

Developing a performance measurement framework to enhance the impact orientation of the Food Research Institute, Ghana

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Research institutions in Ghana are facing various challenges. It is the contention that viable research and development institutions are needed for achieving sustainable change in areas of national importance. A key aspect of institutional viability is strong performance management. This implies clear and workable approaches to performance measurement. This paper looks at the initial experiences in a collaborative effort to develop a performance measurement framework for the Food Research Institute (FRI) and the application of the Balanced Score Card (BSC) at institutional level. The process of diagnosing and analysing institutional monitoring and evaluation capacity and systems is described using a mix of diagnostic tools. Stages in applying the BSC approach are documented and the added value of the scorecard perspectives in highlighting focal areas for performance measurement and management within FRI. These are placed in the context of ongoing changes in the external environment posing both threats and opportunities. Changes implied by the introduction of the concept are discussed in the context of current constraints and the way forward is mapped out in terms of enhancing FRIs' impact orientation through the application of improved performance measurement and management.

1. Introduction

This paper presents a summary of the findings of a collaboration between the Food Research Institute (FRI), Council for Scientific and Industrial Research (CSIR) (Ghana) and Natural Resource Institute's Performance and Impact programme (UK) in building a Performance

Management Approach to enhance organisational impact orientation. 'Institutionalizing Impact Orientation' was a 16-month inception project designed to introduce performance management concepts and build the performance management capacity of a pilot group of agricultural research organizations. The project was the first phase of a larger initiative to develop and

implement effective performance management systems in public research institutions. Two organizations in Ghana, the CSIR-Crops Research Institute and CSIR-FRI, and the National Banana Research Programme in Uganda, participated in the project. As one of three collaborating institutions, the findings documented from FRI's experience represent part of a larger initiative aimed at addressing the concern within public sector agencies of how to demonstrate their achievements in an environment of broad-based public policy reform. This pressure is particularly hard-felt by agricultural research organisations, where funders' perceptions of a lack of evidence for the uptake and impact of products and services are raising questions about their efficacy and existence (Sutherland, 2003). In recognising that the developmental impact of research is notoriously difficult to assess, the project is predicated on the belief that indicators of organisational uptake can provide reliable proxies, or 'leading' indicators of development impact. This is what is implied by the phrase 'enhanced impact orientation'. This implies that overcoming the lack of connection between research outputs and development impacts should not be pursued through impact assessment studies alone, but through appropriate systems that account for organisational uptake and research outcomes which provide the clearest evidence of likely developmental impact. Thus, building performance management capacity is about developing clear, meaningful and accountable measures of performance over which the actors have direct control, or manageable interest. This paper therefore summarises the first phase of this project conducted inside FRI: a diagnostic assessment of organisational context and capacity, followed by initial steps of developing a performance management approach. Monitoring and evaluation within the context of agricultural research is often pitched at the level of the research project, focusing on cyclical aspects of design, review and assessment (Smith and Sutherland, 2002). Recognizing that this project was focused on monitoring and evaluation at the institutional level, the terms 'performance measurement' and 'management' were introduced to engender the sense of a concept qualitatively different from 'project M&E', while at the same time confirming aspects common to both organizational and project-level M&E. The intention of introducing a new concept was to avoid getting stuck in the detail of existing knowledge of monitoring and evaluation at an early stage. Performance was defined for the pur-

pose of this study as the functioning of programme or organization over which the actors involved have direct control or a manageable interest. Thus, by extension, performance measurement is the system (methods and tools) used to monitor and assess the programme or organization's functioning. Monitoring and evaluation in this context is a sub-set of a wider performance measurement system (Smith and Sutherland, 2002).

1.1. Institutional profile

The FRI was established by the Government of Ghana in 1963, and incorporated into the CSIR as one of thirteen institutes in 1968.

FRI has a mandate to conduct applied research into problems of food processing and preservation, storage, marketing, distribution and utilisation in support of the food industry, and also to advise government on its food policy. The Institute's mission focuses on providing scientific and technological support to the growth of the food and agricultural sectors in the national economy in line with government policy objectives.

The Institute is divided into seven divisions, four of which address technical aspects of food quality and production; nutrition, microbiology, chemistry and processing/engineering. The remaining three divisions deal with business development, administration and finance. Research programmes and projects, fall both within specific divisions (for example, fats and oils studies, cereal/grain/fish processing studies) and cut across divisions (economic and consumer studies).

FRI has a total of 180 staff, of which 39 are scientists and engineers, 51 senior technical and administrative support staff, and 90 junior members of staff in various supporting roles (Current Profile, 2003). The Institute has a bipartite structure, with the director managing the 3 non-scientific divisions (and with overall responsibility for all divisions and reporting to the management board), whilst the deputy director manages the four scientific divisions. Quarterly review meetings occur between the divisional managers and the director/deputy-director to present progress against objectives on programme initiatives, which in turn is reported by the director to the management board (of which there is a technical sub-committee).

An Internal Management Committee constituted of all Heads of Division and Unit and representatives of recognised staff associations

appraise proposals for consideration. There is also an Internal Commercialisation Monitoring Committee established purposely to monitor and evaluate the commercialisation activities of the institute. The Institute manages its own finance, and reports to the CSIR board based on programme/project outputs.

Major achievements of the Institute include the formulation of composite flours, the development of appropriate technology for micro- and small-scale food processing, and the formulation of food standards and the drafting of food laws and regulations with the Ghana Standards Board and the Ministry of Health.

1.2. Institutional context

FRI is one of 13 institutes under the CSIR. FRI operates research programmes and projects funded by the Government of Ghana and external agencies. The CSIR is funded from the Ministry of Finance and Economic Planning, through the Ministry of Environment and Science.

A commercialisation programme was established within the CSIR in 1995. It was mandated that by December 2001 the CSIR should generate 30% of its Annual Budgetary Requirement and that Government Support for the CSIR would be slashed by 30%. The requirements of CSIR to generate 30% of annual budgetary needs by December 2001 could not be achieved based on the 5-year corporate average of 5.45%

The Ministry of Food and Agriculture (MOFA) is the primary ministry responsible for food and agricultural development in Ghana. Although MOFA and the CSIR are institutionally separate, the research outputs generated by the CSIR institutes are largely disseminated through MOFA.

Two reviews under the National Institutional Renewal Programme (NIRP) were conducted within the CSIR in 2001. An externally managed institutional review funded by the Government of Ghana and the World Bank was conducted which suggested that there was a need for considerable restructuring of the research system. This was largely rejected by staff under the CSIR. This has been followed by an internal research review currently underway, managed from the corporate office of the CSIR, and engaging directors from each institute. The aim of this review is to review the corporate mission of the CSIR, identify priority issues, and link these to the CSIR mission.

2. Diagnosis of institutional monitoring & evaluation (M&E) capacity

The diagnosis conducted with FRI addressed four sets of issues:

- Existing institutional strengths and weaknesses, future opportunities and threats
- Client and other stakeholder linkages
- M&E understanding
- M&E capacity

2.1. Existing institutional strengths and weaknesses

The issues highlighted through the 'strengths' and 'weaknesses' exercise reflected the state of FRI.

Current strengths: Human resource (good quality, technically proficient staff, multi-disciplinary approach to work)

Physical resource (good laboratories, machinery and other equipment necessary to perform effectively)

Research (high quality work on nutrient analysis, food technology, etc.; accreditation)

Dissemination (proven track record on commercial uptake of results)

Current weaknesses: Human resource (poor communication between staff, remuneration, lack of training, loss of staff)

Physical resource (poor IT, ill-equipped with certain types of equipment)

Systems (overbearing bureaucracy, poor extension/external linkages in some areas, lack of coordination, lack of commercial focus)

Funding (delay in disbursement of approved budgets from central government, lack of non-government sources of funding)

2.1.1. Key issues

- Multidisciplinary implies good communication between staff members, yet communication and coordination were identified as weaknesses within the system. The extent to which teams working on programmes and projects at FRI are working in a multi- rather than inter-disciplinary way (i.e. cross-discipline, not just different disciplines working alongside each other), is one for consideration.
- Similarly, commercial uptake of FRI conducted research was highlighted as strength, yet the drive towards an increasingly commercial focus is questioned.

2.2. Potential opportunities and threats

The issues raised through looking forwards at the 'opportunities' and 'threats' faced by FRI highlight a number of key issues:

Opportunities: Research demand (the food needs in the country require further research that FRI is positioned to provide and are central to some of the Government priorities (e.g. poverty reduction, food processing)

Training demand (from other agencies and universities in FRI core specialisms)

Funding (further funding from external sources – donors and private agencies – through contracts and collaborative projects based on existing linkages with these agencies)

Dissemination (of findings to various constituents)

Threats: Government funding (current situation where FRI is expected to attract 30% of funding from other sources – which it has yet to achieve – constrains the ability of the Institute to achieve its objectives. There is a fear of budget reductions from the Government)

Privatisation (fear that FRI will be privatised, with potential staff cuts and associated pressures)

Commercialisation (too much emphasis being placed on FRI to commercialise is eroding the focus and work patterns of staff)

Competition (from other institutes and the private sector)

Human resource (brain-drain of staff from FRI into the private sector)

2.2.1. Key issues

- The demand for FRI's core specialist research is recognised by donors and clients, yet the environment in which the Institute operates is changing, and the Institute is wary about its existing and future sustainability.
- The brain-drain of staff, combined with current weaknesses of lack of motivation, poor salaries and the like, contribute to the fear that FRI may loose out in the future to competitors in the future if it does not address these issues.
- The benefit of good opportunities for FRI to attract funds to support its work is based on existing strong linkages with clients and donors, and thus offsets some of the fears about the future of the Institute.

2.3. FRI – client/stakeholder linkages

A mapping exercise was conducted to look at the type and strength of linkages FRI has with clients

and its' other stakeholders. Within this context, clients are defined as those for whom FRI provides a direct service; other stakeholders are those with whom FRI has some form of linkage.

2.3.1. Key issues

- FRI has numerous clients, ranging from the public to the Government MOFA.
- Strong linkages between FRI and several of these clients were considered strong or very strong, including the local food industry, Food & Drugs Board, Ghana Standards Board, entrepreneurs, food processors, students and the MOFA. However, while these linkages were identified as strong, at the same time, a number of these clients were also perceived to be threats, notably the Food & Drugs Board and private companies who are increasingly working in competition to FRI.
- A fear was expressed about the need to be increasingly commercial within FRI in terms of attracting funds and being attractive to its clients.
- Weak linkages were identified with NGOs and the Public.
- Other stakeholders identified include donors (where the link is very strong) and other government ministries (where the weak is fair). Again, while a strong link with donors is identified, a threat was also perceived in the erosion of donor funding, and of donor priorities (with increasing emphasis on dissemination rather than research).

2.4. Gauging understanding of M&E

What good M&E might do... Inform about impact Achieve good results Provide reasons for non-achievement Reveal the use of funds What good M&E might involve... Effective feedback mechanisms Time-scale/ continuous or regular basis Targets

A brainstorm session on what constitutes good (intentionally left undefined) M&E highlighted various issues which have been grouped into what good M&E might do and what good M&E might involve. Good M&E was perceived as having a role in informing about the achievement of good results and provide reasons for the non-achievement of results. Similarly beyond results, M&E might inform about impact, and the

effective/efficient use of funds. Effective feedback mechanisms, using clear targets reviewed in a timely manner were felt to be aspect of a strong M&E system.

2.5. Diagnosing existing M&E capacity

A self-assessment diagnosis of M&E capacity was carried out by each staff member based on rating a series of 'positively orientated' statements from 'strongly disagree' to 'strongly agree' in the context of FRI.

- We define our measures from the communities point of view.
- Our current M&E system measures all the right things.
- Responsibilities for assessing different measures are clearly defined.
- Our M&E system does not produce more paperwork than is necessary.
- Results from our M&E system informs decisions on budgetary allocations.
- Our system always gives us the information we need when we need it.
- We are only accountable for measures over which we have control.
- Everyone in our organisation understands the measures used to assess performance.
- Senior management built our M&E system with a plan – it did not evolve by chance.
- Our M&E system contains a 'well-balanced' set of measures that reflects the different levels of objectives in our strategic plan.
- We assess client satisfaction of the outputs we deliver with and for them.
- We have a way of to summarise all our outputs easily.
- We pay as much attention to the non-financial measures as we do the financial measures.
- We track performance for internal operations as well as the delivery of outputs.
- We act on results quickly.

2.5.1. Summary of monitoring and evaluation self-assessment

2.5.1.1. Overarching. The analysis of staff responses to the statements identified a considerable strength in the design and functioning of the M&E system. The majority of staff¹ felt that the system was strategically developed (rather than having evolved by chance), that it reflects a balance of performance measures (measuring both internal operations and output delivery)

and that it does not produce more paperwork than is necessary. Contrary to this, questions were raised as to whether or not the right things were actually being measured, and therefore whether or not the right type of information was available when needed. This conflict was highlighted by the fact that opinion was split over whether or not everyone in the organisation understands the measures used to assess performance, and whether accountability to these measures is clearly delineated. The M&E diagnosis identified that the majority of staff believe that measures are defined. In summary, these findings suggest that while a system is functioning within FRI, the majority of senior staff do not feel it serves the best purpose.

2.5.1.2. External focus: linkages with clients

Strong client and stakeholder linkages (identified through the mapping exercise) are supported by strong feedback mechanisms with these same groups. The M&E diagnosis identified that the majority of staff believe that measures are defined from the clients point of view (community client group), and that client satisfaction is assessed.

2.6. Summary of diagnosis

FRI is currently in a state of flux; a public institute located within a large council of research institutes with a public-service mandate, but increasingly linked to the commercial sector, and pressured to become more commercially orientated. This is further complicated by the nature and amount of funds divested from central government, and the upstream shift of donor funding through central ministries.

This complex institutional environment is causing the institute to reconsider its internal structure and systems to best position itself to function effectively and serve these diverse client groups. This is reflected in the understanding of the M&E function within the institute; on the one hand working effectively within the nature of FRI's traditional core business activities and internal systems, on the other, being doubted for whether or not it is still asking and answering the right questions. Further, as FRI's mandate broadens, the impact expected is also being pushed into areas potentially beyond its direct control (i.e. beyond research into extension impact). This cause for concern is reflected in the doubt over whether FRI is accountable only for measures directly under its' own control.

FRI's current reality, and a consideration of future opportunities and threats has heightened the realisation of the need for effective performance management. The need for a clear goal, objectives, indicators and strong feedback mechanisms linked to this diverse client and stakeholder groups is matched by the need to ensure that staff within the institute are informed of these changes, and likewise, that management are aware of staff needs. In this context, areas identified as opportunities to pursue are: the reconsideration of its corporate framework to help staff and investors, the institute's performance, and the development of a more consistent and commonly understood basis with which to monitor and evaluate the institute's work.

3. Building an appropriate performance management system

The approach used to structure the findings of the diagnosis, and develop a system for performance management is based around the Balanced Score Card (BSC) (Kaplan and Norton, 1992). This approach focuses upon four elements, or perspectives, as they relate to each other, and the overall goal of the organisation (Kaplan and Norton, 1996). The following section is structured to address these perspectives in turn.

3.1. Clarifying the organisation's goal

A strong performance management system relies upon a shared understanding of a common goal (PEA, 1999). It was therefore considered essential early on in the diagnostic needs assessment to ascertain whether or not a jointly held goal exists. This was achieved through an exercise to review individual staff understanding of FRI's goal.

3.1.1. Understanding of goal

- Differences in individuals' understanding of the goal of FRI reflected differing expectation of what the Institute may be able to achieve. This ranged from conducting efficient and profitable research to improving the food security of the country.
- Two main themes came out of identifying the goal of the institute: (1) that the focus is increasingly on commercially focus research, and (2) that the role of FRI is to support the food industry in its various forms.
- Individual's perception of their contribution to the organisation's goal, and how this con-

tribution is measured, were also assessed through the same exercise.

3.1.2. Contribution to goal and measurement of contribution

Some individuals found it difficult to distinguish between describing what they do (i.e. their day-to-day activities) and how what they do contributes to the overall goal of the organisation. This may reflect a lack of sense of mission, i.e. what an individual's contribution is to an overall goal.

Considerable variations in the ways in which individuals' contributions to the goal are measured. Two issues arise from this: (1) the extent to which measurements accurately reflect the work individuals are engaged in (e.g. one individual is conducting studies in contributing to the goal of the institute, and this is measured by improvement in the income levels of clients – a disjuncture appears here. One is not measuring the other). (2) which of these measures are most important at the institutional level to best represent the institute to its clients, i.e. to best demonstrate the achievements of FRI.

3.1.3. Summary

Through this exercise it was recognised that FRI needed to reconsider the goal of the institute, how individuals' outputs directly contribute to this goal, and how best these contributions can be assessed. The perceived benefits of the exercise were a common sense of purpose and improved understanding of others' work areas, including linkages between work areas.

3.1.4. Conclusion

Through a group-based review of the various individual perspectives, and the use of guidance material, consensual agreement was reached:

Food Research Institute Goal
To be a centre of excellence that conducts market-orientated research and provides accredited technical services to the food industry by 2008.

3.2. Developing the scorecard perspectives

The BSC approach considers four main perspectives of organisation performance: employee, internal business, client/stakeholder and financial (Kaplan and Norton, 1996, 2000). A key question was attached to each perspective to raise awareness and foster a sense of responsibility towards organisational performance.

3.3. *Employee perspective: how can we continue to improve and create value?*

If FRI is to continue to strive to be the front-running institution in food research, it is crucial that it retains its self-identified most valuable resource, its staff. Without employee 'buy-in', an FRI's achievements are likely to be minimal. Clarifying or defining objectives in this perspective involve reflecting on the performance of internal employee-related processes that drive the organisation, including forward-looking targets for continual improvement (Rohm, 2002). This is of particular relevance in an environment where (a) other agencies (e.g. universities and NGOs) are attracting able employees away from the public sector to potentially more lucrative jobs and (b) where donors are looking to invest in attractive, growing organisations.

3.3.1. *Key issues identified*

- Good quality, technically proficient staff were identified as one of the key strengths of FRI. However, key weaknesses reflected poor communication between staff, poor remuneration leading to a lack of motivation. One or more of these factors has resulted in the 'brain-drain' of staff away from FRI to the private sector and other institutions. This 'brain-drain' is also perceived to be a big threat for the future of FRI.
- Lack of a consistency of understanding was highlighted in the self-assessment exercise, with individuals' unclear about the measures used to assess institutional performance, as distinct from individual staff performance which they were clear about.
- Central to this is a clarification of purpose, strengthened by good communication between staff and a feeling of self-worth. Identifying and illustrating the achievements of individuals and how their work relates to the work of others in view of the goal of the institute will help achieve this.

The following table illustrates the objectives and key performance indicators (KPIs) developed by FRI in light of these issues.

Employee Perspective	
Objective	Key performance indicator
1. Trained and focused staff	X percent of research scientists have PhD degrees by 2008

X percent of technicians have at least Higher National Diploma by 2008
At least x percent of scientific and support staff understand their duties and responsibilities
Equipment for carrying out X number of different analysis are available by 2008

2. Requisite facilities in place

The building of a performance management action plan to address these objectives focused on identifying what is currently being performed by FRI in these areas, and within this context, considering critical factors to ensure the success of the objectives in question, and thus the organisation's goal.

3.3.2. *Value added from considering the employee perspective*

The diagnosis relating to this perspective highlighted strengths and weaknesses and differences of opinion among staff with regard to the status of employees and the trends regarding employment. The lack of effective systems to provide feedback both to staff and management on staff contribution was highlighted through the issues of poor communication and lack of consistent understanding. While there was no time during the workshop to develop an action plan under the objectives for this perspective, the development of the action plan after the workshop recognised that a review of existing systems needs to be conducted to understand more comprehensively where gaps exist, and how to enhance information flows amongst staff and between staff and management.

3.4. *Internal business perspective: to satisfy our clients, at what internal business processes should we excel?*

The objective of this perspective is to link the client/stakeholder perspective (to follow) with the internal actions and the perspective of those responsible for meeting contractual obligations and fulfilling mandates.

3.4.1. *Key issues identified*

- Effective feedback mechanisms were highlighted as a weakness in the diagnosis ('not

always getting the information that is needed, when we need it'). Thus, while the Institute has strong linkages with clients, and a strong staff-base, the implication is that business processes are not necessarily reflecting client or stakeholder needs in the most effective way. This was reflected in comments on the existing internal weaknesses at FRI, including poor communication between staff and lack of motivation (in some cases), perhaps reinforced by a lack of common purpose reinforced by projectization.

- In terms of FRI's relationship with its' client base, an imbalance was identified between the importance attached to identifying the needs of farmers, on the one hand, and understanding and being able to respond to the needs of other client groups on the other. In view of the shift in FRI's client base towards private sector entities, and a changing relationship with government and donors, FRI's recognises the need to have a research focus and processes that reflect these changes.

The following table illustrates the objectives and KPI developed by FRI in light of these issues.

Internal Business Perspective	
Objective	Key performance indicator
Quality research carried out	X number of publications in international journals
Demand driven technologies developed	X number of appropriate technologies developed X number of patents.
Quality service delivered to clients	X number of queries raised by internal audit of laboratory procedures X percent of FRI analytical results sent for verification confirmed by reputable accredited laboratories
Services timely delivered to clients	X percent of FRI analytical results released to clients on schedule

3.4.2. Value added from considering the internal business perspective

The principal focus within this perspective has been to consider the extent to which FRI's internal business processes both reflect and address

client demand for their services. The action plan drafted to address the specific objective 'demand-driven technologies developed' reflects both the existing and required steps that need to be taken. While the internal processes are currently reasonably strong, the gaps identified relate to feedback mechanisms: knowledge of clients utilisation of products and services, and clients' perceptions of FRI's products, services and delivery process. The approach taken in developing the action plan was iterative, reformulating the framework to suit the process of illustrating existing activities and systems, and determining requirements

3.5. Client/stakeholder perspective: how do we appear to our clients?

This perspective considers the organisation's performance through the eyes of a client or stakeholder, so that the institution retains a careful focus on client or stakeholder needs and satisfaction (Rohm, 2002).

The diagnosis revealed that FRI has numerous client groups and stakeholders. FRI's links to several of these clients are strong, implying good feedback mechanisms with FRI understanding the needs of these groups, and conversely, these groups appreciating the services or products delivered by FRI. However, a number of these clients were also perceived to be threats, notably the Food & Drugs Board and private companies who are increasingly working in competition to FRI. A fear was also expressed about the need to be increasingly commercial within FRI in terms of attracting funds and being attractive to its clients.

A similar pattern was found with other stakeholders, notably donors (where the link was identified as very strong) and other government ministries (where the weak is fair). The strong link with donors was counteracted by the perception that donor funds are diminishing, or being re-directed through MOFA which presents barriers to access, and that donor priorities are shifting away from research towards dissemination which challenges the role and mandate of the FRI.

3.5.1. Key issues identified

- There appears to be an opportunity for FRI to better position itself with respect to its clients and stakeholders. While strong linkages exist, FRI is facing increasing pressure to commer-

- cialise, and is finding itself in competition with other institutions working in the same field.
- Thus, for FRI to remain at the forefront of the food research industry, favoured by the clients of its research, a number of key questions need to be considered:
 - How do we want our clients/stakeholders to view us?
 - Has the design of existing monitoring activities incorporated client/stakeholder input?
 - Do our existing measures for M&E and reporting reflect the expectations of varying clients/stakeholders (e.g. provide relevant, accessible, accurate, clear and timely information?)
 - Further issues to be considered may include how FRI relates to its weaker linkages, i.e. with the public (what else other than the provision of scientific information is important?), and with the NGOs (as a potential source of collaborative work).

The following table illustrates the objectives and KPIs developed by FRI in the client/stakeholder perspective

Client/Stakeholder Perspective	
Objective	Key performance indicator
1. Clients satisfied with technologies developed	X percent of technologies adopted.
2. Accredited service provider	X number of analytical methods accredited to ISO 17025.
3. Reliable services provided	X percent of clients satisfied with timeliness, responsiveness and quality of service. X percent of major clients retained. X number of complaints in a year.
4. Cost effective services provided	X percent of FRI charges competitive to charges of similar laboratories.

Performance action plans were drafted for some of the objectives of the client perspective.

3.5.2. Value added from considering the client/stakeholder perspective

The self-assessment exercises identified a number of issues relating to how FRI currently relates to its

clients, and what its client and stakeholder base is likely to look like in the near-future. The objectives and draft action plan developed builds on existing mechanisms to outline a strategy for strengthening FRI's engagement with clients and to demonstrate the achievement of certain industry standards.

The draft action plan for objective 2 (accredited service provider)² developed represents an initial framework for considering the type of critical factors that need to be achieved if the objective is to be satisfied. It is recognised that this is not a time bound objective in itself, but requires continual actions to maintain this standard, highlighting the importance of mechanisms for reviewing progress towards, and maintenance of this standard as one objective of four in the client/stakeholder perspective.

In taking the process ahead, further development of this, and other action plans (for the other three objectives in the client perspective) may involve reviewing the objectives (to reflect on whether or not they aid FRI in achieving the goal) and KPIs, to ensure that they suit the criteria of effectively measuring the objective. Addressing the other objectives may require further delineation of the client and stakeholder groups, recognising that the nature of the products and services provided, and of the linkages vary accordingly.

3.6. Financial perspective: how do we want to appear to donors, government and investors from the corporate sector?

The pressures on FRI's finances come from both the drive to be more commercially-orientated, thus seeking clients and linkages with industry or the private sector more broadly, and because of disbursement difficulties from central government coupled with the re-routing of donor funds through central government agencies.

Internal and external competition for resources has re-emphasised the need for strong internal systems (efficient use of resources, transparent financial procedures) and improved relationships and understanding of clients and key funding stakeholders.

3.6.1. Key issue identified

The need for a corporate framework/basis with which to help FRI staff as well as its investors better understand its overall performance and its impact as an institution if it is to attract funding

on a more equally defined basis. For example, mechanisms for providing feedback to government about how its policies affect the work of FRI and its commercialisation drive.

The following table illustrates the objectives and KPIs developed by FRI in the financial perspective:

Financial Perspective	
Objective	Key performance indicator
1. Resources efficiently utilised	Statements of account submitted on schedule X number of audit raised on statements of accounts by external auditors and donors.
2. Finances transparently managed	N/A

3.6.2. Value added from considering the financial perspective

FRI considered the financial perspective from an internal systems viewpoint, focusing upon the utilisation and management of financial resources. This differed from other case study organisations, who viewed it in terms of how their institute relates to financial stakeholders (government, donors and paying clients).

The perspective chosen by FRI is based on the understanding that a sound financial system provides a good internal view of the state of the institute, and thus can be presented to financial donors as evidence of the strength of the institute. While this approach does not directly address the constraints identified, it is expected that the indicators developed will be utilised within a broader framework which reviews the relationship between funders and FRI.

3.7. Mapping objectives

The strength of the BSC approaches lies not only in considering of perspectives outside of the research process, but also examining the way in which these perspectives interrelate, and contribute to the organisation's goal (Kaplan and Norton, 2000).

The mapping of objectives – looking at cause and effect relationships – visualises how the objectives are linked. Mapping has two purposes:

- First, as a tool to help strategize and prioritise areas for development.
- Second, once the performance management system has been established, mapping will potentially help identify blockages, enabling corrective action to be taken.

Key Performance Indicators (KPIs) have a crucial role to play as measures of the success of each objective, and as indicators of the likelihood of the linked objective being met (Smith and Sutherland, 2002).

Having established and tested the key linkages between objectives, it may be necessary to review the KPIs, to see whether or not that they effectively fulfil this function. If not, they may need to be adjusted or added to, or it may be considered appropriate to develop some extra KPIs to look at the interface between one or more objectives. For example, the snapshot³ of FRI's mapped objectives implies that if staff are trained and focused, they will produce high quality research delivered to clients, who in turn will be satisfied with the products. Whilst this is somewhat linear and simplistic, it serves two purposes. First, to test the assumptions on which linkages are based, ensuring that the theory behind achieving a particular objective through certain actions (critical success factors) holds true. Second, it enables a consideration of how best the goal of the institute can be achieved, i.e. what other things may need to happen.

KPIs identified in the workshop did not reflect these linkages, but were designed to measure only the objective in question. The next step therefore may be to consider, for example, one or more critical indicators for measuring the cause and effect relationship between quality service delivered to client satisfaction with technologies, including how client views are incorporated into the process. While the BSC approach allows that each objective under a perspective contributes to the organisational goal, where linkages are deemed to exist, the measurement of these linkages will enable a more intelligent assessment of progress.

4. Conclusions

4.1. Where FRI started

The identification of:

- Certain inherent weaknesses within the system at the organisational level: poor communication between staff, appropriate information not always available, burdensome bureaucracy.

- Certain strengths within the system at the organisational level: high quality staff and (in-general) equipment, good internal systems for measuring the research process.
- A need to have systems that are sufficiently robust to incorporate a better understanding of the external environment (clients and donors) into the internal processes of the institute.

4.2. What FRI has performed through this process:

- Considered the reconfiguration of existing activities under the framework of the BSC. Namely, a review of the organisations goal to accurately represent the work + aims of the institute, considered objectives and indicators to achieve this goal, and drafted action plans to achieve some of these objectives.
- Identified, through the use of the BSC, areas that have not received attention previously – notably methods for enhancing feedback and thus learning across several dimensions, for example, employee satisfaction and its linkages to organisation performance.

4.3. What value the process has added

- Clarified current capacity and issues, potential opportunities and threats which reflect the existing capacity and utilisation of systems within FRI.
- Utilised a framework for facilitating a broader understanding of organisational performance.
- Development of corporate objectives and indicators that aim to bring together the core work areas of the institute.
- Identified critical success factors for achieving these objectives in view of what is currently being done in these areas. Identifying current M&E activities in these areas, and revealing gaps to be addressed through action plans.

4.4. The way forward

Measurement is not an end in itself, but a tool for more effective management. The results of performance measurement will tell you what happened, not why it happened, or what to do about it. In order for the FRI to make effective use of the results of performance assessment, it must be able to make the transition from assessment to management. It must also be able to anticipate needed changes in the strategic direction of the

Institute, and have a methodology in place for effecting strategic change. Successful accomplishment of these two tasks represents the foundation of good performance management. Both of these tasks can be greatly facilitated by use of the BSC. In other words, besides simply assessing performance, the BSC provides a structured framework for performance management.

Measurement has provided the basis for the FRI to assess how well it is progressing towards its predetermined objectives, helped it identify areas of strength and weakness, and decided on next steps, with the ultimate goal of improving organizational performance. It has also provided the data necessary for showing how activities support broader goals, and provided the data necessary for supporting requests for additional resources or for supporting new initiatives. But it is the effective use of this data by management at all levels of the Institute to aggressively improve products and services for customers and stakeholders that is the hallmark of leaders in performance management.

The FRI now needs to look at how to manage assessment results to the benefit of the Institute, and how the BSC methodology can be used to guide the Institute towards accomplishment of strategic goals. To effectively move from performance measurement to performance management, two key components need to be in place:

- The right organizational structure; (which is in place), and
- The ability to use performance measurement results to actually bring about change in the institute.

The FRI has been able to manage assessment results to the benefit of the Institute, and is now using BSC methodology as a guide in accomplishing the strategic goals of the Institute. The use of the BSC as a Management tool has made the FRI to re-examine the philosophy and core principles of how research programmes are designed. It is no longer acceptable within the Institute for Project Managers, for example, to plan programmes for applied research without the participation of direct and indirect users. The FRI has devised a business plan as well as a strategic plan, based on the Performance Management approach, which was participatory and iterative.

The business plan defines the basic strands of research until the year 2015. Together with its clients the FRI has carried out the following steps:

- A historical analysis of research, tracing the main trends, unchangeable elements, mechanisms and strategies of actors.
- A diagnostic analysis, to establish the strengths, weaknesses, opportunities and risks of FRI's research.
- A prospective analysis, based on the key elements of the historical and diagnostic analyses, in order to map out the desired future of research and to determine the strategic options for moving forward.

For the strategic plan, the FRI worked with its clients to:

- Diagnose the key barriers to achieving development goals.
- Produce a research status report.
- Analyse technological deficits by assessing the available technologies and establishing where there is demand for new technologies.
- Define research themes; and set priorities.

Public Research and Technological Organisations wherever they are on the globe can accomplish far-reaching reforms. They carry a heavy responsibility for making a positive difference to life by introducing fundamental and significant changes. To this end they must communicate better with other parties in their sector, critically question their own goals and strategies, and develop the capability to showcase the contribution they make. It has been proven by the FRI, that Impact Orientation can be institutionalized within public research and technological organisations.

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Notes

1. Thirteen senior scientists participated in the M&E diagnostic self-assessment exercise (representing over 50% of FRI's staff at this level who were at post at the time of study).
2. Owing to space considerations the action plans were not shown in this paper.
3. The snapshot has not been shown in this publication.