

Census 2011

Strategic Plan – Research and Methodology



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EXECUTIVE SUMMARY

The creation of a permanent structure for the planning and implementation of population censuses at Statistics South Africa and the inclusion of the component: Research and Methodology to specifically manage census research was an innovation after Census 2001.

The vision of the component is to become a quality and trusted advisor of management with regard to population and housing census methodology, monitoring and evaluation. The component's mission was finalised in consultation with census stakeholders.

The mission of the component is to:

- collect and analyse data and information that inform decisions on population and housing census methodology;
- communicate pertinent research findings to the relevant stakeholders; and
- provide technical support in the cultivation of a culture of continuous evaluation and improvement.

The component's research activities focus on the following three areas:

- Content research (the topics to be covered in the census and the effective formulation of questions) and research on the effects of layout and format of the census form.
- Measurement of respondents' perceptions and attitudes as well as level of satisfaction of stakeholders.
- Business process redesign, the piloting of operations and performance measurement

Table 11 on page 34 lists the schedule of research projects for the 2004/5 to 2010/11 financial years.

SECTION 1: BACKGROUND

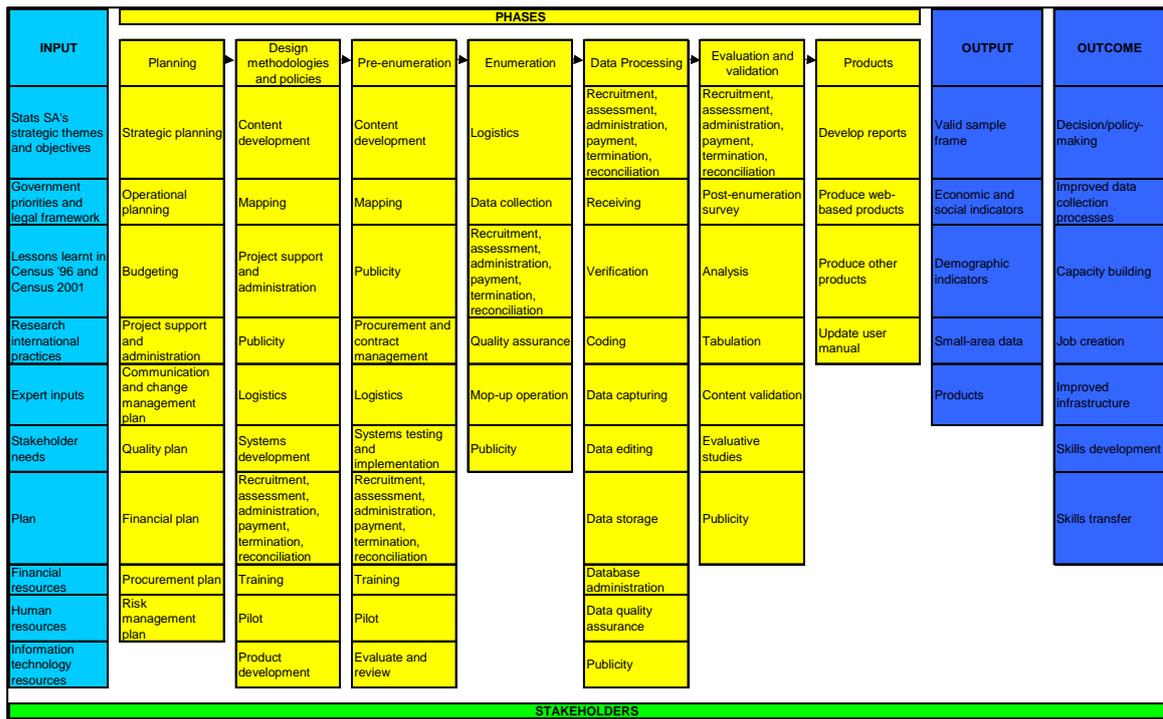
1.1 Introduction

Population censuses are the most extensive and complicated statistical operations that this country undertakes. Any minor oversight in the planning of pertinent activities can lead to costly inefficiencies in operations. It can also seriously compromise the validity of the results derived from the data collected in these censuses. Hence all possible measures should be undertaken to ensure the achievement of maximum economy when conducting various operations. A balance has to be struck between the information that is required and its utility, and the costs of collecting, processing and using that information. A census is too expensive an exercise to repeat. Figure 1 shows a typical value chain for a population census.

It is a major concern of the management of Statistics South Africa to constantly revise and improve the business processes that pertain to the undertaking of population and housing censuses. This revision can follow several different approaches. The focus may be on the improvement of the design or implementation of activities. Management may structure and reconfigure process flows. The information flow or the knowledge management around processes may be changed. Another area of focus may be the configuration of roles around processes. All such innovations are bound to have an effect on the quality of the results and the cost-effectiveness of the operations. It is the aim of census research to ensure that rational decision-making is adhered to in this regard.

The component: Research and Methodology was established as part of the permanent Population Census structure to focus on pertinent census research issues. This plan aims to establish a comprehensive and sound strategic basis for operational planning for this component that is in line with the strategic imperatives determined and communicated by the Population Census structure and the broader organisation.

Figure 1: Typical value chain for a population census



1.2 Outline of the document

The document is divided into six sections.

The first section provides background information that focuses on the need for a strategic plan that pertains specifically to census research, as well as the beneficiaries of such research and their expectations.

The second section is on the vision and mission of the component. The strategic objectives of the census research that will be conducted in preparation for Census 2011 are listed.

Section three is on pertinent census research challenges and the current priorities with regard to census research. This section in particular will inform the operational planning for the component.

The fourth section focuses on the linkages between census research and business process redesign. A pro forma for the documentation of census methodologies is specified. The link of research to governance through process performance measurement is highlighted.

Section five provides guidelines on the management of the census research projects. Issues pertaining to integration, roles and accountability are considered.

The sixth section contains concluding remarks on the various issues that are discussed in the above sections.

1.3 Scope of Census Research

The component: Research and Methodology is tasked with the review of census methodologies and procedures on an ongoing basis to ensure cost effectiveness and quality. The following strategies and outputs link directly to this research function.

Table 1: Strategies and outputs that link directly to a research function

Strategies	Outputs
<ul style="list-style-type: none"> Continuously assure quality in the documentation of methodologies and procedures and the rationales for choices in this regard 	<ul style="list-style-type: none"> Pro forma for documentation of methodologies
<ul style="list-style-type: none"> Conduct literature research of best practices in census-taking 	<ul style="list-style-type: none"> Research reports that inform methodology
<ul style="list-style-type: none"> Liaise with client components to establish mechanisms to determine research needs and priorities and to compile and approve research proposals 	<ul style="list-style-type: none"> Documented research framework
<ul style="list-style-type: none"> Initiate and, where applicable, manage research projects aimed at providing insights into the processes and problems of population census taking 	<ul style="list-style-type: none"> Research reports that inform methodology
<ul style="list-style-type: none"> Ensure the proper piloting (testing) of all census procedures and instruments before adoption 	<ul style="list-style-type: none"> Census test/pilot reports that inform methodology
<ul style="list-style-type: none"> Ensure the compliance of census methodologies with organisational standards through liaison with the relevant components of Quality and Integration 	<ul style="list-style-type: none"> Census methodologies document
<ul style="list-style-type: none"> Ensure through liaison with component managers, the adoption of suitable objective verifiable indicators to enable an evaluation of the census 	<ul style="list-style-type: none"> Evaluation framework
<ul style="list-style-type: none"> Collect and report the indicators specified in the evaluation framework according to agreed format 	<ul style="list-style-type: none"> Indicator reports

1.4 Need for a strategic plan specific to research and methodology

Strategy, according to Michael Porter, is the creation of a unique and valuable position involving a different set of activities¹. This perspective accentuates the need for constant innovation and change in the pursuit of excellence. Activities are the basic unit of success and differentiation follows from an optimal choice of activities that flows from effective strategy.

It is crucial to consolidate the lessons learned from the experiences of Censuses 1996 and 2001 and to utilise these experiences to build a sound methodological foundation for census taking. The key strategies to achieve this objective involve:

- documentation;
- process evaluation;
- innovation; and
- testing.

Documentation is essential in building the organisation's memory and expertise. The documentation must be carried out according to a standard pro forma that enables communication and analysis.

Process evaluation involves the analysis of existing processes, the mapping and modelling of business processes and the measurement of performance. Processes may be redesigned on the basis of research results using standard redesign principles.

Through pilot testing, actual proof of the benefits of new processes is given. The staff gain experience and the testing enables design refinements. Piloting thus facilitates migration to full implementation and limits risks.

¹ Michael Porter, *What is Strategy?*, Harvard Business Review, November-December 1996

The above process is a complex progression that involves many stakeholders and hence it must be carefully planned to ensure that the correct research priorities are identified.

Any innovation inevitably leads to organisational stress. Apart from its “scientific” value in enabling rational decision-making, the census research also has social value in helping managers and staff to adopt and adapt to-be processes without undue stress. This role of the research is important and should be exploited. The research programme should be transparent and census managers and other key stakeholders should be fully involved in the research design.

1.5 Beneficiaries of census research

There are a number of stakeholders who will benefit from the census research activities of the component as listed in Table 2.

Table 2: Beneficiaries and benefits of census research

Who benefits		What are the benefits
Broad category	Specific beneficiary	
Census management	Executive management	<ul style="list-style-type: none"> • Management information
	Operational managers	<ul style="list-style-type: none"> • Technical support in the revision of procedures • Tested methodologies
Other internal stakeholders	Financial management	<ul style="list-style-type: none"> • Technical support in the revision of procedures • Tested methodologies
	Human resource management	<ul style="list-style-type: none"> • Technical support in the revision of procedures • Tested methodologies
	Demographic analysis	<ul style="list-style-type: none"> • Research results
	Quality and methodology	<ul style="list-style-type: none"> • Documented and tested methodologies that enable standardisation
	Service delivery improvement	<ul style="list-style-type: none"> • Performance measurement
	Social statistics	<ul style="list-style-type: none"> • Opportunities for collaboration and sharing of resources
	Provincial coordination	<ul style="list-style-type: none"> • Opportunities for collaboration and sharing of resources
External stakeholders	Data users	<ul style="list-style-type: none"> • Improved quality (relevance, integrity and credibility, methodological soundness, accuracy and reliability, consistency, timelines, accessibility)
	National Treasury	<ul style="list-style-type: none"> • Improved cost-effectiveness of census operations

Who benefits		What are the benefits
Broad category	Specific beneficiary	
	Statistics Council	<ul style="list-style-type: none"> • Documentation of methodologies and evaluation framework enable improved evaluation of census
	Suppliers	<ul style="list-style-type: none"> • Improved ownership of census operations • Improved decision/policy making to enhance the standard of living

SECTION 2: VISSION, MISSION, VALUES AND STRATEGIC OBJECTIVES

2.1 Vision

The component: Research and Methodology will become a quality and trusted advisor of management with regard to population and housing census methodology, monitoring and evaluation.

2.2 Mission

The mission of the component: Research and Methodology, in consultation with census stakeholders, is to:

- collect and analyse data and information that inform decisions on population and housing census methodology;
- communicate pertinent research findings to the relevant stakeholders; and
- provide technical support in the cultivation of a culture of continuous evaluation and improvement.

2.3 Values

The component embraces the following values as far as the conducting of census research is concerned:

- to ensure professional staffing;
- to ensure methodological transparency;
- to be open about errors;
- to ensure open dissemination;
- to protect respondent confidentiality;
- to uphold ethical standards to prevent misuse of data; and
- to be independent from political influence or manipulation.

These values underscore the paramount importance of quality, accountability, transparency, empowerment and commitment throughout all the census processes.

2.4 Key focus areas

The following table links the key focus areas for census taking with the corresponding focus areas of research.

Table 3: Focus areas for census research

Key focus areas for census taking		Focus areas of research
Demarcation	To utilise the listing of households and residential and non-residential structures to create a spatial register of enumeration areas.	<ul style="list-style-type: none"> • Enumerator area validation • Piloting of operations • Impact of use of addresses on quality of spatial referencing and completeness of information collected
Questionnaire design	To design and produce a relevant, user friendly, concise and unambiguous census questionnaires.	<ul style="list-style-type: none"> • Content Research • Research on effects of layout and format
Logistics and data collection	To count every person in the country.	<ul style="list-style-type: none"> • Piloting of operations • Calibration of quality control instruments
Data processing	To capture and accurately process information contained in census questionnaires.	<ul style="list-style-type: none"> • Piloting of operations • Calibration of quality control instruments • Other methods of data collection (e.g. through the internet)

Key focus areas for census taking**Focus areas of research**

Coordination	To ensure effective planning, coordination, integration and monitoring of all census sub-projects.	<ul style="list-style-type: none">• Business process redesign
Quality assurance	To review methodologies and procedures of the census to ensure cost effectiveness and quality.	<ul style="list-style-type: none">• Performance measurement
Product design	To design products that conform to international standards and satisfy the needs of stakeholders.	<ul style="list-style-type: none">• Measurement of stakeholder needs
Dissemination	To provide products that conform to international standards and satisfy the needs of stakeholders.	<ul style="list-style-type: none">• Measurement of level of stakeholder satisfaction
Publicity and advocacy	To ensure that the public understands, is positively aware of and wants to participate in the censuses.	<ul style="list-style-type: none">• Measurement of respondent perceptions and attitudes
Stakeholder relations	To develop and implement stakeholder management strategy.	<ul style="list-style-type: none">• Measurement of stakeholder perceptions, attitudes and resources
Resource management	To provide effective, efficient and economic utilisation of resources for census programmes in accordance with government norms and standards.	<ul style="list-style-type: none">• Operational research (cost-effectiveness, technology, including possible innovation, compliance)

Key focus areas for census taking**Focus areas of research**

People management	To build an efficient, reliable, productive and motivated human resources	<ul style="list-style-type: none"> Operational research (recruitment, appointment, training, payment and contract termination)
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2.5 Strategic objectives and outputs

A total of 13 strategic objectives, with the relevant strategies and outputs are identified as shown in Table 4.

Table 4: Strategic objectives, strategies and outputs

Strategic objectives	Strategies	Outputs
To validate² enumeration areas	<ul style="list-style-type: none"> Utilise research projects as opportunities of EA validation (utilise standardised structured evaluation form). 	<ul style="list-style-type: none"> Register of demarcation/ mapping problems and solutions.
To inform decisions on census content	<ul style="list-style-type: none"> Investigate problems experienced in Census 2001 through sample-based statistical research (focus on employment, unemployment, fertility, mortality and migration). 	<ul style="list-style-type: none"> Research findings that inform question choice and formulation.

² As defined in Table 6

Strategic objectives	Strategies	Outputs
To inform decisions on questionnaire layout and format	<ul style="list-style-type: none"> • Conduct literature study and formulate guidelines (in liaison with Quality and Methodology). • Test layout and format alternatives through sample-based statistical research. 	<ul style="list-style-type: none"> • Tested guidelines on questionnaire layout and format.
To pilot census operations	<ul style="list-style-type: none"> • Conduct census tests in liaison with census operations managers (measure consistency, accuracy, and timeliness). Identify problem areas and link to business process redesign. 	<ul style="list-style-type: none"> • Research findings that inform the design of methodology.
To calibrate quality control instruments	<ul style="list-style-type: none"> • Application of standard quality control methods 	<ul style="list-style-type: none"> • Calibration for quality control of printed questionnaires and data processing steps.

Strategic objectives	Strategies	Outputs
To redesign business processes	<ul style="list-style-type: none"> • Application of the Integration Definition Business Process Modelling Method to document and investigate census methodologies. The investigations may lead to the identification of research needs. 	<ul style="list-style-type: none"> • IDEF0 diagrams. • Streamlined business processes. • Identified research needs.
To measure performance	<ul style="list-style-type: none"> • Design, based on a complete understanding of business processes, performance measures that feed into an evaluation framework. 	<ul style="list-style-type: none"> • Evaluation framework.
To measure stakeholder needs	<ul style="list-style-type: none"> • Audit key stakeholder needs through a structured questionnaire. 	Identified stakeholder needs.
To measure level of stakeholder satisfaction	<ul style="list-style-type: none"> • Audit level of key stakeholder satisfaction through a structured questionnaire. 	<ul style="list-style-type: none"> • Research findings on level of stakeholder satisfaction.

Strategic objectives	Strategies	Outputs
To measure respondent perceptions and attitudes	<ul style="list-style-type: none"> • Determine respondent perceptions and attitudes through sample-based statistical research. 	<ul style="list-style-type: none"> • Research findings that inform publicity and data collection strategies.
To measure stakeholder perceptions, attitudes and resources	<ul style="list-style-type: none"> • Audit stakeholder perceptions, attitudes and resources through a structured questionnaire. 	<ul style="list-style-type: none"> • Research findings on stakeholder perceptions, attitudes and resources.
To conduct operational research on cost-effectiveness, technology and compliance	<ul style="list-style-type: none"> • Design, based on process evaluation, tests on pertinent methodological issues. 	<ul style="list-style-type: none"> • Research findings that inform the design of methodology.
To conduct operational research on recruitment, appointment, training, payment and contract termination	<ul style="list-style-type: none"> • Design, based on process evaluation, tests on pertinent methodological issues. 	<ul style="list-style-type: none"> • Research findings that inform the design of methodology.

SECTION 3: CENSUS RESEARCH CHALLENGES

3.1 Total Quality Management (TQM)

Total Quality Management involves the application of six basic concepts. Table 5 indicates the role census research is scheduled to play in promoting Total Quality Management.

Table 5: Link of census research to TQM

Total Quality Management concept	Role of census research
Committed and involved management to provide long-term top-to-bottom organisational support	<ul style="list-style-type: none"> • To provide relevant data and information that enable rational decision-making
Unwavering focus on the customer, both internally and externally	<ul style="list-style-type: none"> • To understand the needs of census stakeholders, enumerators and respondents
Effective involvement and utilisation of the entire work force	<ul style="list-style-type: none"> • To focus on cost-effectiveness • To integrate research activities into other Stats SA projects
Continuous improvement of the business and production processes	<ul style="list-style-type: none"> • To revise census methodologies
Treatment of suppliers as partners	<ul style="list-style-type: none"> • To understand the needs of respondents • To measure stakeholder satisfaction • To uphold the culture of confidentiality of the information solicited from respondents
Establishment of performance measures for processes	<ul style="list-style-type: none"> • To establish an evaluation framework that structures management information

3.2 Cost-saving strategies

The UNFPA lists research into census costs and operational methods, along with advocacy, capacity building and strategies as conceptual approaches for improving the efficiency and cost-effectiveness of census taking³.

Decision on the scope of the census, the level of field control and timelines impact vastly on census budgets. Hence implications of alternative scenarios should be investigated.

Cost, timeliness and accuracy are essentially trade-offs. Census research should inform management decisions on what level of quality is acceptable and fit to the purpose of census stakeholders.

3.3 Census research priorities

Using the debriefing information of Census 2001 as a basis, the following research priorities are identified for each of the research focus areas.

Table 6: Census research priorities

Focus area for research	Research priority
Enumerator area validation	<ul style="list-style-type: none">• To investigate the quality of existing maps• To validate current demarcation and listing methodologies• To identify priority regions for listing
Piloting of operations	<ul style="list-style-type: none">• To utilise a variety of techniques, including focus groups, cognitive interviewing, small-scale and large-scale tests as well as qualitative follow-up surveys to assess the overall acceptability of individual questions• To test compliance with specifications of the

³ UNFPA, **Counting the People, Constraining Census Costs and Assessing Alternative Approaches**, Population and Development Strategies Series, Number 7/2003

Focus area for research	Research priority
	<p>Census and Survey Administration System (CSAS) modules</p> <ul style="list-style-type: none"> • To test all field methods (mapping as well as data collection) and logistical procedures (such as storage, distribution, transport, recruitment and payment) in terms of cost, compliance with accuracy and time specifications, and ease of implementation/management
Content research	<ul style="list-style-type: none"> • To establish an understanding of concepts around relationship in different cultural contexts • To investigate the viability of asking extensive questions about fertility in the 2011 Census. • To determine the best way to ask questions about fertility, mortality and migration. • To investigate the viability of asking extensive questions about employment and unemployment in the 2011 Census. • To determine if it is necessary to use the full schedule of prompts as used in the Labour Force Surveys, as certain activities defined by Statistics South Africa as work, are not perceived as such by respondents. • To investigate the viability of asking extensive questions about disability in the 2011 Census. • To investigate the effect of proxy response on data quality.

Focus area for research	Research priority
<p>Research on effects of layout and format of questionnaire</p>	<ul style="list-style-type: none"> • To investigate the role of questionnaire design in census coverage and content errors. • To determine the most effective questionnaire layout (row-oriented table vs. column-oriented table vs. page-per-person). • To determine an effective design for branching instructions.
<p>Calibration of quality control instruments</p>	<ul style="list-style-type: none"> • Determine optimum calibration for quality control of the printing of questionnaires. • Determine optimum calibration for quality control of receiving and box content verification (data processing). • Determine optimum calibration for quality control of questionnaire scanning (data processing). • Determine optimum calibration for quality control of completion of optical character recognition (data processing). • Determine optimum calibration for quality control of enumerator area validation (data processing).
<p>Business process redesign</p>	<ul style="list-style-type: none"> • To render complete, concise and consistent descriptions of core census taking processes at a level of accuracy that allows adequate performance measurement. • To analyse these process models to identify opportunities of improvement and research needs.

Focus area for research	Research priority
Performance measurement	<ul style="list-style-type: none"> • Establish a framework of process efficiency indicators, process effectiveness indicators and outcome indicators that provide management information on coverage, content, compliance, timeliness, confidentiality and user focus.
Measurement of stakeholder needs	<ul style="list-style-type: none"> • To determine key stakeholders' needs in terms of census information and information products.
Measurement of level of stakeholder satisfaction	<ul style="list-style-type: none"> • To determine key stakeholders' level of satisfaction of the quality of census products (relevance, integrity and credibility, methodological soundness, accuracy and reliability, consistency, timelines, accessibility).
Measurement of respondent perceptions and attitudes	<ul style="list-style-type: none"> • To determine the level of respondent s': <ul style="list-style-type: none"> ○ understanding of the need for census data; ○ willingness to comply; and ○ reasons for reluctance/refusal to comply. This research should focus on hard-to-count groups.
Measurement of stakeholder perceptions, attitudes and resources	<ul style="list-style-type: none"> • To determine key stakeholders' level of: <ul style="list-style-type: none"> ○ understanding of the need for census data; ○ willingness to contribute; and ○ reasons for reluctance/refusal to contribute. • To determine which resources key stakeholders can avail.

Focus area for research	Research priority
Operational research	<ul style="list-style-type: none"> • To investigate alternative methodologies specified by census managers (e.g. the utilisation of the NAD database and the “DOT” listing method) in terms of cost-effectiveness, technology requirements and compliance with all relevant quality dimensions. • Determine the efficacy of the training of regional, field staff and processing staff.

Three main streams of research can be discerned:

- Content research (the topics to be covered in the census and the effective formulation of questions) and research on the effects of layout and format of the census form.
- Measurement of respondents’ perceptions and attitudes as well as level of satisfaction of stakeholders.
- Business process redesign, the piloting of operations and performance measurement

Only research for which the findings impact directly on census methodology will be initiated. Some of the priorities identified above will be managed by the relevant operational managers.

SECTION 4: CENSUS METHODOLOGY

4.1 Understanding and improving processes

It is the aim of census managers to:

- understand existing census taking processes; and
- improve or design new processes on the basis of this understanding.

There are standard tools and methods to achieve these. It is part of the component: Research and Methodology's mandate to provide technical expertise in this regard.

The purpose of the existing processes must be understood. This implies a full understanding of the objectives of the existing processes, as well as the expectations of the customers of these processes. The performance of the processes must be measured to understand the problems and credits relating to the existing processes. The existing processes must be benchmarked and then modelled. Based on the above understanding innovations may be tested and introduced.

It is of paramount importance to ensure that the census taking processes satisfy the following criteria:

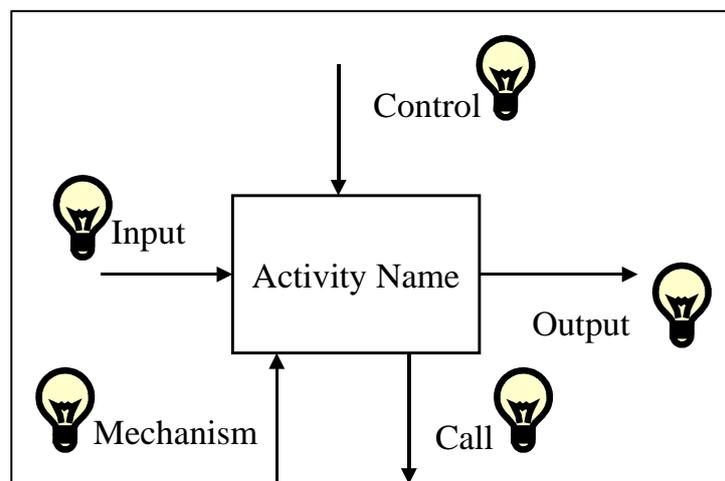
- They must be valuable : *The role of each process in the value chain must be clearly understood.*
- They must be capable : *Each process must be effective and achievable.*
- They must be available : *There must be adequate resources and control to implement each process. Each process must be relevant.*
- They must be adequate : *The set of processes that make up a particular methodology must be comprehensive enough to ensure effective and efficient operations.*

4.2 Tools for process modelling

Process modelling is thus the core method for ensuring sound census methodologies. The component: Research and Methodology has chosen the Integration Definition (IDEF0) business process modelling method as the standard tool that will be used. This method is based on the Structured Analysis and Design Technique (SADT) and was adopted as a US Federal Information Processing Standard (FIPS).

A typical IDEF0 Model consists of a purpose statement, a viewpoint statement and a hierarchical set of diagrams (parent and child diagrams). Figure 2 shows the typical configuration of these diagrams.

Figure 2: Typical configuration of IDEF0 diagrams



Input arrows represent physical or informational objects that are consumed or transformed by an activity. Examples are raw materials and blank forms.

Output arrows represent physical or informational objects that are the direct result of an activity. These objects can be intended or successful output as well as unintended, unsuccessful or scrap output. Examples are products, assembled parts, processed orders and reports.

Control arrows represent data or objects that specify conditions that must exist for the activity to produce correct output. Examples are instructions, policies, laws, measures, schedules, specifications and drawings.

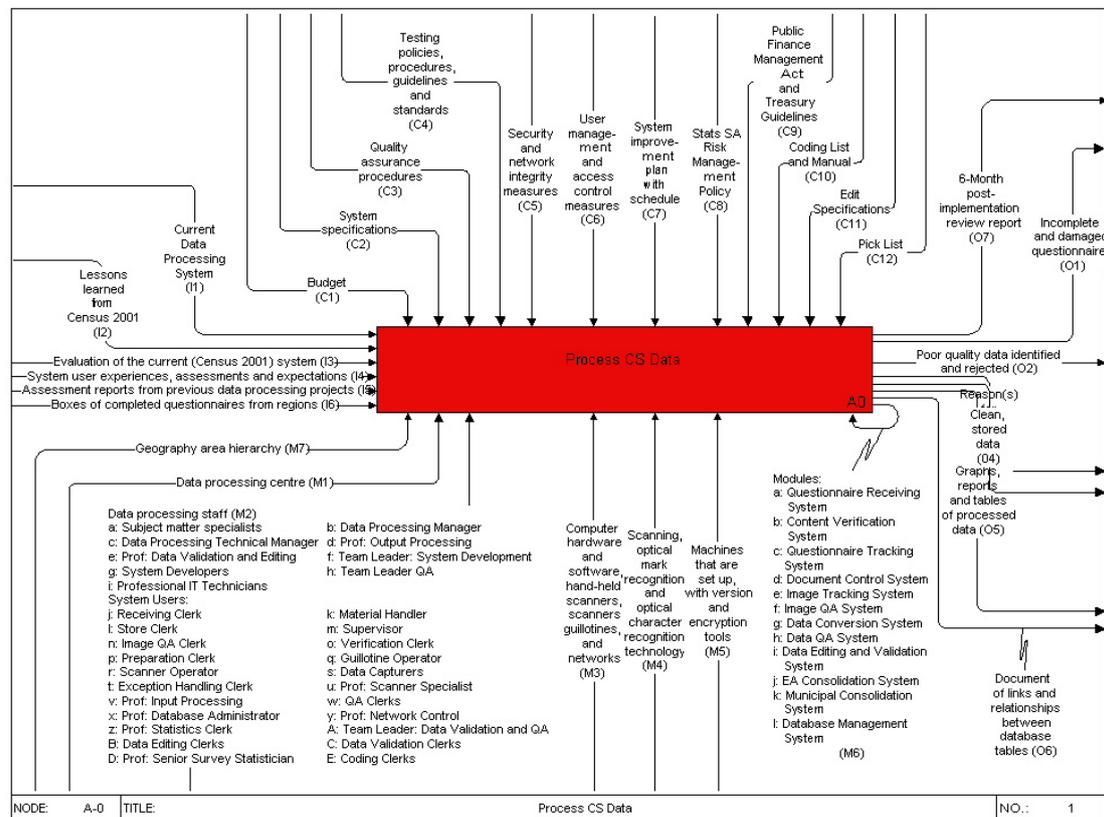
Mechanism arrows represent an object or energy that supports a successful cycle of the activity, and in which energy is expended, but in which the mechanism is not consumed or transformed as the result of its use. Examples are machines and human resources.

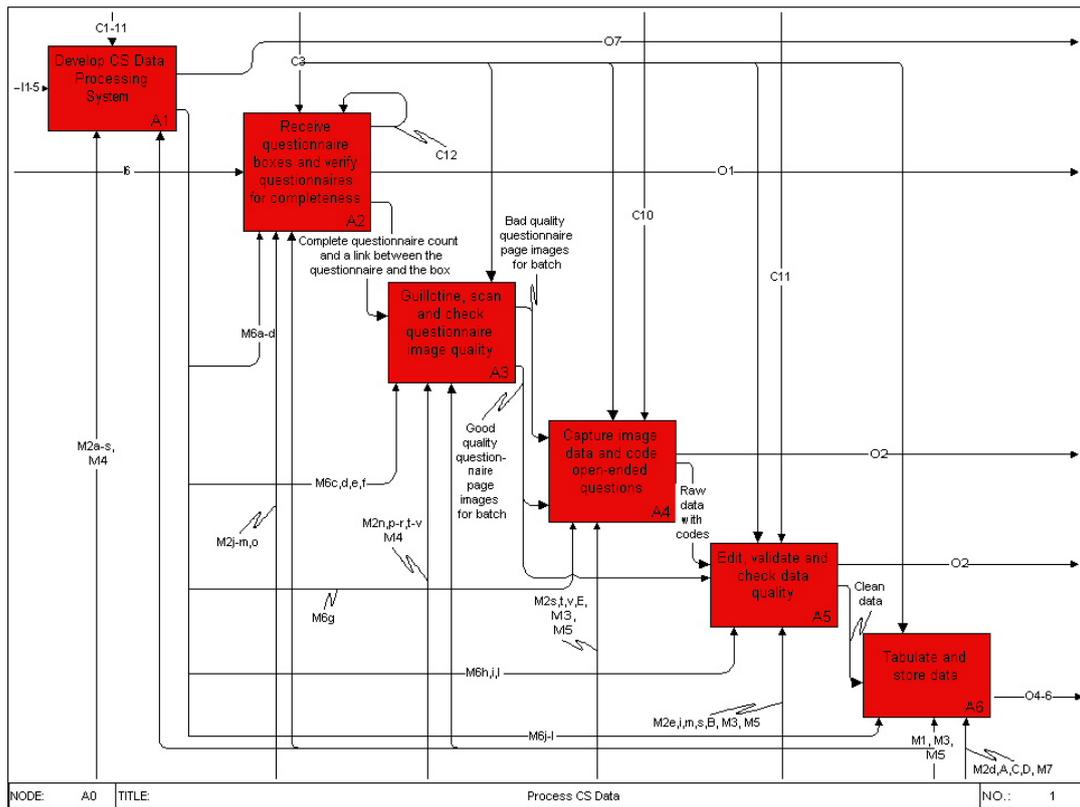
Call arrows enable sharing between different models or portions of the same model.

This modelling method is described in detail in **Draft Federal Information Processing Standards Publication 183** (21 December 1993).

IDEF0 diagrams for the PROCESS CS DATA process in the Community Survey follows as an illustration of the method and its benefits in terms of documentation (see Figure 3). Only the A-0 and A0 level diagrams are shown.

Figure 3: IDEF0 diagrams of PROCESS CS DATA Process





4.3 Pro forma for documenting methodology

The following standard pro forma is prescribed for the documentation of census methodologies:

- Definitions
- Methodological overview
 - Lessons learned from previous population censuses
 - Strategy for Census 2011 (with exhaustive list of processes)
 - Advantages, disadvantages and associated risks
 - Assumptions
- For each process:
 - Vision
 - Objectives
 - Attributes
 - IDEF0 Model
 - If process was changed:
 - IDEF0 Model of previous process
 - Rationale for change

4.4 Process Performance

Measurement quantifies process performance. It helps evaluate the effects of change and enables systematic improvement. It is therefore a fundamental requirement for process improvement and redesign. Table 7 shows the three types of process indicators that will be designed to monitor performance.

Table 7: Types of process indicators for measuring performance

Type of indicator	Description
Process Efficiency Indicators	They measure if things are done right. They quantify the inputs consumed relative to the outputs produced and are measured within the process.
Process Effectiveness Indicators	They measure if the right thing is done. They quantify the ability of the process to deliver products or services according to specification and are measured when the products or services are produced.
Outcome Indicators	They are the ultimate process performance measures. They quantify the ability of outputs to satisfy the needs of the process customers and are measured after the product has been delivered or the service has been provided.

These indicators must be designed to offer minimal opportunity for manipulation. They must be acceptable to the people concerned. Census managers, therefore, should be fully involved in their design.

Indicators that are complex and difficult to understand will be avoided, as will indicators that may cause employees to act not in the best interests of quality and cost-efficiency. The availability of data and the cost of its collection will be taken into consideration during their design.

SECTION 5: MANAGEMENT

5.1 Integration

The main opportunity for integration that presents itself to the component is the utilisation of the surveys and updating activities carried out by Social Statistics division. The component therefore does not attempt to build its own capacity for fieldwork, but coordinates its activities with the above division so that its field infrastructure can be used as a common resource. Opportunities for integration with other divisions, such as Geography and Provincial Coordination are also explored.

5.2 Capacity building

Table 8 lists the skills that are needed to fulfil the component's mandate. These skills are cultivated amongst staff through formal training such as short courses and support in part-time studies.

Table 8: Skills needed to fulfil the component's mandate

Mandate	Skills required
Facilitation of process redesign	<ul style="list-style-type: none">• Entity modelling• Object oriented analysis and design• Business analysis and modelling• Business process redesign
Research management	<ul style="list-style-type: none">• Social research methodologies• Project management• Data processing and analysis• Report writing

Mandate	Skills required
Technical support in the development of indicators	<ul style="list-style-type: none"> • Skills listed above for facilitation of process redesign • Understanding of: <ul style="list-style-type: none"> ○ the concept of evaluation; ○ the role of evaluation in relation to monitoring and audit; and ○ its role in the concept of results-based management approaches

An understanding of census operations and related technical issues is cultivated through involvement in the activities of other census components.

SECTION 6: SCHEDULE OF RESEARCH PROJECTS: 2004/5 to 2010/11

In March 2004 Cabinet decided that population censuses will be conducted in a ten-year cycle. The next population census is therefore scheduled to be in 2011. To ensure regular updates on major trends in demographic, economic and social development, Cabinet mandated Statistics South Africa to conduct a Community Survey in the 2006/7 financial year. This survey will be used as a launch pad for the documentation of methodologies as described in Section 4 of this document. Given their relevance to census taking processes, it is expected that business process analysis will lead to the identification of research priorities and will feed into the development of a monitoring system and evaluation frame for the census.

Table 9 lists the schedule of census research projects for the 2004/5 to 2010/11 financial years. In 2009/10 the component will also play a leading role in setting objectives for the census pilot.

Table 9: Schedule of census research projects

Financial year	Research project	Detail
2004/5	Investigation of Employment Status and Migration Schedules	A content research survey that investigated proxy effects for these two schedules of questions and tested a revised schedule for employment status.
2004/5	Census Publicity Research	A survey that investigated respondents' decision-making with regard to participation in census. The survey was preceded by focus groups to inform the design of the questionnaire.

Financial year	Research project	Detail
2005/6	Investigation of Fertility Schedule	A content research survey that tested a revised schedule of questions for fertility.
2006/7	Investigation of Disability Schedule	A survey that tests a revised schedule of questions for disability. The survey will be preceded by focus groups to inform the design of the set of questions.
2006/7	Documentation of the methodologies of the Community Survey	As described in Section 4 of this document.
2007/8	Investigation of Mortality Schedule	A survey that tests a revised schedule of questions for mortality.
2008/9	Follow-up investigation of all content research issues	A survey that tests revised schedules. Will also investigate layout and formatting issues.
2009/10	Census Publicity Research	A follow-up survey in this regard.
2010/11	Pilot Follow-up	Provision is made for a survey to further investigate issues identified in the census pilot in 2009.
2010/11	Documentation of the methodologies of Census 2011	As described in Section 4 of this document.

CONCLUSION

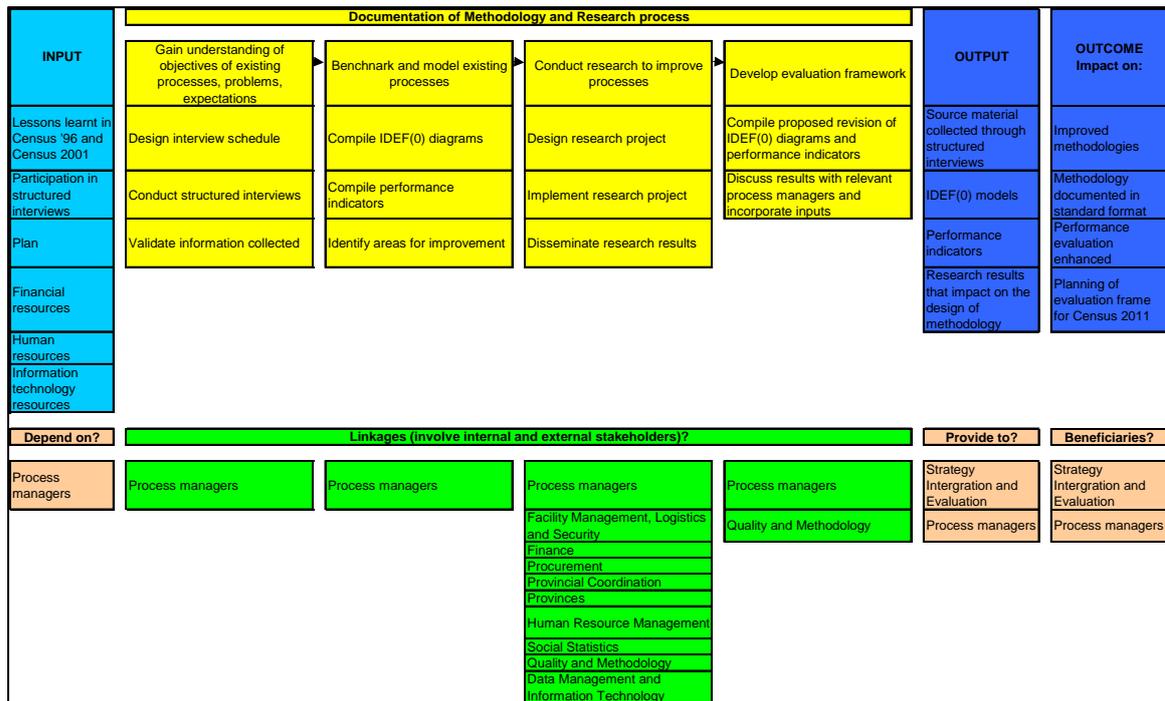
Rational decision-making with regard to the choice and design of census methodologies must be informed by sound census research. The component: Research and Methodology has a mandate to ensure a focus on pertinent census research issues and to coordinate the census research activities of Statistics South Africa. This strategic plan guides these efforts and facilitates the involvement of all stakeholders in this important endeavour. The plan will also constitute the backbone of the operational plan for the component.

The component: Research and Methodology's vision is to become a quality and trusted advisor of management with regard to population and housing census methodology. This can only be achieved through close cooperation with all stakeholders, including census managers.

The Integration Definition (IDEF0) business process modelling method is used as a tool for business process redesign. Pertinent issues are researched to inform this redesign and new processes are tested. The information generated through this will feed into the establishment of an evaluation framework as a basis for performance measurement.

The above leads to the value chain for the component: Research and Methodology shown in Figure 4.

Figure 4: Value chain for Component: Research and Methodology



The component currently faces the following challenges:

- to build sufficient capacity to fulfil its mandate of facilitation of process redesign, research management, and technical support in the development of indicators; and
- to obtain the trust and cooperation of customers.

REFERENCES

Porter M, 1996 *What is Strategy?*. Harvard Business Review. November-December 1996

DESA (UN), 1998. *Principles and Recommendations for Population and Housing Censuses*, Series M No.67/Rev.1.

DESA (UN), 2001. *Handbook on Census Management for Population and Housing Censuses*, Series F No.83/Rev.1.

UNFPA, 2003. *Counting the People, Constraining Census Costs and Assessing Alternative Approaches, Population and Development Strategies* Series, Number 7.

Draft Federal Information, Announcing the Standard for INTEGRATION DEFINITION FOR FUNCTION MODELING (IDEF0). 1993. Processing Standards Publication 183, December 1993