2013, <http://www.projectmanagement.com/content/processes/11506.cfm>

Project Management Institute (2004) *A Guide to the Project Management Body of Knowledge*. 3rd edn. Newtown Square, PA: Project Management Institute

Taylor J (2011) *Working with Project Constraints: The Project Triangle*. Accessed online 10 October 2013, <http://www.brighthubpm.com/project-planning/9227-working-with-project-constraints-the-pm-triangle/>

The Royal Society (2011) *Knowledge, Networks and Nations: Global Scientific Collaboration in the 21st Century*. Accessed online 2 November 2013, http://royalsociety.org/uploadedFiles/Royal_Society_Content/policy/publications/2011/4294976134.pdf

University of Strathclyde (2012) *The Management of Research Projects*. Accessed online 3 March 2012, <http://www.strath.ac.uk/aer/materials/9commissioningandconsumingresearchineducation/unit3/managingresearch/>

Weber A and L Mosley (undated) *Project Management – Tools for the Research Administrator's Toolbox*. Slide presentation. National Council for University Research Administrators (NCURA). Accessed online 4 November 2013, http://www.ogrd.wsu.edu/r6ncura/2012ProgramMaterials/MO_Project%20Management%20for%20the%20RA_04162012.pdf

Wight D (2008) Most of Our Social Scientists Are Not Institution Based - They Are There For Hire: Research Consultancies and Social Science Capacity for Health Research in East Africa, *Social Science and Medicine* 66: 110–116

Acknowledgements

For participating in the funders case studies:

- Professor Hannah Akuffo, Sida, Sweden
- Renée Larocque, GHRI, IDRC, Canada
- Dr Claire Botha, National Research Foundation, South Africa

For participating in the university case studies:

- Professor Adesola Ogunniyi, University of Ibadan, Nigeria
- Professor Josephat Rugemalira, University of Dar es Salaam, Tanzania
- Professor Laetus Lategan, Central University of Technology, South Africa

For participating in interviews:

- Professor Ackson Kanduza, University of Botswana
- Keikantse Kelesitse Merata, University of Botswana
- Dr Robin Drennan, University of the Witwatersrand

The papers in this series

As part of the RIMI4AC project, five papers were commissioned to help ensure that the work undertaken at institutional and regional level both reflects and feeds into wider policy debates. The papers are all available on the project website at <http://www.rimi4ac.net/en/>, and are listed below.

The papers in this series are:

IPR systems and technology transfer at research institutions in southern Africa

Alphonsus Neba

Project management

Karin Dyason and Jonathan Harle

Research contract management

Gretha Cronje, Alweri Enslin, Sarita Groenewald, Cornelia Malherbe, Mark Mulder and Sinazo Peter

A case study on the state of research management in the Caribbean

Tashoya Streete, Martin Henry, Paul Ivey, Gossett Oliver

Strengthening the mechanisms of competitive research funding and peer review in Africa

Jay Kubler

This paper was first published in 2013, by the European Union's ACP S&T Programme and Research Africa, Cape Town

© Karin Dyason and Jonathan Harle



Produced under the RIMI4AC Project funded by the European Commission's Africa, Caribbean and Pacific Science and Technology Programme. Grant no. FED/2009/218782.

