Statistics Botswana ICT Strategy

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STATISTICS BOTSWANA

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List of Abbreviations

Abbreviation	Description
API	Application Programming Interface
BCP	Business Continuity Plan
BPI	Business Process Improvement
BSc	Bachelor of Science
CPU	Central Processing Unit
DBA	Database Administrator
DRP	Disaster Recovery Plan
EDI	Electronic Data Interchange
EDMS	Electronic Document Management System
ERP	Enterprise Resource Planning
ETL	Extract, Transform, Load
HQ	Headquarters
HR	Human Resources
ICT	Information and Communication Technologies
IT	Information Technology
ITD	Information Technology Director
ITIL	Information Technology Infrastructure Library
ITMSP	Information Technology Master Systems Plan
NA	Network Administrator
PMO	Project Management Office
RACI	Responsible, Accountable, Consulted and Informed
SA	Systems Administrator
SB	Statistics Botswana
SLA	Service Level Agreement
SM	Strategy Manager
SOA	Service Oriented Architecture
WAN	Wide Area Network

1. Introduction

1.1. Background

Statistics Botswana (SB) is a semi-autonomous organisation enacted by the Statistics Act, 2009. Its mandate is to collect, process, compile, analyse, publish, disseminate and archive official national statistics.

SB recognises the importance of using technology as a strategic enabler of the business. Technology is now being used by many other similar institutions to assist in achieving their respective mandates. As a result, SB is keen to develop a robust Information Communication Technology (ICT) strategy that is aimed at ensuring technology supports SB in delivery of its objectives by closely supporting business process execution. The ICT strategy is one of the strategic initiatives of the 2015-2020 corporate strategic plan.

1.2. Corporate Strategy

SB developed a comprehensive five-year corporate strategy (2015 – 2020) that sought to provide direction in achievement of its mandate. Within the corporate strategic plan, there are four (4) high-level goals namely:

1. **Adequate organisational capacity;**
2. **Provision of quality official statistics;**
3. **Increased usage of official statistics; and**
4. **An effective National Statistics System.**

The corporate strategy remains relevant even beyond 2020. The ICT strategy has been developed in alignment with SB's corporate strategy and will assist in the achievement of the high level goals mentioned above. It is mainly aligned with the "Adequate Organisational Capacity" goal.

SB's key strategic foundations which are the anchor of the ICT strategy are as follows;

Vision: To be a world class provider of quality official statistics and related services
Mission: To enable stakeholders to formulate policies, plan and make decisions.

Values:

1. **Focus on Customer**
2. **Focus on Quality**
3. **Accountability**
4. **Teamwork**
5. **Professionalism**
6. **Confidentiality**
7. **Integrity**

SB's corporate strategy map is shown in the figure below.

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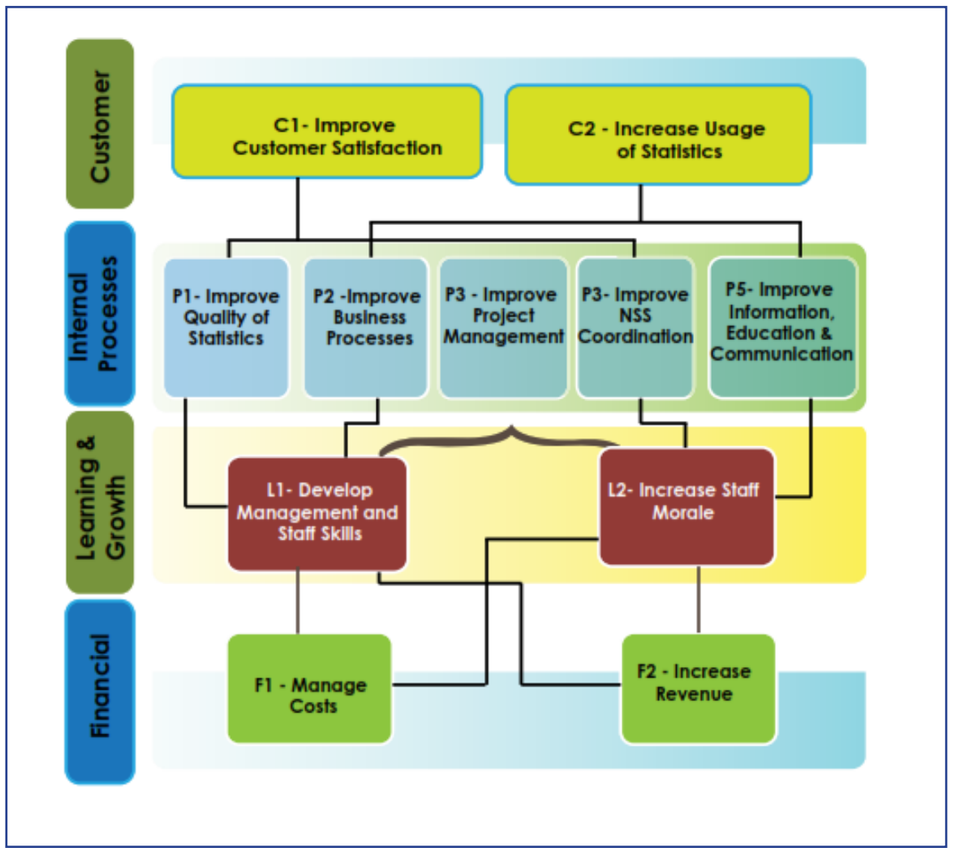
Figure 1: SB corporate strategy map



Given that ICT is a key part of all processes throughout all stages of the statistical value chain, the ICT strategy has to cover virtually all areas of the corporate strategy map.

1.3. Purpose

As articulated in the corporate strategy, SB should leverage on ICT. Therefore the primary purpose of this ICT Strategy is to enhance SB's ICT usage and set it on a path to significantly improve organisational performance through the utilisation of technology. The aim of the ICT strategy is to address key challenges currently experienced within SB as well as identifying other specific areas that require development, innovation and implementation.

This document presents a cohesive ICT strategy that will provide a framework for the optimal and efficient development and utilisation of technology to enable SB to provide enhanced services to stakeholders and customers.

1.4. Change Dimensions

A comprehensive situational assessment was undertaken prior to development of the ICT strategy. The results of the exercise were documented and serve as the basis for the development of the key ICT objectives. Based on the consolidated findings, appropriate change dimensions were identified

which articulate the focal areas that should be covered by SB's ICT strategy. The table below depicts each change dimension preceded by key elements identified in the IT environment, followed by the desired state.

Table 1: Key focal areas (change dimensions)

Current Situation	Change Dimension (Focal Area)	Desired State
1. Data sources separate and application specific 2. Absence of a centralised data repository 3. Data inconsistency	**Centralised data repository**	1. Business intelligence environment 2. Up-to-date and centralised data repository 3. Ability to interrogate data from any source system for analysis and reporting purposes
Instances where systems do not fully support business processes	**Application functionality**	Maximised automation of key business processes
Average network performance, specifically at the branches	**Network performance**	Optimal network performance at all sites
Lack of sufficient resources on the ground to service the entire offices and branches.	**ICT Resource Allocation**	1. Effective and efficient resource allocation of the ICT team to better service the entire offices. 2. Optimal IT organisational structure.
Business processes not fully optimised	**Business process management**	1. Fully optimised and integrated business processes 2. Established business process management discipline 3. Use of technology to monitor business process execution and workflow management
Performance management monitored and reported on, using basic and non-specific application packages	**Corporate, individual and initiative performance management**	1. Enterprise wide performance monitoring application that link corporate objectives to departmental and individual objectives 2. Programme and project management application that track initiatives linked to achieving corporate performance
Lack of documented ICT processes including formalised and documented DRP and BCP	**ICT policies, processes and procedures**	1. Documented processes 2. Global ICT service delivery and support standards 3. Policies to support procurement of hardware and management of SLAs 4. Fully documented and tested DRP and BCP

Table 1 Cont'd: Key focal areas (change dimensions)

Current Situation	Change Dimension (Focal Area)	Desired State
ICT skill levels among SB staff are basic and propensity to increase adoption of ICT is low	**ICT Skills**	1. Increased adoption of ICT usage and enhanced technology literacy amongst SB staff. 2. Periodic refresher training sessions to ensure that staff keep their skills and knowledge up-to-date.
Inadequate ICT training to provide skills to support the current business demands.	**ICT staff skills enhancement**	The ICT team equipped with the relevant trainings to comply with the business requirements.
1. ICT asset register does not detail the make of some of the ICT equipment. 2. The ICT asset register does not indicate when the ICT equipment was procured.	**Asset Register updates**	1. Regular asset register updates to maintain proper record of ICT assets within SB. 2. Consolidate both asset registers into one asset register.
Lack of Business Continuity Plan	**Business Continuity**	Minimum interruptions to business operations in the event of a disaster
Lack of Disaster Recovery Plan and site.	**Disaster Recovery**	Speedy restoration of lost or damaged business data

2. ICT Strategy

2.1. Vision, Mission Values and Strategic Intent

The SB ICT vision and mission statements provide an umbrella for guided and sustained operation of information technology. In addition, values are characteristics that will be subscribed to when delivering products and services using ICT. These are presented in the following sub-sections.

2.2. ICT Vision Statement

The vision statement is one that is inspirational and depicts the aspirations for the use of ICT in SB. The ICT vision statement is given below:

"To have a seamlessly digitized organization"

The vision recognises the strategic importance of technology in transforming SB to be a digital platform in the delivery of statistical data.

2.3. ICT Mission Statement

The mission statement identifies the role of ICT in the delivery of core SB operations on a daily basis. The ICT mission statement is given below:

"Provision of official statistics through an intuitive digital solution platform and related ICT services"

2.4. Values

The following values, will guide the conduct, practise and implementation of ICT within SB.

1. **Integrity** – We will ensure the integrity of data and integrity of ICT staff members;
2. **Focus on Customer** – We will ensure excellent customer experience through provision of optimal digital services;
3. **Focus on quality** – We will work to ensure the quality of data;
4. **Accountability** – We will be accountable in the services we provide;
5. **Teamwork** – We will work together with other departments to ensure delivery of corporate objectives;
6. **Professionalism** – We will be professional at all times with internal and external customers; and
7. **Confidentiality** – All data entrusted to us will be secure and confidential.

2.5. Strategic Intent

The strategic intent conveys the key strategic goal the organisation desires to achieve within a defined period. SB has defined its strategic intent, in terms of ICT, as follows:

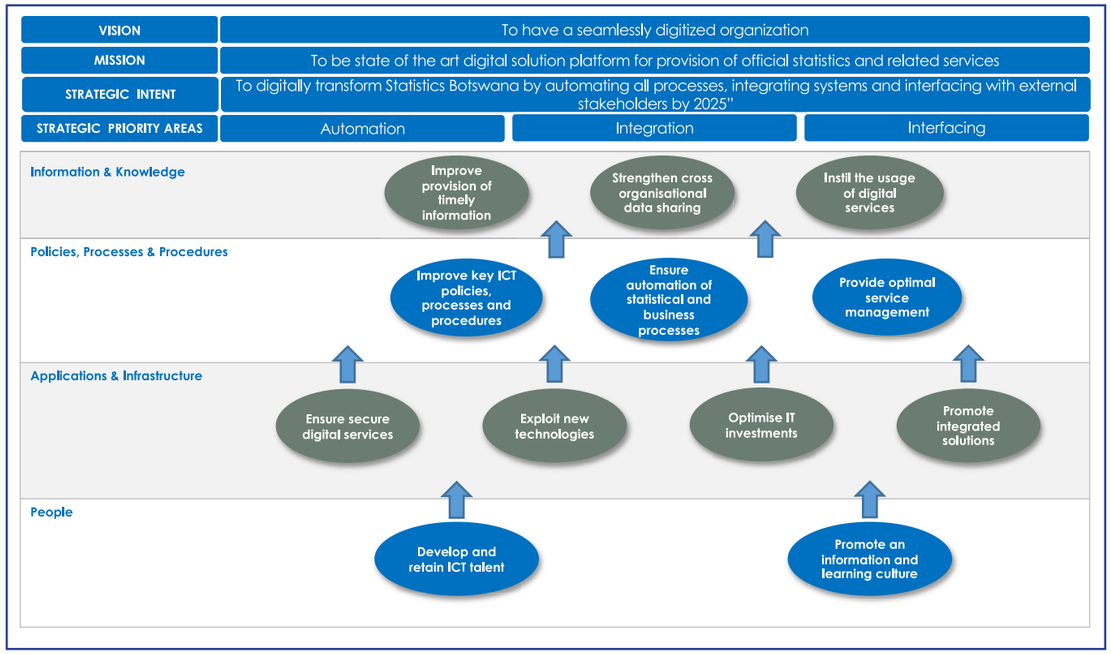
"To digitally transform Statistics Botswana by automating all processes, integrating systems and interfacing with external stakeholders by 2025"

2.6. ICT Strategy Map

This section presents the ICT strategy for SB using the principles of the Balanced Scorecard (BSC) methodology. The strategic objectives contained therein reflect SB's desire to transition from the current state to the desired environment as outlined in table 2.

A strategy map pictorially shows an organisation's strategy. It generally reflects the perspectives through which strategy is viewed, with the corresponding strategic objectives aimed at achieving a particular vision. SB's ICT strategy map is shown in the figure below.

Figure 2: SB ICT strategy map



The table below presents how the ICT strategy aligns with SB's corporate strategy. It should be noted that engagement with business is critical when implementing each ICT objective in order to ensure that all relevant ICT initiatives support business activities.

Table 2: Alignment of ICT strategy with corporate strategy

Corporate Strategic Objective	Relevant ICT Strategic Objective(s)
Customer/Stakeholder Perspective	
Increase Usage of Statistics	• 1-Improve provision of timely information • 3-Instil the usage of digital services
Increase Customer Satisfaction	• 2-Strengthen cross organisational data sharing • 1-Improve provision of timely information
Internal Business Processes	
Improve NSS Coordination	• 4-Improve key ICT policies, processes and procedures • 7-Ensure secure digital services • 5-Ensure automation of statistical and business processes
Improve Quality of Statistics	• 5-Ensure automation of statistical and business processes • 7-Ensure secure digital services • 10-Provide integrated solutions
Improve Project Management	• 7-Ensure secure digital services • 5-Ensure automation of statistical and business processes
Improve Business Processes	• 4-Improve key ICT policies, processes and procedures • 5-Ensure automation of statistical and business processes • 8-Exploit new technologies
Improve Information, Education and Communication	• 1-Improve provision of timely information • 2-Strengthen cross organisational data sharing • 12-Promote an information and learning culture
Learning and Growth Perspective	
Develop Management & Staff Skills	• 11-Develop and retain ICT talent • 12-Promote an information and learning culture
Improve Staff Morale	
Financial Perspective	
Manage Costs	• 9-Optimise IT investments • 6-Promote optimal service management
Increase Revenue	• 10-Promote integrated solutions • 8-Exploit new technologies • 3-Instil the usage of digital services • 1-Improve provision of timely information

2.7. Key Outcomes

For SB to attain the strategic intent of digitally transforming Statistics Botswana by 2025, the key outcomes that will assist in the implementation have been identified as stated below:

1. Improving accessibility through a central data repository, implementation of integrated applications that will enable efficient data management and analysis for effective strategic management and statutory reporting.

2. Establishing appropriate communications infrastructure that will connect SB Head office with its branches, field workers and relevant entities.

3. Provide customers and staff with access to services through secure and reliable technology.

4. Establishing and organising the ICT staff in order to effectively support current and future ICT applications and infrastructure.

5. Effective use of business intelligence technology to optimise monitoring of business performance and dissemination of statistical data, enhance the ability to execute SB's corporate strategy and enable analysis and reporting capabilities.

6. Maintain and enhance the ICT environment with excellent performance and availability monitoring systems.

7. Adopt an effective sourcing policy for optimal management of critical SB ICT services.

[1] Definition of COBIT and ITIL as per the IT Governance Institute (www.itgi.org)

3. IT Organisation and Governance Structure

3.1. Organisational Structure

A fit for purpose organisational structure is needed for achieving the intended outcomes of this strategy. The following are important factors in relation the requisite organisational structure to support the strategy:

1. Given the strategic role of IT in enabling key SB processes, the leadership of the IT division should be profiled at the highest decision making level within the organization.

2. SB IT personnel should gain proficiency and competence in ITIL Service Management and system development.

3. SB IT personnel should deliberately engaged and facilitated to promote efficiency, effectiveness and optimisation of adequate resource allocation throughout the organisation.

4. Ability to utilise multiple applications that adequately supports the entire IT environment and the key functions of SB.

5. Ideally given the above factors, the head of the IT component in the organisational structure should be at the third tier (currently Director Level) so as to be enabled to drive the function at the strategic level.

3.2. IT Governance Model

The strategic use of technology to enable the optimal dissemination of statistical data, information and knowledge supports the strategic intent of SB. This requires the use of an appropriate IT Governance Model/Framework to reduce the risk associated with the use of technology to drive key business processes.SB should adopt the Control Objectives for Information and Related Technology (COBIT) Framework for IT Governance.

COBIT provides a set of generally accepted measures, indicators, processes and best practices to assist in maximizing the benefits derived using information technology and developing appropriate IT governance and control in an organization[1] .

In addition, SB should adopt Information Technology Infrastructure Library (ITIL) for IT Service Management. ITIL is a framework outlining worldwide-accepted best practices for IT Service Management. The concepts within ITIL support IT service providers in the planning of consistent, documented, and repeatable processes that improve service delivery to the business

3.3. Enterprise Architecture

The growing need for integrated information at SB has necessitated the development of an Enterprise Information Architecture (EA) that will enable the following:

1. Identification of critical sources of data.

2. Integration of the different types of data.

3. Provision of a basis for determining the usage of information within SB.

4. Provision of a flexible and comprehensive foundation for effectively managing the current and future information needs of SB.

5. Contextualise a mechanism for reporting, monitoring and analysis across SB.

The development of an appropriate EA which supports the above objectives forms a solid foundation for addressing the information needs of SB. SB should adopt the relevant aspects of the TOGAF[2] framework to develop the envisaged Enterprise Architecture. This is the defined business rules, systems structure, technical framework, and application backbone for business information systems.

The SB Enterprise Architecture should consist of at least four layers: business architecture, systems architecture, technical architecture, and application architecture.

[2] The Open Group Architecture Framework (TOGAF®) is a framework and development method for Enterprise Architecture that is used by enterprise architects to design, plan, implement, and govern an organization's enterprise architecture.

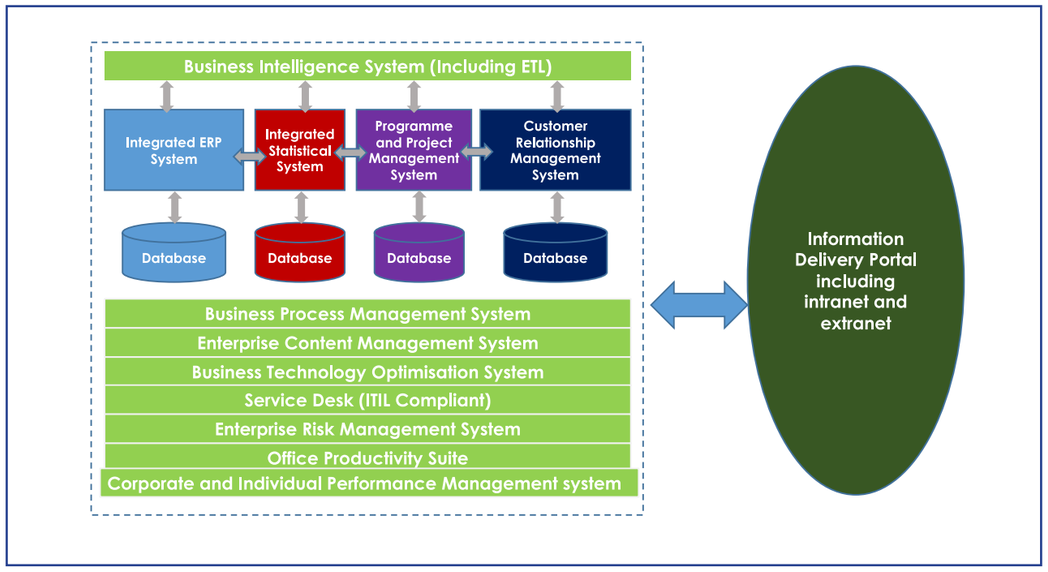
4. Application and Information Reporting Strategy

The application strategy determines software applications (systems) that should be implemented/ enhanced at SB as part of the effort to improve service provision and information access while ensuring maximum integration.

4.1. Application Schematic

A high-level schematic showing the applications that will be implemented/enhanced is presented in the figure below.

Figure 3: SB application schematic



The schematic highlights the following major components of the application strategy:

1. An **Enterprise Resource Planning System** that supports the following areas: Finance (financial, cost accounting, budgeting), HR, Payroll, Asset Management.

2. A **Statistical System** that enables SB to automate data collection, analysis and dissemination across all surveys and censuses.

3. A **Programme and Project Management System** which will standardise the manner in which programmes and all associated projects are captured, monitored and reported on.

4. A **Customer Relationship Management (CRM) System** to enable SB to effectively manage relationships with its customers including the capture, storage, and analysis of information.

5. An **Information Delivery Portal** (for example a website) for interfacing with SB customers and stakeholders.

6. A **Business Process Management System** to enable continuous improvement of SB processes and further transforming the authority from a functional to a process-centric organization. This includes the implementation of electronic workflow.

7. A **Business Intelligence System** that will perform data analysis and produce the appropriate reports.

8. An **Enterprise Content Management System** meant to combine the capture, search and networking of electronic content (for example, documents and images) with digital archiving. This is to allow for improved document management and version control.

9. A **Business Technology Optimisation System** for ensuring proactive monitoring of application and networks (WAN and LAN) in order to maximise uptime.

10. An ITIL compliant **Service Desk** for enhancing service delivery and support. This is in line with best practices in ICT service management which is being adopted globally.

11. An **Enterprise Risk Management System** that will assist SB in aligning its strategy, processes, people and knowledge to meet its risk management purpose. The system will also ensure the automation of SB's risk management strategy and also flag potential risks that may arise during operational activities thereby initiating appropriate risk mitigation procedures.

12. An **Automated Performance Management System** that allows users to capture, store and retrieve performance information at both corporate and individual levels. This will be supported by a Strategy Performance Monitoring tool indicating the performance of SB across all the perspectives of the balanced scorecard against set targets.

4.2. Information/ Data Management Strategy

The information management strategy details how data will be gathered, stored and used at SB in order to optimize analysis and reporting. Secure storage of information in a centralized data repository is paramount in ensuring the information availability and ease of access for improved decision-making.

A strategy that enables information (as a resource) management will ensure that data is reliable and can be easily accessed and queried by users to produce any required analysis.

SB has identified the objectives and key goals of data capture and storage and usage to be the following:

Table 3: Information management objectives and goals

Objective	Key Goals
SB must place great emphasis on ensuring the quality of its data.	• Emphasise data quality throughout SB. • Publicise measures taken to improve data quality.
Incorporate data quality into the design of systems and office procedures.	• Encourage consideration of data quality during system design and implementation by involving all SB departments and external stakeholders. • Ensure appropriate and well-documented data collection, entry, storage, and maintenance procedures. • Provide security controls to ensure the required level of data protection and filtering amongst different user types. • Provide support and documentation to encourage accuracy and consistency in end-user reporting.
Analyse data quality issues as and when they arise.	• Quickly identify common problem areas and assess the consequences of disregarding them. • Identify the source of data quality issues and inform the relevant individuals about the impact of their actions. • Effect the appropriate steps to rectify inaccurate data. • Provide support for the analysis of data quality.
Ensure that data quality is checked and monitored for soundness on a regular basis.	• Use feedback from regular management information data extractions to monitor information quality. • Carry out periodic reviews of data quality which includes tolerance levels for erroneous data.
Standardise formats for data exchange both internally and externally.	• To enable data exchange verified by third parties. • To enable data exchange between internal systems. • To enhance the envisaged integration of key SB systems.

SB will implement an enterprise data management program which will include the development of a national data management system. Enterprise Data Management will be a program that continuously, overtime, increase SB's ability to accomplish business goals.

The implementation of the program will assist SB in working with stakeholders and partners to standardise the exchange of data through the **Statistical Data and Metadata eXchange (SDMX)** standard.

SDMX is *"an ISO standard designed to describe statistical data and metadata, normalise their exchange, and improve their efficient sharing across statistical and similar organisations".*

The following are the main advantages of SDMX:

1. Facilitate data and metadata exchange;
2. Make efficient use of technologies and standards;
3. Reduce reporting burden;
4. Enhance availability of statistical data and metadata for the users;

Data reporting = data dissemination = data sharing (one data is reported only once and then shared widely using modern technologies.

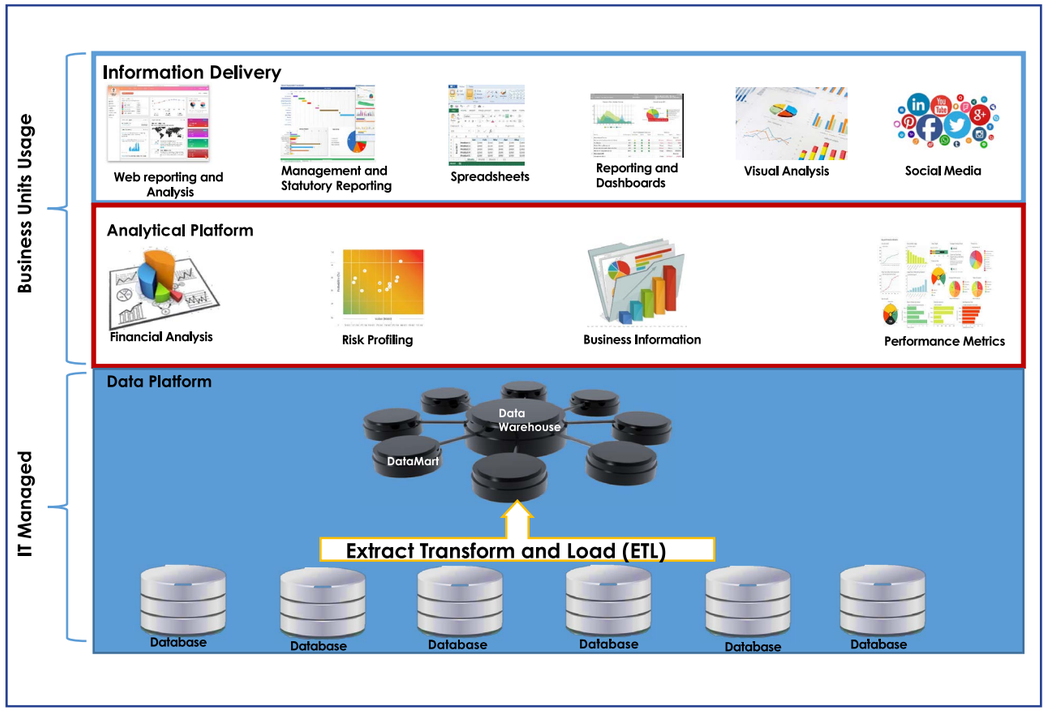
It is envisioned that Statistics Botswana will develop a digital platform through integrated systems, centralised data repository and interfaces with other entities. SDMX will be at the centre of standardising data to ensure interoperability. Furthermore there will be alignment with the

Government's e government entreprise architecture and the Africa Information Highway. This will ease access to official statistics locally and internationally through specialised portals such as the Open Data Platforms.

4.3. Information Delivery

SB will adopt a business intelligence model for information storage, delivery and presentation. The diagram below presents the information delivery schematic. This model will be driven through the usage of business intelligence software.

Figure 4: Information delivery and analytics platform



Data Platform: In this layer, data from transactional source systems is pulled together into an integrated, comprehensive data warehouse which can then be broken down into smaller data marts according to organizational requirements. The Extraction, Transformation and Loading (ETL) Tool pulls the data from source systems, transforms the data, improves the data quality through a validation process, and automates the loading and subsequent updating of data.

Analytical Platform: This is the analytical engine where aggregation of data and complex calculations are performed. This platform also provides trend analysis, forecasting and what-if analysis functionality.

Information Delivery: This platform provides visual and analytic representation of data for further querying, reporting and analysis requirements. Reports will be delivered in user defined formats and dashboards that are easy to understand and tailored to each user's needs. Information will be accessed and presented based on role and function. Alerting and exception reporting will also be enabled.

5. SB Approach on Emerging Technologies for Official Statistics

Statistics Botswana will strive to take full advantage of some technologies that have matured over the past five years. It must strive to take advantage of the 4th industrial revolution technologies, such as Big Data, Artificial intelligence, machine learning etc.

Other emerging disruptive ICT solutions have an even greater potential to change SB's operations. The emerging technologies are defined in the subsequent subsections below.

5.1. Big Data

Big Data has become the "buzz" word in the last few years among statistical organisations. By definition Big Data is "*the collection and analysis of data sets that are complex in terms of the volume and variety, and in some cases the velocity at which they are collected.*"

SB should formulate a Big Data strategy that will provide a direction in the adoption and use of Big Data. The strategy should aim to bolster the use of big data analytics in the following areas:

1. Enhanced statistical services
2. New statistical services and business partnerships
3. Improved policy development
4. Provision of enhanced statistical insights

Big data should be made a strategic business initiative that will utilize the power of data and analytics to power SB's business model.

5.2. Geographical Information System (GIS)

"*Mapping has been an integral part of census-taking for a long time. Traditionally, the role of maps has been to support enumeration and to present aggregate census results in cartographic form.*"

Geographic Information System (GIS) "*is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data*". With the use of GIS by SB, geography will play a key role across the organisation and will impact many statistical business processes from the creation of base maps, to Enumeration Area (EA) design, through the data collection and validation process, operations management, and the dissemination of statistical information.

SB should use GIS technology to connect **data** with **geography** and to understand **what** belongs **where**. SB should also use this technology and other available resources to improve on their publication of Geospacial statistics.

5.3. Distributed ledger technology

A blockchain is "*a distributed ledger or decentralized database that is used to maintain a continuously growing list of records, called blocks. Each block contains a timestamp and a link to a previous block. Basically, it is a database, a giant network, known as a distributed ledger, which records ownership and value, and allows anyone with access to view and take part*".

Distributed ledger technologies such as blockchain enable the tamper-proof tracking of progress of and changes to items in real time.

Integrated distributed ledger solutions, such as smart tagging and labelling, can significantly improve SB's ability to track the collection of data throughout the enumeration process thereby greatly enhancing traceability. The implementation of distributed ledger technology solutions will benefit SB by enabling improved data integrity, quality and auditability.

5.4. Augmented Analytics

Augmented analytics is the use of statistical and linguistic technologies to improve data management performance. This includes data analysis, data sharing and business intelligence. It provides the ability to transform big data into smaller, more usable datasets.

SB can use augmented analytics to automate the process of data preparation, insight generation and insight visualisation. This will enable SB to rely less on professional data scientists and encourage citizen data scientists.

5.5. Artificial Intelligence

Machine learning allows technology to process large data volumes and interpret data patterns without human supervision. SB will use this to help automate tasks and build predictive models.
Natural language processing supported by artificial intelligence can help SB speed up the generation, translation and delivery of tailored statistical content, enabling SB to interact with clients using everyday language. Artificial intelligence–based image recognition can help us detect and classify objects, and artificial intelligence–enabled modelling and simulation can help accelerate our analytics capability.

5.6. Cloud Adoption

Where there are not enough resources to self host IT solutions, SB will consider the use of cloud services. The current stand for SB is that there should minimum cloud usage and more control of data.
Cloud services present an opportunity for SB to source and manage ICT services to maximise flexibility, agility and automation. SB will use these to transform the way business requirements are met, by making the most of off-the-shelf cloud-hosted solutions. SB will also assess funding and security implications of delivery of cloud solutions.

6. Information Technology Master Systems Plan

The Information Technology Master Systems Plan (ITMSP) is a series of strategic initiatives that guide execution of ICT strategy. It is analogous to a strategy scorecard and used to document critical elements of a strategy to assist in monitoring and tracking execution of ICT related objectives. SB's ITMSP is shown in the table below and includes a RACI (Responsible, Accountable, Consulted, Informed) chart. Each strategic initiative has been colour coded to indicate priority: **Red** for high priority (implementation within 0-12 months), **Amber** for medium priority (implementation within 12-24 months) and **Green** for low priority (implementation after 24 months and beyond).

Table 4: SB ITMSP

				Implementation Period		RACI					
ICT Strategic Objective	**Measure**	**Target**	**Strategic Initiative(s)**	**Start Date**	**End Date**	**R**	**A**	**C**	**I**	**Budget EST (BWP)**	**Corporate Objective Alignments**
Improve content and provision of timely information	% content up to date	80%	Undertake updating of key statistical information	Apr-20	Sep-20	IT Team	ITD	EXCO	All departments	0	• Increase Usage of Statistics • Increase Customer Satisfaction • Improve Information, Education and Communication • Improve NSS Coordination
	Number of days to provide requested information	3 days	Implement Centralised data repository	Apr-20	Mar-21	IT Team	ITD	EXCO	All departments	2,000,000.00	
			Design and implement an enterprise content management system	Apr-20	Mar-21	IT Team	ITD	EXCO	All departments	1,200,000.00	
			Develop and implement a business intelligence system.	Apr-21	Mar-22	IT Team	ITD	EXCO	All departments	600,000.00	
			Develop and implement an extranet and intranet for SB	Apr-23	Mar-24	IT Team	ITD	EXCO	All departments	1,500,000.00	
Instil the usage of digital services	No of systems and portal users	80%	Review and enhance online statistical portal	Jul-20	Nov-20	IT Team	ITD	All departments	EXCO	100,000.00	• Increase Usage of Statistics
Improve key ICT policies, processes and procedures	% completed ICT policies and procedures handbook	100%	Review and improve IT policies, processes and procedures	Apr-20	Oct-20	IT Team	ITD	All departments	EXCO	300,000.00	• Improve Business Processes
			Identify, document and store SLA's for all ICT services and solutions.	Apr-20	May-20	IT Team	ITD	All departments	EXCO	0	
			Develop and document DRP and BCP environments	Apr-20	Jul-20	IT Team	ITD	All departments	EXCO	400,000.00	
			Implement ITIL service delivery and support standards	Apr-21	Mar-22	IT Team	ITD	All departments	EXCO	500,000.00	
			Implement the COBIT framework for enhancing ICT governance and control	Apr-22	Mar-23	IT Team	ITD	All departments	EXCO	150,000.00	
			Implement the TOGAF framework for enterprise architecture.	Apr-23	Mar-24	IT Team	ITD	All Departments	EXCO	150,000.00	
Promote optimal service management	% User satisfaction	80%	Develop and implement ICT security management programme	Jul-21	Jun-22	IT Team	ITD	All departments	EXCO	400,000.00	• Manage Costs • Improve business processes
Ensure automation of statistical and business processes	% statistical and business processes automated	90%	Design, develop and implement an Enterprise Resource Planning (ERP) system	Apr-21	Mar-22	IT Team	ITD	EXCO	All staff	5,000,000.00	• Improve Business Processes • Improve Quality of Statistics • Improve Project Management • Improve Business Processes
			Upgrade and standardise IT hardware and software and Implement a DR Site	Jan-20	Jun-20	IT Team	ITD	All departments	EXCO	4,500,000.00	
			Design, develop and implement a programme and project management system	Apr-23	Mar-24	IT Team	ITD	EXCO	All staff	1,000,000.00	
			Design, develop and implement a Customer Relationship Management (CRM) system	Apr-24	Mar-25	IT Team	ITD	EXCO	All staff	1,000,000.00	
			Enhance current service desk system	Apr-24	Mar-25	IT Team	ITD	EXCO	All staff	600,000.00	
			Design, develop and implement an Enterprise Risk Management system	Apr-24	Mar-25	IT Team	ITD	EXCO	All staff	1,000,000.00	
			Design, develop and implement a business technology optimisation system	Apr-24	Mar-25	IT Team	ITD	EXCO	All staff	700,000.00	

Table 4 Cont'd: SB ITMSP

				Implementation Period		RACI					
ICT Strategic Objective	**Measure**	**Target**	**Strategic Initiative(s)**	**Start Date**	**End Date**	**R**	**A**	**C**	**I**	**Budget EST (BWP)**	**Corporate Objective Alignments**
Optimise IT investments	% reduction in IT costs	50%	Develop and implement integrated solutions	Apr-22	Mar-23	IT Team	ITD	All departments	EXCO	600,000.00	• Manage Costs
Strengthen cross organisational data sharing	% implementation of integrated solutions	100%		Apr-20	Jul-20	IT Team	ITD	All departments	EXCO		• Improve Information, Education and Communication
Promote integrated solutions	% implementation of interfaces	80%		Aug-20	Jan-21	HRM	ITD	All departments	EXCO		• Improve Quality of Statistics
Develop and retain ICT talent	% Competent staff boarded per structure	100%	Recruit talented IT personnel	Apr-20	Jul-20	IT Team/ HRM	ITD	All departments	EXCO	3,250,000.00	• Develop Management & Staff Skills • Improve Staff Morale
Promote an ICT information and learning culture	% improvement in basic ICT literacy	80%	Train staff on basic IT skills.	Apr-20	Nov-20	IT Team/ HRM	ITD	All departments	EXCO	1,200,000.00	• Develop Management & Staff Skills

6.1. Implementing the ITMSP

The successful implementation of the SB IT strategy and by extension the corporate strategy relies entirely on the successful execution of the ITMSP. Six factors play a crucial role in implementation and are as follows:

1. **Executive sponsorship and buy-in;**
2. **Innovative financing and investment strategies;**
3. **Full support and buy-in from the SB Board of Directors and Ministry of Finance and Economic Development;**
4. **Separate teams that manage "business as-usual" activities and project specific activities;**
5. **Ensure clear user requirements, optimised business processes and data integrity prior to implementation of identified applications; and**
6. **Standard project management methodology governing project initiation, execution and closure.**

7. Appendix A: Hardware Strategy

The following key aspects constitute SB's hardware strategy:

1. Source hardware devices (including end-user computing devices, servers) should preferably be based on the computing requirements. Supplier choice will be determined only after a comprehensive evaluation exercise has been carried out. This will ensure greater economies of scale and a reduction in supplier turnaround times as well as enhanced support capabilities.

2. The server environment should be extended to incorporate a robust Storage Area Network environment, which supports high speed data storage and retrieval capability.

3. All installed hardware should support open source solutions to ensure maximum flexibility and utilization.

4. Hardware will be reviewed every three (3) years to assess compatibility and relevance of the hardware devices to the requirements of SB at that time.

5. SB will ensure that the UPS environment for the Head Office and all branches is fully serviced and maintained as stipulated by manufacturer guidelines. In addition, there must be monthly tests of the UPS environment.

6. SB shall maintain dedicated leased lines between Head Office and all the other branches to maximize information access and transfer speeds as well as contribute to improving network availability. Considerations will also be made regarding the use of satellite technology to provide connectivity with remote sites.

8. Appendix B: ICT Policies and Procedures Strategy

The following serve as guidelines for ICT policies and procedures at SB.

1. **Policy review period** – ICT policies and procedures will be reviewed once every two (2) years or as deemed necessary by SB.

2. **Use of proven methodologies and frameworks** – Key goals are to implement:

   a. Best practice methodologies shall be used for all ICT initiatives at SB. This will include the use of proven project management principles (PRINCE II, PMBOK), and the use of international best practice standards such as COBIT.

   b. SB will adopt the Information Technology Infrastructure Library (ITIL) as the framework for ensuring optimised service delivery and service management.

3. **Standards – Key goals are to ensure:**

   a. Formal change management procedures will be followed when implementing new systems. This will ensure that users are eased into new operating environments that will be implemented at SB.

   b. All procedures and policies relating to the use of ICT will be documented and should be made available from a centralised location in both hard and soft copy format.

   c. An operations manual governing the manner in which ICT will operate will be developed and implemented.

   d. Develop and implement SLAs and operating level agreements (OLA) with:

      i. External suppliers of goods and services
      ii. Internal SB departments

4. **Policies – Key goals are to ensure:**

   a. All ICT related policies will be developed and documented, accessible from a single location to all the relevant stakeholders.

   b. Properly communicated data backup policy in place. All data backups will be automated to reduce reliance on manual procedures and improve bandwidth utilisation.

9. Appendix C: Procurement Strategy

The ICT Procurement strategy aims to improve operational efficiency whilst reducing the current ICT costs. These strategies will include where possible purchasing off-the-shelf applications, enhancing existing systems (including renegotiation of current ICT contracts) and development of tailor-made systems. SB will adopt the following approach to procure and implement applications and associated technologies (in order of preference):

Table 5: Procurement strategy

Priority	Method	Motivation
1	Enhance existing systems	• Allows existing functionality to be re-used/enhanced reducing the learning curve. • Familiarity of system environment is maintained. • Reduced cost of development and training. • Cheaper option than using off-the-shelf or custom-developed systems.
2	Purchase off-the-shelf applications	• Commercially tried and tested systems, less likely to suffer from the bugs and errors that afflict custom-developed systems. • Fast implementation as most systems are ready to use straight away. • Improved access to support and maintenance. • Regular upgrades are available. • Relatively low cost when compared with acquiring custom-made systems with the same level of functionality. • Opportunity to map optimized business processes to best-fit system functionality.
3	Custom development of systems	• Software tailored to the precise requirements of the business. • Existing systems cannot be used or enhanced to meet specific business requirements. • Off-the-shelf systems are not available to meet business requirements.

10. Appendix D: Risk Management

Risks are inevitable in projects. Proactive risk management ensures that risks are identified at the start of a project, assessed for their potential impact and the likelihood of occurrence, and addressed promptly and effectively. The table below lists several potential risks that SB could face when implementing the ICT strategy and factors that could mitigate the risks.

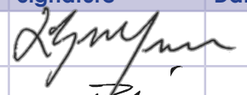
Table 6: Potential risks

Risk	Mitigating Factors
Inadequately defined processes and capability to implement systems	• Establish project management offices and adopt proven project management methodologies to manage projects. • Define and implement tried and tested processes and procedures to manage system implementation.
Lack of sponsorship and leadership support to implement systems	• Ensure that each project has a project sponsor at executive management level and ICT is represented and that level • Perform cost-benefit analysis for each project to be undertaken to depict the value of the project.
Insufficient financial resources	• Ensure that an ICT budget is produced, discussed and approved at Board level. • Prioritize projects based on available expenditure to ensure progress.
Failure to implement systems correctly	• Implement effective project and change management practices. • Ensure that correct skills are present to manage and implement initiatives. • Ensure that the existing ICT environment is operating effectively to support the proposed systems
Unauthorized access to sensitive and confidential information	• Introduce physical and logical security layers. • Implement robust backup schemes, along with regular monitoring of user transactions.
IT Department not included in procurement of applications.	• Implement a process that will include IT in the procurement processes.

11. Appendix E: SWOT Analysis

Table 7: SWOT Analysis

Strength	Weaknesses
1. Launched Computer Assisted Personal Interviewing (CAPI) 2. Acquired new network infrastructure 3. Existence of ICT policies and guidelines	1. Ageing server infrastructure 2. Lack of integrated and interfaced systems 3. IT budget constraints 4. Lack of a BCP and DRP 5. Absence of a centralized data repository 6. Unfavorable placement of the IT unit within the organization and IT structure 7. IT inadequately capacitated in terms of manpower and skills
Opportunities	**Threats**
1. ICT resources within the NSS (in terms of infrastructure and human capital) 2. In-house skills in IT and data management 3. Availability of collaboration systems/ platforms for easy flow of information 4. Supporting legal framework on the integration of systems (SB Act of 2009)	1. International cyber security threat 2. Survey and census data exposure on lost mobile devices 3. Few references of new modern big data analytics in the region 4. Expensive GIS gadgets and satellite imagery 5. Lack of security policies 6. Lack of a patch management system

	Official	Signature	Date
Approval	Chairperson		16/03/20
Approval	Statistician General		16 March 2020

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