ICT Use for Service Delivery in the Public Sector:

a study of Palau, Samoa, Kiribati and the Solomon Islands

August 2016

Prepared by the team at the Centre for Flexible Learning

Acknowledgement

The team would like to acknowledge and thank all those that contributed to this study, in particular to the Government of Australia and the Pacific Islands Centre for Public Administration for the funding, the Public Service Offices of the countries of Palau, Samoa, Kiribati and the Solomon Islands for their facilitation; and the cooperation of the Ministries of Education, Health and Information and Communication in these respective countries. The team also wishes to acknowledge the time and effort provided by individual staff members in these ministries to accommodate the in-country interviews and further follow-ups with the surveys and requests for additional information.

Research team:

- Valentine Hazelman
- Deepak Prasad
- Alena Meo
- Eroni Racule
- Flora Bentley
- Tomasi Cabebula
- Dhiraj Bhartu
- Makarita Erasito*

*For further information regarding the study or if you would like to contact the research team, please email erasito_m@usp.ac.fj or call +679 323 2105.

Disclaimer: Every effort has been made to ensure that this report is accurate. Errors, inaccuracies and omissions can be brought to the attention of the research team to enhance this document further.

Table of Contents

Executive summary 6
1.0 Introduction 8
2.0 Framework for the study 9
2.1 Limitations of the study 10
3.0 Country snapshots 11
3.1 Palau 12
3.11 The Nation and its people 12
3.1.2 The Economy 12
3.1.3 The Public Service 13
3.1.4 Telecommunications profile 14
3.2 Samoa 14
3.2.1 The Nation and its people 14
3.2.2 The Economy 15
3.2.3 The Public Service 15
3.2.4 Telecommunications profile 16
3.3 Kiribati 17
3.3.1 The Nation and its people 17
3.3.2 The Economy 18
3.3.3 The Public Service 18
3.3.4 Telecommunications profile 20
3.4 Solomon Islands 20
3.4.1 The nation and its people 20
3.4.2 The Economy 21
3.4.3 The Public Service 21
3.4.4 Telecommunications profile 23
4.0 Methodology 23
4.1 Ethics issues 24
4.2 Phase 1: In-country interviews 24
4.3 Phase 2: Online and paper based survey 25
5.0 Findings 26
5.1 Palau 27
5.1.1 Characteristics of the sample 27
5.1.2 Awareness of PICPA 28

5.1.3 Extent of ICT use 28
5.1.4 Access to ICTs 29
5.1.5 ICT-related capabilities 29
5.1.6 Plan for ICT use 30
5.1.7 Types of ICT applications for service delivery 31
5.1.8 Methods for evaluating service delivery 31
5.1.9 Ways public gives feedback 31
5.1.10 Means of informing the public about introduction of new technologies 32
5.1.11 RIPPLES assessment 33
5.1.12 Views on ICT for service delivery 33
5.1.13 Barriers to ICT use 34
5.2 Samoa 34
5.2.1 Characteristics of the sample 34
5.2.2 Awareness of PICPA 36
5.2.3 Extent of ICT use 37
5.2.4 Access to ICTs 37
5.2.5 ICT-related capabilities 38
5.2.6 Plan for ICT use 39
5.2.7 Types of ICT applications for service delivery 40
5.2.8 Methods for evaluating service delivery 40
5.2.9 Ways public gives feedback 40
5.2.10 Means of informing the public about introduction of new technologies 41
5.2.11 RIPPLES Assessment 42
5.2.12 Views on ICT for service delivery 42
5.2.13 Barriers to ICT use 43
5.3 Kiribati 43
5.3.1 Characteristics of the Sample 43
5.3.2 Awareness of PICPA 45
5.3.3 Extent of ICT use 45
5.3.4 Access to ICTs 46
5.3.5 ICT-related capabilities 46
5.3.6 Plan for ICT use 47
5.3.7 Types of ICT applications for service delivery 48
5.3.8 Methods for evaluating service delivery 48

5.3.9 Ways public gives feedback 48
5.3.10 Means of informing the public about introduction of new technologies 49
5.3.11 RIPPLES assessment 49
5.3.12 Views on ICT for service delivery 50
5.3.13 Barriers to ICT use 50
5.4 Solomon Islands 51
5.4.1 Characteristics of the sample 51
5.4.2 Awareness of PICPA 52
5.4.3 Extent of ICT use 53
5.4.4 Access to ICTs 53
5.4.5 ICT-related capabilities 54
5.4.6 Plan for ICT use 55
5.4.7 Types of ICT applications for service delivery 56
5.4.8 Methods for evaluating service delivery 56
5.4.9 Ways public gives feedback 56
5.4.10 Means of informing the public about introduction of new technologies 57
5.4.11 RIPPLES assessment 57
5.4.12 Views on ICT for service delivery 58
5.4.13 Barriers to ICT use 58
6.0 Discussion and conclusion 59
7.0 Recommendations 62
References 65
Appendices 68
Appendix A – Research Information & Consent Form 68
Appendix B – Research and Ethics Clearance from Palau 69
Appendix C – Research and Ethics Clearance from the Solomon Islands 70
Appendix D – Survey questions from Survey Monkey 72

Executive summary

This study explored the use of Information, Communication Technologies (ICTs) to enhance service delivery in the Public Sector of four Pacific Island Countries (PICs). The countries were Palau, Samoa, Kiribati and the Solomon Islands respectively. Specifically, the objectives of the study were to:

- present the current status of ICTs for service delivery in the public sector of selected countries;
- identify barriers to ICT use impacting service delivery;
- provide recommendations to address these barriers to effective ICT use; and
- provide a future outlook on the application of ICTs in selected countries.

The study took place over four months with a team of six researchers. A mixed methods research design was deployed in order to capture rich and meaningful data via in-country interviews, an online and paper based survey along with key documents collected from all sites. The RIPPLES (Resources, Infrastructure, People, Policies, Learning, Evaluation and Support) model by Surry (2002) and Rogers (2003) *Diffusion of Innovations* (DoI) theory informed the framework for the study in terms of exploring ICT use and implementation. This framework was chosen specifically to address a perceived 'disconnect' between familiarity with ICTs at the national and regional policy making level and the appropriate and/or competent use of them for progressing national governments and further filtering down the organization and to the public due to varied ICT competencies and infrastructure. Therefore, an aspect to the study worth exploring was the current ICT capacity that existed in these four countries to deliver proper services to the public.

Generally, the potential benefits of using ICTs to provide services to the public were acknowledged and understood, especially in terms of achieving efficiencies. They were not without some key challenges in terms of access, skills, policies, cost and infrastructure as the study showed. However, with the gradual improving state of telecommunications and information technology in the Pacific region, further spill-on effects can affect public service delivery more positively in the future but more solid commitment and action needs to happen now in the Public Service, firstly by taking stock of and improving current capacity.

The following five recommendations were provided with specific areas addressed in detail in the report:

- 7.1 Recommendation 1: Create, strengthen and engage ICT policies and strategies;
- 7.2 Recommendation 2: Enhance awareness and dissemination of information;
- 7.3 Recommendation 3: Develop infrastructure and resourcing capabilities;
- 7.4 Recommendation 4: Alleviate cost and access issues; and
- 7.5 Recommendation 5: Focus on human resource development and retention.

1.0 Introduction

Information Communication Technology (ICT) is now an integral part of everyday life. According to the Australian Public Service Information and Communications Technology Strategy 2012-2015, people rely on a range of technologies to communicate, interact, inform decisions, and to provide and receive services and products (p. 8). Literature on the use of ICTs point to its transformative impacts on daily living, in the way people interact with each other and with organizations. Jones & Williams (2005) state that ICT has the potential to transform the relationship between citizens and public services, and how public services are delivered – but only if it is clear what the ICT is being used for, and appropriate ICT is used to achieve its objectives (p. 6). Bhatnagar (2014) suggests four ways in which the application of ICT is used in order to improve governance and development impact. Firstly, as an intervention to an existing programme that delivers public services in order to ensure its adequate reception as opposed to adequate delivery. Secondly, as an enabler of delivery of government services (or e-Delivery) in order to reduce access costs. Thirdly, as a means for sharing information on development expenditure so that communities get involved in demanding allocation of development expenditure that best meets their needs. Fourthly, to enhance rural incomes by providing information on economic opportunities, knowledge of best practices via websites, call centers and mobile phones.

In the limited regional literature, studies in ICTs for use in the public service have looked at the potential of e-Governance to improve service delivery and customer satisfaction. Pathak, Naz, Singh & Smith (2010) found that expectations of citizens from public services are quite high but their experience has often been negative. In a preceding study, Pathak et al (2008) suggest that ICT enabled systems may potentially eliminate corrupt practices and allows citizens to conduct transactions themselves. Further exploration of ICT use by Naz et al (2006) suggests that enhancing communication between the public service and citizens allows citizens to be involved in all aspects of government which in turn creates a culture of trust and mutual interest. According to Joshi (2010) transparency and accountability on service delivery has always been an underlying theme in the literature on service delivery (p. 1). However, before the effects of ICT use can be fully realized, capacity to provide a decent service to the public needs to be assessed.

This study explored the use of ICTs to enhance service delivery in the Public Sector of four Small Island Developing States (SIDs) from the perspective of the service providers. This enabled an assessment of the current capacity of ICT use in the Public Service in order to

address the objectives of the study. The countries were Palau, Samoa, Kiribati and the Solomon Islands respectively, representative of the cultural classifications of Micronesia, Polynesia and Melanesia. Specifically, the objectives of the study were to:

- present the current status of ICTs for service delivery in the public sector of selected countries;
- identify barriers to ICT use impacting service delivery;
- provide recommendations to address these barriers to effective ICT use; and
- provide a future outlook on the application of ICTs in selected countries.

For the purpose of this study, ICTs are the technologies used in the transmission, operation and storage of data by electronic means. Examples of ICTs include landline telephone, computers, Internet, mobile phone, radio and TV (OU, 2013). Service delivery is providing services mainly or completely funded by taxation that citizens depend on like water, electricity, basic health care and education (Worldpolicy, 2014).

2.0 Framework for the study

The framework for the study was conceptualized with the objectives in mind. The nature of ICT use in organizations in general provided an appropriate lens for examination via the RIPPLES model by Surry (2002) and Rogers (2003) *Diffusion of Innovations* (DoI) theory. Briefly, RIPPLES is a model organizations can use to plan for the successful implementation of new tools and practices. RIPPLES has seven components, namely, Resources, Infrastructure, People, Policies, Learning, Evaluation and Support. Surry (2002) emphasizes four main applications of the model:

1. *Implementation Planning* - Determining an organization's overall implementation readiness and identifying specific barriers or enablers to implementation.
2. *Implementation Support* - Developing specific interventions that will facilitate the implementation of an innovation thereby reducing stress, and saving time and money.
3. *Implementation Evaluation* - Understanding the reasons for a successful or unsuccessful implementation in order to better prepare for future implementations.
4. *Research* - Developing better theories about why implementations succeed or fail and creating theory-based models for supporting implementation in a variety of organizations.

Rogers (2003) diffusion of innovations theory (originally conceptualized in 1962) used as a foundation for much of Surry's work, also informed this framework in terms of a broad consideration for innovation. Rogers (2003) defines innovation as,

> "an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behaviour is concerned, whether or not an idea is objectively new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his or her reaction to it. If the idea seems new to the individual, it is an innovation" (p. 12).

Rogers seminal work however was in the field of *diffusion of innovations*, for which he defined as,

> "the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 11).

Rogers diffusion of innovations focuses on four key elements which are the innovation, communication channel, time, and the social system. Technology implementation and diffusion studies have prominently focused on one of two levels of inquiry, the individual level and organizational level. Examining ICT use to enhance public service delivery requires a balanced focus on these two aspects in order to gauge possible 'disconnects' between current capacity of ICT use, capacity to deliver services, and capacity to receive these services as an end user. Hence, observing the parameters of the study through Surry's six conditions framed within Rogers four elements of diffusion is fitting as a framework.

2.1 Limitations of the study

This study is not without its limitations and must be stated up front; in terms of scope of application of theory, the time-nested context, variable country conditions and responsiveness. Firstly, the RIPPLES and diffusion of innovations theories are fairly dense in terms of their scope and application. Therefore a superficial application of the theories was feasible within the study's timeframe. Despite the often instructional context of these theories, application is cross disciplined, relevant and valid.

The research team made every effort to contain the scope of the study within the objectives which was challenging because ICT and Public Service delivery research tends to be multifaceted and considers many mitigating factors and variables from provider to recipient. Within the four month timeframe, the team looked at the perspective of the Public Sector

(limited to Health, Education, Information and Communication ministries along with the Public Service Offices) as opposed to the public that were provided the services. A longer period of data collection and engagement with the four countries would have allowed for soliciting of data from the public as well.

The timeframe of the study also presented challenges in terms of receiving timely responses and feedback to the survey. While the in-country interviews built good networks for the purpose of the follow-up surveys, they were no guarantee that the online and paper based survey responses would be forthcoming in terms of a good response rate. Ultimately the responses were small relative to the Public Service employee population for each country. Participation in the survey was also voluntary. Therefore, broad generalizations were made from the data instead of specific conclusive statements.

Each research team had approximately one week to conduct interviews in each country which was limiting in terms of establishing more meaningful relationships on the ground. Timing was not entirely ideal and those interviewed were available at those points in time. Kiribati for instance was in the midst of their new government's budget release when the research team arrived in Tarawa so availability of key people was challenging. However, the Public Service Offices in three of the four countries were useful in terms of facilitating interview schedules as best as they could. Several follow-ups to the online survey requests spanning one month yielded mixed results in terms of response rates.

The research ethics clearance for the Solomon Islands was delayed (received by the team on 13th July 2016) and presented issues for the timely analysis of solicited data. The Palau clearance was received just as the team was departing for Koror for the in-country interviews. This is an important point to note for future research projects in the PICs, i.e. background checks on research and ethics requirements for each country.

3.0 Country snapshots

The following section provides a profile of the countries included in this study. In no particular order, they are Palau, Samoa, Kiribati and the Solomon Islands. Each snapshot begins with a profile of the nation and its people, followed by a description of its governance structure, economy, the public service and telecommunications profile.

3.1 Palau

3.11 The Nation and its people

The Island nation of Palau (or Belau) is located 800km South East of Philippines and consists of a group of islands that has a total land mass of around 508km^2. Palau belongs to the cultural classification of Micronesia. It shares its maritime boundaries with Indonesia, Philippines and the Federated States of Micronesia (FSM). The majority of the 21,000 inhabitants of the island are scattered amongst the four main islands of Koror, Babeldaob, Angaur and Peleliu with Koror being the most populous. Koror is the Central Business District (CBD) and is also home to approximately two thirds of Palau's population. The demographic is such that 71% of this population is between the ages of 15 and 64 (Ministry of Finance, 2014). Native Palauan's constitute 70% of the population and the Philipinos form the other major ethnic group. The rest of the population is made up of foreign workers from other states of FSM, Bangladesh and other parts of Asia (Encyclopedia, 2007).

Palau was initially occupied by the Germans and the Japanese until post World War 2 when it became a United Nations Trust Territory administered by the United States of America (US). It gained independence in October, 1994 and signed the Compact of Free Association with the U.S. Consequently, the governance structure closely mirrors the American system. The government of Palau has 16 states. The republic has an Executive branch consisting of the Office of the President and Vice President, the 8 Government Ministries and the Council of Chiefs. The other branch of government, the Legislature, has the Senate, House of Delegates and the Judiciary (Palau Government, 2015).

3.1.2 The Economy

Palau uses the U.S currency and its proximity to Asian markets makes it an attractive place for potential entrepreneurs. The government relies mostly on U.S assistance and grants under the Compact of Free Association. Palauan's are natural fishermen but over the years have enacted laws to better manage and conserve their fisheries resource, turning them into tourist attractions for wealthy Chinese. Recently, the country's estimated growth for 2014 was 5.4%, which was attributed to the strong growth in Tourism and related activities (Monitoring, Control and Surveillance, 2015).

3.1.3 The Public Service

The Palau Public Service consists of 8 ministries, namely:

1. Ministry of Justice;
2. Ministry of Education;
3. Ministry of Finance;
4. Ministry of Health;
5. Ministry of State;
6. Ministry of Community and Cultural Affairs;
7. Ministry of Natural resources, Environment and Tourism; and
8. Ministry of Public Infrastructure, Industries and Commerce (Palau Government, 2015).

A Ministry is headed by a Minster who is a political appointee. Within each Ministry, there are two sub layers of reporting lines, the Bureau headed by Directors (who report directly to the Minister) and within these Bureaus are Divisions headed by Chiefs.

The Bureau of Public Service System (BPSS) is situated within the Ministry of Finance; it acts as a Human Resource Office and is responsible for the day-to-day management of programs and activities involving employees of the National Government. "BPSS administers training programs to upgrade the skills and qualifications of National Government employees; formulates rules, regulations, policies and procedures to carry out the provisions of the National Public Service System Act. Additionally, they foster and develop in cooperation with the Appropriate Management Officials and others, programs to promote the public service system and the improvement of employee efficiency. With the Attorney General, they also provide technical assistance and advice regarding the Public Service System regulations, including the issuance of directives and the establishment of procedures to effectuate these regulations, and make such inquiries and investigations into personnel administration in the Public Service System as necessary" (Palau Government, 2015).

3.1.4 Telecommunications profile

Telephones - main lines in use	7,300 (2012)
Telephones - mobile cellular	17,150 (2012)
Telephone system	**Domestic:** fixed-line and mobile-cellular services available with a combined subscribership of roughly 100 per 100 persons. **International:** country code - 680; satellite earth station - 1 Intelsat (Pacific Ocean) (2009).
Broadcast media	No TV stations; a cable TV network covers the major islands and provides access to rebroadcasts, on a delayed basis, of a number of US stations as well as access to a number of real-time satellite TV channels; about a half dozen radio stations with 1 government-owned (2009).
Internet country code	.pw
Internet hosts	4 (2012)
Internet user penetration	36.2% (http://www.internetworldstats.com/pacific.htm) 2015 estimate

(http://www.indexmundi.com/palau/telecommunications_profile.html)

3.2 Samoa

3.2.1 The Nation and its people

The Independent state of Samoa is located in the South Pacific Ocean (formerly known as Western Samoa). It is believed that the Samoans originated from Southeast Asia and Melanesia and developed a unique language and cultural identity (*Fa'asamoa*). Samoa was a German colony in the 1900's until August 1914 when New Zealand seized the islands and officially became independent on 1st June 1962 (Government of Samoa, 2014). Samoa belongs to the cultural classification of Polynesia.

Samoa consists of two main islands, Upolu and Savai'i. Upolu, which is home to nearly three quarters of Samoa's population (approximately 187, 820) houses the capital city, Apia. It is located on the central-north coast of Upolu. Savai'i is the larger of the two main islands and is known to be the largest shield volcano in the South Pacific. There are seven other smaller islands that make up Samoa's chain of islands. Samoa's time zone is UTC + 13 since the government ordered the change, moving Samoa over the International Date Line (Samoa

Bureau of Statistics, 2012). Samoa's spoken languages are Samoan and English (both official). Tokelauan and French are other languages spoken on a regular basis. Samoa is made up eleven political districts known as *itumalo*. 80% of the population of Samoa is Christian mainly Roman Catholic, Latter Day Saints, Methodist, Seventh Day Adventist and there are also members of other religions such as Islam and the Baha'i faith. According to the Samoa Bureau of Statistics (2012) Samoa has a higher ratio of males to females in the population; 52% males and 48% females. Half the population belong to the younger (aged 14 category) and (65 or older category), while the other half belong to the working age group (aged 16 – 64).

3.2.2 The Economy

Samoa's economy is growing at a moderate rate with an average annual growth of 1.5 percent according to the Samoa Bureau of Statistics. The Samoan economy was greatly affected by the global economic crisis in 2008-2009 and the tsunami in 2009 and cyclone Evan which struck the country in 2012. As of 2014, the Samoa GDP per capita was SAT10, 185 or USD4, 121 equivalent (Samoa Bureau of statistics, 2015).

3.2.3 The Public Service

The Samoa Public Service consists of 15 government ministries, namely:

1. Ministry of Agriculture and Fisheries;
2. Ministry of Commerce, Industry and Labour;
3. Ministry of Communication and Information Technology;
4. Ministry of Education, Sports and Culture;
5. Ministry of Finance;
6. Ministry of Foreign Affairs and Trade;
7. Ministry of Health;
8. Ministry of Justice, and Courts Administration;
9. Ministry of Natural Resources and Environment;
10. Ministry of Police;
11. Ministry of the Prime Minister and Cabinet;
12. Ministry of Public Enterprises;
13. Ministry of Revenue;
14. Ministry of Women, Community and Social Development; and
15. Ministry of Works, Transport and Infrastructure (Government of Samoa, 2016).

Samoa is a parliamentary democracy which consists of the head of state and 49 legislative assembly members who are chosen through electoral vote every five years (PSC Samoa Annual Report, 2013-2014). The main office of the Public Service Commission (PSC) is located in central Apia. The Public Service Commission was established under Article 84 of the Constitution of Samoa. The PSC is responsible for policy advice to government on Human Resources Management in the Public Sector and technical advice and assistance to ministerial and line agencies under Article 87 of the Constitution and the Public Service Act 2004 (The Public Service Act, 2004).

According to the PSC Annual Report Academic Overview (2014) there was an increase in qualified staff in relation to established positions and there was a considerable decrease in staff turnover within the Public Service Commission. Gender distribution shows 36% are male employees and 64% female employees which indicates a growing number of females within the PSC. The statistics also reported a relatively young workforce, i.e. 80% PSC employees were aged between 20 to 30 years (PSC Samoa Annual Report 2013-2014).

3.2.4 Telecommunications profile

Telephones - main lines in use	35,300 (2010)
Telephones - mobile cellular	167,400 (2010)
Telephone system	**Domestic:** combined fixed-line and mobile-cellular teledensity roughly 100 telephones per 100 persons. **International**: country code - 685; satellite earth station - 1 Intelsat (Pacific Ocean) (2007).
Broadcast media	State-owned TV station privatized in 2008; 4 privately-owned television broadcast stations; about a half dozen privately owned radio stations and one state-owned radio station; TV and radio broadcasts of several stations from American Samoa are available (2009).
Internet country code	.ws
Internet hosts	18, 013 (2012)
Internet user penetration	29% (http://www.internetlivestats.com/) 2016 estimate

(http://www.indexmundi.com/samoa/telecommunications_profile.html)

3.3 Kiribati

3.3.1 The Nation and its people

Kiribati is a Republic headed by a President who is both chief of State and Head of government. The capital is Tarawa. It comprises 3 geographic units, namely: Gilbert Islands, Line Islands and Phoenix Islands, 6 districts and 21 island councils. The Gilbert Islands were granted self-rule by the U.K in 1971 and complete independence in 1979 under the new name of Kiribati. The U.S relinquished all claims to the sparsely inhabited Phoenix and Line Island groups in a 1979 treaty of friendship with Kiribati. The capital and now most populated area, South Tarawa, consists of a number of islets, connected by a series of causeways. These comprise about half the area of Tarawa Atoll. Kiribati is the only country in the world to fall into all four hemispheres (CIA, 2016).

Kiribati's population was 105, 711 as estimated in July 2015. The vast majority (more than 90%) of people inhabit the Gilbert Islands, with more than 33% populating an area of about 16 km^2 (6.2 sq. mi) on South Tarawa. Until recently, the people of Kiribati mostly lived in villages with populations between 50 and 3,000 on the outer islands. Most houses are made of materials obtained from coconut and pandanus trees. Frequent droughts and infertile soil hinder reliable large-scale agriculture, so the islanders have largely turned to the sea for their livelihood and subsistence. Most are outrigger sailors and fishermen. The native people of Kiribati are called *I-Kiribati*. Ethnically, the *I-Kiribati* belong to the cultural classification of Micronesia. The people of Kiribati speak an Oceanic language called 'Gilbertese'. Although English is also an official language, it is not used very often outside the island capital of Tarawa. Christianity is the major religion in Kiribati, having been introduced by missionaries in the 19th century. The population is predominantly Roman Catholic (56%), although a substantial portion of the population belongs to the Kiribati Uniting Church (34%). Many other Protestant denominations, including evangelical churches, are also represented. The Bahá'í faith religion also exists in Kiribati (2.2%), along with Jehovah's Witnesses and The Church of Jesus Christ of Latter-day Saints (LDS Church) (4.7%). The LDS Church self-reported a membership of 15,364 (14.6%) at the end of 2011. The population of Kiribati has a life expectancy at birth of 60 years (57 for males, and 63 for females) and an infant mortality rate of 54 deaths per 1,000 live births (Wikipedia, 2015).

3.3.2 The Economy

Kiribati has few natural resources. Commercially viable phosphate deposits on Banaba were exhausted at the time of independence. Copra and fish now represent the bulk of production and exports. Kiribati is considered one of the least developed countries in the world. In one form or another, Kiribati gets a large portion of its income from abroad. Examples include fishing licenses, development assistance, worker remittances, and tourism. Given Kiribati's limited domestic production ability, it must import nearly all of its essential foodstuffs and manufactured items; it depends on these external sources of income for financing. The economy of Kiribati is dependent and benefits from international development assistance programs via bilateral and multilateral aid. The major donors in 2010/2011 were Australia (AUD$15 million), Taiwan (AUD$11 million); New Zealand (AUD$6 million), the World Bank (AUD$4 million) and the Asian Development Bank (Wikipedia, 2015). The country's sovereign fund, the Revenue Equalization Reserve Fund (RERF), which is held offshore, had an estimated balance of $668 million in 2013, equivalent to 381% of GDP. The RERF seeks to avoid exchange rate risk by holding investments in more than 20 currencies, including the Australian dollar, United States dollar, the Japanese yen and the Euro. Drawdowns from the RERF helped finance the government's annual budget (Wikipedia, 2015).

3.3.3 The Public Service

The Kiribati Public Service consists of 13 government ministries, namely:

1. Ministry of Foreign Affairs and Immigration;
2. Ministry of Fisheries and Marine Resources Development;
3. Ministry of Internal Affairs;
4. Ministry of Finance and Economic Development;
5. Ministry of Labour and Human Resources Development;
6. Ministry of Public Works and Utilities;
7. Ministry of Communications, Transport and Tourism Development;
8. Ministry of Health and Medical Services;
9. Ministry of Education;
10. Ministry of Commerce, Industry and Cooperatives;
11. Ministry of Environment, Lands and Agriculture Development;
12. Ministry of Line and Phoenix Islands Development; and
13. Ministry of Women, Sports and Social Welfare (Republic of Kiribati, 2014).

Under the Constitution, the power to make appointments to public offices is vested in the *Beretitenti* (President), acting in accordance with the advice of the Public Service Commission (PSC). In practice, this power is delegated to the PSC. The primary legislation guiding governance is the Public Service Commission (Functions) Act 1983 and the Public Finance (Control and Audit) Act 1981. The Kiribati public sector is generally characterized by the following that result in low productivity, and dependence on a select few public servants;

i. limited human resource base;
ii. absence of modern human resource management systems; and
iii. limited outreach beyond the major urban centers (PICPA, 2016).

There have been a number of attempts to reform the public sector. In 1996 a program of 'rightsizing' was undertaken with a review of positions and conditions of service across government. With limited results arising from this program, the National Development Strategy, 2000-2003 also focused on public service reform to create the 'enabling environment needed to stimulate growth and private sector development.' In both cases the absence of an active private sector hindered efforts to introduce public management reforms involving privatization and contracting (PICPA, 2016).

Responsibility for public service recruitment and management is shared between the Public Service Office (PSO) – charged with human resource management, planning and development), the Public Service Commission (PSC) – approves public service appointments and monitors discipline) and individual line ministries (responsibilities for recruitment, promotions, discipline and removal of public servants). The division of responsibility is not always clear in practice and can cause bottlenecks in the recruitment process (PICPA, 2016). The vision statement of the PSO is 'a supportive and proactive public service' and the mission statement is 'to improve public service delivery performance and delivery for the betterment of Kiribati'. There are 5 main divisions within the PSO namely the IT/Statistics Unit, Operations and Planning Unit, HR & Policy Administration Unit, HR Management Unit and HR Development Unit (PSO, 2013-14).

3.3.4 Telecommunications profile

Telephones - main lines in use	9,000 (2012)
Telephones - mobile cellular	16,000 (2012)
Telephone system	**Domestic:** wire line service available on Tarawa and Kiritimati (Christmas Island); connections to outer islands by HF/VHF radiotelephone; wireless service available in Tarawa since 1999. **International:** country code - 686; Kiribati is being linked to the Pacific Ocean Cooperative Telecommunications Network, which should improve telephone service; satellite earth station - 1 Intelsat (Pacific Ocean) (2010).
Broadcast media	1 TV broadcast station that provides about 1 hour of local programming Monday-Friday; multi-channel TV packages provide access to Australian and US stations; 1 government-operated radio station broadcasts on AM, FM, and shortwave (2009).
Internet country code	.ki
Internet hosts	327 (2012)
Internet user penetration	12.9% (http://www.internetlivestats.com/) 2016 estimate

(http://www.indexmundi.com/kiribati/telecommunications_profile.html)

3.4 Solomon Islands

3.4.1 The nation and its people

Solomon Islands is a scattered archipelago consisting of six major islands and over 900 smaller islands in Oceania lying to the east of Papua New Guinea and northwest of Vanuatu. The islands cover a land area of 28,400 square kilometers (11,000 sq. mi) and include Guadalcanal, Malaita, Santa Isabel, San Cristóbal, Choiseul, New Georgia, and the Santa Cruz group. The six main islands are volcanic, mountainous and forested with Guadalcanal as the most populous island. It gained independence from Britain in 1978 with Sir Peter Kenilorea becoming the country's first Prime Minister. The country's capital, Honiara, is located on the island of Guadalcanal. It is one of the poorest countries in the South Pacific with 85 percent of the country's population living in isolated rural villages on undeveloped

outer islands. The Solomon Islanders comprise diverse cultures, languages, and customs. Of this, 94.5% are Melanesian, 3.3% Polynesian and 1.2% Micronesian. In addition, small numbers of Europeans and Chinese are also registered citizens. The total population (July 2014 est.) is approximately 609,883. The country has a total dependency ratio of 76.3% and an annual population growth rate of 2.07%. The majority of Melanesians speak 92 indigenous languages. Most of the people live in small rural villages and they engage mainly in subsistence gardening, pig-raising, and fishing but are also involved in the cash economy (Everyculture, 2016).

3.4.2 The Economy

The bulk of the population depends on agriculture, fishing, and forestry for at least part of its livelihood. Most manufactured goods and petroleum products must be imported. The islands are rich in undeveloped mineral resources such as lead, zinc, nickel, and gold. Prior to the arrival of the Regional Assistance Mission to the Solomon Islands (RAMSI), severe ethnic violence, the closing of key businesses, and an empty government treasury culminated in economic collapse. RAMSI's efforts to restore law and order and economic stability have led to modest growth as the economy rebuilds (CIA, 2016).

In the early 21st century the service sector employed the majority of the active workforce and contributed almost half of the country's gross domestic product. Tourism has been developed but is not a major source of income. Solomon Islands' main resources, fish and timber, have been exploited excessively, which has resulted in their depletion. Its other export products are derived from plantation crops: palm oil, copra, and cacao (the source of cocoa) (Encyclopedia Britannica, 2015).

3.4.3 The Public Service

The Solomon Islands Public Service consists of 23 government ministries, namely:

1. Ministry of Public Service;
2. Ministry of Development, Planning and Aid Coordination;
3. Ministry of Finance and Treasury;
4. Ministry of Police, National Security and Correctional Services;
5. Ministry of Women, Youths and Children Affairs;
6. Ministry of Education and Human Resources;
7. Ministry of Health and Medical Services;

8. Ministry of Foreign Affairs & External Trade;
9. Ministry of Commerce, Industry and Employment;
10. Ministry of Culture and Tourism;
11. Ministry of Agriculture and Livestock Development;
12. Ministry of Lands, Housing and Survey;
13. Ministry of Infrastructure Development;
14. Ministry of Communication and Aviation;
15. Ministry of Environment, Conservation and Meteorology;
16. Ministry of Fisheries and Marine Resources;
17. Ministry of Energy, Mines and Rural Electrification;
18. Ministry of Provincial Government and Institutional Strengthening;
19. Ministry of Home Affairs;
20. Ministry of National Unity, Reconciliation and Peace;
21. Ministry of Rural Development and Indigenous Affairs;
22. Ministry of Justice and Legal Affairs; and
23. Ministry of Forestry (Solomon Islands Government, 2014).

The Public Service Ministry discharges responsibilities ascribed in the current Solomon Islands Government policy document as well as the mandatory roles (Reform, Recruitment, Selection, Separation, Retention, Regulation and Capacity Building) which are provided for in Sections 3 and 4 of the Public Service Act (Cap 92). It assists and facilitates submissions of appointments from the Solomon Islands Government ministries and departments to the respective Commissions. It prepares the Solomon Islands Government staff recruitment, selection and retention processes. Furthermore the Ministry conducts training for Honiara and provincial based public officers, as well as facilitation of long-term in-service training. The Ministry is organized into 3 divisions, the Organizational Development (OD) and Employee Performance Management (EPM), the Employment Services (ES), and the Institute of Public Administration and Management (IPAM). The three (3) divisional heads are responsible for the coordination and management of their divisional functions (Solomon Islands Government, 2015).

3.4.4 Telecommunications profile

Telephones - main lines in use	8,060 (2012)
Telephones - mobile cellular	302,100 (2012)
Telephone system	**Domestic:** mobile-cellular telephone density is about 50 per 100 persons **International:** country code - 677; satellite earth station - 1 Intelsat (Pacific Ocean) (2011).
Broadcast media	Solomon Islands Broadcasting Corporation (SIBC) is the sole TV broadcaster with 1 station; multi-channel pay-TV is available; SIBC operates 2 national radio stations and 2 provincial stations; 2 local commercial radio stations; Radio Australia is available via satellite feed (2009).
Internet country code	.sb
Internet hosts	4,370 (2012)
Internet user penetration	9.8% (http://www.internetlivestats.com/) 2016 estimate

(http://www.indexmundi.com/solomon_islands/telecommunications_profile.html)

4.0 Methodology

The team assumed a pragmatic philosophical approach to the methodology in terms of what worked best for the circumstances of the study. Gall (2003) posits, "research always occurs in social, historical, political, and other contexts." As such a one size fits all approach such as deploying a purely qualitative or quantitative approach was limiting when the scope of the study was considered. The team decided on a mixed methods design incorporating both qualitative and quantitative methods for data collection and analysis. Data collection occurred in two phases. Phase 1 involved in-country interviews while Phase 2 involved online and paper based surveys.

The composition of the research team aided the methodology. The team was assembled based on their expertise and qualifications which mediated possible in-country issues and quicker understanding of the Public Service system. The team comprised two lead researchers and four assistant researchers. Each lead researcher (covering two countries) was paired with an assistant researcher. This enabled wider coverage of interview participants

within the one week duration, as well as efficiently covering administrative issues on the ground. Transcription and interview summaries were completed relatively quicker with a two-person team per country site as well. Additionally, the opportunity was used by CFL to upskill the assistant researchers in academic research and inquiry.

4.1 Ethics issues

All research participants were provided information regarding the research and consented to participate mostly verbally or by assumed consent if they completed the survey. Appendix A presents the Research Information and Consent Form. An unanticipated issue that arose as teams were commencing in-country interviews was research clearance as highlighted in the Limitations section. This occurred for two of the four countries, Palau and the Solomon Islands. Clearance from Palau was received on 18th May 2016 while the Solomon Islands clearance was received on 13th July 2016. These are provided in Appendix B and C. To the team's knowledge, there were no clearance requirements/issues for Samoa and Kiribati.

4.2 Phase 1: In-country interviews

Once PICPA established the in-country liaison contacts at the Public Service Offices with the research team, broad interview questions were then formulated based on the objectives and framework for the research. The aim of the interviews was twofold. Firstly,

1. to gain an understanding of the context of the study (ICT & the PS) in each country;
2. inform the questions for the online and paper based survey.

Interviews in the four countries occurred over a four week period as follows:

Country	Duration (2016)
Samoa	25 – 29 April
Kiribati	3 – 11 May
Solomon Islands	16 – 20 May
Palau	23 – 27 May

The interviews were semi-structured as the focus was on information gathering and getting a feel for the context on the ground. Broad interview questions looked at:

- interviewees knowledge in terms of their ICT use with regard to their department/ organization;
- the general makeup/ structure of their department/ organization;
- staffing abilities in terms of ICT use and application;
- the types of services their department/ organization delivered to the public;
- their awareness of an ICT plan (if any);
- how they perceived access issues in terms of technology use by the public;
- the forms of communication to spread awareness within, between the ministries and the public;
- what they saw as barriers to public service delivery; and
- how they perceived ICT could be used to enhance public service delivery in the future.

The in-country interviews yielded a total of 37 interviews. They comprised IT Officers and Assistants, Permanent Secretaries, Deputy Secretaries, Administrative Assistants, and Coordinators/ Administrators in various capacities across the Education, Health, Information and Communication Ministries as well as the Public Service Offices. This is highlighted in the Findings section. A breakdown is as follows:

Country	Count (staff)
Samoa	8
Kiribati	9
Solomon Islands	8
Palau	12

Following the interviews, a preliminary summary was compiled and analyzed by the team to extract the emerging themes with the objectives and framework for the study in mind. This informed the survey questions.

4.3 Phase 2: Online and paper based survey

The online and paper based survey comprised 20 questions, both quantitative and qualitative in nature. The team hosted the survey in Survey Monkey, an online survey management tool

that provided quick compilations and analysis of data. The survey questions can be found in Appendix D. The dissemination points for information regarding the surveys were the country liaison contacts. The survey was made available for one month with weekly reminders to the liaison contacts to encourage staff to complete it. The option of printing the PDF version of the survey was also provided with printed responses sent back to the research team from each country. Following this phase, a qualitative analysis was undertaken to synergize the quantitative analysis from Survey Monkey.

5.0 Findings

The findings in this section are presented by country. Using this format provides a quick and unfiltered point of reference for country stakeholders to reference their own relevant information from this report. It also enables stakeholders to compare intra and inter-countries beyond their specific sections.

Each country contains 13 areas of itemized data in both quantitative and qualitative form. The interview data and document analysis that informed the survey is woven into the specific areas where appropriate so that the narrative is seamless.

The data and findings are presented in this order: Palau, Samoa, Kiribati and the Solomon Islands. The 13 areas under each country are as follows:

1. Characteristics of the sample;
2. Awareness of PICPA;
3. Extent of ICT use;
4. Access to ICTs;
5. ICT-related capabilities;
6. Plan for ICT use;
7. Types of ICT applications for service delivery;
8. Methods for evaluating service delivery;
9. Ways public gives feedback;
10. Means of informing public about introduction of new technologies;
11. RIPPLES assessment;
12. Views on ICT for service delivery; and
13. Barriers to ICT use.

As a side note, Palau represented the smallest number of respondents to the survey among the four countries and as such the findings below need to be cautiously viewed as not fully representative. The same could be said for the other four countries, however broad generalizations are being made from the data and it is only interpreted within the context of the responses rather than being representative of the majority of the Public Service. The research team understood the challenging context of an online survey but within the limited time frame of the research, the paper-based submissions could not be collected, received and analyzed on time and were ultimately excluded.

5.1 Palau

5.1.1 Characteristics of the sample

The sample consists of 5 participants from 2 sectors divided as follows: 2 (40%) from Health and 3 (60%) from Public Service Office (see Table 1). Respondent positions included ICT Administrator, Administrator, Assistant Attorney General, Legal Officer and HR Information Systems Administrator.

Table 1. Characteristics of the respondents by sector

Sector	**Count**
Health	
Respondent's position	
ICT Administrator	1
Administrator	1
Total	**2(40%)**
Public Service Office	
Respondent's position	
Assistant Attorney General	1
Legal Officer	1
HR Information Systems Administrator	1
Total	**3(60%)**

5.1.2 Awareness of PICPA

In terms of awareness of PICPA activities in Palau, three of the five respondents were aware while two were not. Reasons for not being aware of PICPA were not given but it would be interesting to gauge when PICPA first engaged with Palau in terms of their activities and whether there was a formal dissemination plan for its activities.

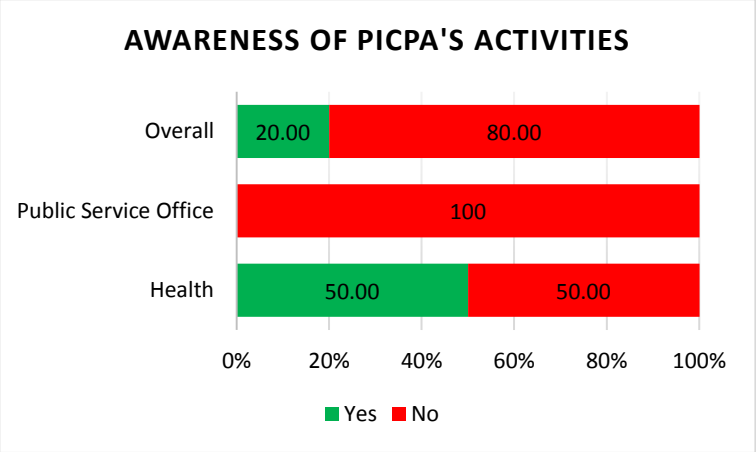

Figure 1. Awareness of PICPA's activities – Palau

5.1.3 Extent of ICT use

In terms of the extent of ICT use in their daily work, responses were very positive, skewing to 'great extent' and 'very great extent'. This correlates with their access to ICTs in 5.1.4.

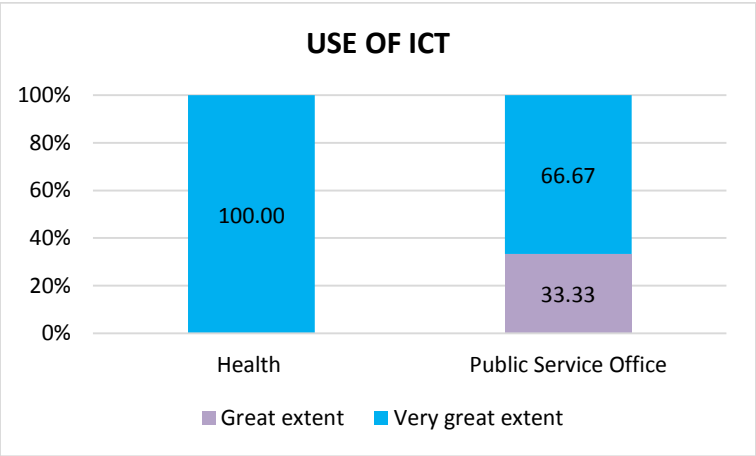

Figure 2. Use of ICTs - Palau

5.1.4 Access to ICTs

All respondents indicated having regular access to the baseline ICTs in their office, department or organization which also supports their 'great extent' or better, ICT use in 5.1.3.

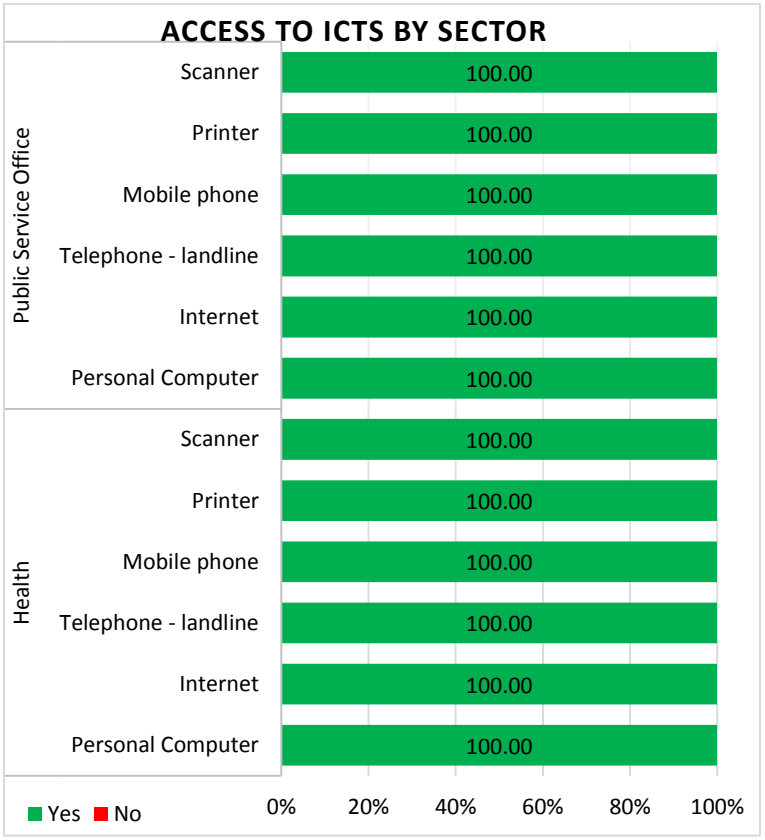

Figure 3. Access to ICTs by sector - Palau

5.1.5 ICT-related capabilities

The majority of respondents indicated 'totally confident' for baseline ICT related capabilities which would be characteristic of their everyday interactions with basic ICT tools used in their offices. Overall, this corresponds positively with their responses to extent of ICT use and access in 5.1.3 and 5.1.4.

For the minority that indicated 'moderately confident' or 'not at all confident', lack of capability was towards the more intermediate level tasks with the ICT tools, i.e. email signatures, graph creation and image downloads from the web. These functions would be more dependent on the type of work they were involved in for example.

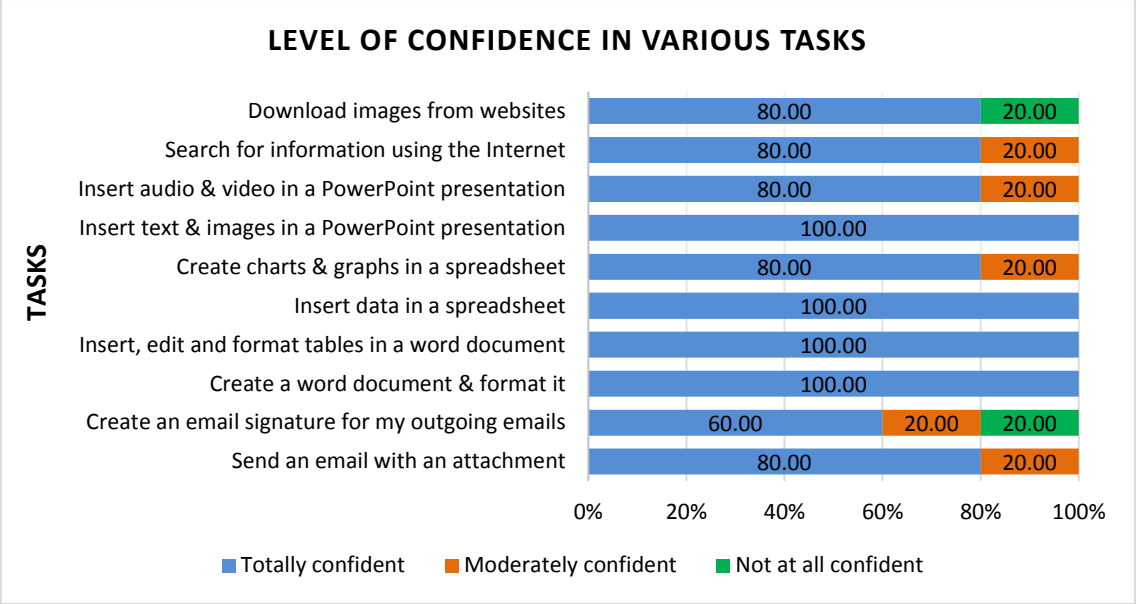

Figure 4. Level of confidence in various tasks - Palau

5.1.6 Plan for ICT use

In terms of awareness of an ICT plan or policy in their office, department or organization, none of the respondents were aware of one or they were unsure that one existed. Document evidence suggests a plan exists considering that a framework/strategy is in place for PICSs including Palau, i.e. 'Framework for Action on ICT for Development in the Pacific' (Solomon Times, 2011). Further evidence suggests consultative work undertaken by the International Telecommunications Union (ITU) recommended an updated ICT policy and that a strong regulatory framework was needed for Palau (Defreitas, 2012). How filtered down the organization such a plan was disseminated was undetermined.

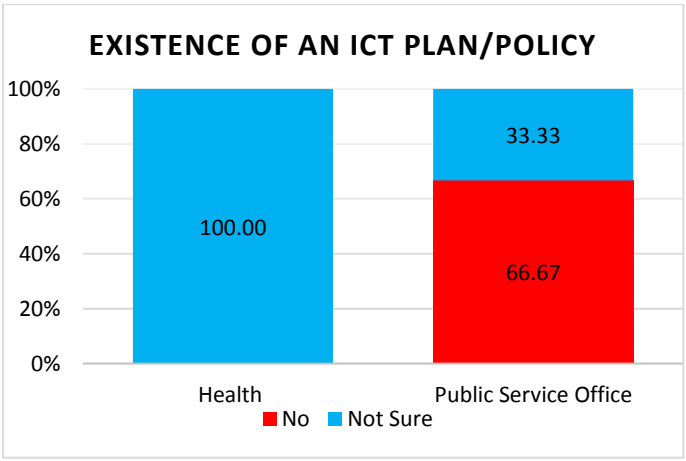

Figure 5. Existence of an ICT plan/policy - Palau

5.1.7 Types of ICT applications for service delivery

Respondents stated consistent ICT tools in terms of the types of ICT applications they used for service delivery. These could be categorized under typical public dissemination media such as radio, television and websites and the less public dissemination applications like cell and landline phones (calls and texts) and email notifications. One ministry had specific systems set up for the purposes of service delivery although they did not elaborate on them. Overall however these types of ICT applications pointed to more information dissemination types of services e.g. 'what is', 'how to' and 'who to contact'.

5.1.8 Methods for evaluating service delivery

Three main indicators by respondents were provided in terms of methods for evaluating service delivery. They were either by complaints lodged at their offices by the public, through written feedback from the public and by how the office or department measured their accomplishments, i.e. "results". There did not appear to be a systematic or singular preferable method however so various avenues appeared to be acceptable as long as the office/department was contactable. Additionally, given the small size of the country it was not too difficult to solicit or provide advice/feedback even if it was an informal verbal one in passing.

5.1.9 Ways public gives feedback

The respondents generally indicated that the public hardly provided feedback with the minority indicating drop-ins or calling in. The interviews however revealed a different approach and it was via a 'roundabout way' where they would approach someone else who may be related or connected to the person they had feedback (or a complaint) for. Some would go straight to the head of department or the most senior figure to provide their feedback, usually verbally. Whether this method was feedback on a service or merely a complaint about a particular person or process was undetermined. Again, issues of small country size may factor into the lack of feedback, at least via formal/official means.

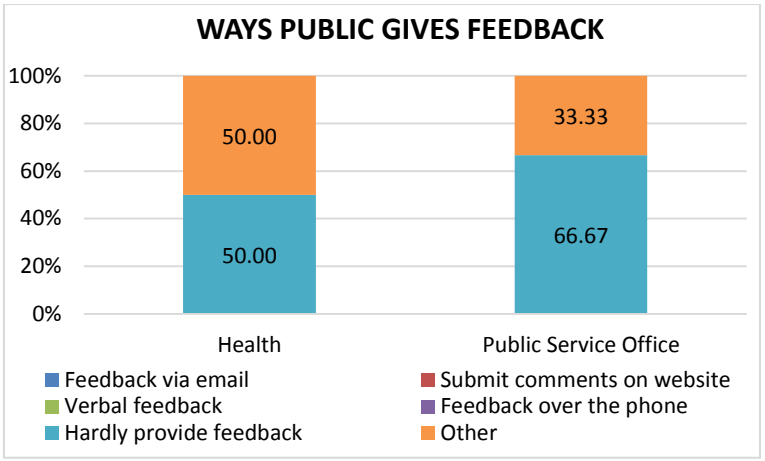

Figure 6. Ways public give feedback - Palau

5.1.10 Means of informing the public about introduction of new technologies

Email, website and radio were generally indicated as the more common means of informing the public about the introduction of new technologies. There did not appear to be a singular preferred method as well with public dissemination of this type of information although the various means pointed to perhaps a wider dissemination approach by the respective offices/departments. However, responses here were consistent with 5.1.7 in terms of the types of ICT used for public service delivery.

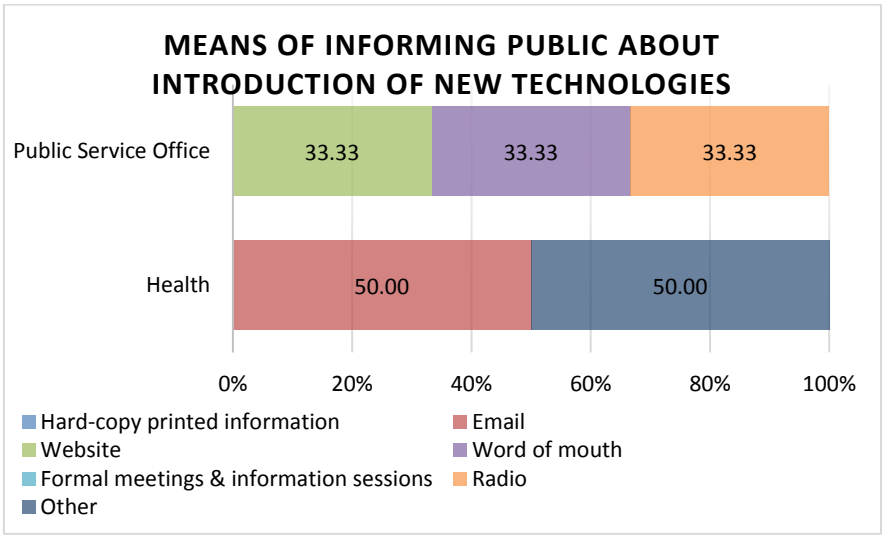

Figure 7. Means of informing public about introduction of new technology – Palau

5.1.11 RIPPLES assessment

Overall, respondents generally rated their RIPPLES as being 'Average' to 'Above average' although a few rated 'Below average'. It is interesting to compare this rating with sentiments expressed in 5.1.13 in terms of barriers.

	High	**Above average**	**Average**	**Below average**	**Low**	**Don't know/ Not sure**
Resources (Financial)		2	1	1	1	
Infrastructure (Communication, networks)		1	4			
People (Talent, expertise)	1	3	1			
Policies (Rules, practices)		2	3			
Learning (Training)		2	2	1		
Evaluation (Costs, benefits)		2	1	2		
Support Administrative, technical)	1	1	3			
Total	**2**	**13**	**15**	**4**	**1**	**-**

5.1.12 Views on ICT for service delivery

Respondent's views on ICT use for service delivery could be classified into three categories – importance, cost and effectiveness. With regard to importance, respondents acknowledged its vitality to a changing world and the fact that more knowledge in terms of 'know how' is needed in order for enhanced use of ICTs. In terms of cost, respondents felt that access to computers for example needed to be cost effective, even free. Along with this sentiment was the need for affordable and faster internet connectivity. The interviews pointed to similar

themes in terms of having better connectivity and less of a monopolized approach to internet (and telecommunications) provisions. With regard to effectiveness, they saw ICT use as beneficial and its effects positive in terms of being immediate, relevant and allowing for greater coverage of the population as far as dissemination of information was concerned.

5.1.13 Barriers to ICT use

The views expressed in 5.1.11 point to the barriers to ICT use as well and respondents articulated these in terms of access, infrastructure, cost and knowledge which could be viewed as spill-on effects of each other. Overall, poor, limited or underdeveloped infrastructure coupled with limited access to computers (and the internet) because of high costs hindered widespread use of ICTs. As one respondent puts it,

> *"Lack of development as far as infrastructure goes. Internet is quite slow, for example, I had to do this survey four times before it sent through. A large part of the community does not have access to fast internet that is readily available."*

5.2 Samoa

5.2.1 Characteristics of the sample

The sample of the study consisted of 25 participants from 4 sectors: (1) Education, (2) Health, (3) Information and Communication, and (4) Public Service Office. As indicated in Table 2, most of the respondents (44%) were from the Public Service Office (n = 11) followed by Education (28%), Information and Communication (20%), and Health (8%). Respondent positions ranged from Assistant Chief Executive Officer to Assistant Officer. The distribution of respondent's position is presented in Table 2.

Table 2. Characteristics of the respondents by sector

Sector	Count
Education	
Respondent's position	
Assistant Chief Executive Officer	5
Secondary Math Curriculum Officer	1
Culture Officer	1
Total	**7(28%)**
Health	
Respondent's position	
Epidemiology Advisor	1
Assistant Officer	1
Total	**2(8%)**
Information & Communication	
Respondent's position	
Assistant Chief Executive Officer	1
Principal ICT Officer	1
Principal Information Officer	1
Principal IT Officer	1
ICT Officer	1
Total	**5(20%)**

Public Service Office	
Respondent's position	
Assistant Chief Executive Officer	1
Principal Policy Analyst	3
Policy Analyst	4
Data Analyst	1
Principal Planning & Publication Officer	1
Network & IT Specialist	1
Total	**11(44%)**

5.2.2 Awareness of PICPA

Respondents were generally not aware of the activities of PICPA with 16 indicating 'No' and 9 'Yes'. Reasons for not being aware were not determined but it was interesting to note that the majority of those that were aware came from the Public Service Office. This may be an indication that perhaps PICPA activities (at least direct engagement) was with the Public Service Office more than the other ministries/sectors. Further examination of PICPA records with regard to in-country engagements may confirm this although was not possible within the timeframe of the study.

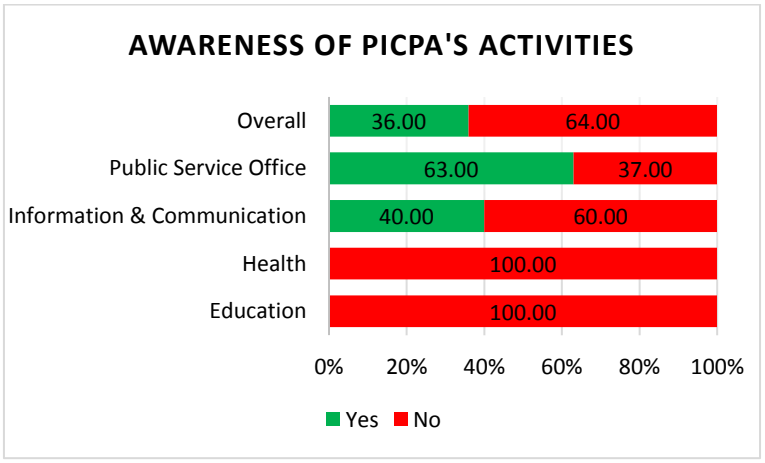

Figure 8. Awareness of PICPA's activities - Samoa

5.2.3 Extent of ICT use

Respondents generally indicated 'Great' (11) to 'Very great extent' (13) in terms of use of ICTs in their work. This is not surprising as the characteristics of the respondents in 5.2.1 suggests greater use of ICTs in their daily work which may also suggest that access to ICTs in 5.2.4 is to a greater extent as well.

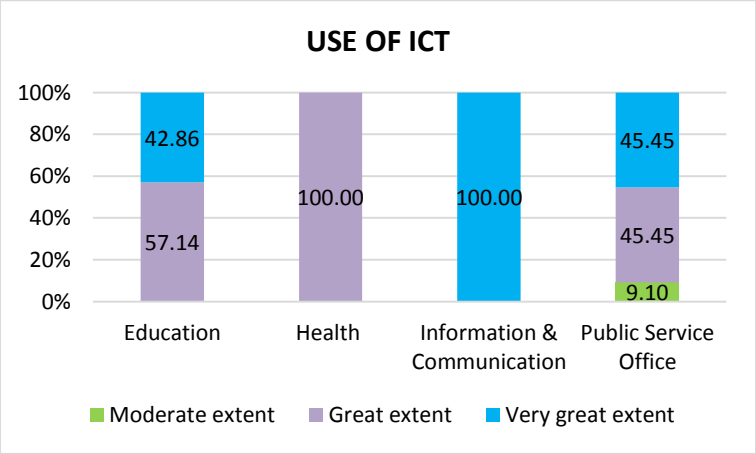

Figure 9. Use of ICT - Samoa

5.2.4 Access to ICTs

While access to the baseline ICT tools was generally good across the respondents, access to some of the ICT tools by sector of government was variable. Internet for example was the only ICT tool that was accessible for all respondents but not so for the other ICT tools. This seems to indicate that the ICT tools were simply not accessible or were shared in the case of the Personal Computers when contrasted with internet access. Mobile phone and scanner access at the office appeared to be the least accessible ICT tools. However this maybe a reflection of the availability of other forms of similar ICTs such as landline access with similar purpose and functionality; and relevance (or lack thereof) of ICT tool to work as in the case of scanners.

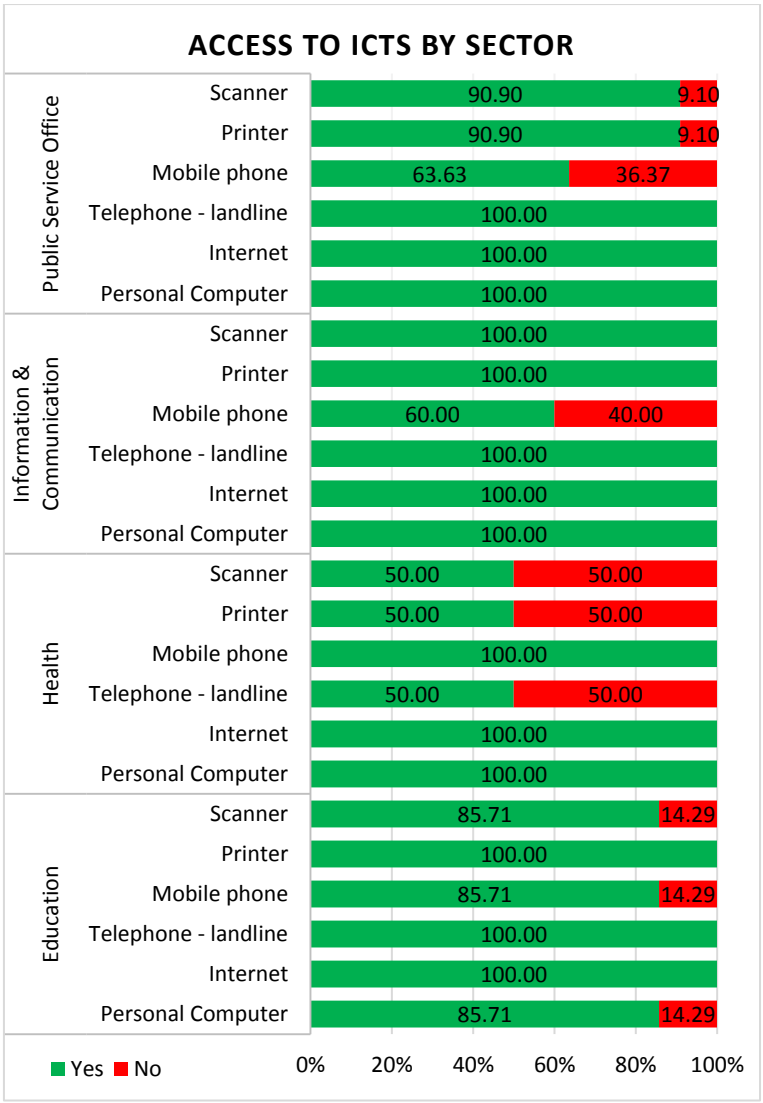

Figure 10. Access to ICTs by sector - Samoa

5.2.5 ICT-related capabilities

In terms of ICT-related capabilities, respondents were generally 'totally confident' of the baseline tasks of computer use. This is consistent with 5.2.3 in terms of their greater extent of computer use. The minority were 'moderately confident' in tasks related to working with spreadsheets, email signatures and attachments, and downloading website images, and 'not at all confident' with intermediate level tasks with PowerPoint.

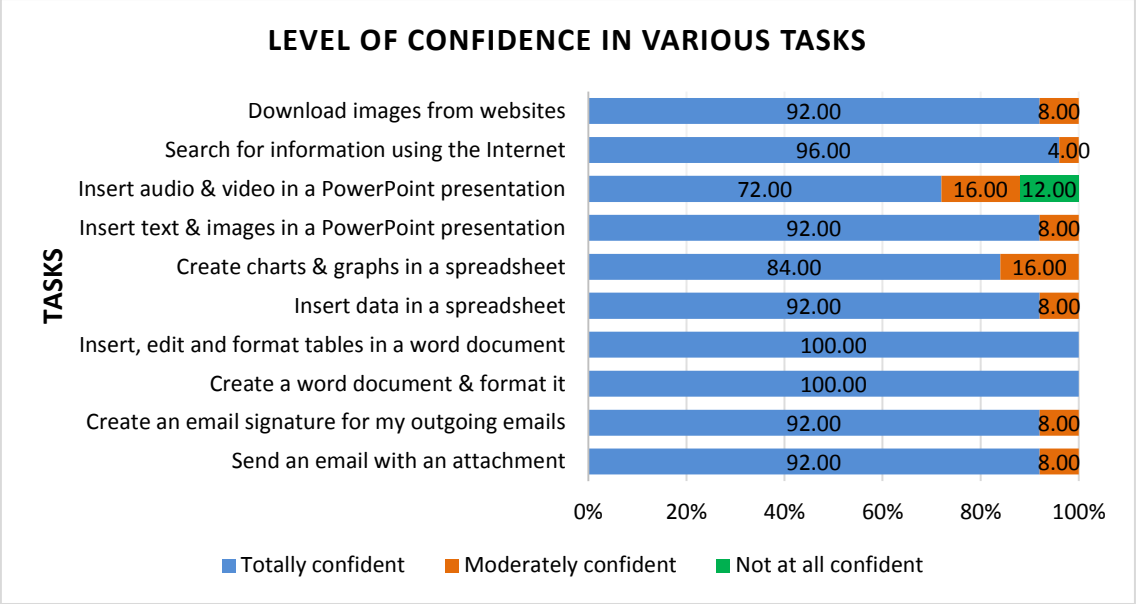

Figure 11. Level of confidence in various tasks - Samoa

5.2.6 Plan for ICT use

The majority of respondents (15) were aware of an ICT plan or policy in existence while 10 were either not aware or unsure. Disparities in awareness levels may be attributed to the different sectors of government in terms of proximity of work involved with ICTs or policy level discussions and the extent of use of ICTs and ensuing policies if they were directly applicable to their activities. This may be the case for the Information and Communication sector and Public Service Office that represented the majority (13) of those who were aware of such a plan or policy.

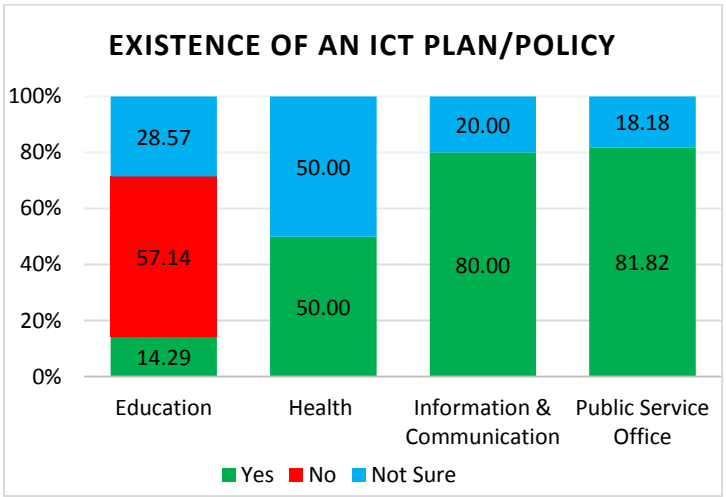

Figure 12. Existence of an ICT plan/policy - Samoa

5.2.7 Types of ICT applications for service delivery

Respondents commonly listed several types of ICT applications, of which most were provided in 5.2.4 above. Additionally, there were mentions of mass media tools such as radio and TV. Email and websites were also mentioned along with specific sector based tools such as hospital databases, e-Survey platforms and social media such as Twitter and Facebook.

5.2.8 Methods for evaluating service delivery

Respondents provided a mix of opinions about methods for evaluating service delivery that pointed to a lack of uniform or systematic approach to conducting evaluations of such nature. Apart from those that did not know about their evaluation systems or felt there needed to be some type of organized evaluation process, others mentioned some form of unspecified monitoring and evaluation tools, email and telephone surveys and public consultations or receipt of public complaints directly. Additionally there were mentions of regular reporting systems such as an outcomes based template to note the quality of services provided, monitoring of website hits and social media comments. Whether the template for example was in widespread use across the Samoa Public Service remained to be seen.

5.2.9 Ways public gives feedback

Responses were fairly mixed with regard to the ways public provided feedback. However, 'they hardly provide feedback' was commonplace, followed by verbal feedback either in person on via the phone and also through emails. There was also mention of "customer service spot checks where people can fill out survey forms on how our service delivery is." One respondent suggested that feedback was usually provided by whatever means the public had of contacting or communicating with the office/department which may explain the mix of ways the public was providing feedback through. Another alluded to some form of "M&E exercises." This also correlates to 5.2.8 in terms of no singular system or method for soliciting feedback.

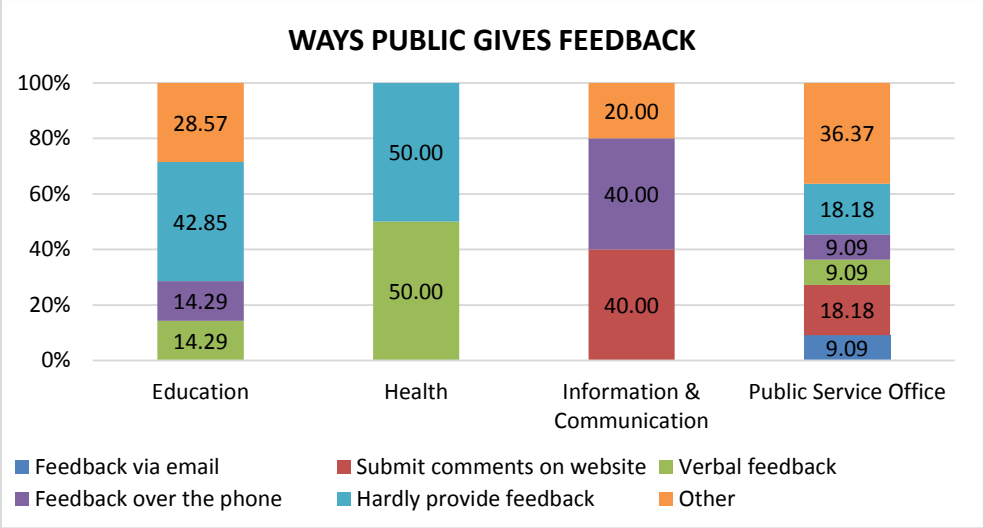

Figure 13. Ways public gives feedback - Samoa

5.2.10 Means of informing the public about introduction of new technologies

Again, a mixed approach to dissemination was indicated by the respondents in terms of informing the public about the introduction of new technologies. These ranged from radio to formal meetings and information sessions, email and word of mouth. This was consistent with earlier indications in 5.2.7 in terms of service delivery tools. Additionally, circular memoranda and letters were also mentioned as means of informing the public which suggests that not all communication was electronic, but hardcopy as well.

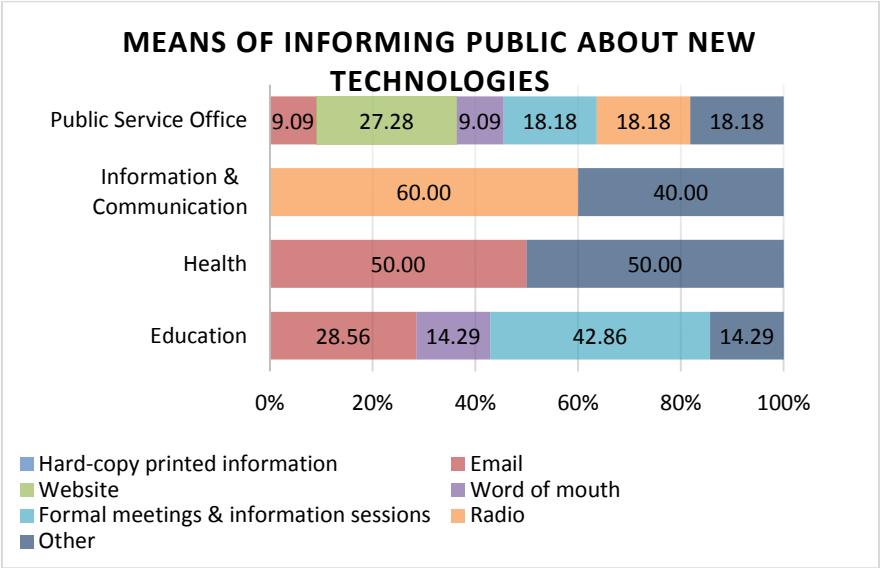

Figure 14. Means of informing the public about new technologies - Samoa

5.2.11 RIPPLES Assessment

Overall, respondents generally rated their RIPPLES from 'Average' to 'Above average'. 'Below average' to 'Low' was notable in terms of comparisons to sentiments expressed in 5.2.13.

	High	**Above average**	**Average**	**Below average**	**Low**	**Don't know/ Not sure**
Resources (Financial)	1	4	14	4	1	1
Infrastructure (Communication, networks)	2	10	10	2	1	
People (Talent, expertise)	5	8	9	3		
Policies (Rules, practices)	1	12	10	1	1	
Learning (Training)	1	7	11	5	1	
Evaluation (Costs, benefits)		7	12	3	2	1
Support Administrative, technical)	2	11	8	3	1	
Total	**12**	**59**	**74**	**21**	**7**	**2**

5.2.12 Views on ICT for service delivery

Overall, respondent's views were polarizing on ICT use for service delivery. Those that provided more optimistic views explained the benefits that ICT use could bring to service delivery in terms of its effectiveness, efficiencies and usefulness. The importance was also emphasized in terms of this day and age of progress and organizational change. For those that were not as positive, they reflected on the realities of slow connectivity, further room needed for improvement in ICT use, a lack of full capacity in terms of proper use of ICT and

the need for more public exposure to ICT use. One respondent aptly expressed the inevitability of ICT use,

> *"I believe using ICTs in public service delivery is an inevitable trend. Technology has evolved significantly in the past 10 years and ICT is the one tool that provides the medium, means and language to communicate and transform the way we live and interact. Hence, any organisation should try as much as possible to invest and utilise ICT in their core business in order to keep up or otherwise be left behind."*

5.2.13 Barriers to ICT use

Two main themes emerged as barriers indicated by respondents. Firstly, cost in terms of high price of data and internet ('affordability') and lack of or inequitable funding ('opportunities') regarding proper ICT provisions for enhanced infrastructure, equipment, acquisition of new technologies and maintenance costs. Secondly, capacity in terms of people's lack of knowledge/understanding ('literacy'), buy-in, confidence and the limited access to ICTs. To a lesser extent, additional sentiments were expressed regarding unreliable networks and a presumed "old school mentality" and "digital divide" when it came to embracing new technologies and being allowed its affordances. As one respondent expressed,

> *"The number one barrier is the current mindset of the users who have a negative attitude in opening up and accepting these new technologies to change how we transact and interact. Therefore, we need to educate them and make them aware of these changes illustrating the benefits that they can have when they follow along. The second issue is lack of funding sources. ICT is a cost centre and equipment and softwares/systems are not cheap to procure. Also, ICT experts are limited."*

5.3 Kiribati

5.3.1 Characteristics of the Sample

The sample of the study consisted of 10 participants from 4 sectors divided as follows: 1 (10%) from Education, 1(10%) from Health, 5 (50%) from Information and Communications, 3 (30%) from Public Service Office. The characteristics of the respondents are shown in Table 3.

Table 3. Characteristics of the respondents by sector

Sector	Count
Education	
Respondent's position	
Senior IT Specialist	1
Total	**1(10%)**
Health	
Respondent's position	
Medical Officer	1
Total	**1(10%)**
Information & Communication	
Respondent's position	
Director	1
Assistant IT Officer	1
Licensing Officer	1
Manager	2
Total	**5(50%)**
Public Service Office	
Respondent's position	
Assistant Public Workforce Management Officer	1
Human Resource Development Officer	1
IT Manager	1
Total	**3(30%)**

5.3.2 Awareness of PICPA

Respondents were split in terms of awareness of PICPA activities. Reasons for not being aware were undetermined but based on the data, awareness of the activities of PICPA may be limited to certain sectors of the Public Service such as the Public Service Office for example that may be more actively engaged with PICPA. For lack of a significant number of respondents however, the extent of mass awareness or lack thereof is purely speculative at this point.

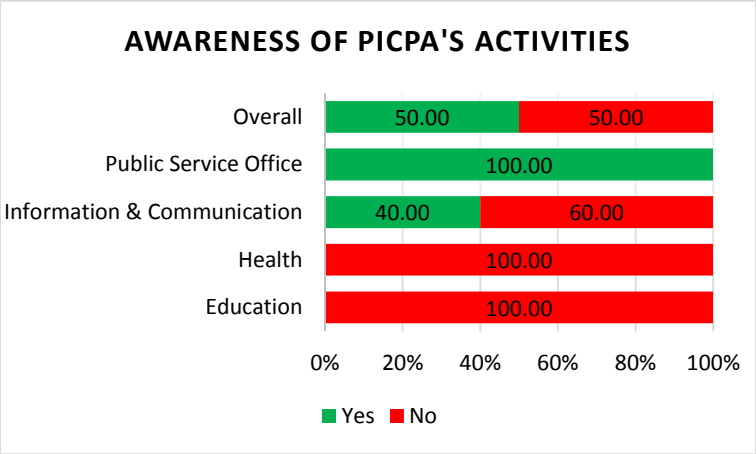

Figure 15. Awareness of PICPA's activities - Kiribati

5.3.3 Extent of ICT use

Respondents generally indicated 'moderate extent' to 'very great extent' in terms of how much their work involved the use of ICTs which reflected the type of staff that completed the survey. 'Very great extent' for example were ratings from those that worked in the IT areas of the Public Sector.

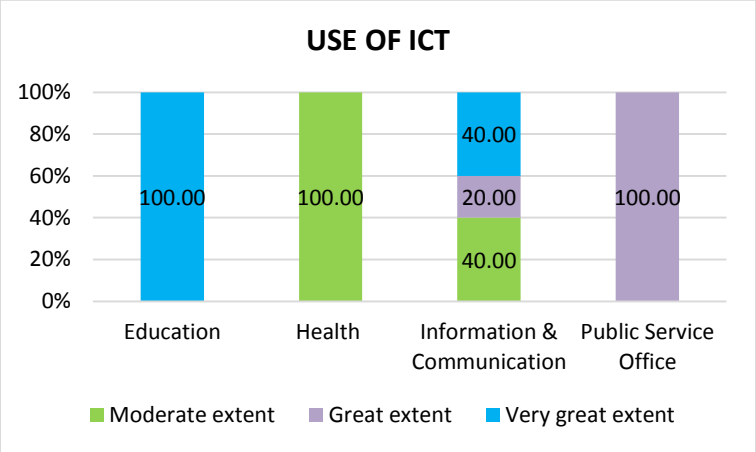

Figure 16. Use of ICT – Kiribati

5.3.4 Access to ICTs

Respondents generally had access to the baseline ICT tools at their office/department which correlates to the extent of use of ICTs in 5.3.3 as well as the type of work they were involved in. It was interesting to observe that all respondents at least had access to a telephone landline despite not having access to the other ICT tools. What remains to be seen is if the few that didn't have 'regular access' had any form of access what so ever.

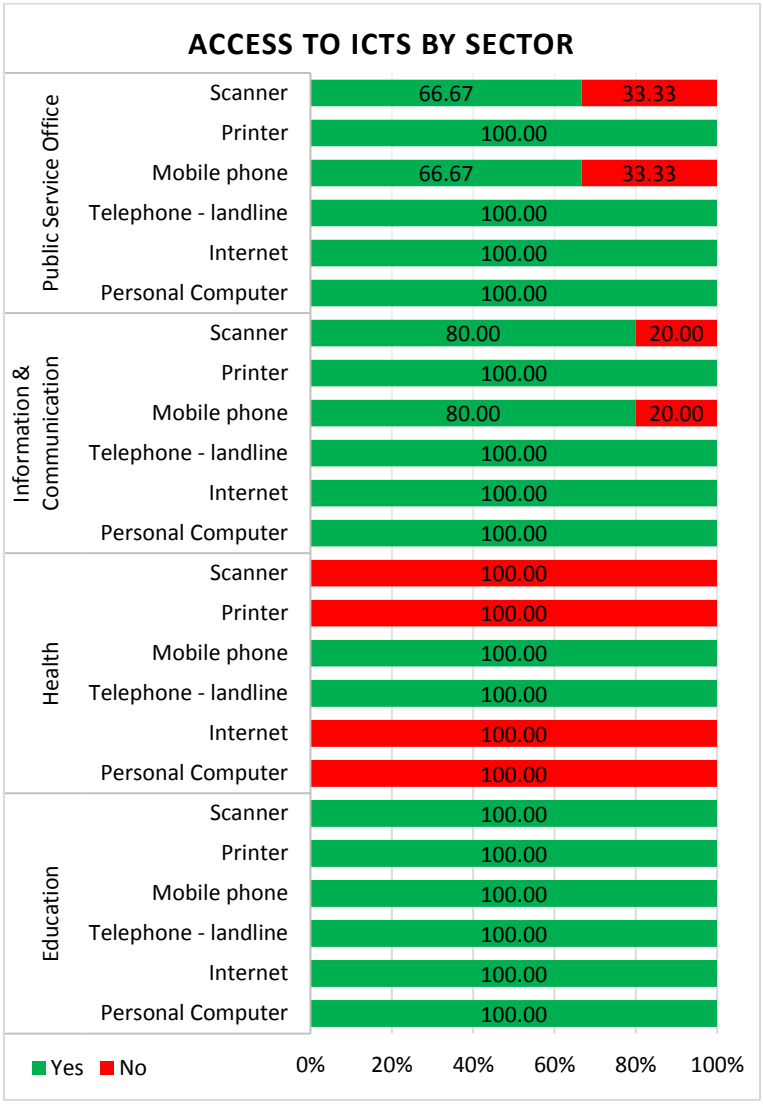

Figure 17. Access to ICT by sector- Kiribati

5.3.5 ICT-related capabilities

Respondents were generally 'totally confident' about their standard ICT-related capabilities with computer use. The intermediate tasks such as spreadsheets, inserting audio and video in

PowerPoint presentations, and creating email signatures reflected 'moderately confident' and 'not at all confident' for the small minority.

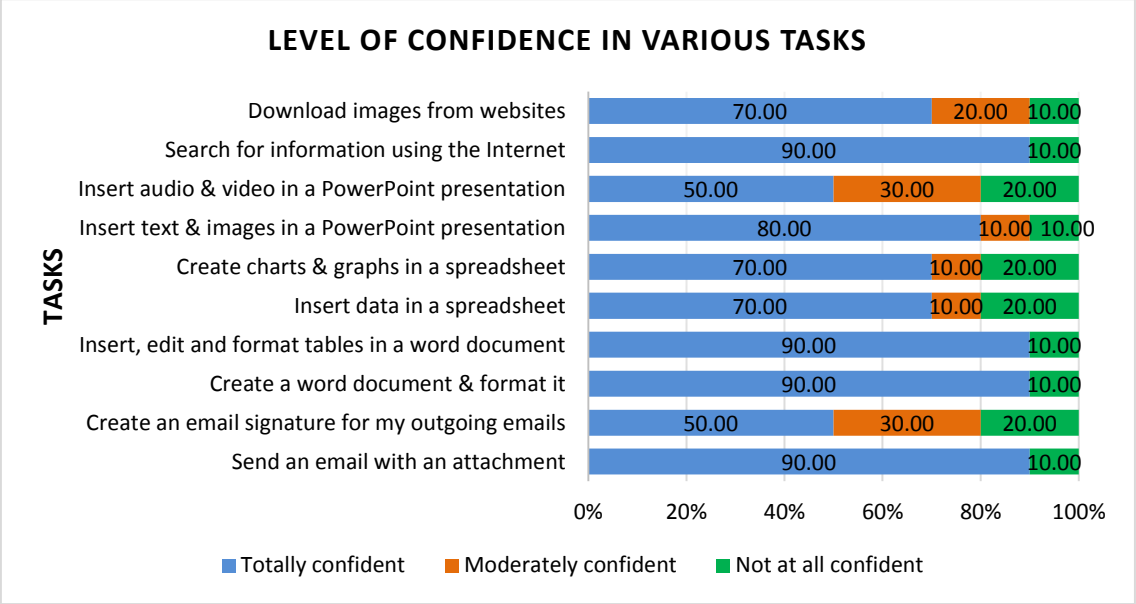

Figure 18. Level of confidence in various tasks - Kiribati

5.3.6 Plan for ICT use

As far as awareness of an ICT plan/policy was concerned, the majority of respondents were 'not sure' or indicated 'no'. Interestingly, the few that indicated 'yes' occupied some of the more senior positions in the Public Service. Whether this was a reflection of macro level awareness that had not filtered down the organization remained to be seen, or perhaps awareness was limited to higher level preliminary implementation discussions for the moment.

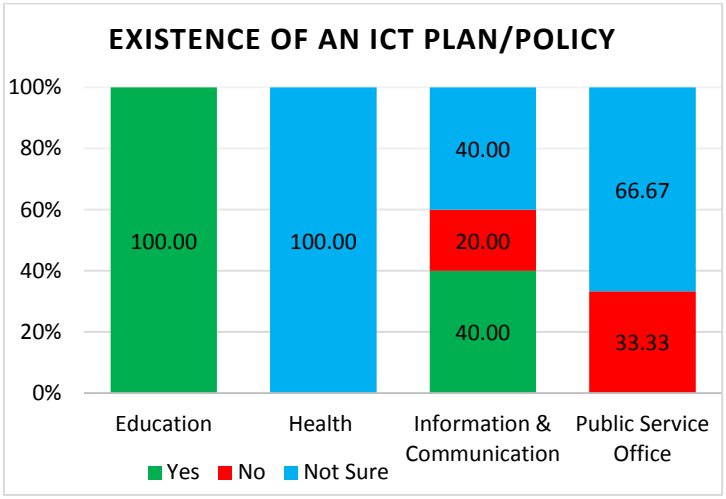

Figure 19. Existence of ICT plan/policy - Kiribati

5.3.7 Types of ICT applications for service delivery

The use of emails, websites and telephony were common responses in terms of types of ICT applications used for service delivery. Internet connectivity appeared to be key in allowing communication exchanges and ministries "keeping abreast of the issues arising from time to time." Specific databases were also indicated although to a lesser extent.

5.3.8 Methods for evaluating service delivery

While a few respondents were not sure of the methods their office/department used to evaluate their service delivery, others indicated unspecified forms of survey type instruments, email feedback and complaint boxes. There were also indications of some form of interviews and staff performance measures.

5.3.9 Ways public gives feedback

The most common responses were "they come and see us personally and provide verbal feedback" and "they hardly provide feedback". The minority indicated email and telephony feedback with one respondent indicating that feedback from the public was dependent on what type of means they had to contact the office/department or person concerned. This suggests several means by which the public were able to provide feedback to the Public Service instead of a single method or process.

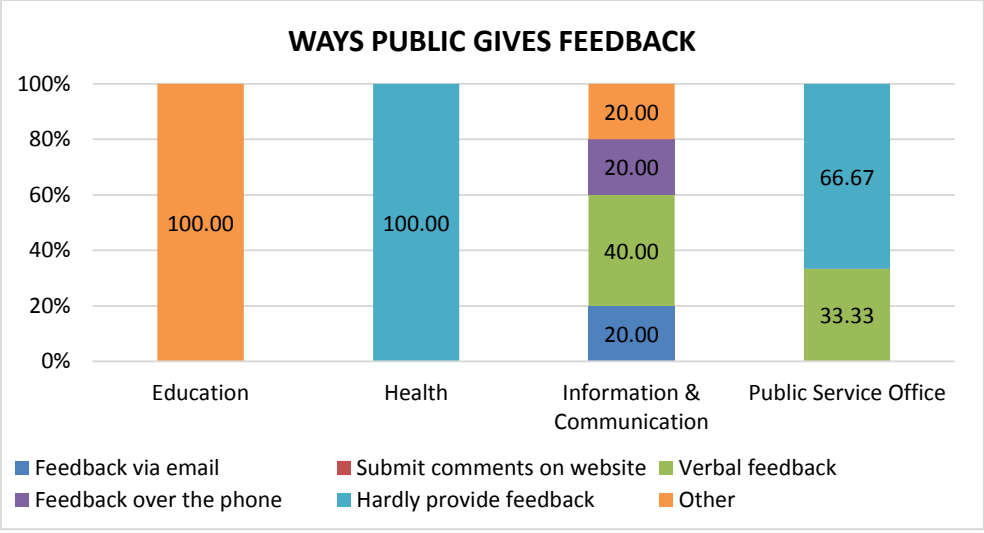

Figure 20. Ways public give feedback - Kiribati

5.3.10 Means of informing the public about introduction of new technologies

Radio came out as the most common means for disseminating information to the public about a new technology followed in equal measure by email, website, word of mouth (informal) and formal meetings/information sessions.

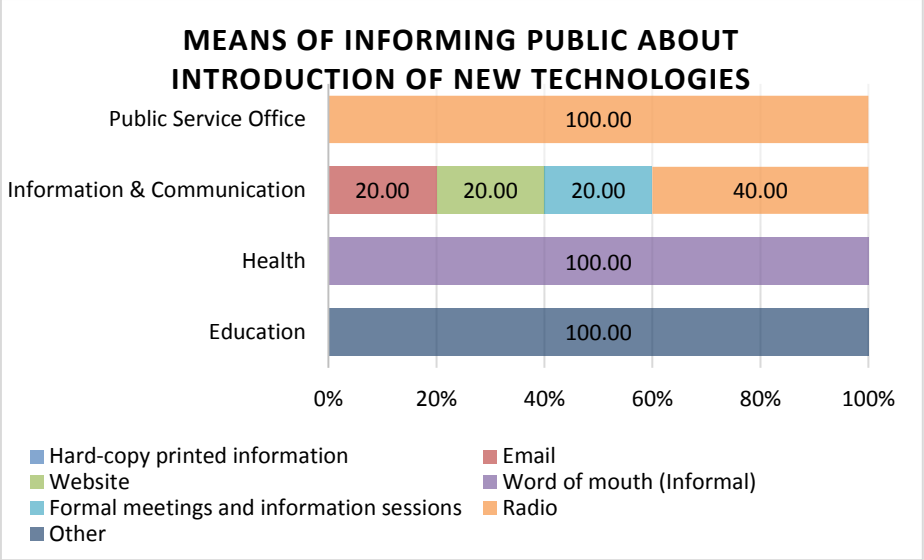

Figure 21. Means of informing the public about new technologies - Kiribati

5.3.11 RIPPLES assessment

Overall, respondents generally rated their RIPPLES as 'Average'. Note the contrast of this rating with issues raised in 5.3.13.

	High	Above average	Average	Below average	Low	Don't know/ Not sure
Resources (Financial)			6	1	1	2
Infrastructure (Communication, networks)		2	6		1	1
People (Talent, expertise)		5	3	1		1
Policies (Rules, practices)		1	7	2		

Learning (Training)		3	6	1		
Evaluation (Costs, benefits)		2	6		1	1
Support Administrative, technical)		5	2	3		
Total	**-**	**18**	**36**	**8**	**3**	**5**

5.3.12 Views on ICT for service delivery

The majority of respondents generally spoke to the potential and capabilities of ICT use, particularly where it could "enhance the effectiveness and efficiency of the service delivery to the public" and its capacity to reach remote islands where it was not possible before. One respondent threw caution to the wind in terms of "a question of maintenance and continuity of the adopted technology." Another respondent expressed,

> *"I believe ICT is enabling us to shape our future using new innovations and technology although at present this potential is benefitting us averagely but can be further improved by providing the support needed for ICT to be integrated constructively into how we carry out our duties within our respective departments as well as when dealing with customers and also between staff in this Ministry."*

5.3.13 Barriers to ICT use

Cost, access, connectivity and capability were general themes extrapolated from respondents. Cost was highlighted as high in terms of a monopolized telecommunications environment, e.g. "high cost of internet connection." There were also indications of funding issues as one respondent puts it,

> *"Financial resources has to be the main issue. Nevertheless, the support of the administrative department to ICT must be improved to make sure ICT takes its rightful place in improving public service delivery, in this time and age."*

Access to ICTs was limiting in terms of the general population, especially to access government information relevant to them. Connectivity issues especially to the more remote outer islands were seen as a barrier. Lack of basic ICT skills were indicated as a barrier in terms of educating the public and bridging the "gap between the older and new generation in the new technologies."

5.4 Solomon Islands

5.4.1 Characteristics of the sample

The sample of the study included 36 participants from 2 sectors: (1) Education, and (2) Information and Communication. As illustrated in Table 4, majority of the respondents were from Education 69.44% (n = 25) while the remaining 30.56% (n = 11) were from Information and Communication. Respondent positions ranged from Director to Intern. The distribution of respondent's position is summarized in Table 4.

Table 4. Characteristics of the respondents by sector

Sector	**Count**
Education	
Respondent's position	
Administrative Registry Officer	1
Director Teaching and Learning	1
Accountant	1
Manager	4
Under Secretary	1
Secretary	1
Executive Personal Secretary	1
Principal Officer	3
Committee Coordinator	1
Local Technical Coordinator	1

Senior Administrative Officer	3
Data Officer	3
Communication Officer	1
Planning Officer	1
Information Officer	1
Chief Classroom Assessment Officer	1
Total	**25(69.44%)**
Information & Communication	
Respondent's position	
Director ICT Support Unit	1
Technician	3
System Administrator	1
Programmer Application Support	1
Intern	1
Principal IT Officer	1
Operating Environment Administrator	1
Asset Officer	1
Information Officer	1
Total	**11(30.56%)**

5.4.2 Awareness of PICPA

Respondents were generally not aware of the activities of PICPA with approximately 86% indicating 'no' compared to approximately 14% that indicated 'yes'. Awareness of PICPA activities may be limited to those sectors that were directly involved with PICPA although the scope and extent of PICPA activities in the Solomon Islands for instance could be further examined in order to properly identify what levels of sector penetration was sufficient in terms of engagement.

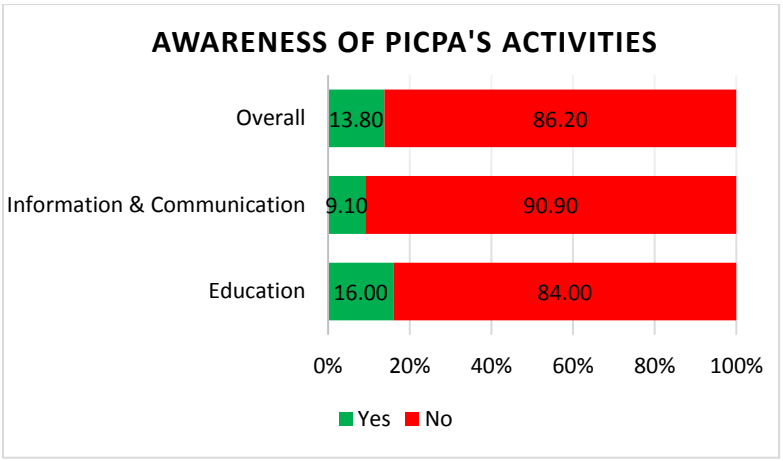

Figure 22. Awareness of PICPA's activities – Solomon Islands

5.4.3 Extent of ICT use

Respondent's generally indicated their extent of ICT use as 'great extent' (approx.. 31%) and 'very great extent' (approx.. 47%) which was a reflection of the type of work they were involved with. Approximately 17% indicated 'moderate extent' though overall it was clear that ICT use was common place among respondents.

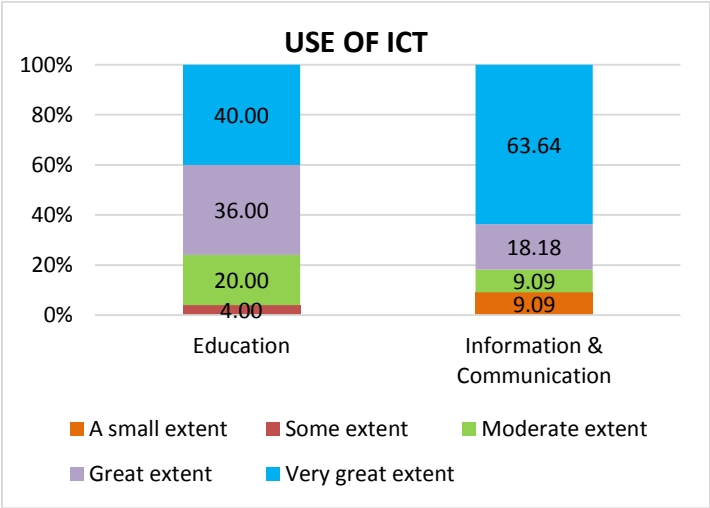

Figure 23. Use of ICT – Solomon Islands

5.4.4 Access to ICTs

Regular access to the baseline ICT tools was common for all respondents with the exception of one or two that did not have regular access to a personal computer or mobile telephone. This was fairly consistent with their extent of ICT use in 5.4.3.

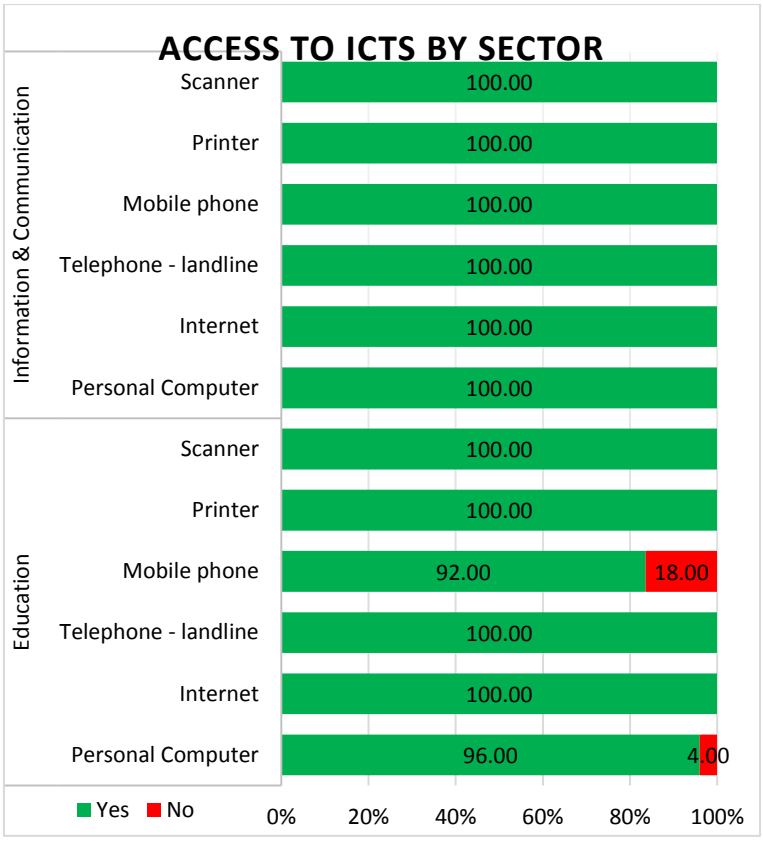

Figure 24. Access to ICTs by sector - Solomon Islands

5.4.5 ICT-related capabilities

The majority of respondents indicated 'totally confident' for the baseline ICT tasks related to computer use. The more intermediate computer tasks were rated by the minority as 'moderately confident' and 'not confident at all'. These related to spreadsheet creation and the more complex PowerPoint authoring functions related to audio and video insertion.

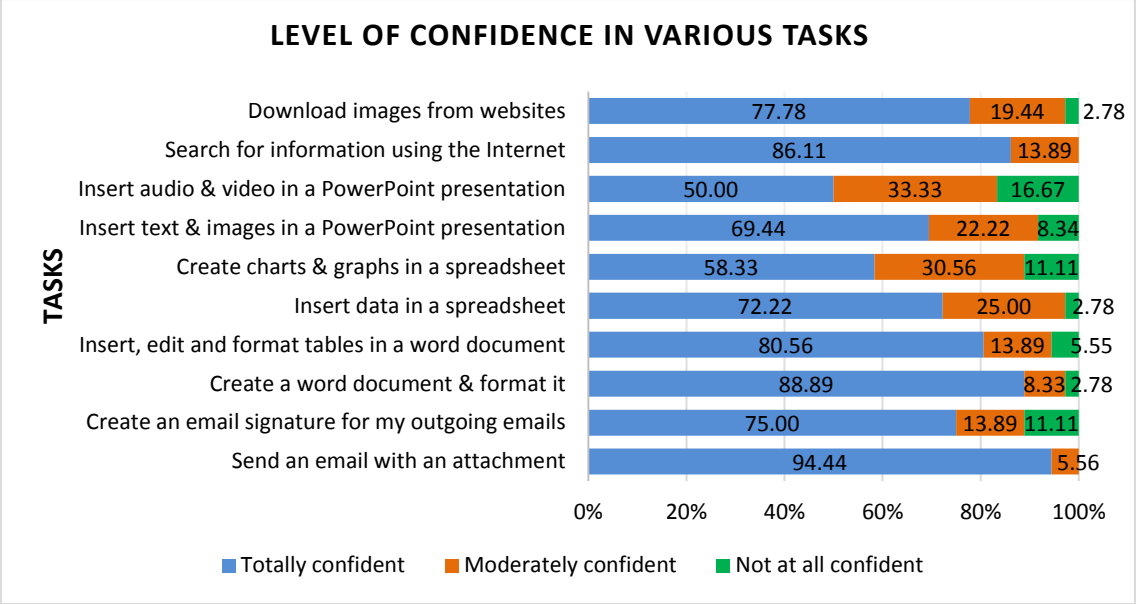

Figure 25. Level of confidence in various tasks – Solomon Islands

5.4.6 Plan for ICT use

The majority of respondents (approx. 64%) were aware of an ICT plan/policy with approximately 36% indicating 'no' (only from the Education sector) or 'not sure'. Reasons for not being aware of the existence of a policy/plan was undetermined but based on the type of work the respondents were involved in; there may be a limited awareness or understanding of ICT plans/policies that have not filtered adequately through the organization.

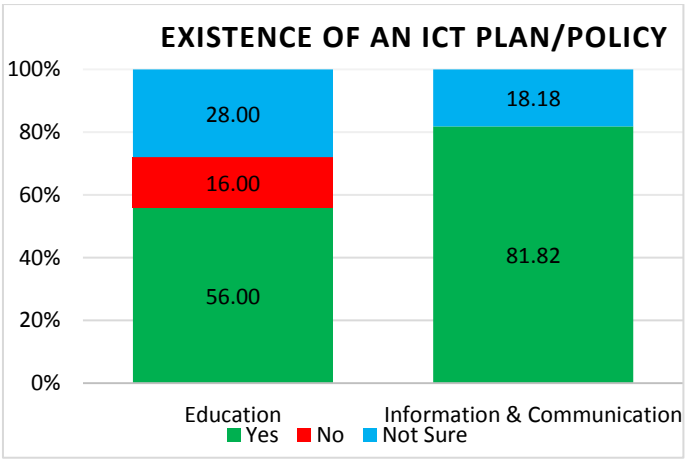

Figure 26. Existence of an ICT plan/policy – Solomon Islands

5.4.7 Types of ICT applications for service delivery

Emails, websites and telephony were the most common ICT tools used for service delivery according to the majority of respondents. There were indications of some form of sector-specific databases, shared networks and even the use of CDs. There were a few noticeable responses indicating infrastructural aspects of ICTs that may have been the result of misinterpreting the question but it is not an entirely wrong because it tends to reflect the backbone of typical frontline ICT tools, for example LAN, WAN, Citrix, VPN.

5.4.8 Methods for evaluating service delivery

With the exception of a few that did not have an idea of the methods or simply stated 'we don't', most respondents indicated various forms of evaluating service delivery. They were either via electronic means ('helpdesk system') or hardcopy ('pamphlets'). The odd few rated their service as opposed to what the question actually required which was means of evaluating. There were other less traditional means such as services of an independent assessor as well as some form of unspecified M&E tools and processes. There did not appear to be any singular or standard method for evaluating service delivery.

5.4.9 Ways public gives feedback

Email was the most common form of feedback by the public according to the respondents, followed by some form of verbal feedback either via telephone or in person. There were a few indications of 'they hardly provide feedback' as well. Traditional media ('newspapers') and social media ('Facebook') appeared to be other ways the public provided feedback according to the respondents. This may be a more informal channel than a formal one.

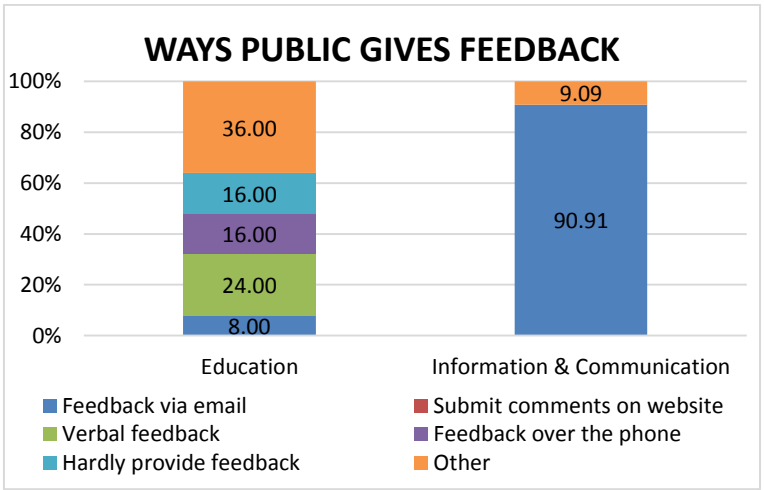

Figure 27. Ways public give feedback – Solomon Islands

5.4.10 Means of informing the public about introduction of new technologies

Respondents generally indicated Radio and Email as the most common means of informing the public about the introduction of new technologies. Newspapers were also mentioned as another avenue for media releases regarding new technologies. Websites and hardcopy materials were mentioned but to a lesser extent.

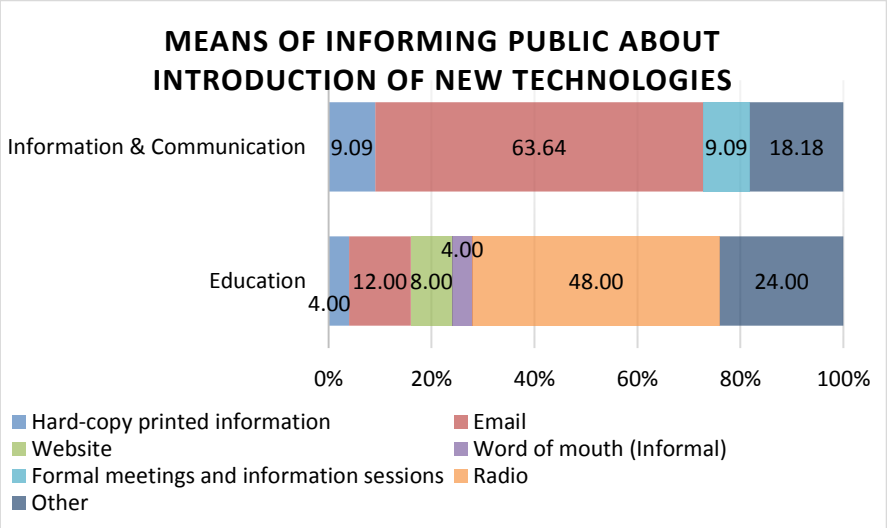

Figure 28. Means of informing the public about new technologies – Solomon Islands

5.4.11 RIPPLES assessment

Overall, respondents generally rated their RIPPLES as 'Average' to 'Above average' and even 'High' in some cases. When comparing this assessment with 5.4.13 it raises interesting questions about their perceived better assessment of RIPPLES in comparison to the diverse barriers illustrated that impacted each other.

	High	Above average	Average	Below average	Low	Don't know/ Not sure
Resources (Financial)	5	12	14	4		1
Infrastructure (Communication, networks)	10	14	11		1	

People (Talent, expertise)	6	19	8		1	2
Policies (Rules, practices)	3	15	16	1		1
Learning (Training)	4	10	17	4	1	
Evaluation (Costs, benefits)	3	8	20	2	1	2
Support Administrative, technical)	6	11	12	5	1	1
Total	**37**	**89**	**98**	**16**	**5**	**7**

5.4.12 Views on ICT for service delivery

The benefits of ICT for service delivery were very clear among respondents who generally saw it to enhance work, communication and processes. Its far reaching effects in terms of rural access were also acknowledged although the disparity between urban and rural access needed to be narrowed. Further development of the country was anticipated with greater use of ICTs. While respondents were encouraged by the possibilities ICT could bring, there were respondents that erred on the side of caution in terms of a lack of basic understanding of ICT use that existed, having to disseminate information to the wider community about ICT use properly and requiring proper policies to be in place first to effect "cheaper and convenient access in the long run." Indications also pointed to having proper infrastructure with the right type of skills. As a respondent simply stated,

"More is needed."

5.4.13 Barriers to ICT use

Infrastructure, capacity, access and cost were the most common barriers stated by respondents. In terms of infrastructure, this was viewed as uneven and inconsistent especially when it came to comparing what the urban areas had in contrast to the provinces,

"*Another barrier is the ICT infrastructure in the provinces which caused rural people not to access the information posted in the website."*

Other aspects of infrastructure related to poor network setups and inconsistent coverage of internet. In terms of capacity, there appeared to be a lack of it due to a presumed lack of computer knowledge usage and,

> *"Knowing very little about it to take the lead in decision-making leads to the attitude to using ICT, not very confident, less access to use of ICT, less productivity if the office decides to use ICT without training its officers."*

> *"Barriers/hindrances is within the organization itself, there is certainly a need for some sort of in house trainings conducted for users of these modern technologies as most or some of us came into service when these modern technologies were still not introduced in the work place and are still computer illiterate. We are just learning to handle these applications on the "Look and Learn" basis."*

Access was another barrier which also ties in with cost because higher costs meant lower access to ICTs. Further, because of variable infrastructure throughout the country, access was inconsistent. Internet particularly was acknowledged as being high and very expensive. A lack of resources was also mentioned though not elaborated on. Interestingly enough the English language was mentioned as a barrier to fully understanding ICT use by rural dwelling populations.

6.0 Discussion and conclusion

This study brought to light issues related to ICT use in the Public Service of Palau, Samoa, Kiribati and the Solomon Islands purely from a provider point of view. Gauging the 'provider perspective' helped to understand the discrepancies that existed between capacity and provision with regards to ICT use via Surry's RIPPLES model. It also informed and addressed the research objectives through the findings and into the following section.

With regard to awareness of the activities of PICPA in the four countries, it was interesting to note the disparities in awareness which may shed light on the key functions and reach of PICPA in the region. The Public Service Offices had a clearer understanding and awareness compared to the other sectors which may point to the key stakeholders for which PICPA worked with and engaged as part of their scope of work. While this was an additional inquiry for the research, it fostered greater understanding of the study's purpose and objectives in-country.

ICT use across the studied sectors (Education, Health, and Information and Communication) in the four countries was prominent as this generally reflected the nature of the role of the respondents. This ties in closely with access to ICTs where use of ICTs in their daily work was comparable to the types of ICT tools they readily had access to. In areas where access was lacking for some of the basic ICT tools, respondents still had access to tools that were similar in nature to expedite their work. No surprise however as to why sectors such as Information and Communication had better access over others, again an aspect of work being closely related to ICT access and use. In terms of respondent's confidence with various computer related tasks, the baseline assessment was satisfactory across the four countries and another reflection of the nature of work and the type and level of ICT engagement.

Policy-wise, awareness of an ICT plan or policy was clearly lacking in the ministries across the countries. Whether it was symptomatic of a lack of communication or there actually being no plan remains to be seen but based on the in-country interviews, there was a plan of sorts but it seemed more obvious to those directly affected by it. In some cases as Kiribati for example, the plan was outdated although efforts were being made to implement some form of centralized ICT body. A current ICT policy for service delivery across the four countries however could not be determined accurately from the research, and if one existed, how far up and down the Service was the extent of awareness and application of such a policy?

Services provided by the various sectors to the public (not reported in the Findings) were fairly similar across all countries, i.e. by functionality and purpose of department/organization. Generally, indications of the services provided by the studied sectors were communicatory and informational in nature. If they were not directly engaged with the public, they were engaged with providers of the service instead, in the case of the Public Service Offices for example. The Public Service Office generally felt they did not provide services (per se) to the public directly but more so for the Public Service which in essence was the public to a certain extent. The ways in which these services were provided to the public were similar in terms of standard ICT tools such as websites and email. The newer avenues such as text messaging and social media were still emergent and informal platforms. Older media such as radio and television and even hardcopy pamphlets, notices and newspapers were still prevalent in some cases especially where there was a larger geographical spread of communities, islands, states and provinces. The availability of a number of communication channels (ICT tools) for knowledge dissemination may be attributed to the inconsistent availability of and access to ICT tools in the first place as the

example of existing print media proves. The availability of older forms of communication to the public may also reflect the lack of wider access to newer ICT tools.

With regard to methods of evaluating service delivery, there was no singular method deployed by the sectors. Again, the presence of various avenues and forms of evaluations may be an indication of variable ICT use and access across the sectors. However, there was some effort being put into evaluating services albeit through sporadic approaches. The avenues available to the public for feedback were as variable as the public's capacity to provide feedback. Issues of smallness relative to country size more or less determined the type and medium of feedback. The interviews hinted at possible cultural issues in terms of the public providing feedback, or lack thereof. There appeared to be (at least from the Public Service perspective) some understanding by the public about avenues for feedback to them. Soliciting feedback from the public however was generally infrequent and even if there were proper systems in place the public may not be fully encouraged to provide feedback about services.

The RIPPLES assessment overall was generally rated 'Average' and directly corresponded to the barriers to ICTs indicated by the countries. This multi-dimensional approach to assessing finances, communication, people's capabilities, procedures, training, evaluation and support may require more input from upper tiered management in the Public Service. Understandably, it is not as clear cut as 'getting more to enhance more' considering departments/organizations within the Public Service operate under budgetary limitations and strategic priorities among other constraints. It does highlight however the deficiencies that exist with respect to the means for enhancing ICT use for better delivery of public services.

It is a general sentiment that ICTs can and are being used to enhance service delivery. Awareness of its benefits is also clear. The extent of its diffusion or infusion (in organizational processes) however is not consistent. There is a perceived understanding that inequalities with respect to ICT use and availability (access, cost), skills (capacity, upskilling) and overall infrastructure (connectivity, coverage) hinder or prevent widespread and proper application for effective service delivery. This is also supported by the fact that older forms of information and knowledge dissemination systems such as radio, TV and hardcopy publications are still being used. The reality of the situation is that these countries, much like other PICs will not become 'Singapores' or 'Japans' any time soon because their geographies and resource challenged characteristics work against them. Even before considering

enhancing ICT to deliver public services, perhaps a step backward is needed to evaluate the quality of the public services systematically before considering the vessel with which to deliver them.

7.0 Recommendations

Based on the research findings, the following recommendations are to be seen as suggestions that countries can adapt or modify to suit their particular situation. It is hoped that these recommendations could generate consistent policy dialogues within and among public sectors to embrace practical ICT applications to improve the quality and effectiveness of services delivered. Further, these recommendations are provided with a forward outlook on ICT use while acknowledging that some progress was being in the Public Service of these countries.

7.1 Recommendation 1: Create, strengthen and engage ICT policies and strategies

- Create ICT polices and strategies both at the national and sectorial levels that is consistent and practical. This needs to be considered in the current context of the capacity to deliver services with a nurturing approach to innovation.
- Sectorial policies should be closely linked to national policy and vice versa.
- National ICT polices should be tied to the country's overall development plan/strategy, regional and international development priorities, e.g. Pacific Regional ICT Strategic Action Plan (PRISAP) 2015-2020 (CROP ICT Working Group, 2014).
- Consider a centralized ICT body with relevant Terms of Reference to better coordinate, diffuse and monitor ICT policies and practices.

7.2 Recommendation 2: Enhance awareness and dissemination of information

- A proper communication plan needs to be in place for better dissemination of policies/plans across the Public Service and to the public, clearly detailing services, means of dissemination and avenue for feedback and evaluation.
- More community centres should be set up to provide access to ICT tools for greater awareness of public services. This includes some form of

standardised infrastructure and technical support. This would help build staff and public capacity and confidence in ICT use and awareness.

- Information regarding public services should be more accessible in the local languages with a coordinated approach to simple instructional design of advertisements and public announcements/press releases and awareness-raising across all platforms for dissemination.
- Mobile applications should be further explored and enhanced as a means for raising awareness of ICT use and public services.
- Improve the methods for data storage of essential records across the Public Sector by hosting on properly maintained servers that enable easy intra-ministry sharing of information. This would avoid issues of duplication.
- Government portals for information need to be updated, consistent and maintained properly. This includes proper design of web pages with consideration for disability friendly access, secure hosting sites and a cohesive approach to linking all ministries and the services they provide in a simple to access and user friendly way.
- Evaluation of processes, systems and services need to occur at regular intervals with a consistent approach that is clear to the Public Service and the public.

7.3 Recommendation 3: Develop infrastructure and resourcing capabilities

- A centrally coordinated audit of ICT infrastructure across the public service should be undertaken to map services provided to capacity to deliver in order to assess further steps to improve delivery. This can be undertaken by a centralized ICT body.
- Consider infrastructure and resource sharing across ministries to ease the burden of overloads on technical support and deficiencies in equipment provision.

7.4 Recommendation 4: Alleviate cost and access issues

- Regulate the cost of standard ICT tools such as Internet access, mobile telephony and PCs/laptops to be more affordable to the public.
- Allow greater but monitored access to Internet use throughout the Public Service.

- Reduce the high cost of equipment and maintenance through subsidies for the public.
- Provide incentives for market entry of more ICT providers and remove the monopolistic approach to telecommunications provision.
- Explore the use of open source software and applications that would reduce the cost of acquiring expensive commercial equivalents.

7.5 Recommendation 5: Focus on human resource development and retention

- Strengthen performance management systems for equitable opportunities and staff retention. This can be done by providing a range of incentives which include, but not limited to, awards, promotions, bonuses, and paid study leave to enable them to receive further training in key areas.
- Promote and encourage more ICT upskilling and workplace integration of ICT tools to bring about process efficiencies.
- Provide professional development and career plans for staff exploring cost effective means of upskilling such as undertaking relevant Massive Open Online Courses (MOOCs).
- Build a repository of relevant learning materials from Open Educational Resources (OER) related to the various sectors of the Public Service based on partnerships with regional and international organizations for the purpose of knowledge enhancement and sharing among ministries. This could also be an added dimension to improving data storage and government portals in the earlier recommendations.

References

Bhatnagnar, S. (2014, March). *Public Service Delivery: Role of Information and Communication Technology in Improving Governance and Development Impact.* ADB Economics Working Paper Series, No. 391, Manilla, Philippines.

CIA World Fact Book. (2016). *Australia-Oceania: Solomon Islands* https://www.cia.gov/library/publications/the-world-factbook/geos/print_bp.html

CROP ICT Working Group. (2014). *Pacific Regional ICT Strategic Action Plan (PRISAP) 2015-2020.* The University of the South Pacific.

Defraitas, D. (2012, April). *A National ICT Policy – Implication for Licensing in the Republic of Palau*, Consultation Workshop 10-12 April 2012, International Telecommunications Union. Koror, Palau. https://www.itu.int/en/ITUD/Projects/ITUECACP/ICB4PAC/Documents/Incountry%20support%20documents/new_Palau%20Licensing.pdf

Demographics in the Solomon Islands. (n.d). (2016). In *Wikipedia*. Retrieved July 4th, 2016 from https://en.wikipedia.org/wiki/Demographics_of_the_Solomon_Islands

Encyclopedia. (2007). *Palau.* Retrieved July 4th 2016, from Encyclopedia.com: http://www.encyclopedia.com/topic/Palau.aspx

Encyclopedia Britannia. (2015). *Solomon Islands*. (Ed.) H. M. Laracy, from https://www.britannica.com/place/Solomon-Islands

Everydayculture. (2007). *Solomon Islands*. (Ed.) J. M. Fugui. Countries and their Cultures, from http://www.everyculture.com/Sa-Th/Solomon-Islands.html

Government of Australia. (2012). *Australian Public Service Information and Communications Technology Strategy 2012-2015*.

Government of Samoa – Office of the Samoa Public Service Commission (2013). *Annual Report 2013-2014.* [Online], Retrieved 1st July 2016, from: http://www.psc.gov.ws/wp-content/uploads/2016/05/AR-2013_2014-Eng.pdf.

Government of Samoa – Samoa Bureau of Statistics. (2015). *Demographic and Health Survey 2014.* [Online], Retrieved 1st July 2016, from: http://www.sbs.gov.ws/index.php/new-document-library?view=download&fileId=1648.

Government of Samoa. (2004). *Public Service Act 2004.* [Online], Retrieved 1st July 2016, from: http://faolex.fao.org/docs/pdf/sam128245.pdf.

Jones, A & Williams, L. (2005, November). *Public Services and ICT Final Report – How can ICT help improve quality, choice and efficiency in public services?* The Work Foundation, London.

Joshi, A. (2010, October). *Review of Impact and Effectiveness of Transparency and Accountability Initiatives: Annex 1 Service Delivery*, Institute of Development Studies. Accessed 15th July from https://www.ids.ac.uk/files/dmfile/IETAAnnex1ServicedeliveryJoshiFinal28Oct2010.pdf

Laracy, H.M. (2016). Solomon Islands: Islands and nation, Pacific Ocean. *Encyclopedia Britannica.* Retrieved July 4th, 2016 from https://www.britannica.com/place/Solomon-Islands

Naz, R., Pathak, R.D., Rahman, M.H., Agarwal, K.N., & Smith, R.F.I. (2006). The Potential For Using IT To Cut Corruption In Service Delivery: A Case Study Of Services To Farmers In Fiji. International *Journal of Effective Management,* 3(1), 39-52.

Open University. (2013). *What are ICTs?* In ICTs in everyday life, OpenLearn Works. Retrieved 28th April 2016 from: http://www.open.edu/openlearnworks/mod/page/view.php?id=48047

Palau Government – Ministry of Finance. (2014). *Household Income and Expenditure Survey Palau*.

Palau Government. (2015). Monitoring, Control and Surveillance. *Strategic Plan 2016-2021*. Palau: Republic of Palau.

Palau Government. (2015). *About BPSS*. Retrieved July 8th 2016, from Bureau of Public Service System: http://palaugov.pw/executivebranch/ministries/finance/bpss/about_and_contacts/

Palau Government. (2015). *Executive Branch.* Retrieved July 6th, 2016, from: http://palaugov.pw/executive-branch/

Pathak, R.D., Naz, R. Singh, G. & Smith, R.F. (2010). ICT for Improved Public Service Delivery in Papua New Guinea Governance. *JOAAG*, Vol. 5. No. 1.

Pathak, R.D., Singh, G., Smith, R.F.I., &Naz, R. (2008). *Contribution of Information and Communication Technology in Improving Government Transparency and Accountability in Fiji.* Paper presented in the conference of the Network of Asia -Pacific Schools Institute of Public Administration and Governance. Held in Jawaharlal Nenhru University, 5-7 December, 2008.

Rogers, E. M. (2003). *Diffusion of innovations*. New York: Free Press.

Surry, D.W. (2002, April). *A Model for Integrating Instructional Technology into Higher Education*. Paper presented at the meeting of the American Educational Research Association (AERA), New Orleans, LA.

Solomon Islands Demographics Profile 2014. (2015). In *Central Intelligence Agency World Fact Book*. Retrieved July 4th, 2016 from http://www.indexmundi.com/solomon_islands/demographics_profile.html

Solomon Islands Facts. (n.d). (2016). In *National Geographic Atlas of the World* (8th ed). National Geographic Society. Retrieved July 4th, 2016 from: http://travel.nationalgeographic.com/travel/countries/solomon-islands-facts/

Solomon Islands Country Profile.(n.d). (2016). In *Nations Online*. Retrieved July 4th, 2016 http://www.nationsonline.org/oneworld/solomon_islands.htm

Solomon Islands Government – Ministry of Public Service. (2015). Retrieved July 4th, 2016 from https://sites.google.com/a/mps.gov.sb/ministry-of-public-service-in-solomon-islands/About-the-Ministry

Solomon Times. (2011, February). *Information and Communication Technology (ICT) provides a platform for achieving the Millennium Development Goals (MDGs) through the implementation of locally appropriate national development strategies.* United Nations Public Administration Network, http://www.unpan.org/PublicAdministrationNews/tabid/115/mctl/ArticleView/ModuleID/1467/articleId/24793/default.aspx

Worldpolicy. (2014, May). *What does "service delivery" really mean?* (Eds.) L. Chen, J. Dean, J. Frant & R. Kumar, from http://www.worldpolicy.org/blog/2014/05/13/what-does-service-delivery-really-mean

Appendices

Appendix A – Research Information & Consent Form

Research Information & Consent Form

Title:	Use of Information Communication Technologies (ICTs) to Enhance Service Delivery in the Public Sector of selected Pacific Island Countries (PICs)
Researchers:	Valentine Hazelman & Deepak Prasad
Duration:	April – July 2016 (4 months)
Overview:	PICPA in collaboration with the Centre for Flexible Learning at the University of the South Pacific is undertaking research in the use of ICTs in the Public Sector of selected PICs. The outcomes are, a comprehensive report to PICs addressing: • the current state of ICTs for service delivery in the public sector in selected countries – Samoa, Kiribati, Palau and the Solomon Islands; • barriers to ICT use impacting service delivery; • recommendations to address these barriers to effective ICT use; and provide • a future outlook on the application of ICTs in the selected countries.
Methods:	Data collection for this research will involve a survey administered to staff in selected areas of the Public Sector at the country sites, interviews with key stakeholders and key document analysis. Data collected will be both quantitative and qualitative. The survey should take not more than 15-20 minutes to complete. The interview should take between 20-30 minutes per participant.
Participation:	This research hopes to gather as much relevant information as possible. Participation is voluntary and participants can withdraw from the research at any time by contacting the researchers. For willing participants, every effort is taken to ensure anonymity and protection of privacy. There are no foreseeable risks to participation. All responses will be treated as confidential and only available to the research team.
Contacts:	If you have questions about the research or would like to contact the researchers please feel free to do so through the following: 1. Valentine Hazelman – hazelman_v@usp.ac.fj or (+679) 323 2308 2. Deepak Prasad – prasad_d@usp.ac.fj or (+679) 323 2041 3. Makarita Erasito – erasito_m@usp.ac.fj or (+679) 323 2105
Consent:	I understand the purpose and requirements of this research and agree to participate. Name: _____ Signature: _____

Appendix B – Research and Ethics Clearance from Palau

Below is the approval response from the Bureau of Public Service System via the IRB. The team was required to submit an Application to the Palau Institutional Review Board for exemption from human subjects in research requirements on 16th May 2016. A signed copy is with IRB Palau.

From: Umerang A. Imetengel [mailto:umerangi@palaugov.org]
Sent: Wednesday, May 18, 2016 7:07 PM
To: Corinne Yee; Valentine Hazelman; Desmond Amosa
Cc: terran@palaugov.org
Subject: IRB application signed

Dear All:

I have received the call from Ms. Franz that the IRB exemption certification was signed so we are in the clear.

Please inform the research team to travel as planned.

I will be travelling next week, but I will leave instructions with Chief Terra Nabeyama who will assist the team with introductions to Department heads and Point of Contacts.

Thanks.
Umerang

--
Ms. Angeline Umerang Imetengel
Director, Bureau of Public Service System/Procurement Officer (MOF)
PO Box 6011, Melekeok, PW 96939

Phone: (680) 767-1000 ext. 5607
Fax: (680) 767-2416
Website: http://palaugov.org/bureau-of-public-service-system/

Appendix C – Research and Ethics Clearance from the Solomon Islands

Below is the approval response from the Ministry of Health and Medical Services on 13th July 2016.

From: "Freda Pitakaka" <freda.pitakaka@moh.gov.sb>
To: "Deepak Prasad" <prasad_d@usp.ac.fj>, "Flora Bentley" <flora.bentley@usp.ac.fj>
Cc: "Ivan Ghemu" <IGhemu@moh.gov.sb>, "Fraser Ghoe" <FGhoe@moh.gov.sb>, "Paul Asitewa, Kerewiri" <pasitewa@sig.gov.sb>
Subject: Health Research Project HRE030/16

Dear Dr Deepak Prasad,

The Solomon Islands Health Research and Ethics Review Board (SIHRERB) had the opportunity to review Project No. HRE030/16, Protocol Title: *"Use of Information Communication Technologies (ICTs) to enhance service delivery in the public sector of selected Pacific Countries (PICs)."*

This submission has been referred to the Information Communication Technologies Support Unit (ICTSU) of the Ministry of Finance and Trade (MOFT) for review in which approval was granted as shown in their attached email.

Also, see attachment for the SIHRERB feedback on your submission.

I hope the attached information are sufficient to commence with the survey.

Yours sincerely,

Freda Pitakaka (Ms).
Dip Nursing (SINU), BPH (FNU), MPH by Research (UNSW)

Chief Research Officer (Ag)
National Health Research Secretariat
Ministry of Health and Medical Services
P.O. Box 349
Honiara, Solomon Islands

Tel: +677 23207
Mobile: +677 7442295
Email: Freda.Pitakaka@simtri.gov.sb

Project Title	Use of Information Communication Technologies (ICTs) to enhance service delivery in the public sector of selected Pacific Countries (PICs).
HRE No.	030/16
Re	Study protocol received from Dr Deepak Prasad dated 27th May 2016.

Reviewed by: SIHRERB **Date:** 21st June 2016

For (Principal Investigator): Deepak Prasad, PhD

SIHRERB Remarks

The above study protocol has been reviewed by the Solomon Islands Health Research and Ethics Review Board (SIHRERB) on the 21st June 2016 and recommends that your protocol needs to be submitted to the core government ministries responsible for your project area:

1. Information Communication Technology Unit, Ministry of Finance and Trade and not through the Ministry of Health and Medical Services Ethics Review Board.

The SIHRERB executive wishes you every continued success in your research.

SIHRERB Chairman (Name) Dr CHRISTOPHER BECHA **Signature**

Appendix D – Survey questions from Survey Monkey

There were four links enabled in Survey Monkey for each country as follows:

- https://www.surveymonkey.com/r/picpa-palau
- https://www.surveymonkey.com/r/picpa-samoa
- https://www.surveymonkey.com/r/picpa-kiribati
- https://www.surveymonkey.com/r/picpa-solo

ICT & Service Delivery in PICs [SOLOMON ISLANDS]

What is this survey about?

This survey aims to gather information on the use of ICTs* for service delivery+ in the Public Sector (Service) of Pacific Island Countries (PICs). Information gathered from this survey will be used by the Pacific Islands Centre for Public Administration (PICPA) to contribute to enhancing service delivery via the use of ICTs. All responses to this survey will be confidential. You only need to complete this survey once.

-

**ICTs (Information, Communication Technologies) are the technologies used in the transmission, operation and storage of data by electronic means. Examples of ICTs include landline telephone, computers, Internet, mobile phone, radio and TV. (OU 2016)*

+Service delivery is providing services mainly, or completely funded by taxation that citizens depend on like water, electricity, basic health care and education. (IPA 1998, World Policy 2014)

*** 1. In what area of the Public Service are you employed?**

- ◯ Education
- ◯ Health
- ◯ Information & Communication
- ◯ Public Service Office

*** 2. Are you aware of the activities of the Pacific Islands Centre for Public Administration (PICPA)?**

- ◯ Yes
- ◯ No

*** 3. Please state your job title? E.g. Administrative Assistant, Information Officer.**

*** 4. Briefly describe what your work involves.**

*** 5. To what extent does your work involve the use of ICTs?**

- ◯ No extent
- ◯ A small extent
- ◯ Some extent
- ◯ Moderate extent
- ◯ Great extent
- ◯ Very great extent

*** 6. Do you have regular access to the following ICTs at your office, department or organisation?**

	Yes	No
Personal computer	◯	◯
Internet	◯	◯
Telephone - landline	◯	◯
Mobile phone	◯	◯
Printer	◯	◯
Scanner	◯	◯

*** 7. Rate your level of confidence for the following tasks.**

	Totally confident	Moderately confident	Not at all confident
I can send an email with an attachment	◯	◯	◯
I am able to create an email signature for my outgoing emails	◯	◯	◯
I can create a word document and format it	◯	◯	◯
I can insert, edit and format tables in a word document	◯	◯	◯
I am able to insert data in a spreadsheet	◯	◯	◯
I can create charts and graphs in a spreadsheet	◯	◯	◯
I can insert text and images in a PowerPoint presentation	◯	◯	◯
I can insert audio and video in a PowerPoint presentation	◯	◯	◯
I am able to search for information using the Internet	◯	◯	◯
I can download images from websites	◯	◯	◯

*** 8. Does your office, department or organisation have an overall ICT plan/policy for delivering services to the public?**

- ◯ Yes
- ◯ No
- ◯ Not sure

*** 9. What key services does your office, department or organisation provide for the public?**

*** 10. What types of ICTs are used to deliver these key services?**

*** 11. How does your office, department or organisation evaluate the services it provides for the public?**

*** 12. How would you rate the services that your office, department or organisation provides?**

- ◯ Excellent
- ◯ Very good
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very poor

*** 13. How does the public evaluate the services that your office, department or organisation provide?**

- ◯ They normally email us feedback
- ◯ They go to our website to submit feedback comments
- ◯ They come and see us personally and provide verbal feedback
- ◯ They call us and provide feedback over the phone
- ◯ They hardly provide feedback
- ◯ Other (please specify)

*** 14. How would the public rate the key services that your office, department or organisation provides for them?**

- ◯ Excellent
- ◯ Very good
- ◯ Good
- ◯ Fair
- ◯ Poor
- ◯ Very poor
- ◯ They hardly provide feedback

*** 15. When a new technology is introduced at your office, department or organisation, how is information about it communicated to you?**

- ◯ Hard-copy printed information
- ◯ Email
- ◯ Website
- ◯ Word of mouth (Informal)
- ◯ Formal meetings and information sessions
- ◯ Other (please specify)

*** 16. When a new process is introduced at your office, department or organisation, how is information about it communicated to you?**

- ◯ Hard-copy printed information
- ◯ Email
- ◯ Website
- ◯ Word of mouth (Informal)
- ◯ Formal meetings and information sessions
- ◯ Other (please specify)

*** 17. When the introduction of a new technology affects the public, how does communication of the new technology to the public occur?**

- ◯ Hard-copy printed information
- ◯ Email
- ◯ Website
- ◯ Word of mouth (Informal)
- ◯ Formal meetings and information sessions
- ◯ Radio
- ◯ Other (please specify)

*** 18. Rate the strength of the following in terms of your office, department or organisation.**

	High	Above average	Average	Below average	Low	Don't know/ Not sure
Resources (Financial)	○	○	○	○	○	○
Infrastructure (Communication, networks)	○	○	○	○	○	○
People (Talent, expertise)	○	○	○	○	○	○
Policies (Rules, practices)	○	○	○	○	○	○
Learning (Training)	○	○	○	○	○	○
Evaluation (Costs, benefits)	○	○	○	○	○	○
Support (Administrative, technical)	○	○	○	○	○	○

*** 19. What are your views on the use of ICTs for delivering services to the public?**

*** 20. In your view, what are some barriers to using ICTs for delivering effective services to the public?**