Part 2: Census 2021 Background

2.1   Introduction

The Census is the official count of population, dwellings and households in Tonga and it provides a 'snapshot' of the country at one specific point in time: 30th of November 2021. Since 1956 until 2006, Census has been taken once in every ten years.

The census provides a unique source of detailed demographic, social and economic data relating the entire population and its most precious resource, its people. This information is used for policy making and planning, monitoring and evaluation, research and other decision-making.

The census is often the primary source of information such as used for allocation of public funding, especially in areas such as health, education and social policy. The main users of this information are the government, international agencies, local authorities, businesses, community organizations and the public in general.

The population census 2021 was the third population and housing census by 5 years' interval or after 5 years from the previous census in 2016.

2.2   Census History

The 2021 Census was taken under the authority of revised Statistics Act No. 7 of 2015. A review of the Statistical Act (1978) Chapter 53, which empowers the Ministry of Finance to make regulations necessary to conduct the population and housing Census. The regulation was approved by the Cabinet and cited as Census Regulation 2011. The Census regulations also indicate that the Government Statisticians is responsible for the administration and completion of the Census, in addition, the regulations enabled the Statistics Department to carry out the necessary activities required to plan, manage and implement all the necessary Census activities.

The first national population census was taken in 1921, although there were counts as early as 1891. After World War II, censuses in Tonga were taken regularly once in every ten years beginning 1956 up to 2006. In 2011 Census of Population and Housing was the first time to conduct Census in a five-yearly interval, 2016 was the second one and 2021 was the third time to held the census 5 yearly.

2.3 Census planning and management

From a planning and management perspective, the Census had two main objectives. Firstly, it was to ensure that the process of collecting, compiling, evaluating, analyzing and disseminating of demographic, economic and social data was conducted in a timely and accurate manner. The development of procedures and processes for the 2021 Census of Population and Housing made use of the lessons learned in previous censuses, and built upon recommendations for improvements.

Secondly, it was a valuable opportunity for building the capacities of employees of the Statistics Department (SD), thus resulting in enhancing the image, credibility and reputation of the Department and at the same time, strengthening its infrastructure. Emphasis was placed on having senior staffs with a wide perspective and leadership qualities.

Through the use of vision, planning, coordination, delegation of responsibilities and a strong team spirit, the census work was conducted in an effective and efficient manner. Incentives for other parties to participate, both within and outside the government.

The 2021 Population and Housing Census uses technology-tablets using CAPI for data collection. TSD had planned taking into account the great advantages that associated this methodology. Tablets were able to contribute to cutting down budget cost, and avoid long period taken for data processing phase and not the least enable monitoring of fieldwork simultaneously. Later advantaged includes institutionalizing across ministries this equipment.

There were 870 tablets all together where 40 was funded by the World Bank for HIES 2021 and was use for Census and the rest were purchased by Tonga Government.

Data consistency between censuses was an important consideration in the overall census planning. Demands for and the use of data, improvement in data accessibility and analytical tools were also considered.

Extensive and detailed planning is needed to conduct a successful census. Areas that required planning include: enumeration procedures and fieldwork, public awareness and support, data processing and output systems, mapping and the design of census block boundaries, dissemination procedures, content determination and questionnaire development and training. These aspects, and how they are interacted with each other, played a crucial role in determining the quality of all of the census outputs. Each phase

therefore required careful, methodical planning and testing. The details of such activities, and their implementation and responsibilities were assigned to 9 sub-committees composed of staff members of TSD.

2.4   Computer-Assisted Personal Interview (CAPI)

To improve data quality in data collection, TSD continue to use CAPI technology in data collection for the 2021 Population and Housing Census. This was the second time to use CAPI for Census followed the first time in 2016.

The Survey Solution software was identified as one of the best tools for data collection due to its capabilities of monitor data collection and data quality. Every completed questionnaire is sent to the respective supervisors to check and either rejects the questionnaire back to the interviewers if there are any errors/inconsistencies or approves the questionnaire if he/she is satisfied with the completed questionnaire. Rejected questionnaires are then verified and corrected by the interviewers with the respective household while they are still in the field, which ensures data quality is collected from the field by the interviewers.

The use of the GPS in the tablets, together with the capturing the photo of each visited house ensures the interviewers visited their correct Enumeration Area (EA) as well as proof of visiting the house. With the GPS points, Supervisors and Headquarters staffs were able to plot these GPS points on the map and identify those interviewers who may have enumerated in a wrong EA or had overlapped to other EAs assigned to another interviewer. In summary, improved data quality is attained through correcting survey processes during the field operation.

One of the biggest advantages of using Survey Solutions was the capability to allow for data collection to continue without internet access and this gives more flexibility for interviewers to undertake their work in areas without internet access and only synchronizes the completed questionnaires once they have access to the internet later. Ucall was the main service provider use for DATA by the tablet users.

The Questionnaire was designed using the Survey Solution Questionnaire Designer Tool, which has the facilities to include validations, consistency and logic checks as well as well-designed skip patterns to assist the interviewers in collecting good quality data.

The use of CAPI involves massive planning, preparation, training and testing and this resulted in a number of trainings being undertaken by the staff of the TSD in Questionnaire Design and the full process of using Survey Solution Tools.

2.5 Administrative Framework

2.5.1 Government Approval

TSD first sought the Minister of Finance's approval to conduct this census. Once, this approval was received, the census proposal was prepared. The proposal was submitted to the Minister of Finance for endorsement. It was agreed then that *"The Statistics Department conduct the Tonga Population Census and Housing on 30th November 2021 and Ministry of Finance assist with obtaining of necessary funding for the census."*

2.5.2 National Census Steering Committee

The National Census Steering Committee (NCSC) consisting of the Head of both Government and Non-Government Organization was started early 2021 to oversee the overall national census operation under the chairmanship of the Chief Executive Officer of Ministry of Finance with the Government Statistician (GS) as secretary. The census steering committee was a high-level committee that approved and endorsed the plans and activities of the census. Policy issues that needed to be addressed were submitted to the steering committee for approval prior to the census team and sub-committee's designation of the activities necessary to address the tasks.

The Census Steering Committee members several times were called upon during the preparation period to discuss and approve of the plans of the Census 2021. These meetings were also opportunities for members to input their organization needs into census questionnaire.

Members of the Steering Committee: Acting CEO of Finance **(Chairperson),** CEO of Education **(Vice-chairperson),** Government Statistician**(secretary)**, CEO of Health, CEO of Agriculture, CEO of Fisheries, CEO of MIA, CEO & Registrar General MOJ, CEO MEIDECC, Commerce & Economic Development, Manager Chamber of Commerce, Electoral Commission, CEO Tonga Health, Director Civil Society, and Director Tonga Family Health Association.

2.5.3 Organizational structure of the Census

In preparation for the 2021 Census a new form of organization structure of the Census was established and approved by the Government Statistician. A structure where all planning and tasks involved with preparation and implementation of the Census was given to the Census and Survey division of the Statistics Department to lead in this work.

National Census Steering Committee

The National Census Steering Committee is responsible for endorsing and approving the census plans and activities.

A. Government Statistician

In charge of approving the plans and activities of the census and bringing it forth to the Census Steering Committee and reporting to the Minister of Finance with regards to Census task. Also has the power to call off the census.

B. Census Manager

The responsibilities of the Census Manager is responsible for the management of all day-to-day census activities under the authority of the Government Statistician. He is the focal point of the Census activity. This task was assigned to *the Assistant Government Statistician, Mr Sione Lolohea who also the head of Census and Survey Division.* The budget, methodologies and procedures were under his care.

C. Census Committee

Ensure the smooth implementation of all census activities. From the census committee it has 9 sub committees namely the Publicity, Questionnaire, Logistics, Procurement, Mapping, Recruitment, Training, Fieldwork and Data Processing. All activities of the sub committees have to be approved from Census Committee before implementation. All staffs of TSD were members of one or more Sub Committees.

D. Census Supervisors

Census 2021 have several layers of Supervisors. The Island Division Census Supervisor who monitored and managed the Census activities in each Island Division. There was also a District Census Supervisor for Tongatapu as it was too much to be monitored by 1 person. There were 4 District Officers in Tongatapu who reported to the Census Manager who was also the Island Division Census Supervisor.

Each District was divided into Supervision Area each of which was under one Supervisor. This Supervisor guided the Census Enumerator and monitored during the data collection phase of census. This supervisor checked for consistency and accuracy of data collected and approve or decline forms after the enumerator completed it.

E. Census Enumerator

There were 792 enumerators for population and housing census 2021. Tonga was divided to 754 Census units and it was the responsibility of the enumerators to count all persons present in Tonga on Census Night in the area assigned to them.

2.5.4 Major Census Activities

i. Census block re-boundary

There was a need to revise the **boundary framework** for the upcoming **Population Census 2021**.

Identified from previous population censuses, the census block boundaries were unclear and some were either too large or too small which impacts the efficiency and accuracy during data collection. It was also acknowledged that users also demand data at semi-village level which could not be met given the current framework.

TSD carried out its **Tonga Statistical Geography Framework (TSGF) project** in 2020 in-order to address the issues of past census. From census units that averaged from 60 – 80 households, the revised census units. averaged to 20 – 30 households for the upcoming census. The TSGF also ensured that the boundaries of village, district and island division were still maintained. Overall, from this project, there are 383 census blocks which contains a total of 754 census units. Not only will the this be more manageable during data collection but better results and information to address user demands.

ii. Household Listing

TSD carried out its household listing activity in April 2021 for 3 weeks. The household listing accounts for all households in Tonga in a certain period of time. The aim of listing activities is to up-date TSD's population household list to aid planning for data collection in the upcoming census. It is amongst the most crucial activities of which the results may provide an estimation depending on the collection method.

This listing activity was unique as it was a task that trial ran the revised statistical boundaries, the output of the Re-boundary activity – Tonga Statistical Geography Framework (TSGF) project in 2020. At completion, the listing provided a pre-count of the number of households with its corresponding precise location at different geographical levels.

iii. Publicity

The main purpose of census publicity is to ensure the cooperation of the public to provide the requested data. This is an essential part of the census preparations and TSD too it seriously. The publicity team started early in their awareness programs which includes TV and radio programs, banners and posters, pamper stickers, stationers and t-shirts.

The census 2021 theme, "Shape our future! Be counted so we leave no one behind" was printed either in Tongan or in English in all the give aways and use in all publicity activities. During the FWC annual church conference which was held in 'Eua in June 2021, TSD had a booth to showcase census products and the importance of having everyone to participate.

TV and radio programs were first presented by the GS, Chairperson of the NCSC and Census Manager on the 2nd week of August, 2021, and then ran every week before and during the census collection period. They were used to inform the general public about the progress and the need for cooperation on the census. During the last two weeks just prior to the enumeration, these programs were used to brief the people of Tonga about the nature of the questions that they would be asked.

iv. Recruitment

From past censuses the primary school teachers were use as enumerators for the census. For this census we decided to open the recruitment of enumerators and supervisors for the public to apply and selection be done on merit.

The recruitment team announced the job vacancy using several media and social media, shortlisted applicants for interview and then finalize the list of those to be recruit for the census. We fell short of the number so again we called again on the teacher both from government and churches to make up the numbers just in time for the training.

v. Training

The activities of the training began with the various preparations including writing of manuals and preparation of training materials. The manuals were tested together with the questionnaires during a 1-week pretest of questionnaire and manuals before the training of trainers (TOT).

The TOT was held in house where all staffs and experienced supervisors from previous surveys were called in for 2 weeks training (18th – 29th Oct) on the questionnaire and the census data

collection procedures. Comments and feedbacks during the TOT were used to edits the training materials and videos for the main training of supervisors and enumerators.

For the main training, there were 10 training centers in Tonga and the training was scheduled for 2 weeks from November 10th to November 24th. There were 6 training centers in Tongatapu, 1 in Vava'u, Ha'apai, 'Eua, Niuatoputapu and Niuafo'ou.

This census is the first time to be use training videos and it was very helpful to deliver the content of the training materials but also to standardize the content and to make sure that enumerators get the same understanding of the training content regardless of the training center they attend. The trainees were taught first to understand the meaning of the questions, they practiced asking the question and then lastly, they were taught on how to use the CAPI to collect such information.

vi. Fieldwork

The fieldwork started on November 25th with the listing of households and institutions within each census unit given to enumerator. This exercise was also aimed to familiarize the enumerator with his/her enumeration EA so she/he can plan well for the data collection. The Census Night was November 30th but the data collection period was from November 29th- 4th December 2021. Households that have not been enumerated after this period were asked to contact TSD and arranged to be enumerated. Some households were visited after the data collection period to make sure that No one was left behind.

The hierarchical structure of the tablet system was of clearly defined levels and enabled the TSD office to monitor the work of the enumerators and supervisors during the data collection period. Issues were dealt with according to the hierarchy. The highest level of the hierarchy was the Headquarter which were the officer who did the final approval of the questionnaire form. Second level of the hierarchy is the Supervisors which was the officers responsible for the first-hand detail checking of the questionnaire forms send to them by the enumerators. The bottom rank was the enumerators who were responsible for enumerating and sending the forms to the supervisors for checking and from there to the headquarters.

The enumerators were divided into teams according to the location of the block they were to enumerate. Each group consist an average of 6 enumerators who were to report to 1 supervisor. Each supervisor was to report to headquarter and headquarters was responsible for an average of 4 supervisors and respective teams. Every enumerator was

assigned 1 census unit to enumerate in time using the tablets that was distributed to them during the training period.

vii. Data Processing

Data processing was composed of different phases which include; error checking and correction through CAPI system, data cleaning and editing, and tabulation. The most distinct advantage of using CAPI (Computer-Assisted Personal Interviewing) with tablets was shown in the data processing phases. The systematic structure of the operations of the tablet system enabled the data processing to be done simultaneously with the fieldwork during the enumeration period.

Application software called Survey Solution (privileged by World Bank) was installed into the tablets to enable the enumerators to view, receive and send the questionnaire forms. Prior to that, the questionnaire was designed and uploaded to the system. Validation sequences and quality checks were implemented into the electronic questionnaire to ensure that quality and accurate data was achieved. The SPC server was used for Census 2021.
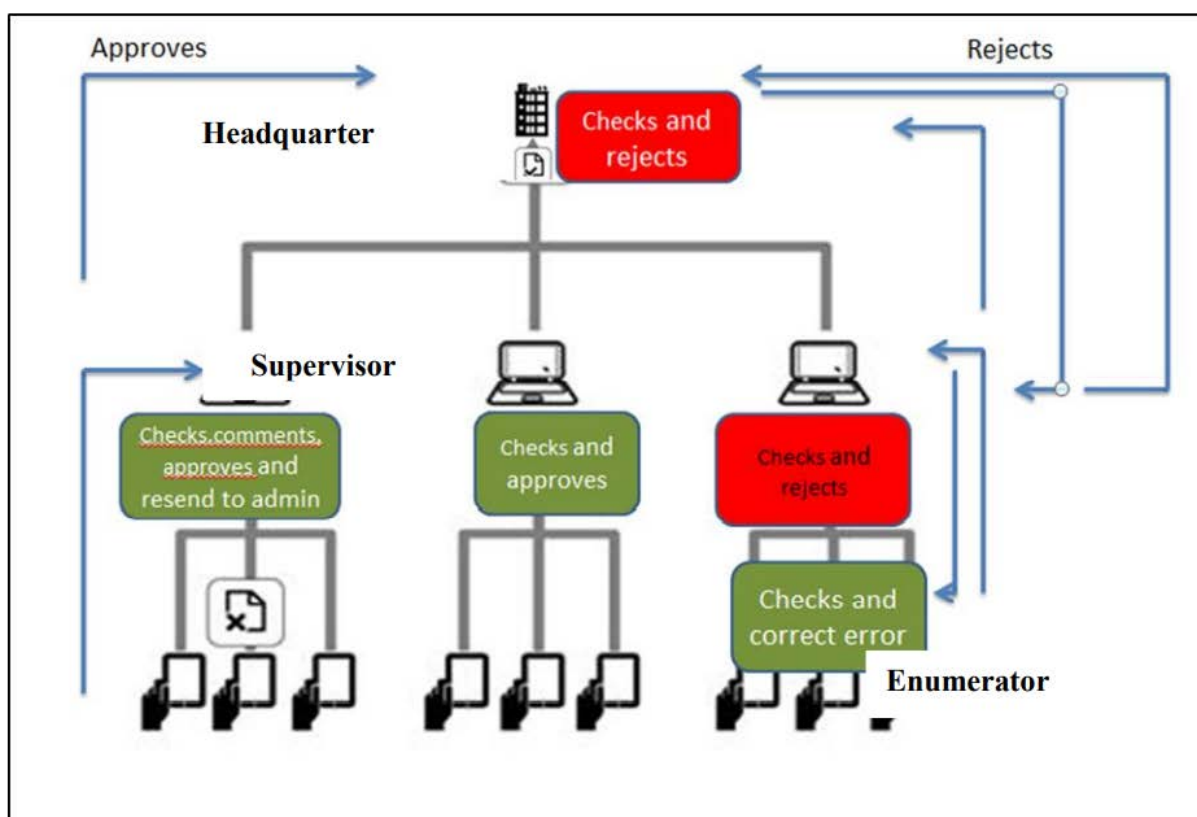
The hierarchical system of the tablets was structure into 3 levels – Headquarter, Supervisor and Enumerator each with clearly defined roles in the data collection and data processing procedures. The enumerators were the first-hand workers in the field who were responsible for collecting and inputting the questionnaire electronically. The Supervisors were doing the detailed error checking and then headquarters be the last to do quality examination of the questionnaire. If there were errors in completing the questions the form would be electronically send back from the Supervisor or Headquarter to the enumerator to correct while in the field.

The system lessens the time and cost of the data processing phase. CAPI enabled the data to be digitalized and Survey solution enabled monitoring at the same time during the fieldwork. Electronic data was downloaded from the system immediately after the enumeration was done. The preliminary result was released at the end of December 2019. Data editing and cleaning was collaborating with the assistance of SPC