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Partnership for ODFL in the Pacific

**ICT use and access in the Pacific:
Emerging Perspectives**



Commonwealth of Learning

**Partnership for ODFL in the
Pacific Project**

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October 2022

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Executive Summary

This report studies the use, accessibility, risks and opportunities for open distance and flexible learning (ODFL) in a group of 9 major Pacific Island countries (PIC) (Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu). It seeks to gather insights from empirical analysis of survey-based responses of a group of broadly representative stakeholders from these countries including students, teachers and government administrative officials who share their experience of using the internet and, in particular, ODFL technologies in the wake of the COVID-19 pandemic. The report combines these with secondary research that looks at changes in the policy environments of these countries and the deficiencies in the ICT infrastructure as it exists in order to suggest steps that can help build the capacities of governments and educational institutions and prevent missteps while strengthening ODFL opportunities and promoting blended learning models in the future.

The statistical analyses begin with a demographic description of the respondents and goes on to characterize the variability in the respondents' availability, usage and experience of ODFL along different dimensions. While a high frequency of internet usage is observed, there is **expected regional variation between urban main islands, rural mainland and outer islands** with the latter two suffering from insufficient electricity supply and poor internet connections. There is suggestive evidence that **even urban ICT infrastructure requires upgradation** to lower the significant share of low frequency users in urban areas. Significant intercountry variation shows that internet penetration is lowest in PNG and Kiribati.

The distribution of devices used for accessing ODFL, on the other hand, is quite uniform with mobiles being at the top of the list. This is, however, accompanied by significant variation in devices *owned*, both across and within each PIC, along with variation in access to school-based computers in labs. These variations must be taken into consideration when attempting to formulate an equitable and robust ODFL strategy, especially because device usage is not mutually exclusive for learners – different tasks require different media and accessing the full potential of ODFL requires increased access to different devices. The analysis of internet usage ends with noting the predominant use of emails and Facebook for communication in all PICs.

The **likelihood of learners facing various obstacles** such as access to and affordability of stable internet, availability of learning devices, ability to engage with the learning interface, insufficient time for learning, and lack of individualized feedback and supervision **is evaluated using logistic regressions.** These problems are shown to affect different countries (and different regions within each country) to different degrees, requiring varied levels of investment in ICT infrastructure, course design, faculty expertise, and learner orientation accordingly. **Problems in accessing ODFL include low ownership of computers** (required for tasks such as typing assignments), **low access to school-based computers,**

sharing of devices in households with multiple learners, requirement of content design to be mobile-friendly, limited availability of stable broadband, bandwidth limits, and incompatibility of devices with 3G/4G internet.

These problems of access to devices, and access and affordability of internet have lower inter-country variation compared to the variation across countries in course design, time available for learning, and availability of effective mentorship, with countries such as Kiribati, Solomon Islands, Tuvalu and Vanuatu requiring more focus on different aspects of design and content of online delivery. **Within each country** the regional variation shows that while course design is a greater challenge in urban areas, **limited access to devices and the internet are relatively bigger obstacles in rural and outer islands**. These constraints lead one to conclude that implementing blended learning models may ease problems such as bandwidth limits, storage space on mobiles, lack of motivation, lack of peer-to-peer learning among others by giving students opportunities to download material at school and to stay engaged with their peers and instructors.

Each of the challenges described above is also examined through the lens of gender which highlights an important dimension of inequity. While frequency of internet usage and preferred modes of communication show **no variation along gender lines**, there is a **significant difference in the types of media used for learning and the types of devices owned**. Males report higher rates of ownership of each device, higher data usage, and lower spending on data as a proportion of their earnings compared to their female counterparts. Males also use computers/laptops more frequently which is presumably more conducive for learning given the existing design of courses and the ability of computers to easily complete the different tasks that are part of learning. **While the ranking of obstacles described above is the same for both males and females, each obstacle is reported by a higher proportion of females than males implying that pre-existing socio-economic inequities of gender are reflected in the experience of ODFL** but the design of ODFL itself does not create widely different experiences for males and females.

The discussion of risks outlines the importance of investments needed in a robust ICT infrastructure and ODFL competencies in order to realize opportunities for regional and national growth. These include improvements in internet and mobile penetration, broadband connectivity, consistent supply of electricity and enhanced availability of affordable devices. These can then be supplemented with education and upskilling of teachers and educators, orientation sessions for students to facilitate navigating the user interface of ODFL technologies, and enhancement in cyber security. Currently, there exists a wide range of variation across the PICs in each of these crucial inputs of ODFL.

An exploration of opportunities dwells on some telecommunication policies and infrastructural improvements that are, encouragingly, already being undertaken by the governments of PICs as well as those that are in the pipeline. These include the plans of installation of submarine cable connections, the Draft Digital Government Plan in Papua New Guinea that aims to extend

telecommunication coverage widely, partnerships with international organizations to facilitate telecommunication facilities in remote areas in addition to funding and technical assistance, partnerships with private organizations for the design of ODL platforms such as Fiji's Learning HUB, partnerships with broadcasting services especially in countries with lower internet penetration, formulation of new policies on ICT, open education and technology training, traditional governmental supports such as subsidies, incentives, duty concessions, tax holiday to the industry and tuition fee grants with allocations for ICT to schools , and budgetary adjustments and reallocations.

From the perspective of blended learning (BL), it may be pertinent to look at models that can leverage the benefits and mitigate the pitfalls of ODFL while also reducing inequities associated with the digital divide and taking stock of the country specific states of technology penetration. If implemented appropriately, blended learning (BL) can promote the development of human capital of the young population of the PICs and help realize the growth potential in the islands through cost reduction, shorter delivery time, accommodation of different learning styles and increased learner motivation. BL can assume forms such as a Rotation model, a Flex model, an A la carte model or an Enriched Virtual model. The appropriate form for each country depends on the different levels of investment required in ICT penetration, stability and affordability of connectivity, training of instructors and designing of platforms in accordance with preferences and requirements of learners. The choice of model must also take account of cultural contexts of linguistic plurality, pedagogical training of teachers using the technologies, and guidance for students and care givers (for instance by providing schedules, helplines, offline access to textbooks) to enhance preparedness for learning at home when compelled by disasters and shocks that are increasing possible in PICs. Both the survey insights and secondary research point to possible improvements in learning and other outcomes through BL models.

1. Introduction

i. Setting the context

From modest beginnings in the 18th century (the first correspondence course kick-started via postal service in Boston, USA), distance education (type of education where students and teachers are separated physically and communication between them is through the use of media/technology) has made huge strides.¹ Riding on rapid technological advancements, it has transitioned from a purely offline mode to a blended learning mode (a combination of both offline and online) and at times a hundred percent online thereby disrupting the way education is conceptualised, designed, and delivered across the world. Starting with asynchronous learning (where interactions between teacher and learner happens at different times, for example recorded lectures), it has evolved to synchronous learning (interactions in real time, for example live feeds) by leveraging technology.

To ensure greater receptivity as well as ease of assimilation and higher levels of engagement with the content shared, various techniques such as gamification (incorporation of games into education via learning platforms), social learning (learning through social interactions between peers), and personalisation (customised learning in line with students' strengths and weaknesses) are deployed.² While typical drawbacks of distance learning that students face due to absence of face-to-face interactions with teachers such as receiving individualised feedback based on direct observation by the teachers in the class-rooms, or the lack of peer learning that tends to happen naturally in a physical class-room setting, and even the lack of opportunities for practical work in labs etc., exists, many of these can be offset with the adoption of blended learning methods and advanced technology.

In the context of Pacific Islands (a very diverse region ethnically, culturally, and linguistically)³, where remoteness is a key challenge, the use of online and distance learning is seen as the key to the development of nation states.⁴ It is an integral part of national & regional educational initiatives (lifelong learning, democratisation of education) as well as an important vehicle for ensuring increased access to higher education. In fact the geographical context of the region has, in many ways, necessitated the early development of distance education in Pacific Island Countries (PICs) with University of the South Pacific (USP) becoming a pioneer in the use of satellite communications technology to enhance and develop its distance teaching programmes in the early 1970s.⁵ Specifically for women who may be unable to further their education off-island due to various commitments/ constraints, Open and Distance Learning (ODL) is central to pursuing higher education (traditionally, university & post graduate studies required locals to go to New Zealand, Australia or Fiji for a number of years).⁶ In addition to the challenges that come with ODL as a medium of education, and others that are typically common to developing nations such as limited access to

¹ Pregowska, A.; Masztalerz, K.; Garlińska, M.; Osial, M (2021). A Worldwide Journey through Distance Education—From the Post Office to Virtual, Augmented and Mixed Realities, and Education during the COVID-19 Pandemic. *Educ. Sci.* 2021, 11, 118. <https://doi.org/10.3390/educ11030369>; <https://files.eric.ed.gov/fulltext/EJ1290369.pdf>;

² Pregowska et al. (2021)

³ Education in the Pacific Islands, Tupeni L. Baba,

<https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/31fde320-d727-437d-b4f8-ad97452c22ae/content>

⁴ Pacific Leaders in Open, Online, and Distance Learning; Carina Bossu; <https://jl4d.org/index.php/ejl4d/article/view/207/201>

⁵ Open and Flexible Learning for Whom? Rethinking Distance Education; Konai Helu Thaman;

<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.511.9742&rep=rep1&type=pdf>

⁶ Pacific Leaders in Open, Online, and Distance Learning; Carina Bossu; <https://jl4d.org/index.php/ejl4d/article/view/207/201>

devices/internet/technology, there are few additional issues that need attention for the successful integration of ODL in the education systems of the nations. These would include an appreciation of the traditional context in which learning took place (interactions with others and the environment), the central role of teachers in the process thereby underpinning the criticality of face-to-face interactions, and inclusion of a culturally inclusive approach to instructional design.⁷

While we have briefly touched upon the emerging role of technology and the historical context to the growing role of ODL, in recent times the COVID-19 health pandemic, by exposing the limitations in the hitherto dominant classroom or campus-based delivery systems of either for young learners, college and university students as well as teachers, trainers, instructors and educators, has provided a tremendous fillip to this approach towards education. The Pacific Islands too have tried in their own ways, drawing from global experiences, partnering with other nation states and international agencies like the COL, UNESCO to adapt to this paradigm shift.

The changed circumstances triggered by the pandemic, and the growing threat to climate stressors and shocks is time and again bringing into focus the urgency for the 21st century teaching and learning methods. Enhancing competencies of teachers and instructors in using modern technologies for imparting knowledge as well as their own exposure to digital (as also green skills) are now being blended in the range of new competencies and qualifications. It is encouraging to note that national governments in the Asia-Pacific region have begun to realise the relevance of triggering the desired change and, therefore, creating and strengthening an enabling ecosystem for innovative methods of training teachers in schools and vocational education institutions.⁸

The pandemic has certainly helped in mainstreaming open distance learning as a reliable means for facilitating continued learning, no longer limiting its relevance to students living in remote areas or in poverty. Online learning not only offers a broad access to education but also tremendous flexibility to learners and educators. Of course, acquiring additional skills such as working on computers or other devices and internet skills becomes a prerequisite for making the most of online learning.

Needless to mention, the pace of adoption varies across the globe depending upon access to technological advancements, investments, conducive policies, enabling partnerships, and favourable eco-systems. While distance education especially via online learning is truly a gamechanger in bridging the gap (time, space) between learners and education providers, it has also given rise to a different form of inequity arising out of the prevalent digital divide.

⁷ Open and Flexible Learning for Whom? Rethinking Distance Education; Konai Helu Thaman; <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.511.9742&rep=rep1&type=pdf>

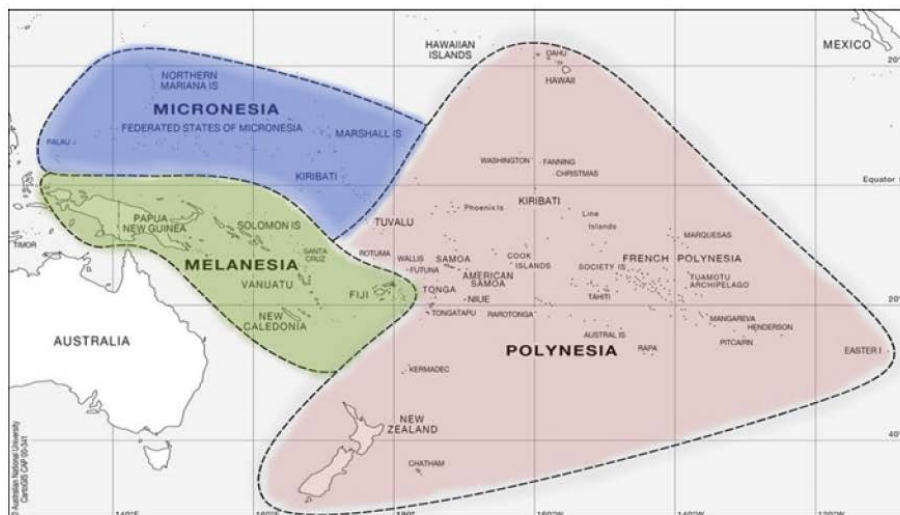
⁸ ADB, 2021. Teacher Professional Development Case Studies: K-12, TVET and Tertiary Education. Manila: ADB, 119p. <https://www.adb.org/sites/default/files/publication/719856/teacher-development-casestudies.pdf>; Last accessed on 6 November 2021.

In geographically remote, developing nations, many students may not have access to suitable technology or internet connections. Hence it is important to understand the potential of e-learning to maintain equitable access to education in such situations.⁹

It may also be useful to keep a holistic framework that delineates global; country, institutional; curriculum/program; and micro-level factor of student, professor, course, and technology interactions¹⁰ in the backdrop while going through the survey responses as well as secondary research to identify the biggest risks and opportunities towards building a resilient ODL architecture in the Pacific Islands.

With support from the Government of New Zealand, the Commonwealth of Learning (COL) has been actively promoting online education through its programme for a group of 9 Pacific Islands comprising Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

The Islands of Micronesia, Melanesia and Polynesia.¹¹



ii. Objectives & Methodology of the present study

The present study commissioned by Commonwealth of Learning, is set in this larger context and is part of its Open Distance Flexible Learning Project for nine (9) major Pacific Islands, supported by Government of New Zealand. Developing insights to inform and strengthen the capacities of governments, institutions and the wider

⁹ Johnson, J.B., Reddy, P., Chand, R. *et al.* Attitudes and awareness of regional Pacific Island students towards e-learning. *Int J Educ Technol High Educ* 18, 13 (2021). <https://doi.org/10.1186/s41239-021-00248-z>; <https://educationaltechnologyjournal.springeropen.com/articles/10.1186/s41239-021-00248-z#citeas>;

¹⁰ Online Education: Worldwide Status, Challenges, Trends, and Implications; Shailendra Palvia, Prageet Aeron, Parul Gupta, Diptiranjana Mahapatra, Ratri Parida, Rebecca Rosner & Sumita Sindhi (2018); *Journal of Global Information Technology Management*, 21:4, 233-241, DOI: 10.1080/1097198X.2018.1542262

¹¹ Cullen R, Hassall G (2016a) e-Government in the Pacific Island states: ICT policy and implementation in small island developing states. *Solomon Islands Country Report*, October 2016. Used with the permission of CartoGIS, Australian National University;

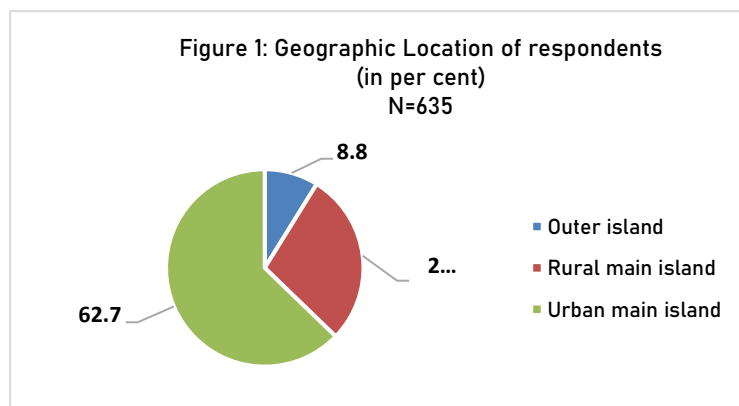
stakeholders to collaborate in catalysing the change process is one of the key components of the COL project.¹²

Through this study, COL is interested in understanding the pattern of ICT availability, usage, and experience of learners in select Pacific islands; examining the risks and opportunities for promoting ODL and the need for blended learning and teaching methods.

The present study is based on mixed-methods approach. COL had undertaken an online survey for ICT users from the Pacific Island Countries. The survey was conducted during the months of February 2022 to May 2022. Quantitative data obtained from the online survey responses from 635 respondents from 9 Pacific Island Countries (PIC) have been used to reflect on the key areas of enquiry. Logistics regression exercises were also undertaken to examine some of the obstacles to learning, which *inter alia* may provide pointers for policy and programmatic actions for the PICs at a regional level. Findings of these results have been presented in relevant places across the report.

In addition, secondary research was also carried to understand the qualitative aspects on the ICT availability, usage, constraints to online learning, recent initiatives in the PICs to promote ODFL and emerging windows of opportunities for blended learning.

The locational profile of the online survey respondents shows that nearly 63 percent were from the urban mainland of the PICs, followed by about 28 per cent from the rural mainland and only a handful, about 9 per cent from the outer islands.



Responses across the PICs¹³ indicate that more than 42 per cent of the respondents were from Fiji (population 9,02,899), 22 per cent from Tonga (population 1,06,759), 10-11 per cent each from Kiribati (population 1,21,388), Papua New Guinea (population 9,119,005) and Vanuatu (population 3,14,464).¹⁴

In interpreting the results based on this sample survey, it would be important to bear in mind that while the one response from Nauru (population 10,873) is from the rural main island, it is cent-percent urban sample for Samoa (population 2,00,144) and

¹² New Zealand's Ministry of Foreign Affairs and Trade (MFAT NZ) has partnered with COL to implement a project to contribute to enhanced capacity and efficiency of Pacific education sectors through greater use of innovative delivery mechanisms and technology. It is a 5-year project (2020-2025) and works with the nine Commonwealth countries in the Pacific, which are: Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. It focuses on the following four areas: (i) Immediate response to COVID-19; (ii) Supporting Youth Employment; (iii) Building resilience in Pacific Education Systems; (iv) Building education lessons and insights.

¹³ Throughout the document the Survey responses refer to the COL Survey on ICT Access and Use in the Pacific

¹⁴ All population figures are for 2021 and sourced from The World Bank website; <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=S2>

Solomon Islands (population 7,03,995).¹⁵ Yet, it is equally important to note that the combined sample weight of these three countries is less than 2 per cent and therefore, may not affect the inferences drawn upon the responses from Fiji, Kiribati, Tonga, Papua New Guinea and Vanuatu (FKTPNGV).

The sample composition in terms of gender of the respondents is relatively balanced, with female comprising over 55 per cent of the sample. A similar distribution is observed in the case of the FKTPNGV group of PICs.

The three major occupational categories of respondents were teachers from educational institutions/training institutions (47.6 per cent), followed by officials from the government institutions engaged in promoting ICT-enabled ODFL in the study countries (20.8 per cent). and students (comprising 17.5 per cent)

Fewer online surveys responses from rural main land (overall) and outer islands are indicative of limited penetration of ICT in these areas in the PIC.

2. ICT availability, usage, and experience of learners: Key Findings from the survey

i. Internet Usage in the region

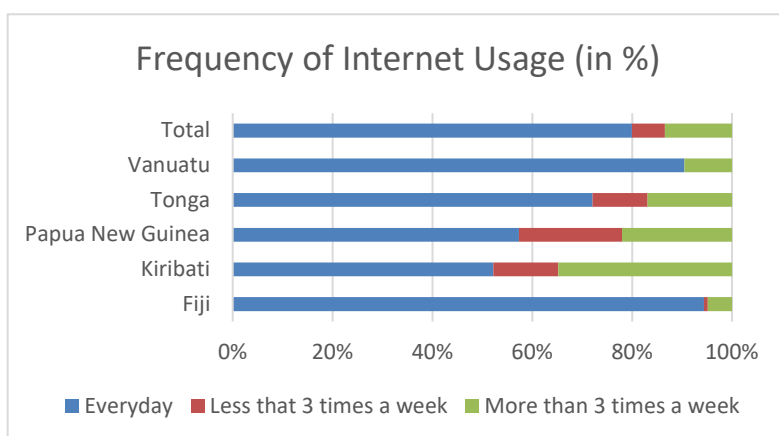
In terms of the usage of internet, findings suggest a high frequency of usage, with nearly 4/5th of the users (79.7 per cent) using it almost on a daily basis. Interestingly, another 13.5 percent of the users reported using the internet more than 3 times a week. Clearly, the cumulative figures of these two types of users (94.6 percent) show a high frequency of usage of internet in the PICs. This is also indicative of the perceived benefits that the internet brings to the users from these countries.

Survey Insight: the good story

- High frequency of internet usage
- Perceived benefits for the users

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An examination of the profile of the users who reported lower frequency of usage (less than 3 times a week) suggests that there is no gender differentiation within this cohort. Further, nearly 57 per cent of such low-internet users are from among those who are students or those working

as educators/teachers, and government officials in the ministries handling ICT-related portfolios.

¹⁵ All population figures are for 2021 and sourced from The World Bank website; <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=S2>

Among the internet users in rural main island and urban main islands, teachers and educators working in schools or training institutions comprise nearly 50 per cent of all users in the corresponding categories (rural main island – 51.1 per cent; urban main island – 48.4 per cent).

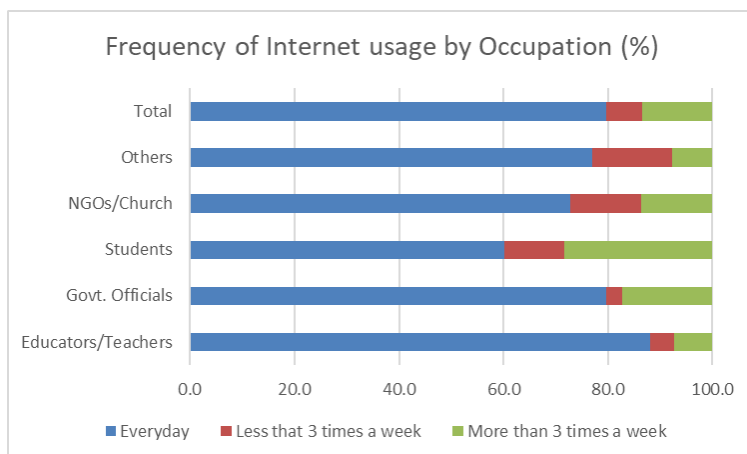
The share of students from these geographical pockets (rural and urban main islands) at an aggregate level is largely in the order of 15-18 per cent. Importantly, for the outer islands in the PICs, the share of students as users of internet is nearly double (33.9 per cent) to their counterparts in the other geographies (rural and urban main islands), thereby depicting a wider category of users.

It is however, disturbing to note that about half of the low users are based out of the urban main islands, where it is generally assumed to have a better internet facility (both in terms of bandwidth and stability). These observations point out the deficiencies in the realm of ICT infrastructure, even in the urban locations.

Survey Insight: the concerns

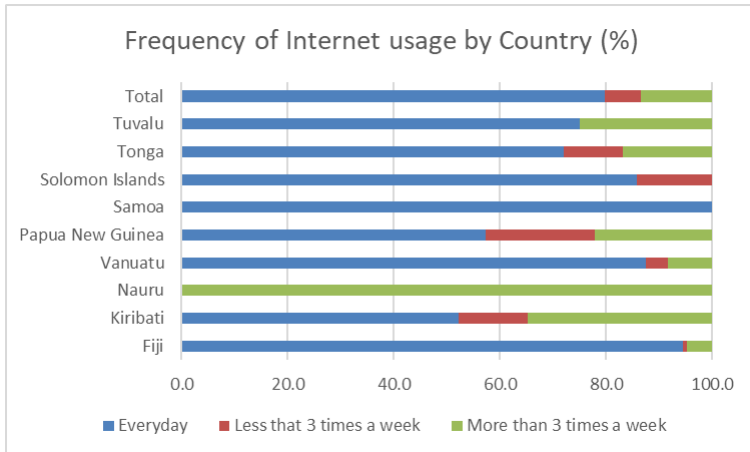
- Urban: Deficiencies in ICT Infra
- Rural: Insufficient electricity supply & poor internet connection

In rural mainland or outer islands, insufficient electricity supply in addition to poor internet connection is a double whammy for learners. Even charging phones to access learning content can be a challenge. Unsurprisingly, low frequency of internet usage (less than 3 times a week) is also the most for Outer Islands (10.8 per cent), followed by Rural Mainland (8.3 per cent), and then Urban Islands (5.8 per cent).



Another observation with regards to frequency of internet usage is through the occupation lens. While 88.1 per cent of educators/teachers use it on a daily basis, only 60.2 per cent students are able to access it every day. This gap hints at the lack of access students may have to content shared by teachers on a regular basis either due to

device or internet accessibility issues.

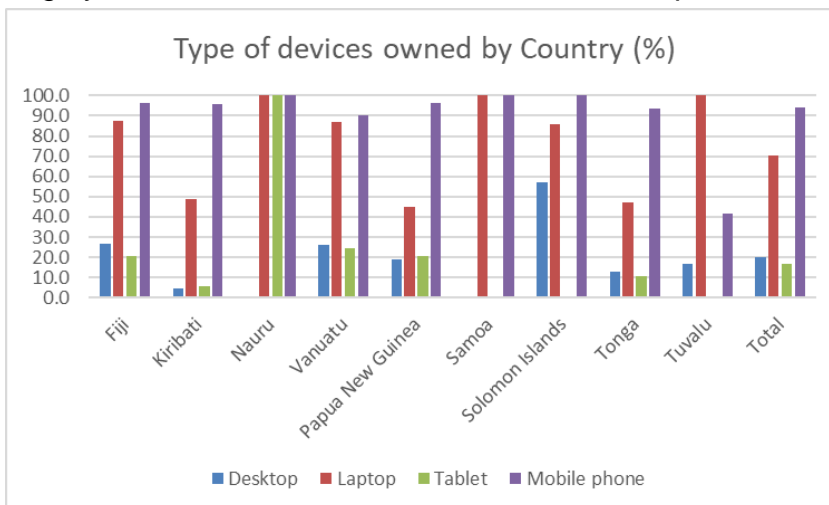


A look at the country-wise frequency of internet usage reveals the gap that exists within the Pacific Island Nations. While 94.4 per cent of users in Fiji and 87.5 per cent in Vanuatu access the internet daily, for Kiribati and Papua New Guinea it is 52.2 per cent and 57.4 per cent respectively. However, when we consider the cumulative

usage of two categories (daily and more than 3-times a week), FKTPNGV reports high frequency of usage, with Papua New Guinea being the lowest at 79.4 per cent, Fiji at 99.3 per cent, and Nauru, Samoa, and Tuvalu at 100 per cent.

ii. Availability and access to Internet and learning devices

Device Ownership: Findings on the ownership of devices suggest that broadly respondents owned more than one type of device, primarily mobile phones (93.9% of the respondents) and laptops (reportedly owned by 70.2 %). Low coefficient of variation for ownership of these devices also depicts that the ownership pattern is largely uniform across the PICs included in the present study.



Ownership of desktops (among 20% of respondents) and tablets (among 16.6% of the respondents), is also widely varying across countries. Even if we exclude the high ownership of tablets (as in Nauru, that has a small share among the total respondents for the survey data), one finds

that the coefficient of variation (CV) is still 85.43%. While countries like Vanuatu, Fiji, and Papua New Guinea show that 1/4th to 1/5th of the respondents own a tablet, it is also clear that the common devices for online learning are still laptops and/or mobile phones. Online learning strategies for the PICs may need to look into these patterns of device ownership.

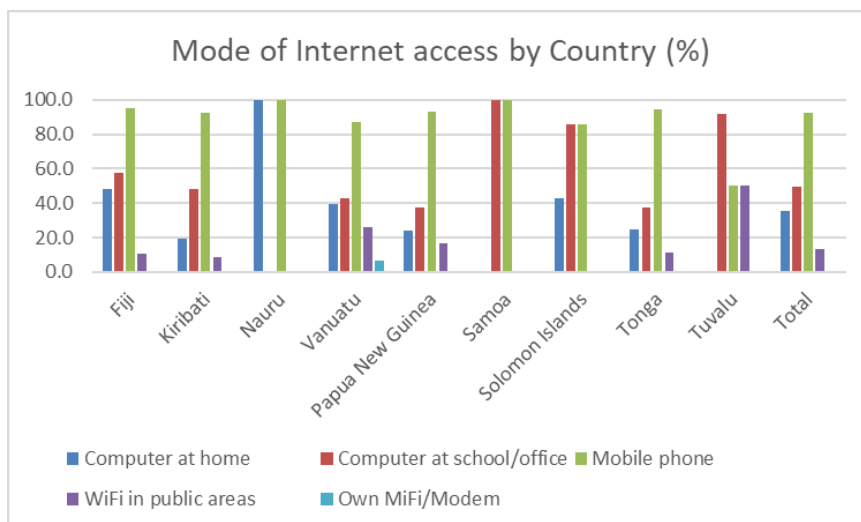
When viewed through the Urban/Rural lens, we find that while mobile ownership is roughly the same in both Urban and Rural Islands at ~95 per cent amongst the respondents, it is 10 per cent point lower in Outer Islands at ~85 per cent. Thus, within a country too ownership patterns have to be considered to formulate a robust ODL strategy.

Devices used for accessing Internet and online learning: Most of the PIC country online learners use mobile phones for accessing internet (over 92 per cent). The pattern is broadly uniform across the proportion of such users across the PICs, indicating a rather ubiquitous presence and reliance on mobile phone based net connectivity for online learning.

Additionally, computer-based internet connectivity (at schools or at homes) is also relied upon by 40-50 per cent of the users.

There are significant variations across the PICs in the proportion of users relying also on school-based computers for internet connectivity. For instance, Samoa, Solomon Islands and Tuvalu report a higher reliance on computers at school labs for accessing internet (85-90 per cent users). This may also be reflective of the outcomes of the initiatives on the part of the educational institutions in these PICs to improve the access to internet for their learners.

On the other hand, the proportion of such users is below 50 per cent in Kiribati, Papua New Guinea, Tonga and Vanuatu. While this is indicative of early improvements through public and governmental efforts to improve access to the ICTs in educational institutions, ICT infrastructure strengthening will warrant continued emphasis.



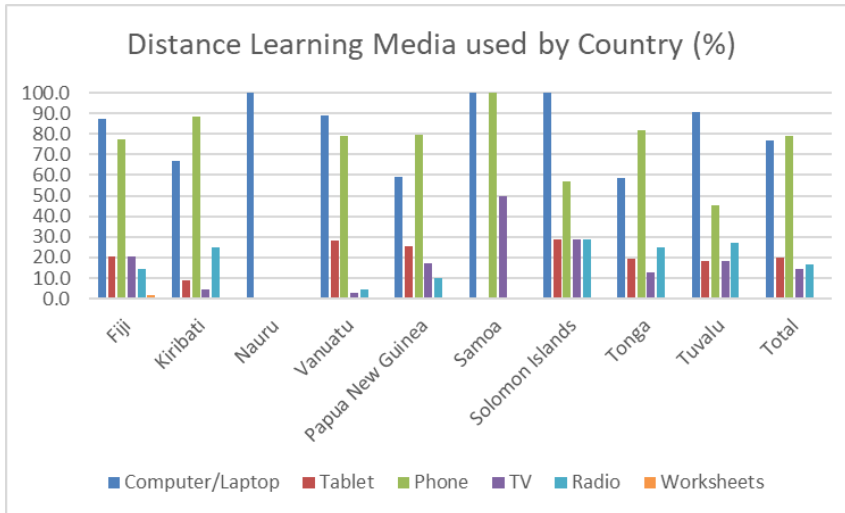
The use of WiFi in public areas still appears to be limited across all PICs, except Tuvalu, where the ICT penetration is still low and thereby dependence on mobile phone-based connectivity and some form of WiFi may be the resultant choice for the users.¹⁶

In terms of location, similar trends are observed across Urban, Rural and Outer Islands with mobiles being the preferred mode of accessing the internet followed by computers at office/school, computers at home, and public WiFi.

¹⁶ There were 5,915 internet users in Tuvalu in January of 2022. Tuvalu's internet penetration rate stood at 49.3% of the total population at the start of 2022. Kepios analysis indicates that internet users in Tuvalu increased by 1.1% or 66 between 2021 and 2022. These user figures reveal that 6,078 people in Tuvalu did not use the internet at the start of 2022, meaning that 50.7 percent of the population remained offline at the beginning of the year. Data from GSMA Intelligence shows that there were 4,296 cellular mobile connections in Tuvalu at the start of 2022. GSMA Intelligence's numbers indicate that mobile connections in Tuvalu were equivalent to 35.8% of the total population in January 2022. The number of mobile connections in Tuvalu increased by 5% or 203 between 2021 and 2022. <https://datareportal.com/reports/digital-2022-tuvalu>;

iii. Type of distance learning media used by country

Both computers/laptops and mobile phones have been reported to be equally preferred as a medium for distance learning among the learners from PICs. It is important to note that these media are not mutually exclusive and the learners are using both for their respective distance learning tasks. This applies to the broader set



of PICs considered in the present study. The specific use of a medium, as reflected from the qualitative responses is more of a function of the task at hand as well as the specific location of the learner while undertaking a given task. For instance, learners tend to use pre-paid mobile

phones at homes to download specific learning material, but use the computers at internet cafes to do the documentation (word typing, data analysis on excel and preparing presentation on power point). Access to ICT labs in educational institutions that provide better internet connectivity at zero cost to the students also determine the usage of computers for downloading learning material that are heavy files. The survey interestingly also pointed out the use of hard copies of learning material (worksheets) at homes, along with accessing internet for learning from their work spaces. A handful of respondents (teachers and government officials engaged in ICT-based learning in Fiji), reported to be using these worksheets. While the numbers may be small of such users, it points out to the need for enabling downloadable and printed hard copies of learning material, particularly for learners who are already in a job and may not have access to ICT learning devices at homes or unstable internet connections.

Interestingly, TV and Radio also emerge as media of choice for distance learning. Noting that a given learner tends to use more than one medium (subject to the learner's location and the task at hand), it is important to note that TV and Radio are reported to be used in at least 15 per cent of the occasions by the learners. This is largely true of almost all the PICs in the study, except for island countries like Nauru and Vanuatu. This may also be read in conjunction with the place of residence of the respondent learners, wherein nearly 80 per cent for instance in Vanuatu were from the urban main islands. With better net connectivity in the urban main islands, the use of computer/laptop and mobile phones is thus likely to be higher compared to the reliance on TV and Radio.

A look at the distance learning media used basis location shows that while phones are used the most in Urban (80.6 per cent) and Outer Islands (85.2 per cent), in Rural

Islands a higher percentage use computer/laptop (77.9 per cent) rather than phones (72.7 per cent).

Best method of Communication

For most of the PICs e-mails (60.5 per cent) emerge as the most preferred means of communication, followed by Facebook (26.3 per cent) and WhatsApp (7.7 per cent). The exceptions to this are Vanuatu and Samoa. In Vanuatu the preference for Facebook (43.1 per cent) is a tad higher than e-mails (38.9 per cent), whereas Samoa as equal preference for both media.

3. Observed obstacles to online learning in PIC

At an aggregate level, the major constraining factors related to online learning are (i) stability and access to internet connection; (ii) availability and access to learning devices, (iii) affordability of the internet packages; (iv) experience of using online learning platforms; (v) insufficient learning time; and (vi) a lack of mentorship. A handful of users belonging to the low usage cohort also find that poor design and delivery of the online learning material reduces their interest in accessing the internet for open educational resources (OERs). While the first three factors are related to IT and Telecommunications infrastructure, the remaining factors are more to do with learner characteristics, faculty expertise, course design, content, and ease of use.

Constraints to online learning: South-East Asian experiments

A recent study conducted in Vietnam assessed factors affecting students' online learning outcomes during the Covid-19 pandemic. It found that **six factors, in descending order, impact the online learning outcomes**. These are **learner characteristics, perceived usefulness, course content, course design, ease of use, and faculty capacity**.¹⁷

Another study based in Taiwan found that teachers' technical capabilities, students' familiarity with digital platforms, and the software & hardware assistance provided by the school's information centre affects the quality of e-learning.¹⁸

While no such studies are available in the public domain for the Pacific Island Countries, it may be useful to consider for the present study, the influence of familiarity (or the lack of it) with online learning platforms and quality of ICT infrastructure on online learning outcomes. In fact, we find that a similar sentiment is echoed in the responses from the survey conducted for the present study. We take a more detailed look at the factors affecting online learning below:

¹⁷ The Factors Affecting Students' Online Learning Outcomes during the COVID-19 Pandemic: A Bayesian Exploratory Factor Analysis; Thi Tinh Thuong Pham, Hoang Anh Le, and Doan Trang Do; <https://www.hindawi.com/journals/edri/2021/2669098/>

¹⁸ How Teachers Conduct Online Teaching During the COVID-19 Pandemic: A Case Study of Taiwan; Sheng-Yi Wu; <https://www.frontiersin.org/articles/10.3389/feduc.2021.675434/full>

i. Stability and access to internet connection:

At an aggregate level, 75.9 per cent respondents have reported unstable internet connection as an obstacle for uninterrupted online learning and 43.3 per cent have reported limited access to internet as a challenge. Thus, even in cases where respondents have access to internet connection, the poor quality of connection becomes a barrier in smooth access to online learning. When we considered the responses of survey participants who have highlighted limited access to internet as a key issue, we find that in many cases it is a function of affordability with respondents mentioning expensive data bundles as a deterrent to internet access. Limited access to gadgets (also a function of affordability) and poor internet connection are additionally reasons cited for limited access to internet.

Seeking to understand the pattern of obstacles faced by learners on account of an unstable internet connectivity, logistics regression results suggest that those using own laptops or tablets and working through fixed broadband connection are more likely to face obstacles to learning on account of an unstable internet. The odds ratio for these are in the order of 1.71, 1.24 and 1.33, respectively. However, results are significant only (at $\alpha=0.05$) for the users of laptops. There is a hint of interplay of the other correlates such as the instability of fixed broadband connection that may also be working to influence the learning processes among the learners using laptops for ODL.

The study also sought to examine the role of data usage per month and its mediating role through limited access to internet as an obstacle to learning. Logistics regression results show that data usage (in terms of the GB consumed per month) is less likely to act as a fetter to online learning (odds ratio ranging between 0.39 to 0.59 across the data usage cohorts). The results are significant (at $\alpha=0.05$). Clearly, ICT policies for promoting ODL in the Pacific need not bother much about this as an intervention variable.

The logistics regression results show that with an odds ratio of 4.82 and a significant $P>|z| = 0.007$, poor connectivity is highly likely to push the learners to reduce their usage of internet. Addressing issues of connectivity and therefore a closer coordination between the Ministry of ICTs and Ministry of Education would be crucial for promoting ODL in the Pacific.

ii. Availability and access to learning devices:

In terms of accessing the internet, struggles with using phones or tablets, or creating hotspots through mobiles for using the internet on the computers/laptops comes in the way of seamless access to internet facilities for users. The challenge is not limited to access to a device say a mobile phone, but also if the device is incompatible (e.g., 3G/4G compatibility).

Moreover, while devices such as computers or laptops are more conducive to online learning rather than mobiles, however computer ownership is low amongst the community. Learners struggle to take notes and type out their assignments on mobile phones. This increases their dependence on internet cafes and university/school labs, while some also end up working on borrowed devices. While users appreciate the usefulness of online learning, as parents it may be prohibitive to buy independent mobiles or computers/laptops for the students to pursue an exclusive online learning method especially for households with more than one learner.

In addition to device availability challenge, it may be worthwhile to explore if the available content is mobile-friendly considering the fact that 93 per cent of the respondents access the internet and therefore online learning through their mobiles.

Device related challenges are likely to reduce the effectiveness of Open Distance & Flexible Learning (ODFL) methods through ICT platforms. This is important in the context of the pandemic induced rapid transformations in the use of ICT platforms for learning and countries moving to online learning methods. For instance, Tonga has already moved to nearly 70 per cent of teaching through online medium and about 30 per cent of the curriculum being covered through face-to-face interactions between the learners and the teachers. Constraints related to ownership and/or access to devices for online learning may prove to be stumbling blocks in the process of the structural transformations now necessitated in the world of “teaching and learning”.

The fact that some users have to create a hotspot through mobile phones is also indicative of limited availability of fixed broadband connectivity and that mobile-based connectivity is rather ubiquitous in PIC. These observations may also be read in conjunction with the affordability of the internet packages, as mentioned above.

iii. Affordability

Affordability of internet tariff in the PICs also restricts the usage of internet and limits the access to online learning. With limited access to WiFi and data bundles being expensive (as in rural main islands of countries like Tonga), students and self-employed professionals tend to use the internet rather ‘wisely’.

Internet packages having limited time and data options also push learners to rapidly complete the modules of online learning materials. With the pressure to download all online learning material across several modules, the learners such as students/teachers/self-employed professional, the power of internet and available online learning material and OER remains underutilised. The entire premise of ICT enabled online learning having the capacity to promote learning at learners’ own pace seems to be diluted under such circumstances. It also adversely impacts the quality of learning as both access to content and timely submissions of assignments for

Points to ponder over

92 per cent access online learning through mobile phones:

Is the content available in mobile-friendly version?

Is the quality of learning experience sub-optimal as computers/laptops are more conducive to online learning?

Is the mobile handset 2G/3G or 4G compatible?

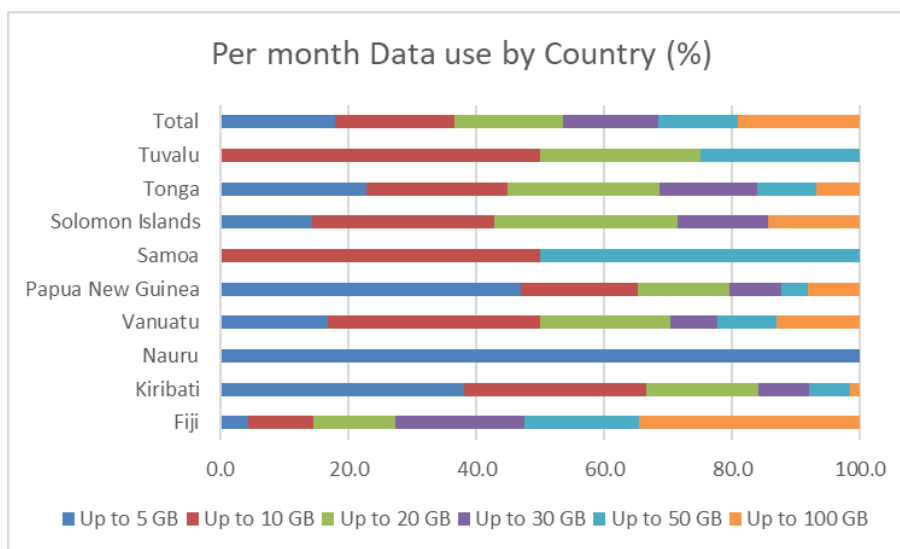
evaluation is a cumbersome process. Viewed typically from a consumer’s perspective and utility maximisation principles, higher tariffs force certain category of users to optimize on the data downloads/uploads available to them.

Point to ponder over

What is the optimum price point and data pack required for enabling an enriching learning experience?

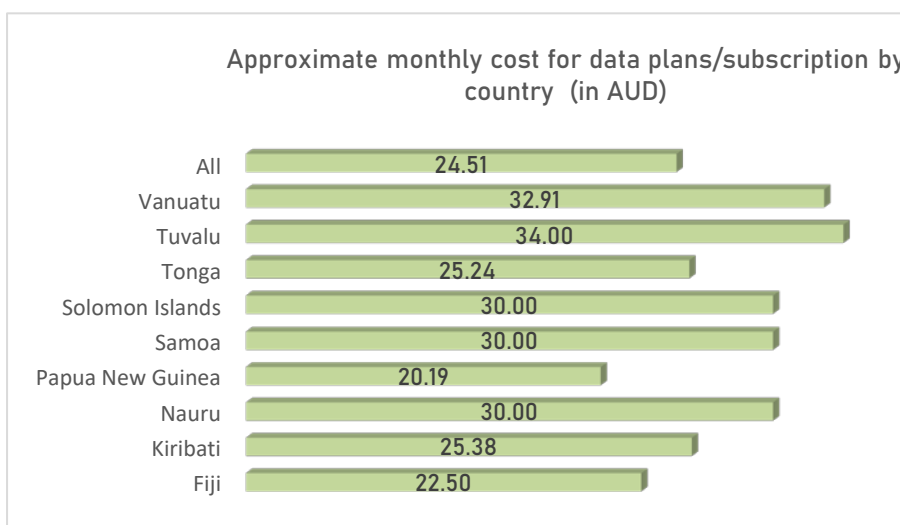
Interestingly, a redeeming part of the changing ICT landscape in the PICs is that people across occupational categories are increasingly

becoming appreciative of the “power of the internet”, both in terms of the internet’s capacity to facilitate learning for knowledge acquisition and for furthering their occupational agenda—be it an educator, a government official, a self-employed professional or a student. The opportunity that online learning provides to pursue learning while in job is a boon for many who may not have been able to upgrade their skills in the absence of such a platform.



As per the survey data, no distinct pattern is discernible in terms of data usage across countries. At an aggregate level, almost similar proportions of users are spread across the data usage in any given country. However,

except for a country like Fiji, where there is a better internet penetration, a majority of the users (54 per cent) use data up to 20 GB per month. The proportion of such users is even higher (70-80% users) in countries like Kiribati, Papua New Guinea, and Vanuatu.



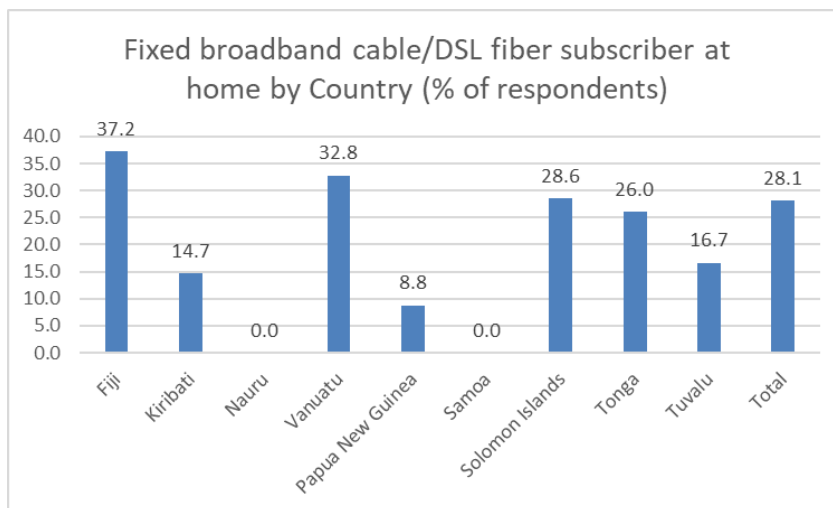
A quick look at the average data cost in the PICs shows that it is generally in the order of the AUD 25 per month. Based upon the responses around price ranges, weighted means have been estimated. The table and accompanying

chart below show that the data plans are available at comparable prices across the PIC countries and do not show much deviation around the mean.

iv. Experience of using online learning platforms

When we consider consistency in internet performance, speed, and overall cost-benefit, typically broadbands stand out whereas mobile data such as 4G takes a lead in terms of mobility. In the present survey, 72 per cent of the respondents do not have access to fixed broadband cable/ DSL fibre connection. Instead, they primarily access the internet through mobile data packages to which 94% are subscribed. This could be one of the reasons for unstable internet connectivity which has a detrimental impact on online learner experience and has been voiced multiple times by the respondents.

At an aggregate level, the subscription of fixed broadband DSL fibre is in the order of 30 per cent of all respondents. Countries like Kiribati and Papua New Guinea however show much lower levels of subscription to fixed broadband connection at 10-15 per cent.



Given that a country like Papua New Guinea among the Pacific Island Countries is prone to natural disasters, the ICT policy of Papua New Guinea has made it imperative to have systems in place for continuation of daily affairs despite disruption in the natural order.

Policy emphasis on ramping up the usage of mobile phones (which stood at approximately 47 % in the pre-covid phase may be seen to have contributed to greater reliance on mobile based net connectivity than fixed broadband connectivity in certain PICs.

In terms of mobile broadband connection, at an aggregate level nearly 95 per cent of respondents in the survey reported having it. This was largely uniform across all the PICs, with the exception of Tuvalu, where internet penetration is still in the order of 49.3 % of the total population at the start of 2022.¹⁹

Point to ponder over

Which factors have the most detrimental/ favourable impact on user learning experience?

Another factor that impacts the quality of online learning is learner's lack of experience in online education. This affects their ability to independently navigate the platform thereby creating a dependence on others for guidance/ support. Further, lack of support/ mentorship

¹⁹https://kepios.com/?utm_source=DataReportal&utm_medium=Country_Article_Hyperlink&utm_campaign=Digital_2022&utm_term=Tonga&utm_content=Kepios_Home_Link

increases the challenges faced by them in online learning. The paucity of face-to-face interactions with teachers, which is extremely useful in clarifying doubts, makes learning all the more difficult for students. Similarly, delayed responses to students' queries by the teachers via e-mail, which would be due to lack of access to devices & internet connection or lack of IT skills, discourages students to pursue learning online.

From the responses gathered it is clear that teachers also need guidance to navigate the online learning systems as well as learn how to be more effective in online teaching (considering that it is significantly different from classroom teaching). The confidence gained by teachers through interventions in this area will have a positive impact on the quality of online experience of the students.

Another factor that adversely affects the online learning experience is the absence of synchronous learning platforms. As has been voiced through certain responses, the students lose interest when their queries or doubts cannot be answered/ resolved in real-time. When learning is limited to online interactions only with teachers then it is not as successful in creating a strong bond between the teachers and students. This also plays a role in students having lower comfort in reaching out to teachers to clarify their doubts.

Moreover, certain learner characteristics related to motivation, discipline, punctuality play a big role in defining their online experience. Considering that self-paced learning puts the onus on students, it may be a challenge for some to demonstrate high levels of discipline and consistency when it comes to online learning.

Constrained by the affordability of devices and internet data packages which leads to a poor online experience, there are views in favour of some form of blended learning method. For instance, earmarking two days in a week for face-to-face interaction has been indicated by some students and learners that can help them overcome the affordability and access constraints. The students expressed that they can use this time to download the online material from the school or college labs. It is also pertinent to note additional concerns of some users for whom several learning materials may not be easily downloadable on a mobile phone (due to limited storage capacity of the mobile handsets and/or the size of the downloadable files).

Additionally, offline platforms (through weekly face-to-face interactions) can prove to be useful for both students and teachers alike. For students it will allow them to interact with the teachers and for the instructors it will help them to clear the students' doubts and provide constructive feedback. There appears to be a case for walking on two legs, while putting the best foot forward.

v. Insufficient time to learn

Not enough time to learn is a sentiment most often echoed by those learners who have to juggle both work and study. These results are found to be statistically significant (at $\alpha=0.05$) for the government officials (odds ratio of 1.83). Additional challenges such as unstable internet connection, expensive data bundles etc., add to their learning woes.

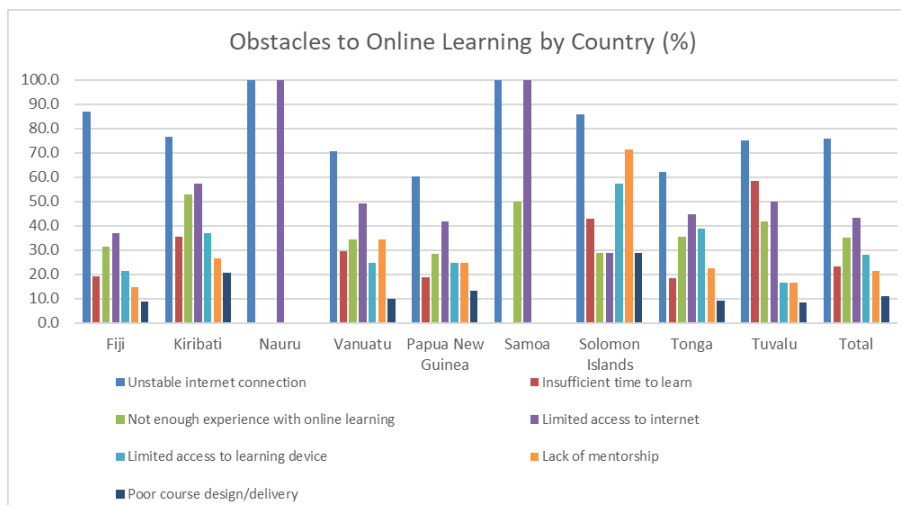
vi. Mentorship – a key concern

An often-repeated concern that has come up in the survey is the ‘lack of mentorship’. A quick scan through qualitative survey responses reveals that this includes references to higher response time by faculty to respond to queries of students via e-mail, a lack of supervision, and absence of one-to-one dialogue/interactions. The lack of mentorship can also be indicative of the current faculty capacity in IT skills including their ability to navigate the online medium. The holistic model referred to earlier includes a transition in faculty role when online to include that of a “cyber guide”, as well as teaching mode (cognitive, affective) and IT skills. Also, as seen earlier, 57 per cent of low-internet users are from among those who are working educators/teachers. It could be inferred from this data point that their IT skill levels may be low which is why they spend less time online.

4. Type of Obstacles to online learning: Country specific perspective

In the previous section we saw that at an aggregate level, in nearly 75 per cent of the online learning sessions, respondents have reported unstable internet connection as an obstacle for uninterrupted online learning. Notably, the responses across countries are uniform in indicating the “instability of internet connection” as a key obstacle (as shown by a relatively low coefficient of variation at 28.17%).

Limited access to internet affected about 1/5th of the online learning sessions.



Approximately one in every six to seven online learning sessions were reported to be sub-optimal by the learners on account of inadequate experience with online learning (including teachers and instructors).

Training on use of online learning methods and navigating the online learning material is a potential area improve optimal usage of online educational resources.

However, one finds that factors like poor course design/delivery (CV of 69.06%), insufficiency of time to learn online (CV of 62.95%) and lack of mentorship (CV of 67.42%) show relatively higher level of variation across countries as obstacles to online learners and educators.

Countries such as Kiribati and Solomon Islands emerge as candidates for focusing on potential improvement in the design and content of the online delivery.

Similarly, a country like Tuvalu that shows nearly 58.3 per cent of the learning session as sub-optimal on account of less time to learn online, points to the need for allowing longer duration for modules for students to comprehensively understand the content.

On the other hand, issues of mentorship may need to be tackled for other countries such as Solomon Islands and Vanuatu, where 71.4 per cent and 34.4 per cent of the learning sessions were reported as sub-optimal on account of adequate mentorship.

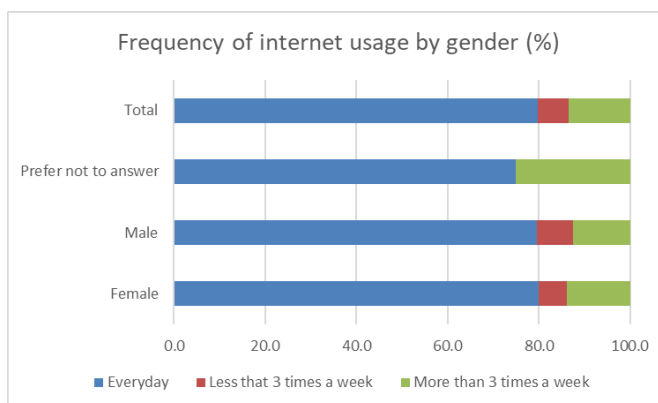
A look at the obstacles to learning from a location perspective shows that the top three obstacles are the same across Urban / Rural/ Outer Islands namely, unstable internet connection, limited access to internet, and not enough experience with online learning. However, a deeper dive into the data shows that an unstable internet is more likely to create obstacles in the urban main islands (odds ratio of 1.59) as compared to the rural main islands (odds ratio of 1.38). These locational differences however are not significant (at $\alpha=0.05$).

A poor course design/delivery is a distinctly bigger obstacle in Urban areas (perhaps due to a higher representation of both educators and students), and limited access to learning devices is a bigger challenge in Outer Islands.

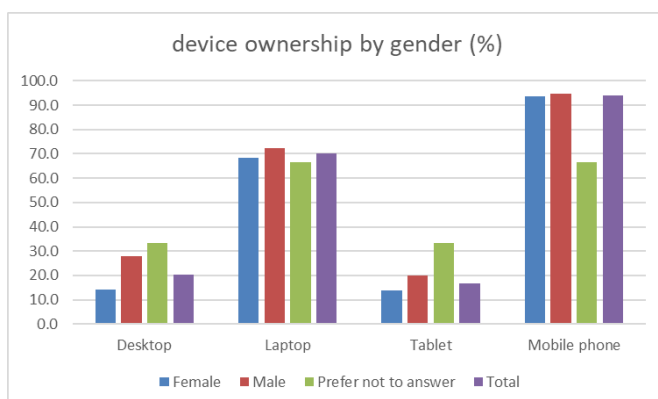
The extent to which the various obstacles listed impact the users tend to vary across the locations, thereby highlighting the need to be cognizant of the differences while designing the most suitable approach for the country.

5. ODL through a Gender lens

The overall representation of females is higher in the survey at 55.6 per cent vis-à-vis

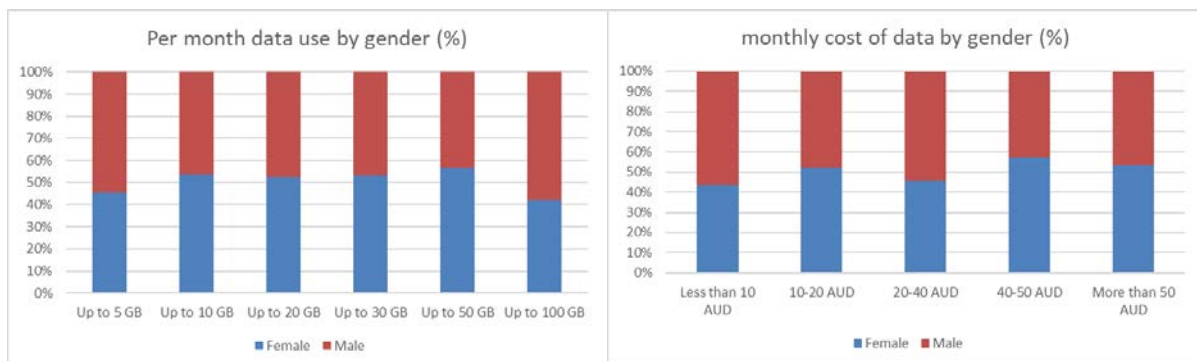


male respondents at 43.8 per cent. In terms of frequency of internet usage by gender there is not much difference. Similarly, the preferred modes of communication are the same for PICs shows both genders. The differences come to the fore when we look at other data points. For instance, in terms of type of distance learning media used by learner, a higher percentage of males (82.2 per cent) as compared to females (72.3 per cent) use computers/laptops. This is corroborated by the device ownership data wherein higher percentage of males own devices across all categories (laptops, desktop, tablet, and mobile phone). Females rely more on phones (84.1 per cent) as compared to males (72.9



per cent) though their mobile ownership at 93.5 per cent is lower than males at 94.7 per cent. This could have an impact on the quality of learning experience by gender considering that computers/ laptops are more conducive to online learning.

A higher percentage of females (91.2 per cent) report obstacles in learning as compared to males (88.4 per cent). The top three obstacles to learning remain the same across gender – unstable internet connection, limited access to internet, and not enough experience with online learning. A look at the ways users access the internet reflects the access to device/internet divide between the two genders with males having a higher access to computers both at home and office (41.1 per cent and 56.9 per cent respectively) vis-à-vis the females (30.8 per cent and 44.3 per cent).



When it comes to data usage, males have a distinctly higher usage in the two extreme categories of up to 100GB and up to 5 GB, whereas females have a higher usage in up to 50 GB. A look at the cost of data reveals that the cost of access to data is higher for females than males with the former having a higher spending in 40-50 AUD and more than 50AUD category. Females also spend a higher proportion of their monthly earnings on data as is revealed from the survey. 29.3 per cent of females spend 5-10 per cent or more than 10 per cent of their monthly earnings on data as compared to 24.8 per cent males. The higher cost to accessing data for females needs to be considered while formulating an appropriate strategy for the nation states.

Females (25.4 per cent) also have a lower subscription to fixed broadband cable/ DSL fibre than males (31.6 per cent) which may have an impact on the quality of internet access.

6. Risk and opportunities for promoting ODL in the region

With the world struggling to handle the effects of the COVID-19 pandemic, there has been a growing recognition of ICT and digital tools in teaching and learning methods. The convergence of technologies that has facilitated access to information across mobile phones, TV sets and Laptops for various segments of population in different countries, including for the teachers and learners; the policy impetus and budgetary allocations by nation states to lay a vast network of IT infrastructure; as well as the existing IT infrastructure that has been the backbone of various sectors where ICT has already penetrated in many advanced and Middle-Income Countries have all contributed to the emergence of ICT in education sector. The Economic Experts Roundtable organized by ITU in June 2020 concluded that countries with top connectivity infrastructure could mitigate up to half of the negative economic shock of the pandemic.²⁰

ICT education, its use in teaching and learning and for enhancing education administration and governance, are pivotal components in regional and national development for the small island developing states of the Pacific.²¹

i. Risks to be overcome

A recent World Bank report has projected that ICT-enabled opportunities will potentially increase the annual growth rate of Fiji by 1.2 percentage point between 2015 and 2040. For the same time period, the projected growth for Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu is modest (between 0.3 to 0.6 percentage points), and for Kiribati and Tuvalu it is negligible (less than 0.1 percentage points). The poor growth projections for many of the Pacific Island nations is due to their lack of investment in ICT infrastructure, unfavourable business environment, and insufficient human resources and skills in ICT whereas, for Fiji the efforts put in to offset these very challenges have resulted in a higher growth projection.²²

The success of ODL is heavily dependent upon a robust ICT infrastructure in the nation states which provides reliable, consistent, and high-speed internet connections. A quick look at the countries in question shows that internet penetration (all January 2022 figures) varies hugely. The internet penetration in decreasing order for the countries is as follows: 70.5 per cent in Fiji²³, 62.4 per cent in Nauru²⁴, 49.3 per cent in Tuvalu, 41.3 per cent in Tonga²⁵, 33.6 per cent in Samoa²⁶, 39.3 per cent in Vanuatu²⁷, 32.2 per cent in Solomon Islands²⁸, 18 per cent in Papua New Guinea²⁹, and 14.6 per cent in Kiribati³⁰. The wide gap within the region is indicative of significant

²⁰ The Economic Experts Roundtable was held on 26 June 2020. See: <https://www.itu.int/en/ITU-D/Conferences/GSR/2020/Pages/default.aspx>;

²¹ https://link.springer.com/chapter/10.1007/978-3-319-50972-3_1

²² Broadband Connectivity in Pacific Island Countries; https://www.unescap.org/sites/default/files/PACIFIC_PAPER_Final_Publication_1_1.pdf

²³ <https://datareportal.com/reports/digital-2022-fiji>

²⁴ <https://datareportal.com/reports/digital-2022-nauru>

²⁵ <https://datareportal.com/reports/digital-2022-tonga>

²⁶ <https://datareportal.com/reports/digital-2022-samoa>

²⁷ <https://datareportal.com/reports/digital-2022-vanuatu>

²⁸ <https://datareportal.com/reports/digital-2022-solomon-islands>

²⁹ <https://datareportal.com/reports/digital-2022-papua-new-guinea>

³⁰ <https://datareportal.com/reports/digital-2022-kiribati>

work that needs to be done to bridge the existing gap as well as inch closer to the global internet penetration of 62.5 per cent³¹ for some of the nations. A lower internet penetration, especially for nations with a predominantly rural population such as Papua New Guinea (86.4 per cent), Samoa (82.3 per cent), Tonga (76.8 per cent), Solomon Islands (74.4 per cent), and Vanuatu (74.2 per cent) implies that large populations may find it difficult to access education due to both geographical constraints as well as communication barriers. The only country in the mix with 100 per cent urban population is Nauru which could also explain why it has a relatively higher internet penetration at 62.4 per cent.

A relatively low median age of population in the countries under discussion, ranging from the lowest at 20.1 in Solomon Islands to the highest at 27 for Nauru indicate that access to education and thereby to internet is important for a large percentage of the population.

As we saw from the primary data, lack of affordable devices is an area of concern. Considering that 92 per cent of the survey respondents accessed the internet through their mobile devices, we take a quick look at the mobile penetration in the nation states. The data reveals that there is a wide gap between the countries with Nauru (145.4 per cent), Fiji (144.4 per cent), Tonga (106.7 per cent) and Vanuatu (102.8 per cent) all reporting more than 100 per cent mobile penetration. Of course, these are not unique mobile subscribers. Samoa (73.9 per cent) and Solomon Islands (71.9 per cent) report a modest mobile penetration whereas Kiribati (54.2 per cent), Papua New Guinea (36%), and Tuvalu (35.8 per cent) all have a low penetration. Again, for Pacific Island Nations with a predominantly rural population, low mobile penetration adds another layer of vulnerability.

While improvement in broadband connectivity in the Pacific has been attributed to regulatory policy reforms and other measures, the broadband divide within the Pacific subregion continues to widen. For instance, it would cost PGK 230 (about USD 70) for a mobile prepaid 6 GB data monthly package in Papua New Guinea, while a similar package (6.5 GB) in Fiji would cost only FJD 24.99 (about USD 12).³²

A conducive ecosystem is essential for the adoption of online learning. One of the key supporting factors in this is reliable and consistent supply of electricity. A glance at the percentage of population that has access to electricity reveals a significant gap across the countries under study. While Fiji, Nauru, Samoa, Tonga, and Tuvalu are at 100 per cent or close to it, Kiribati (92 per cent), Solomon Islands (73.3 per cent), and Vanuatu (67.3 per cent) have obvious gaps to be bridged.³³

The ICT skill gap for both learners and educators is an area that needs attention. A glance through the survey results, as well as a look at secondary data reveals that currently both struggle when it comes to navigating the internet/ learning platforms. Findings from a study from Fiji show that majority of the teachers do not have an ICT background but use it daily for mandatory-record keeping purposes. According to the teachers, an absence of ICT training among other factors severely limits the

³¹ <https://datareportal.com/reports/digital-2022-global-overview-report>

³² Broadband Connectivity in the Pacific Island Countries;
https://www.unescap.org/sites/default/files/PACIFIC_PAPER_Final_Publication_1_1.pdf

³³ Access to electricity (% of population)-Pacific Island Small States;
<https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=S2>

successful integration of ICT in the curriculum.³⁴ In Kiribati, the Government is looking to extend e-Learning applications and tools to schools in a more efficient and effective way which also includes the ongoing education and upskilling of teachers.³⁵ The underutilisation of ICT is reported from Samoa as well where the use of ICT is seen as a way only to improve and support traditional or existing teaching methods.³⁶

This points to the critical role that capacity building of educators and orientation sessions for students will play in order to leverage the many benefits of online education.

A move to online platforms also implies an increase in exposure to cyber risks. According to Child Online Safety Index, around 60 per cent of 8–12-year-olds in 30 countries are exposed to cyber risk including cyberbullying.³⁷ Thus, ensuring cyber security becomes an important factor in offering an enriching online educational experience. This risk has already been noted by the countries and they are taking specific measures to address this. For instance, in Kiribati, education programs are slated to be introduced in schools to teach children on how to use the internet safely.³⁸

ii. Opportunities to be leveraged

Through effective partnerships - between Pacific Island country governments, regional and international organizations such as the Asia-Pacific Telecommunity, ITU and the World Bank, and private telecommunication operators – the expansion of mobile-broadband access in the Pacific islands can be achieved. For instance, in terms of private sector participation foreign-owned Digicel has been instrumental in the quick expansion of mobile-broadband networks in many of the Pacific.³⁹

A 2018 study on ICTs in Education in the Pacific Islands had indicated that some of these countries are likely to install their submarine cable connections, which might trigger improved connectivity. In fact, the long-term benefits of stable and wider connectivity through ICTs are expected to shift demand for human capital. This in turn would warrant sectoral partnerships, (public, private and autonomous institutions, including the civil society) to harness the full range of potential of ICTs to enrich the most important resource of the region – i.e., human capital.⁴⁰

Significant efforts are being made by Governments to improve the enabling infrastructure which is critical for supporting ODL. The Draft Digital Government Plan in Papua New Guinea which aims to extend telecommunication coverage to 90% of the population by 2027, is a case in point⁴¹ Governments are also collaborating with international agencies to expand the reach of communication services. For instance,

³⁴ https://www.researchgate.net/publication/327722442_ICT_integration_in_Fiji_schools_A_case_of_in-service_teachers

³⁵ National ICT policy.pdf; <https://www.mict.gov.ki/sites/default/files/National%20ICT%20Policy.pdf>

³⁶ The Use of ICT as an Educational Tool to Improve Learning and Teaching PDF

³⁷ An expert explains: the digital risks facing our children during Covid-19; <https://www.weforum.org/agenda/2020/05/children-digital-risks-cybersecurity-screen-time-covid19/#:~:text=In%2030%20countries%2C%2060%25%20of,are%20facing%20a%20cyber%20pandemic.>

³⁸ National ICT policy.pdf; <https://www.mict.gov.ki/sites/default/files/National%20ICT%20Policy.pdf>

³⁹ Broadband Connectivity in the Pacific Island Countries;

https://www.unescap.org/sites/default/files/PACIFIC_PAPER_Final_Publication_1.1.pdf

⁴⁰ <https://www.adb.org/sites/default/files/publication/428221/ict-education-pacific.pdf>

⁴¹ <https://tech.pngfacts.com/2022/07/tech-innovation-png-department-of-ict.html>

working in partnership with UNESCO, the Government of Solomon Islands hopes to provide vital communications to more remote Education Authorities, thereby bridging the gap between provincial education authorities and education sector administration in the capital, by leveraging the increasing coverage of mobile network operators in the provinces of Solomon Islands.

The governments in many of the Pacific Island nations are playing an active role in promoting ICT and online learning. This includes forming partnerships with private players such as Telecommunication and Technology companies for the design of distance learning technologies including learning platforms and apps.

For example, in Fiji the Ministry of Education, Heritage and Arts in partnership with Telecom Fiji Limited has launched the LearningHUB which is hosted on the Telecom's cloud platform and allows students and teachers to access these materials. This can be accessed free of cost if it through the Telecom network. Additionally, Fiji has signed an MOU with Huawei Technologies company for development of distance learning technologies to assist schools in rural and remote islands.⁴² In Solomon Islands, a Digital Readiness Assessment tool created by the UN Development Programme has helped identify the shape, pace, and types of digital transitions happening. Government officials are leveraging the tool to fast-track the positives, all the while ensuring that everyone in the Solomon Islands has a share in the benefits which include better access to education.⁴³

Many governments are also adopting policies and bringing about changes in existing ones to support online education. These range from directives aimed at increasing access to and supporting quality teaching & learning, to development of ICT across all areas of governance & education, to even proposing increased investment in ICT policy for education.

Fiji's National Policy on Open Educational Resources⁴⁴, Kiribati's national policy on ICT called KV20⁴⁵, and Tonga's education policy⁴⁶ are a few examples. Interestingly, the department of ICT in Papua New Guinea is showing its commitment to building digital literacy among its citizens and helping unskilled workers have access to more amenities and jobs through a series of free technology training programs.⁴⁷ The gender gap in access to ICT has also been noted by some Governments, and Papua New Guinea, for instance, is encouraging female engagement and enrolment in ICT by establishing scholarships for them.⁴⁸ Nauru's National Sustainable Development Strategy 2005-2025 includes goals to develop an ICT sector delivering a range of services that are responsive to changes in technology, and plans to provide all libraries with ICT facilities.⁴⁹

The support provided by Government goes beyond policy changes and includes on the ground support for encouraging e-learning through various subsidies and incentives to the industry.

⁴² <https://www.fiji.gov.fj/Media-Centre/News/E-LEARNING-OPPORTUNITIES-FOR-STUDENTS>

⁴³ <https://www.undp.org/pacific/news/shaping-solomons-islands%E2%80%99-digital-future>

⁴⁴ http://www.education.gov.fj/wp-content/uploads/2019/04/OER_National_Policy_Final.pdf

⁴⁵ National ICT policy.pdf; <https://www.mict.gov.ki/sites/default/files/National%20ICT%20Policy.pdf>

⁴⁶ <https://neqmap.bangkok.unesco.org/wp-content/uploads/2019/08/Tonga-Education-Policy-Framework-2004-2019.pdf>

⁴⁷ <https://tech.pngfacts.com/2022/01/png-department-of-ict-to-provide-free.html>

⁴⁸ <https://tech.pngfacts.com/2021/12/girls-in-ict-scholarships-in-png-2022.html>

⁴⁹ COL in the Commonwealth. NAURU (2015–2021). <http://hdl.handle.net/11599/3860>;

For instance, in Fiji, since 2011 the Ministry of Education has introduced e-learning in Government schools. The Government Information Technology Centre ensures connectivity to the schools as well as training of the teachers to manage technology related to e-learning. Fijian schools receive a full tuition fee grant from the government and 15% of this amount is to be used for ICT in schools. Changes to duty, freight and VAT have also reduced the prices of computers and networking devices in Fiji and many schools can afford to provide decent ICT facilities to their students. The Fijian Government is offering incentives for investments in the infrastructure for ICT purposes to stimulate growth in the industry. Any new investment in the infrastructure for businesses engaged in the ICT sector will be granted a tax holiday and a duty concession package.

Governments are also providing budgetary allocations and monetary support for the promotion of online learning and ICT infrastructure. A look at the education budget as a percentage of GDP for some of the nation's shows that a significant percentage has been earmarked for education. For instance, Samoa's education spending for 2020 was 16.22% of its GDP, a 0.62% increase from 2019. The education budget has provisions for the inclusion of ICT in the education system.⁵⁰ The Government of Solomon Islands spent 31.89% of GDP on education in 2020.⁵¹

Funding by donor agencies and other governments as well as technical assistance is an important element in the development of ICT infrastructure in the region. The World Bank, ADB, Governments of New Zealand, Australia, and Japan are assisting various PICs financially and technically for the development of ICT. This is especially important for countries such as Kiribati that have a low internet penetration. As of 2021, only 42% of the population had internet access and 30% of population had no mobile phone services⁵². Papua New Guinea has a collaboration with the UNDP to increase the usage of ICT in the country, and specifically in education.⁵³ The Australia- Papua New Guinea partnership of 2017-18 has resulted in the upgradation of ICT departments in Nine teaching colleges, and an installation of an e-Library with over 32 million books, articles and journals.⁵⁴ ⁵⁵ The Government of Japan and the United Nations Educational, Scientific and Cultural Organization are supporting Samoa to promote the integration of ICT in education.⁵⁶ Tonga government is getting financial aid from the World Bank and ADB to improve the growth of Digital technology and support for all its services. Similarly, the Government of Tuvalu, in association with the World Bank, is working to improve the quality of education in Tuvalu⁵⁷

Broadcasting services are being leveraged to provide distance learning. This is a critical element to help promote mixed-media and blended learning approach in the Pacific Islands.

⁵⁰ <https://www.macrotrends.net/countries/WSM/samoa/education-spending>

⁵¹ <https://www.macrotrends.net/countries/SLB/solomon-islands/education-spending>

⁵² National ICT policy.pdf; <https://www.mict.gov.ki/sites/default/files/National%20ICT%20Policy.pdf>

⁵³ <https://www.undp.org/papua-new-guinea/projects/strengthening-centre-excellence-information-technology-papua-new-guinea>

⁵⁴ <https://www.looppng.com/tech/ict-boost-teaching-colleges-76949>

⁵⁵ <https://www.thenational.com.pg/college-get-facilities-australia-png-partnership/>

⁵⁶ <https://www.unesco.org/en/articles/promoting-information-communication-technologies-education-samoa>;

⁵⁷ <https://www.globalpartnership.org/sites/default/files/document/file/2020-11-application-program-document-covid-19-accelerated-funding-for-tonga.pdf>; page 11-12

Fiji is working towards airing an animated educational television series for children which is an initiative of the Education Ministry and UNICEF to support children to continue learning during school closure.⁵⁸ Additionally, the Ministry is developing educational television programmes for Fijian children in collaboration with Fijian Broadcasting Corporation and Wales. Broadcasting services like the radio have received an impetus in Papua New Guinea, which suffers from a lack of widespread access to the internet, and they have been recommended during the pandemic to become the mainstay for imparting education in the country since the use of radio is far more widespread and also affordable for the citizens of Papua New Guinea.⁵⁹ While some countries, as we can see from the above examples, have already started to leverage the broadcasting services, others such as Samoa are gearing up to do so by forging partnerships with television companies and radio stations.⁶⁰ SIBC, in Solomon Islands, is the main channel by which the Government enables the provision of information and education services to the communities.⁶¹

ODL has been mainstreamed as a critical element for promoting continued learning especially in the wake of the pandemic. It is now seen as a credible means of promoting education even in the midst of unfavourable circumstances- natural disasters, health pandemics, political upheavals and other disrupters.

A study carried out in Fiji showed that many students were satisfied with the sudden change to ODL as it provided them many benefits such as extra time with their family, access to course materials from the comfort of their homes at their own pace, freedom from exhausting travels, and safety from the pandemic.⁶² For the Fijian population, which is geographically isolated, it meant that even people with accessibility challenges in remote, maritime, or rural areas could have access to quality education from good teachers. Similarly, it is hugely beneficial for people in permanent employment who would struggle to either complete their degrees or upgrade their skills in the absence of the flexibility offered by online education.

7. Exploring the feasibility of Blended Learning

i. Need for adopting a broader framework

Blended learning (BL) is: **“optimizing achievement of learning objectives by applying the ‘right’ learning technologies to match the ‘right’ personal learning style to transfer the ‘right’ skills to the ‘right’ individuals at the ‘right’ time.”**- Singh & Reed (2001). It **offers a particularly compelling model for educating a student body that is becoming less and less homogenous, both in terms of background and knowledge levels.** The idea of BL is not to “fracture these heterogeneities but to help bring up all students so they can be at the same point through rich [classroom] conversations” (Horn, 2015).⁶³

⁵⁸ <https://www.fijitimes.com/educational-kids-tv-series-to-be-launched/>

⁵⁹ <https://devpolicy.org/the-importance-of-radio-for-pngs-covid-19-school-response-20200617-1/>

⁶⁰ <https://www.samoaoobserver.ws/category/samoa/60413>

⁶¹ <https://www.sibconline.com.sb/about-us/>

⁶² Reference - Fijian Students' Reactions to Required Fully Online Courses during Covid-19 PDF

⁶³ Horn, Michael (2015). New Data backs Blended Learning. Published in The Atlantic, September 23, 2015. <https://www.theatlantic.com/politics/archive/2015/09/new-data-backs-blended-learning/432894/>

Equally important to bear in mind that **BL is not broadcasting any course online or merely swapping analog tools for digital ones** (Panopto, 2019).⁶⁴ Instead the notion of **BL**, therefore, as being discussed here as a **pathway for “flexible learning” combines both in-person interactions between the teacher and the learner as well use of digital material/OER that allows a degree of flexibility to the learners to adjust their own pace of learning.** It is about a **stable equilibrium of technology** for teaching and learning or arriving at some kind of a **suitable blend**, subject to the prevailing ecosystem of learning.

The multitude of benefits that it offers in terms of **cost reduction** (school infrastructure, training overheads); **shorter delivery time** (through self-paced rather than instructor-paced learning, independent study components); **accommodating different learning styles**; and **increased learner motivation** (through flexible learning models, judicious mix of online and offline) makes it a viable choice for governments/educational institutions. Moreover, **opportunities for introducing blended learning exists at 4 levels** - activity; course; program; and institution – and the appropriate node can be chosen for intervention.⁶⁵

BL can take various forms such as i) a Rotation model;⁶⁶ (ii) a Flex model;⁶⁷ (iii) an A la carte model;⁶⁸ or (iv) an Enriched Virtual model.⁶⁹ With each of these blended learning models, video plays a key role in delivering course content to students. Regardless of the blended learning model chosen, the right video platform must allow teachers to focus on *teaching* rather than on the *technology*.

ii. Implications for Pacific Islands

Some of the key determinants on the form of BL that each country chooses are varying levels of policy reforms across the PICs included in the present study, investments in ICT infrastructure, access to mobile or tablet-based internet connectivity among teachers and learners, stability and affordability of IT connectivity and the level of training of teachers in using ICT methods.

Some other relevant **issues for consideration for countries/ institutions** while designing most suitable blended learning approach would include the role of **live interaction**; role of **learner choice and self-regulation**; models for **support and**

⁶⁴ Panopto (2019). What is Blended Learning? Blog Published in Panopto. August 16, 2019. <https://www.panopto.com/blog/what-is-blended-learning/>

⁶⁵ Distance Education In The Age Of Globalization: An Overwhelming Desire towards Blended Learning; Satya Sundar Sethy; Turkish Online Journal of Distance Education-TOJDE July 2008 ISSN 1302-6488 Volume: 9 Number: 3 Article 3

⁶⁶ Rotation Model of Blended Learning: In this model, students within a *single* class rotate between online learning and other learning modalities, either on a fixed schedule or at the instructor's discretion. In this model, most of the learning still occurs on a physical (brick-and-mortar) campus. The Flipped Classroom is the most classic example of the Rotation Model in practice.

⁶⁷ Flex Model of Blended Learning: Here, students switch between learning modalities on a customized, fluid schedule that uses online learning as its cornerstone. Similar to the Rotation Model, learners still learn primarily on-campus, but under the Flex Model *every* class is divided into online and offline components.

⁶⁸ A La Carte Model of Blended Learning: Under this model, a student takes one or more courses online in addition to traditional courses at a brick-and-mortar campus. Unlike full-time online learning, in the à la carte model, students at a particular school may choose between online and offline courses at their convenience.

⁶⁹ Enriched Virtual Model of Blended Learning: In this model, learning is divided between online and offline components. Although face-time is required between the student and teacher, in the Enriched Virtual Model, the student does not necessarily come to campus every day.

training; balance between innovation & production; cultural adaptation; and dealing with digital divide.⁷⁰

In the case of Pacific Island Countries (PICs), countries such as Fiji have recognised the use of OER, whereby innovative use of these resources is being promoted in different pedagogical contexts (MEHA, Fiji 2017).⁷¹ This is evidently indicative of the policy commitments. The same is true of other countries like Kiribati as reflected in its National Policy on ICT as part of KV20 that outlines the use of ICTs in delivery of services across sectors, including education (MICT, 2019)⁷². In fact, in Samoa, national level programmes (with support from UNESCO, Government of Japan⁷³ and ADB) are underway to develop a resilient education system through the use of online and other multimedia platforms. Some of these have been more than a decade old, as the ADB (2007) project in Samoa to address the varying levels of students' learning opportunities and achievements, particularly between urban and rural areas.⁷⁴

Largely dispersed small islands separated by rugged terrain, comprising multiple ethnicities, social groups, local languages pose serious challenges to education across grades. Lack of educational material and limited resources to train, retain and also retain teachers further compounds the problems. Papua New Guinea, for instance, has over 850 indigenous languages, and many of its villages, situated either in the lowland rain forests or the populous highlands, are as isolated by rugged terrain as the Pacific atolls are by distance across the sea. Vanuatu has the highest number of languages per capita in the world (Crowley 2000).⁷⁵ It may be possible to consider investments in translating educational material in as many languages, at least with the major ones to allow students and learners familiar with these languages can at least move rapidly on the learning curve because of the difficulty of training and retaining teachers and the lack of educational materials. **Yet, offline and blended learning methods would be required for communities that do not figure in this “major languages cohort”.** Blended learning methods (with training teachers in using educational material in local languages for students to adapt) has the potential to avoid structural marginalisation that might occur on account of focus on major languages and major islands.⁷⁶

Interestingly, while the pandemic induced crisis has catalysed the process of transformation in the thinking and policy moves on the use of ICTs in the PICs, it has also brought to the fore the need for enabling teachers to make full use of the potential of the ICTs. Making the teachers to use ICTs, beyond printing jobs or

⁷⁰ Distance Education In The Age Of Globalization: An Overwhelming Desire towards Blended Learning; Satya Sundar Sethy; Turkish Online Journal of Distance Education-TOJDE July 2008 ISSN 1302-6488 Volume: 9 Number: 3 Article 3

⁷¹ Ministry of Education, Heritage and Arts (2017). National Policy on Open Educational Resources. Government of Fiji. http://www.education.gov.fj/wp-content/uploads/2019/04/OER_National_Policy_Final.pdf

⁷² Ministry of Information, Communications & Transport (2019). Kiribati National ICT Policy 2019. Government of Kiribati. <https://www.mict.gov.ki/publications/national-ict-policy-2019>

⁷³ <https://www.unesco.org/en/articles/promoting-information-communication-technologies-education-samoa>;

⁷⁴ ADB (2007). ADB and Samoa Using ICT to Improve Access to Education and Training. New Release, December 17, 2007. <https://www.adb.org/news/adb-and-samoa-using-ict-improve-access-education-and-training>

⁷⁵ Crowley R (2000) The language situation in Vanuatu. *Current Issues in Language Planning* 1(1):47-132

⁷⁶ A form of Creole or pidgin is the lingua franca in countries that have such linguistic diversity, but literacy levels in pidgin, English or French are low, and the local language often has no written form.

sending emails or for presentations, has necessitated a growing perception among the PICs that training the teachers per se will be critical for any transformative change. To further this, for instance, countries like Samoa and Kiribati are focusing on assisting teachers to better harness the use of ICTs. It is encouraging to note that there is already a decade old programme through the government IT Centre of Fiji that has been training the teachers to manage technology related to e-learning (Ministry of Education, 2011).⁷⁷ Evaluation of such experiences and cross-learning among the peer PICs may throw up significant pointers on the specific forms of training of teachers may be warranted for the various forms of blended learning.

Review of some of the recent studies of reactions of students to the fully online courses during the pandemic (as in Fiji) show that **irregular feedback from the teachers have resulted in sub-optimal satisfaction** among 18-20 per cent of the **students with the fully online courses** (Chand, Devi & Tagimaucia, 2022) ⁷⁸

Therefore, in the context of Blended Learning, it is critical to acknowledge the role of guidance by the instructors and the face-to-face interaction with the students. A recent study for Vanuatu (Molli et al, 2017) sought to examine the effect of the levels of guidance on students with a low degree of experience in ICTs. Providing varying levels of guidance to students across three cohorts, (namely with students having received no guidance, minimum guidance, and maximum guidance) shows that construction of knowledge from discovery learning⁷⁹ activities occur with or without guidance. However, the amount of guidance received has an influence on the depth of conceptual understanding and its effect on learner's intuitive knowledge (Kirschner et al., 2006). The authors therefore, conclude that the Maximum Guided Group's treatment was the most effective treatment for conceptual change when using computer simulation, particularly for science subjects at the primary and upper primary school levels. This further strengthens the case for a Blended Learning in PICs. (Molli et al, 2017)⁸⁰

The fact that **several PICs**, (like the Solomon Islands, Kiribati, Fiji, to list a few) are **pushing for strengthening school level infrastructure on ICTs** through equipping the schools with tablets, computers and digital learning material, further **strengthens the case for a blended learning approach**.

It may be safe to assume here that PICs are well aware of **strengthening common ICT infrastructure to promote online learning** than wait for the increase in

⁷⁷ Ministry of Education (2011). Introducing e-learning to schools. Published by the Media Centre, Ministry of Education, Government of Fiji. 2011. <https://www.fiji.gov.fj/Media-Centre/News/Introducing-e-learning-to-schools>

⁷⁸ Chand, S. P., Devi, R., & Tagimaucia, V. (2022). Fijian students' reactions to required fully online courses during Covid-19. *International Journal of Instruction*, 15(2), 847-860. https://www.researchgate.net/publication/359120492_Fijian_Students%27_Reactions_to_Required_Fully_Online_Courses_during_Covid-19

⁷⁹ Discovery learning is a technique in which learners gain knowledge about a concept by generating hypotheses and then designing and executing experiments to validate these hypotheses. Quoted in Molli et al, 2017.

⁸⁰ Moli, Lemuel & Delsérieys Pedregosa, Alice & Impedovo, Maria & Castéra, Jérémy. (2017). Learning density in Vanuatu high school with computer simulation: Influence of different levels of guidance. *Education and Information Technologies*. 22. 10.1007/s10639-016-9527-4. Accessed on August 17, 2022.

https://www.researchgate.net/publication/306051997_Learning_density_in_Vanuatu_high_school_with_computer_simulation_Influence_of_different_levels_of_guidance

ownership of computers by students as private individuals. Clearly, this is indicative of **getting the students to come to schools and use the ICT labs for their learning.**

Findings of another study for Fiji (Chand, Devi & Tagimaucia, 2022)⁸¹, also suggest that there is a case for pursuing BL, even as PICs are dovetailing their resources for creating country-wide ecosystem for affordable and stable internet connectivity and uninterrupted power supply.

In fact, **the school-based flexi-form of BL** could allow students to have **stable and assured access to standardised OERs** and digital learning material and also have the benefit of **seeking quick help from the teachers** and instructors.

Based on the recommendations of the second **OER Congress of 2017** (UNESCO, 2017)⁸² and a request from the national government of Tonga, that seeks to accelerate the pace towards **SDG 4 through the key pillars of access, equity and inclusion**, agencies like **Commonwealth of Learning (COL)** have already initiated a **Strategic OER Implementation Project (SOIP)** in **partnership** with the Ministry of Education and training (MET) of **Tonga**.

From the perspective of bringing in the elements of BL (as a pathway for resource optimization), the SOIP is focusing on developing a framework for fully utilizing the new fibre optical network to the Tongans spread across several islands (45) for delivering online learning.

Acknowledging the **role of teachers in contributing to the development and deployment of OERs**, the project is also focusing on capacity building programmes for the teachers.

Steps taken for **improving the institutional level ICT infrastructure** are indicative of the foresight among the policy makers to use a form of BL that would be rotational in nature, whereby, most of the **online learning will be on physical (brick-and-mortar) campuses.**

PICs have been receiving both financial aid and technical assistance from IFIs such as the World Bank, ADB as well Governments of Australia and New Zealand to support the island specific digitisation efforts.

Elements of preparedness (precipitated due to the current pandemic) in education planning have also found prominent mention in the national level efforts in the PICs (such as in Tonga) for ensuring a resilient education system and equal access to learners and teachers for continuing educational opportunities during disasters.

The outputs for such interventions relate to developing home schooling guides and audio lessons for learners of different school grades as well as developing home-based learning and support guidance and modalities for parents to support the young learners at home, in the wake of natural disasters.

⁸¹ Chand, S. P., Devi, R., & Tagimaucia, V. (2022). Fijian students' reactions to required fully online courses during Covid-19. *International Journal of Instruction*, 15(2), 847-860.

https://www.researchgate.net/publication/359120492_Fijian_Students%27_Reactions_to_Required_Fully_Online_Courses_during_Covid-19

⁸² UNESCO (2017). Second World OER Congress, Ljubljana OER Action Plan 2017 https://en.unesco.org/sites/default/files/ljubljana_oer_action_plan_2017.pdf

A beginning has been made. Blended learning through a combination of flex and rotational models are being attempted to enhance the climate resilience of the pedagogical and learning platforms in the PICs. A deeper engagement may be warranted to define the operating procedures, standardize the processes and cross-learning across the PICs to shorten their learning curves.

Going beyond policy pronouncements, there is evidence to show certain encouraging pointers.

For instance, attempts have been made to **experiment with “learn at home” days in Tonga** to prepare the students, teachers and care givers for adopting possible approaches for continuity in learning during emergencies (MET Tonga, 2021).⁸³ The learnings from some of the “Trial Days” led by Tonga’s Ministry of Education and Training (MET) during the pandemic on the above forms of Blended Learning (BL) appear as sound investment for future responses to natural hazards and disasters.

Providing the parents with a daily schedule of learning for children and having dedicated toll-free phone numbers for parents to address any concern on learning faced by the students at home have shown that newer forms, patterns and scope of BL are being exempted. Siloed use of online platforms and OERs are giving way to more convergent approaches to ensure learning continuity and outcomes.

Enabling students to access textbooks and other knowledge products through offline WiFi hotspot application in schools, as under the RACHEL⁸⁴ initiative in Papua New Guinea, is also a manifestation of the efforts by the PICs to try alternative forms of BL that may be based on common ICT resources housed in the traditional in brick-and-mortar campuses (Kana, 2021).⁸⁵

Given that several PICs are vulnerable to such climate stressors and shocks, there is an opportunity to promote cross-learning and region-wide deployment of strategies that may worked in any member PIC.

⁸³ MET Tonga (2021). Ministry of Education and Training partners with Save the Children to safeguard education across Tonga. Press Release June 10, 2021
<https://www.gov.to/press-release/ministry-of-education-and-training-partners-with-save-the-children-to-safeguard-education-across-tonga/>

⁸⁴ RACHEL: Remote Area Community Hotpot Education Learning

⁸⁵ Kana, Josiah (2021). Accessing education amidst the pandemic: COVID-19 and education in Papua New Guinea. UNICEF. November 23, 2021. <https://www.unicef.org/png/stories/accessing-education-amidst-pandemic>

8. Conclusions & Insights

The foregoing sections bring out the current status of use, accessibility, risks and opportunities for open distance and flexible learning (ODFL) in a group of 9 major Pacific Island countries (PIC) (Fiji, Kiribati, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu).

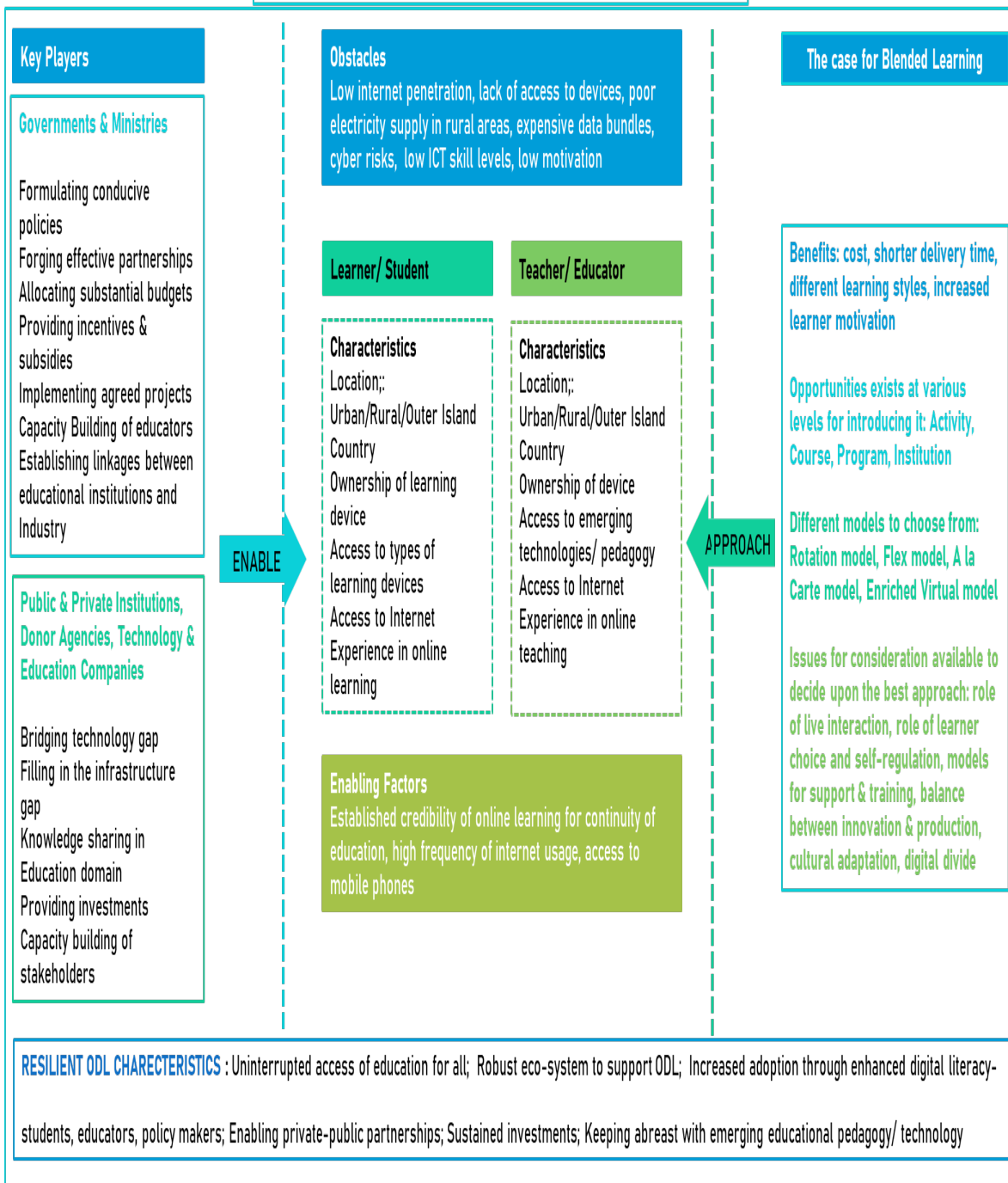
i. Key findings

- A relatively high frequency of internet usage across PIC coexists with regional variation between urban main islands, rural mainland and outer islands on account of power supply breaks and unstable internet.
- Mobile phones are the most common devices used for online learning. There is, however, some variation in access to school-based computers. Use of ICT is mainly for sending email-based communications or emails and Facebook for communication in all PICs.
- Problems in accessing ODFL include low ownership of computers (required for tasks such as typing assignments), low access to school-based computers, sharing of devices in households with multiple learners, requirement of content design to be mobile-friendly, limited availability of stable broadband, bandwidth limits, and incompatibility of devices with 3G/4G internet. This pattern is broadly uniform across all PICs considered for the study.
- The survey also shows that PICs differ terms of quality of online course design, time available for learning, and availability of effective mentorship.
- Currently, there exists a wide range of variation across the PICs in terms of educations and skills of teachers for using ICTs for online teaching and learning.
- There are no observed gender differences in terms of frequency of internet usage and preferred modes of communication.
- Male learners have reported higher ownership of various types of OCT devices and higher data usage than their female counterparts.
- There are encouraging pointers of telecom and other physical infrastructural policy nudges in various PICs (such as submarine cable connections, the Draft Digital Government Plan, design of ODL platforms, to name a few). The study underlines the importance of investments in ICT and power infrastructure for promoting enhanced use of ICTs for online, along with concomitant budgetary allocations.
- Policy interventions may be also required to create an affordable price regime for ownership of mobiles/laptops and monthly package of mobile or fixed broadband connections.
- Education and upskilling of teachers and educators is equally critical as the, orientation of students to facilitate navigating the user interface of ODFL technologies, and enhancement in cyber security.

ii. Research insights: at a glance

The figure below represents the key insights derived from the study. This can serve as the foundation for delving deeper into individual country characteristics in the context of ODL and formulating relevant strategies for its promotion.

Research Insights at a glance: the case for blended learning in PICs



The insights derived from the survey organised by COL has provided a reasonable perspective on the current status of ICT use and access in the Pacific Island Nations. In conjunction with the secondary research, the study provides a broad overview of the status of ODFL in the countries under study, including the key stakeholders and the critical role they can play in contributing to the growth of ODL, the current challenges as well as enabling factors, the characteristics of the learners and educators in this region, insights into a resilient ODL architecture, as well as the growing case for adopting a blended learning approach.