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Finteching remittances in Paradise: a path to sustainable development

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Finteching remittances in Paradise: a path to sustainable development[+]

by

Hongjoo Hahm, Tientip Subhanij and Rui Almeida[*]

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Abstract

Remittances are an important source of external finance for developing countries, and especially for the Pacific small island developing States (Pacific SIDS). The transaction costs of sending remittances to these countries are amongst the highest in the world. Tackling this issue is crucial not only for economic and social development, but also for improving financial inclusion. This paper is one of the first to analyse fintech adoption in remittance services in the Pacific SIDS, using an original framework to assess the current landscape of fintech in the remittance sector and draw tailored policy recommendations. The framework is conceptualized through a ladder with five rungs: availability, accessibility, awareness, literacy and trust. Based on this, the paper systematically analyses the fintech landscape in the Pacific SIDS and finds that most of these dimensions are still not observed, which results in strong preference for the more expensive traditional remittance services. It finds that among all the fintech-based remittance services, mobile money is the most prevalent and more readily accessible to individuals in the Pacific. Countries in the region are different in their stage of readiness for fintech adoption. While Fiji, Samoa and Tonga have shown almost all of the necessary conditions for adopting fintech-based remittances, other countries still lack behind, requiring extra efforts to encourage the digital transformation of remittance services.

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***Keywords**:* small island developing States; Pacific; fintech; remittance transaction costs.

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I. Introduction

Covering less than one per cent of the globe surface and roughly one per cent of global population, small island developing States (SIDS)[1] are characterized by small domestic markets that pose barriers to the development of a dynamic private sector and a competitive economy. Moreover, SIDS have a great and increasing dependence on imports, especially food products. In 1990, 45 per cent of food available in the Caribbean small islands was imported, while in the Pacific that figure was of 40 per cent. In 2011, this proportion increased to 67.5 and 60 per cent in the Caribbean and Pacific, respectively (FAO, 2016). Another obstacle to sustainable development is the high exposure to external economic shocks faced by SIDS, particularly to international financial volatilities, affecting foreign direct investment (FDI) and access to international debt markets. For example, SIDS are 12 times more exposed to oil price-related shocks than non-SIDS (UNCTAD, 2012). These factors contribute to inferior and more volatile rates of economic growth. Over the course of the 21st century, the average annual growth rate of SIDS was 3.2 per cent, whereas least developed countries (LDCs) exhibited a rate of 4.7 per cent per annum. During the same period, Pacific SIDS showed the highest flows of official development assistance (ODA), of around 21 per cent of GNI, as compared to the LDCs average of about 13 per cent (World Bank, 2018b).

The socio-economic fragility of Pacific SIDS results from their vulnerability to natural disasters as well as extreme remoteness and geographical isolation. Pacific small states are situated on average 12,000 km away from the nearest markets, posing a barrier not only to trade but to international cooperation and integration. According to the World Risk Index, Pacific SIDS are the most vulnerable in terms of natural disasters. As of 2018, Vanuatu ranked first worldwide as having the highest risk of disaster from extreme natural events, followed by Tonga.

An important characteristic of Pacific SIDS is their great reliance on remittance inflows. Feeny, Iamsiraroj and McGillivray (2014) found that Pacific SIDS receive much larger remittance inflows as a proportion of their GDP than any other country-group. As we will discuss later, the average cost of remitting to the Pacific is one of the highest in the world. Lowering transaction costs, therefore, has the great potential of contributing to economic growth and human development of the region. This is recognised by the 2030 Agenda for Sustainable Development in Target 10.c: "*By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent*". Meeting this target would save remittance families around the globe an additional US$20 billion annually (IFAD, 2017).

Motivated by innovative financing solutions, this paper attempts to answer two fundamental questions. First, given such high costs of sending remittances, can financial technologies (fintech) be an instrument to drive down costs? Second, what needs to be done to promote a more widely adoption of fintech in the Pacific? To answer these questions, the paper applies and modifies a ladder framework largely used in political and economic literature. This framework is used to analyse and shed light on how to effectively promote the adoption of fintech in remittance services in the Pacific.

For the Pacific small islands, previous studies have focused on the high volume of remittance inflows (Browne and Mineshima, 2007), the dimension and motivation for the high transaction costs (Gibson, McKenzie and Rohorua, 2006), the impact of remittances on growth (Feeny,

[1] A complete list of SIDS (by region) can be found in appendix 1.

Iamsiraroj and McGillivray, 2014) or on the relation between natural disasters and remittances (Bettin and Zazzaro, 2018). Other research works have investigated the potential of remittances using modern digital technology (Loukoianova and others 2018; Naghavi and Scharwatt, 2018; Rillo and Levine, 2018). Despite some previous works in this area, none examined the role of fintech adoption in the context of remittance services in the Pacific. The present paper contributes to the literature by aiming to analyse both the causes for costly remittance transactions and the benefits of adopting fintech in the remittance services in the Pacific.

The paper is organised as follows: section II examines the magnitude of both remittance flows and their transaction costs. Section III presents the causes for costly remittances in the Pacific and discusses the viability of different solutions. Section IV establishes a definition for fintech-based remittance services. Section V introduces a new framework to assess the current state of affairs in the Pacific and draw policy recommendations. Finally, section 6 concludes by summarising the findings and indicating opportunities for future research.

II. Remittances in the Pacific SIDS

Cross-border remittances, defined as personal transfers and compensation of employees made by non-resident households to resident households, are a major source of external financing for Pacific small islands. From 2000 to 2017, Pacific SIDS received an average of 9.7 per cent of their GDP in cross-border remittances. This is more than the average of world SIDS or the Asia-Pacific region, for instance. Among Pacific SIDS, Tonga received the highest level of remittances as a proportion of GDP, reaching 37.1 per cent, followed by Samoa, Marshall Islands, Tuvalu and Kiribati (figure 1). Papua New Guinea and Palau, on the contrary, are in line with the World average and barely depend on remittance inflows. In total, in 2017, around US$688.5 million was sent to the Pacific SIDS via remittance transactions. The largest recipient was Fiji, recording almost US$274 million or 40 per cent of the total.

The size of remittances in the Pacific SIDS is large also in comparison to private capital flows received from abroad.[2] From 2000 to 2017, remittances to the Pacific SIDS as a proportion of GDP were on average 4.6 percentage points higher than FDI (World Bank, 2018b) - a difference in magnitude not observed anywhere else in the world.[3] Remittances are thus playing a crucial role in stimulating the private sector, since they are received directly by households rather than governments. In fact, remittances are generally found to contribute positively for private consumption and investment, particularly in small businesses (Connell and Conway, 2000; Connell and Brown, 2005).

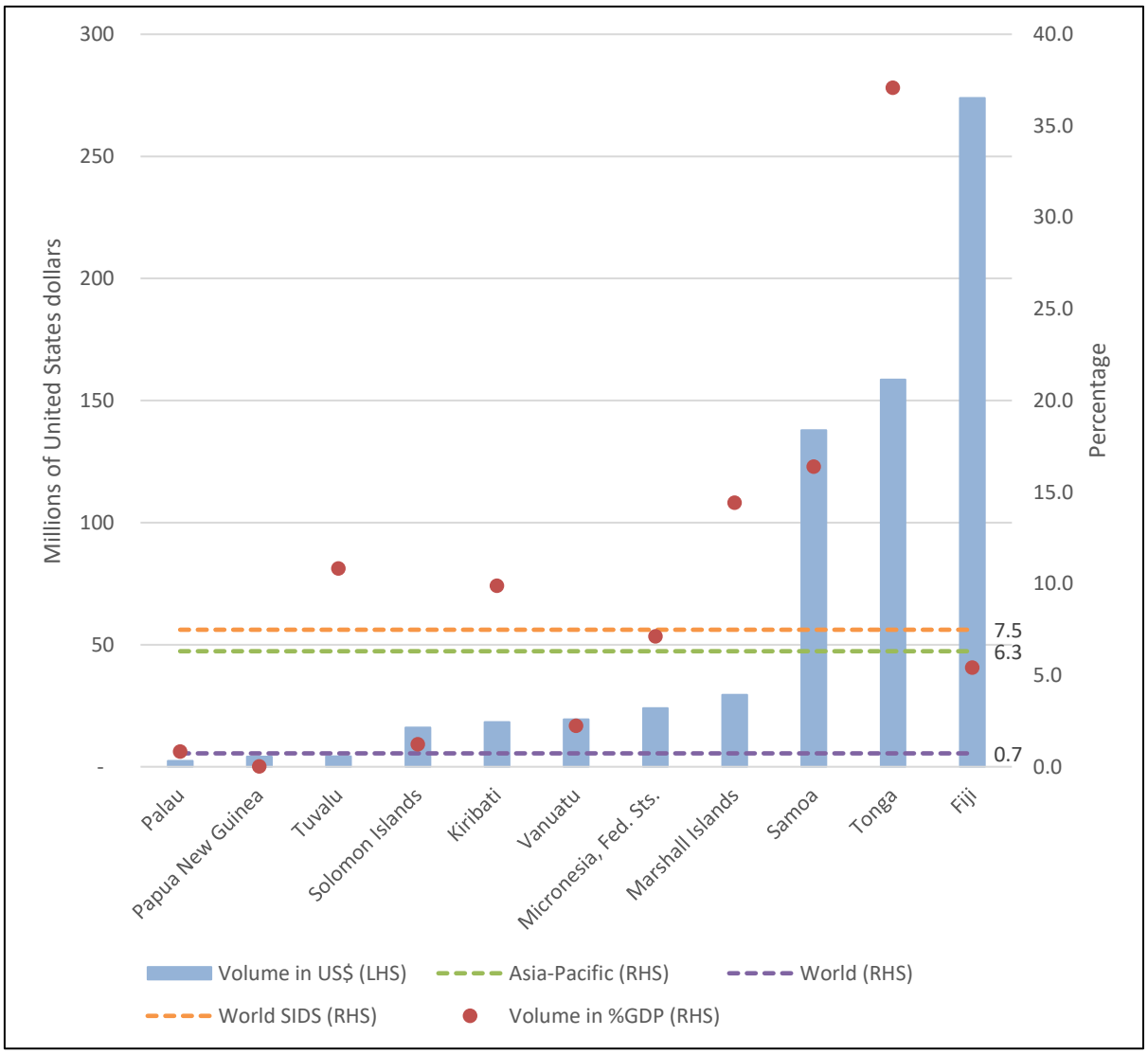
Apart from the large size of remittance inflows to the Pacific SIDS economies, studies show that there is a considerable number of households that depend on these transfers. Surveys conducted in Samoa, Solomon Islands, Vanuatu and Tonga reveal that over one third of the adults had

[2] According to the OECD (2019), private capital flows are defined as the sum of foreign direct investment (FDI), portfolio equity (transactions of stocks and shares), remittances and private sector borrowing. Given the under-development of the financial system in the region, portfolio equity flows are neglectable.

[3] Based on our analysis of the World Development Indicators database, from 2000 to 2017 the difference in percentage points between the proportions of remittances and FDI to GDP are: 2.9 for LLDCs, 0.7 for Asia-Pacific and -2.4 for the World.

received remittances (both from within the country or abroad) in the previous year.[4] Remittances thus contribute significantly to the financial lives of the populations of these countries.

Figure 1. Personal remittances received in selected countries and country-groups, 2017



Source: Authors, based on World Development Indicators.
Note: There is no data available for Nauru.

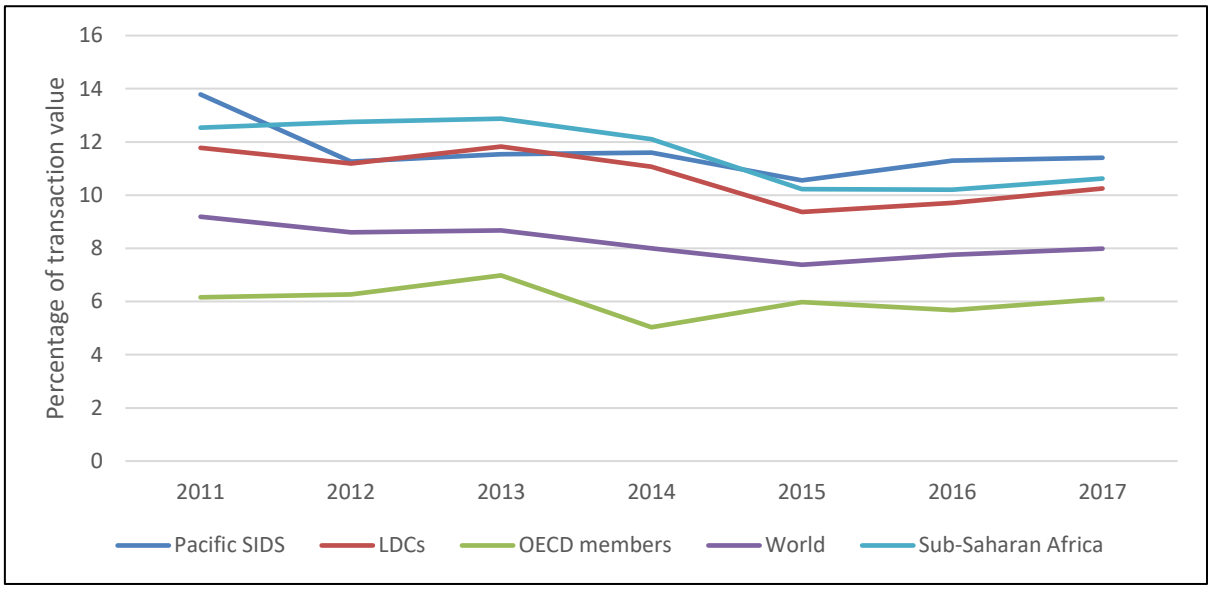
These heavy remittance inflows are explained by the substantial levels of migration to neighbour countries (mainly Australia and New Zealand), together with a strong communal culture of giving. According to Browne and Mineshima (2007), the key determinants for the intense migratory phenomenon include the economic prosperity of the partner countries, direct transport links, and

[4] The *Financial Services Demand Side Surveys* were led by national central banks in cooperation with the Pacific Financial Inclusion Programme (Central Bank of Samoa, 2015; Central Bank of Solomon Islands, 2015; Reserve Bank of Fiji, 2015; National Reserve Bank of Tonga, 2016; PFIP, 2016; Reserve Bank of Vanuatu, 2016). For the remaining of the paper, when there is a reference to survey responses, assume that the authors mean the *Financial Services Demand Side Surveys* (unless stated otherwise).

the absence of a language barrier between those countries. Additionally, both Australia and New Zealand have been expanding their seasonal-worker programmes. These schemes bring thousands of Pacific workers to fill labour shortages in agriculture, as well as in the accommodation and tourism sectors (World Bank, 2018a). Cultural traditions in the Pacific countries are deeply rooted in family and community values. Workers from the Pacific small islands (especially those employed overseas) feel the social obligation to set aside part of their income to support their immediate and extended families (AUSTRAC, 2017). This monetary assistance is essentially used to fulfil feeding and housing needs, and to cover medical and educational expenses. Community remittances are also common, especially in major life events (such as weddings or funerals) and in the aftermath of natural disasters.

The issue of greater concern lies with the transaction costs of sending remittances to the Pacific SIDS. In fact, the Pacific remittance corridors are among the most expensive in the world.[5] The average cost of remitting US$200 to the Pacific SIDS from 2011 to 2017 was 11.6 per cent of the transaction value. This figure is well above the global average of 8.2 per cent, as well as other parts of the world (figure 2). Reducing the transaction costs of remittances, therefore, has an enormous potential for improving the socio-economic conditions of these small economies in the Pacific. There are numerous benefits of instituting less costly remittance corridors, including increased transfers and reduced informality of the sector.

Figure 2. Transaction costs of sending remittances, 2011-2017



Source: World Development Indicators.
Notes: Not all Pacific SIDS are included in the dataset – for 2011, data refers to Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu; for the remaining years, data refers to Fiji, Samoa, Tonga and Vanuatu.

Past research has revealed evidence that remittances have a negative cost-elasticity to transaction costs. In other words, the lower the costs of remitting money, the larger the amount of transfers. Gibson, McKenzie and Rohorua (2006) estimate that this negative price-elasticity is around 22

[5] The term "remittance corridor" refers to the outflow of funds from one country to another.

per cent, whereas Freund and Spatafora (2008) found it to be about 16 per cent. By running a randomized control trial, Aycinena, Martinez and Yang (2010) concluded that a US$1 lower fee would boost remittances US$25 a month in the United States-El Salvador corridor. This behaviour lies in the inherent local context and is partly motivated by altruistic motives: migrants generally care about their relatives and, given the opportunity to save in remittance fees, will choose to send the saved amount of money back to their home countries rather than keeping it for themselves. This is also in accordance with the law of demand: the lower the prices, the higher the quantity consumed, *ceteris paribus*.

Research shows that a 10 per cent increase in per capita remittances leads to a 3.5 per cent decline in the share of poor people in the population (IFAD, 2017). Thus, reducing transaction costs contributes to achieving Sustainable Development Goal (SDG) number 1 "No Poverty", through the increase of the size of remittance inflows. Similarly, meeting SDG number 5 "Gender Equality" could be facilitated by the increase in the migrants' amount of transfers. In the Pacific, migrants are typically men, with women-headed households relying on remittances (UNFPA, 2014). This results in an increased likelihood of women being the recipients of remittances in comparison to men, which is in accordance to the surveys conducted in the region. Additional remittances thus increase women's economic power and financial autonomy. Finally, Goal number 8 of the 2030 Agenda advocates "Decent Work and Economic Growth". Feeny, Iamsiraroj and McGillivray (2014) argue that the size of remittances has a positive impact on real GDP growth rates in the Pacific mainly because they are associated with higher investment levels in the region. Remittances are also found to have a stabilising influence on output and investment volatility (Jackman, Craigwell and Moore, 2009). Given that uncertainty negatively affects business confidence and investment, remittances – which help reduce uncertainty – should have a positive impact on growth.

Lowering remittance transaction costs also contributes to reducing informal sector by decreasing informal transfers from migrants to their families. Informal channels include cash transfers delivered personally by the sender, unofficial courier companies, relatives or friends (Freund and Spatafora, 2008). Reduced levels of informality in remittance flows is advantageous for both families and the economy as a whole. On the one hand, reducing remittance informality implies more secure transactions. In fact, remitting money by hand-delivery entails a great risk of loss, theft or corruption because of customs restrictions, theft and crime. On the other hand, economies and their authorities could also benefit significantly from lower levels of informal remittances, since it would result in increased transparency. The smaller the informal sector, the more reliable the national accounts. In turn, this improved accuracy in recording financial flows would lead to increased efficiency of regulation and supervision. Not realizing the true size of remittance flows could mean inappropriate design of policy initiatives.

In sum, there are several motivations for encouraging a substantial reduction in remittance transaction costs. First, it would increase the amount of transfers and, consequently, become a driver of sustainable development. Second, the issue of the prevalence of informal channels would be tackled, guaranteeing more secure and transparent transfers of migrants' funds.

III. Causes and solutions for high costs

There are three main drivers of costly remittances: (i) small size of transfers, (ii) de-risking practices, and (iii) the geography of SIDS.

First, the volume of money sent back individually by the Pacific islanders, despite very frequent, is typically small. Survey data shows that 75 per cent of remittances to Pacific countries were for amounts of less than US$330, which is significantly lower than the global average (AUSTRAC, 2017). This explains high average costs as most remittance service providers (RSPs) charge a fixed minimum fee. Therefore, average costs as a proportion of the total amount sent tend to be higher for smaller transactions.

Second, the remittance industry in the Pacific is facing the threat of de-risking practices imposed by global financial institutions. These practices imply the termination or restriction of their business relationships with remittance companies and smaller local banks, as defined by the World Bank (2016). Generally, this issue is motivated by a combination of factors. On the one hand, cost/benefit considerations make small countries with limited financial markets more vulnerable. On the other hand, weaknesses in governments' policies to combat money laundering and the financing of terrorism make Pacific island countries riskier and hence less attractive. Indeed, these were the factors that greatly motivated the large-scale withdrawal of correspondent banking relationships (CBRs) from the Pacific SIDS (Alwazir and others, 2017). Additionally, their financial reputation has also been hurt by the increasing concerns related to tax transparency, especially after the recent unmasking of offshore investments in the region.

Third, operating in the Pacific can be very costly for RSPs due to the islands' small size and infrastructure gaps. As a consequence, distribution channels are very expensive, and economies of scale are hard to achieve. This hinders the determination of competitive prices due to high operational costs. The small and widely dispersed populations of the Pacific SIDS also make it non-attractive for companies to operate, generating little supply of these services. In the Solomon Islands, for instance, unbanked individuals live on average 6 hours away from the nearest bank branch (Central Bank of Solomon Islands, 2015).

Regarding the de-risking issues faced by the Pacific SIDS, regulatory action is essential to achieve improved anti-money laundering and combating of the financing of terrorism (ALM/CTF) regimes. There is the need, therefore, for clearer AML/CTF obligations and the role of external organisations in enhancing capacity. During 2018, dialogues between banks, money transfer operators and regulators were held in the Pacific SIDS in cooperation with the International Monetary Fund (IMF) and the Asian Development Bank (ADB, 2018). In these discussions, parties agreed to pursue a number of strategies such as better information sharing and a focus on automation and technology to improve customer due diligence. There is already regional awareness of the problem and AML/CTF issues have already started being tackled by the international community.

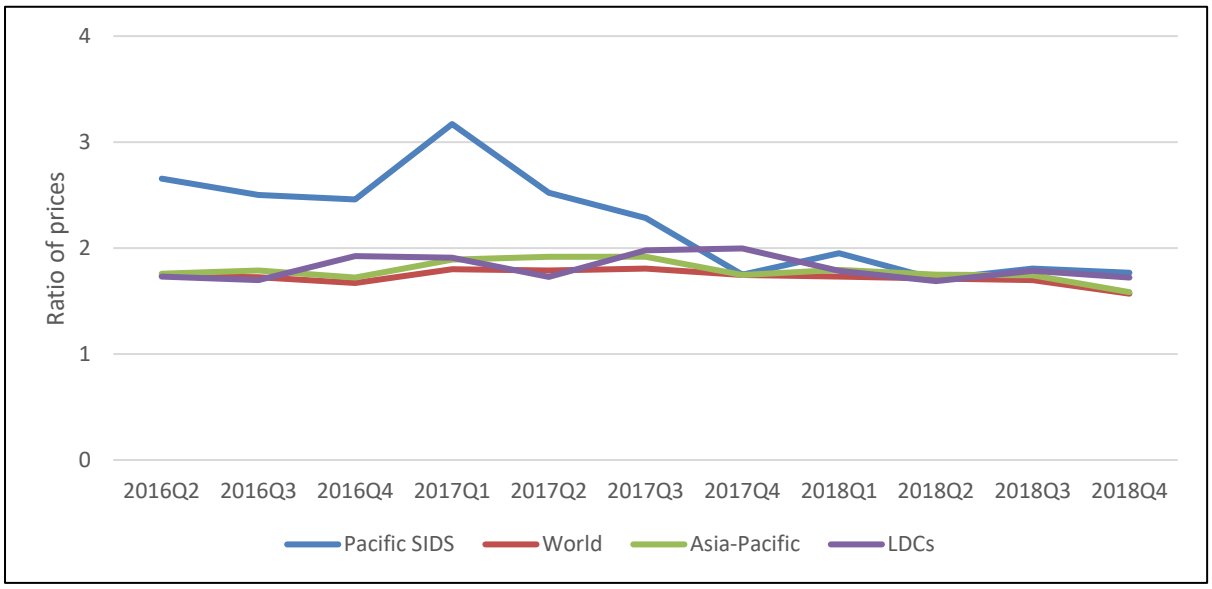
In the attempt to deal efficiently with the costs brought about by the SIDS geographical and infrastructural constraints, some companies started combining innovative business models and modern digital and online technology. These are the so-called fintech companies, whose main objective is to enable, enhance and disrupt financial services. Even though they may operate in various domains of the financial sector, the present research aims to emphasise their contributions to more affordable money transfers. Recently, the potential of fintech companies in bringing down remittance costs has been widely discussed in the online community. Their competitiveness is

achieved by their ability to reduce operational costs: because most of these companies are fully digital, their expenses with office rentals and full-time labour will be lower. Fintech companies also reduce the number of intermediaries involved in any transaction (Cortina and Schmukler, 2018). The World Bank (2016) even recognises the potential of fintech in lowering the cost of CBRs and thus fighting the recent de-risking measures taken by global banks.

There is evidence of the low-cost feature of fintech-based remittance services. Since the ratio between the fees charged by traditional RSPs over fintech RSPs is positive for the whole sample period, we find that fintech companies systematically charge lower remittance fees than the traditional ones. In 2018, for instance, traditional services were on average 1.8 times more expensive than fintech in the Pacific SIDS (figure 3).

Over the past two years, the Pacific SIDS' ratio of prices of traditional over fintech services has converged. This is largely due to the downward trend of traditional services' transaction costs. In fact, all the four Pacific countries experienced a decrease in the fees charged by traditional RSPs. In the environment of a growing number of fintech companies operating in the region, the increasing competition in the fintech remittance sector might have put pressure on the traditional sector to provide more affordable services. Despite this trend, fintech operations still remain cheaper than traditional RSPs.

Figure 3. Price ratio of traditional services over fintech, 2016Q2-2018Q4



Source: Authors, based on Remittance Prices Worldwide.
Note: The higher the value of the ratio, the more expensive traditional services are in comparison with fintech; Only four Pacific SIDS are included in the database (Fiji, Samoa, Tonga and Vanuatu).

Apart from reducing remittance costs, the adoption of fintech in remittance services also contributes to decreasing the number of financially excluded people. Broadly speaking, financial inclusion refers to the proportion of population that participates in the financial system. Demirgüç-Kunt and others (2018) argue that account ownership (defined as having an individual or jointly owned account either at a financial institution or through a mobile money provider) is an

appropriate marker for financial inclusion. Fintech remittance services are not cash-based, they require a formal account. Therefore, if individuals perceive the cost benefits of fintech-based remittances and are incentivized to contract these services, they need to open an account and hence become part of the financial system.

Improving access to digital payments also contributes to women's empowerment by giving them more control over family finances and increasing their personal security. In Niger, for example, research revealed that receiving digital transfers over cash shifted intrahousehold decision-making in favour of women (Aker and others, 2016). This was mainly because the transfers were less observable to other family members.

Moreover, given the important nature of remittances in families' daily lives, fintech transfers could trigger people's trust in the digital economy, encouraging them not only to own an account but also to make use of it to build savings, pay bills and access credit. In their research about the impact of technology on financial inclusion, Loukoianova and others (2018) find evidence that the spread of mobile technology (as a proxy for fintech adoption) has a positive effect in improving access to banking services such as deposit accounts and bank loans. Fintech implementation should therefore be critically placed in the Pacific policymakers' agendas. Not only does it contribute to the affordability of remittance transactions, but also facilitates access to the financial sector for those previously excluded.

IV. Defining fintech in remittances

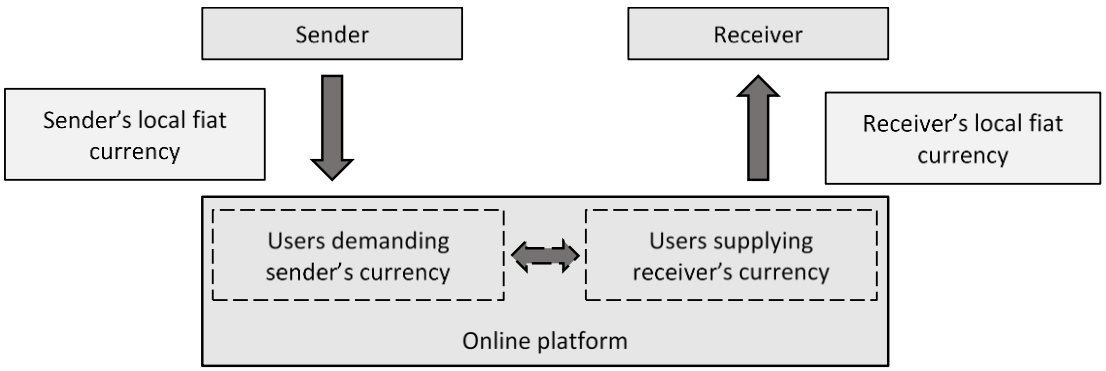
Fintech implementation in remittance services is defined as the adoption of alternative payment methods in transferring money, namely by using the internet or mobile phones. On the contrary, traditional remittance service providers (traditional RSPs) include the institutions whose services are contracted through bank branches, brick-and-mortar agents or call centres. What differentiates these two types of businesses is the access point from which their services are made available. There are several business models for cross-border remittances operated by fintech companies. According to the Alliance for Financial Inclusion (AFI, 2018), these comprise online platforms (including peer-to-peer platforms), blockchain-based and mobile money.

A. Online platforms

The term 'online platforms' refers to companies that provide exclusively online remittance services via mobile applications or websites.[6] To transfer money, senders must link their bank accounts to the platform, while receivers can get the funds in several ways (cash included). Some online platforms operate under a peer-to-peer model. This allows money to be received in a different currency from the sent one without the funds actually crossing borders. If someone is buying dollars with euros and another customer is buying euros with dollars, these transactions working in opposite directions would be paired instead of transferred or exchanged. By using two local transfers instead of one international transaction, this scheme allows RSPs to charge the official exchange rates, which greatly reduces transaction costs.

[6] Western Union, for instance, is a money transfer operator which provides both online and over-the-counter remittance services; because it is not exclusively operating digitally, it is not considered an online platform.

Figure 4. Online platforms model



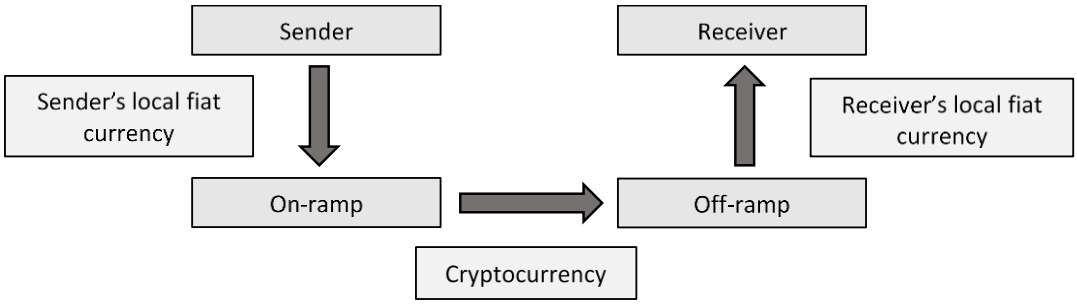
Source: Authors, adapted from Mancin (2018).
Note: P2P models include the dashed-line elements.

As a case in point, **TransferWise** is a company based in the United Kingdom (UK) and founded in 2011. To use TransferWise's services, which allow sending money in over 40 currencies, remitters only need to create an account in the company's website or app and link it to their formal bank accounts or payment cards. The revolutionary feature of the service was its peer-to-peer transfer system. TransferWise's success is unquestionable: they are currently moving more than US$4 billion every month and have 1,300 employees in 11 offices spread across the world (TransferWise, 2018). This success roots back to the early investments from high-profile players in the fintech industry, such as Max Levchin and Peter Thiel, the founders of PayPal, and Andressen Horowitz, one of the largest Venture Capital firms worldwide. Furthermore, even though TransferWise is not considered a bank, UK's regulations require that the company holds all customer funds separately from the money used for the daily running of the business.

B. Blockchain-based RSPs

Another emerging business model for remittances enables money transfers through cryptocurrencies (decentralised currencies created under blockchain technology). Some of the most widely used digital currencies are Bitcoin, XRP and Ethereum. Blockchain-based RSPs should not be confused with cryptocurrency exchanges. In fact, contracting these services does not imply any volatility risk for the customer, as the recipient never deals with the cryptocurrency – all risk is managed by the service (Buenaventura, 2017). The whole process occurs as follows: there is an "on-ramp" company in the sending country which accepts local fiat currency and converts it into cryptocurrency; subsequently, they transmit those funds to an "off-ramp" company in the receiving countries; these "off-ramps" then convert the cryptocurrency into local currencies and deliver those funds to the final beneficiary via a variety of domestic transfer methods.

Figure 5. Blockchain-based RSPs model



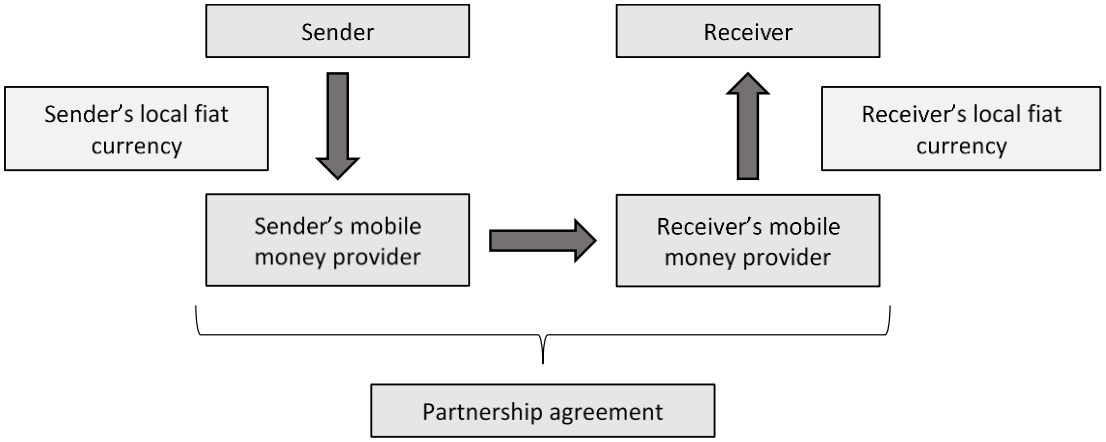
Source: Authors, adapted from Buenaventura (2015).

For example, **Bitspark** focuses on cross-border money transfers using cryptocurrency. Their cash-in/cash-out model was one of the first in the world, and it correctly anticipated a model that other Bitcoin remittance start-ups would also later employ, i.e. using bitcoin purely as a back-end settlement mechanism. Even though the greatest share of Bitspark's services are catered to money transfer businesses, the company also offers individuals the possibility to send money internationally via a mobile app. Bitspark's operations started with the Filipino and Malaysian markets and have in recent years expanded to over seven countries in Asia and Africa. Besides its vast geographical presence, the company's success has also been recognized by a number of notable financial institutions and publishing companies, like Goldman Sachs and Forbes. What is more, Bitspark is cooperating with the United Nations Development Program (UNDP) in financial inclusion projects in Tajikistan (Bitspark, 2018). The key drivers of Bitspark's success include the collaborative efforts with a pre-established money transfer operator in the Philippines, Rebit. Additionally, having started its operations with a physical remittance shop helped Bitspark gain reputation among its customers and understand their needs and fears. At last, the company was also favoured by the regulatory environment in Hong Kong, China, where Bitcoin is not only legal but also part of a simple tax framework (Buenaventura, 2017).

C. Mobile money providers

Mobile money services are another good example of how technology can improve the efficiency of financial transactions. They are usually provided by mobile network operators and consist of electronic wallets linked to the customer's mobile phone number. With these e-wallets, individuals are able to transfer funds, pay bills and deposit and withdraw cash just by using their mobile phones (ADB, 2016). Customers do not need to have Internet access nor own a smartphone – mobile-cellular network connectivity in a regular mobile phone is sufficient. The main advantage of these products is that no formal bank account is necessary to open a mobile money account, making it accessible to a greater share of the population.

Figure 6. Mobile money providers model



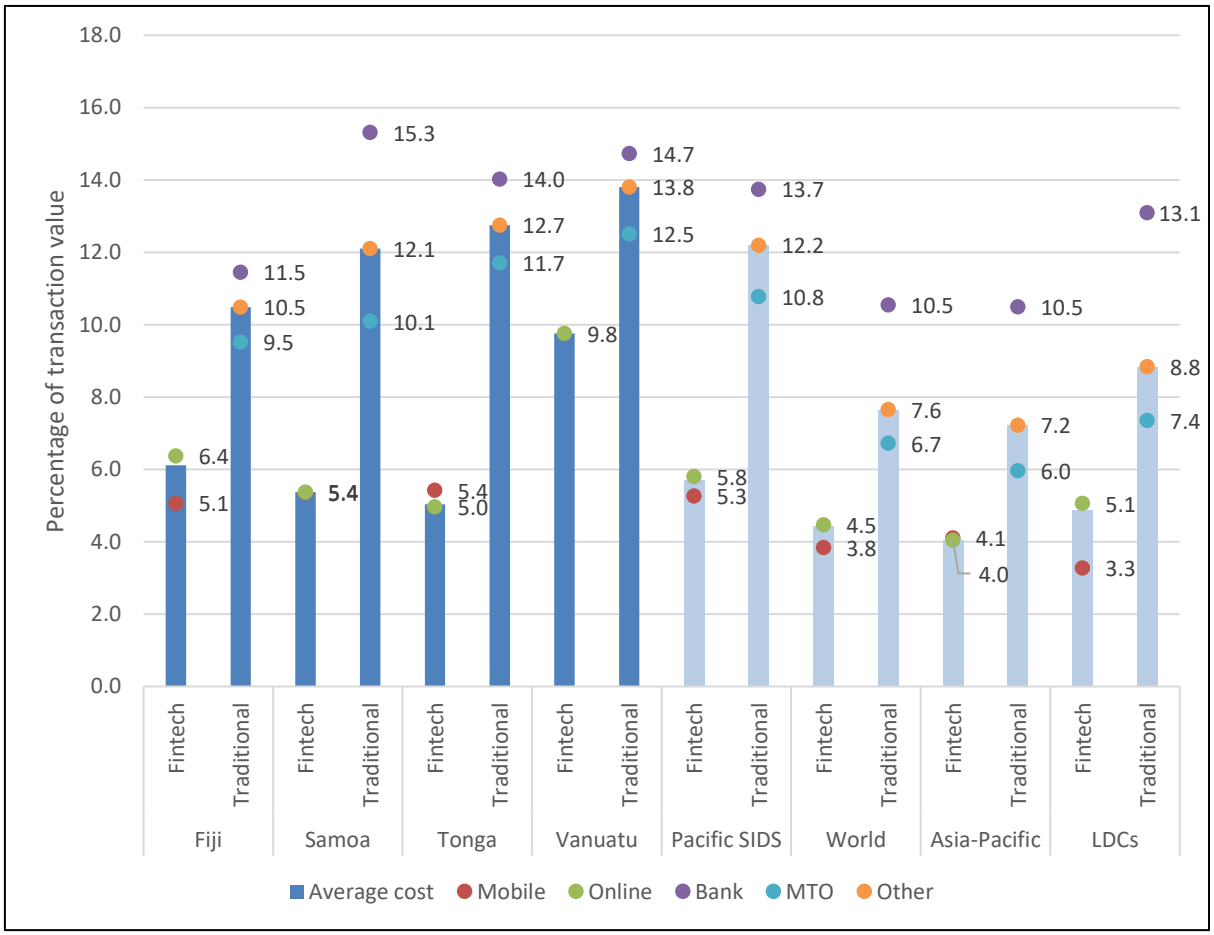
Source: Authors.

In 2013, Orange Money took a step that distinguished its company from other competitors in the mobile money business: it introduced **Orange Money Transfer International** (OMTI), a service which allowed cross-border mobile money transfers without any intermediaries. OMTI started operating between Côte d'Ivoire, Mali and Senegal, a region where remittance flows had previously seen very high rates of informality. After 18 months of having launched the service, the value of money flowing from mobile to mobile was already equivalent to 24.7 per cent of the total formal remittance value previously recorded by the World Bank. There are several factors that help explaining the success of OMTI, as pointed out by AFI (2018). In the selected West African countries, the domestic mobile money market was mature enough in terms of distribution, adoption and customer confidence. Furthermore, the remittance corridors operating between those countries were heavily used due to both migration and trade. The settlement and integration processes also benefitted from the existence of a common platform provider and a common partner bank managing all Orange Money's customer deposits.

It is possible to analyse the differences in fees charged by fintech as opposed to traditional remittance service providers in different parts of the world. The Remittance Prices Worldwide database collects detailed information on the evolution of the total remittance costs per type of company and access point.[7] Mobile money services are usually the most affordable, followed by online platforms. Money transfer operators and banks provide, as expected, the most expensive services (figure 7).

[7] The database does not include information on blockchain-based RSPs.

Figure 7. Average costs of sending remittances by service provider (2016Q2-2018Q4)



Source: Authors, based on Remittance Prices Worldwide.
Note: Money Transfer Operator (MTO); the category "Other" includes post-offices, building societies and other non-bank financial institutions (according to the Remittance Prices Worldwide database terminology); blockchain-based RSPs are not covered by the data.

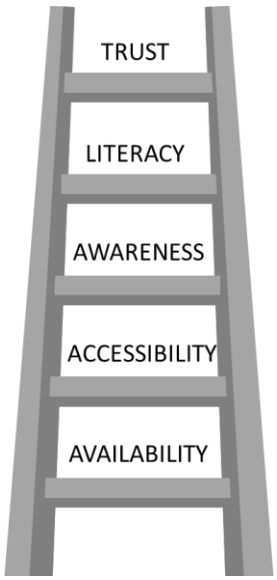
V. The ladder of fintech-based remittance services

This paper has discussed the issue of costly remittance corridors serving the Pacific SIDS and proposes a viable way of overcoming it through the adoption of fintech services. The next step is to understand what needs to be done in the region to achieve this objective. It is necessary to explore whether there are fintech companies operating in the Pacific remittance corridors and, if so, whether Pacific islanders are using these services. In this context, an assessment framework for the presence of fintech in the remittance sector was developed, entitled "ladder of fintech-based remittance services". Its objective is to highlight the action areas that need to be addressed to encourage fintech adoption as a way of reducing transaction costs. Figure 8 outlines the path followed by remitters in their change of behaviour towards fintech and away from the traditional services. The framework is conceptualized through a ladder with five rungs. To achieve the top of the ladder, i.e. actual adoption of fintech-based remittance services, the previous rungs must have been achieved. This framework is designed to reflect the consumer's perspective, and not the company's. It aims to describe the motivations for an individual's preference for fintech services.

Ladder frameworks are widely referred to in political and economic literature. Arnstein (1969) introduced this concept in her seminar work about citizen participation in governments' decisions. As citizens progressed in the eight-rung ladder, their power in determining the outcome of the decision-making process increased. Muzzini (2005) later adopted the ladder conceptualization in her study regarding consumer participation in the regulatory process of infrastructure. References to ladder schemes has also been used by Hosier and Dowd (1987) in the 'energy ladder', which sets a hierarchical relationship of fuel types perceived by households as their income rises. Climbing the 'energy ladder' means that individuals are increasingly consuming cleaner and more efficient energy sources. Lastly, Grilo and Thurik (2005) defined entrepreneurship as a proverbial ladder where higher steps referred to higher levels of entrepreneurial engagement.

The ladder defined in this paper shares some common features with the aforementioned studies, with some structural differences. Successive rungs of the ladder correspond to progressively higher degrees of individual engagement in the process of accepting fintech. However, the fintech ladder follows a chronological progression where the rungs cannot be leapfrogged, and the outcomes are binary. Individuals either use fintech-based services or they do not. If the consumer is on the fourth rung, he or she will still not be using fintech, which can only be achieved after the last rung has been climbed. However, he or she will certainly be more engaged, i.e. closer to adopting it, than a first-rung individual.

Figure 8. The ladder of fintech-based remittance services



Source: Authors.

We proceed to the analysis of the ladder in two stages. First, this framework is used to assess the current status of fintech-based remittance services in the Pacific SIDS (both the supply and demand sides). Later, the ladder contributes as the theoretical foundations for policy recommendations.

A. Fintech landscape in the Pacific SIDS

The first rung of the ladder is **Availability** of fintech-based remittance services. If there are no companies providing these services, the question of how to boost demand for them becomes moot. The first step is therefore to investigate whether there are fintech companies operating in the Pacific SIDS. In other words, find the number of the existing blockchain-based RSPs, online platforms and mobile money providers. Utilizing the SendMoneyPacific database, the number of online platforms currently operating in the Pacific SIDS are shown in table 1.[8] Fiji, Samoa and Tonga are the best served countries in the region, with five or more companies operating in each country. These figures are notably above the World average, but below the Asia-Pacific region which is not surprising given Asia's leading position in the fintech revolution (Sedik, 2018) .[9] However, other Pacific SIDS do not exhibit such dynamism. In Kiribati and Tuvalu, for instance, only one online platform exists. The most widely spread platforms among the Pacific region are Compass Global Markets, XE Money Transfer and Xendpay. These are present in either six or seven of the eight Pacific SIDS. On the contrary, 'Ave Pa'anga Pau and OrbitRemit are present exclusively in one country – Tonga and Fiji, respectively.

Table 1. Online platforms operating in the Pacific SIDS

	Fiji	Kiribati	Papua New Guinea	Samoa	Solomon Islands	Tonga	Tuvalu	Vanuatu
'Ave Pa'anga Pau						●		
Compass Global Markets	●		●	●	●	●		●
KlickEx Pacific				●		●		
OrbitRemit	●							
WorldRemit	●			●		●		
XE Money Transfer	●		●	●	●	●		●
Xendpay	●	●		●	●	●	●	●

Source: Authors, based on SendMoneyPacific (2019).

To date, there are no companies allowing money transfers through cryptocurrencies in the Pacific SIDS. The first start-ups operating under this business model appeared around 2014 in some South-East Asian countries, especially serving the remittance corridors to the Philippines (Buenaventura, 2017). Ever since, this sub-regional corridor has grown, but has barely expanded to other parts of the globe, except for a few countries in Africa and North America (Flore, 2018). This might be due to unclear or lack of regulations about cryptocurrencies. Generally, in the

[8] SendMoneyPacific is a government backed initiative that aims to provide information on the costs of sending money overseas to Fiji, Papua New-Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu from Australia, New Zealand or the USA (SendMoneyPacific, 2016).

[9] Based on our analysis of the Remittance Prices Worldwide database, the national average number of online platforms operating in the World is 3.9, whereas in the Asia-Pacific region is 7.2.

Pacific SIDS monetary authorities have publicly disapproved any activities involving Bitcoin or other cryptocurrencies (Reserve Bank of Vanuatu, 2017; Central Bank of Samoa, 2018). Further ladder analysis of blockchain-based RSPs is meaningless until such services are available in the region, since it is not possible to study the degree of accessibility, awareness, literacy or trust of a service that is yet not provided.

As for cross-border mobile money providers, they first appeared in the Pacific SIDS around 2010 in Fiji, and have since then expanded into Papua New Guinea, Samoa and Tonga (table 2). Currently, there are two mobile money providers in Fiji – Digicel and Vodafone – and one provider in Papua New Guinea, Samoa and Tonga – Digicel. Remitters who wish to send money to Fiji have at their disposal a relatively wide variety of remittance platforms – RocketRemit, KlickEx Pacific and WorldRemit – depending on the mobile money product used by the recipients of the money. Sending remittances via mobile money to Papua New Guinea, Samoa and Tonga is only possible with KlickEx Pacific. Even though mobile money products exist in the Solomon Islands and Vanuatu – ANZ GoMoney Pacific – they do not allow cross-border transfers, and therefore cannot be used by remittance dependent households. There are no mobile money providers in the remaining small island countries of the Pacific.

Table 2. Mobile money providers operating in the Pacific SIDS

<table>
<tr><th>Mobile money provider
(Mobile money product)</th><th colspan="2">Fiji</th><th>Papua New Guinea</th><th>Samoa</th><th>Tonga</th></tr>
<tr><td>Digicel
(Digicel Mobile Money)</td><td rowspan="2">RocketRemit</td><td>KlickEx Pacific</td><td>KlickEx Pacific</td><td>KlickEx Pacific</td><td>KlickEx Pacific</td></tr>
<tr><td>Vodafone
(M-PAiSA)</td><td>WorldRemit</td><td>-</td><td>-</td><td>-</td></tr>
</table>

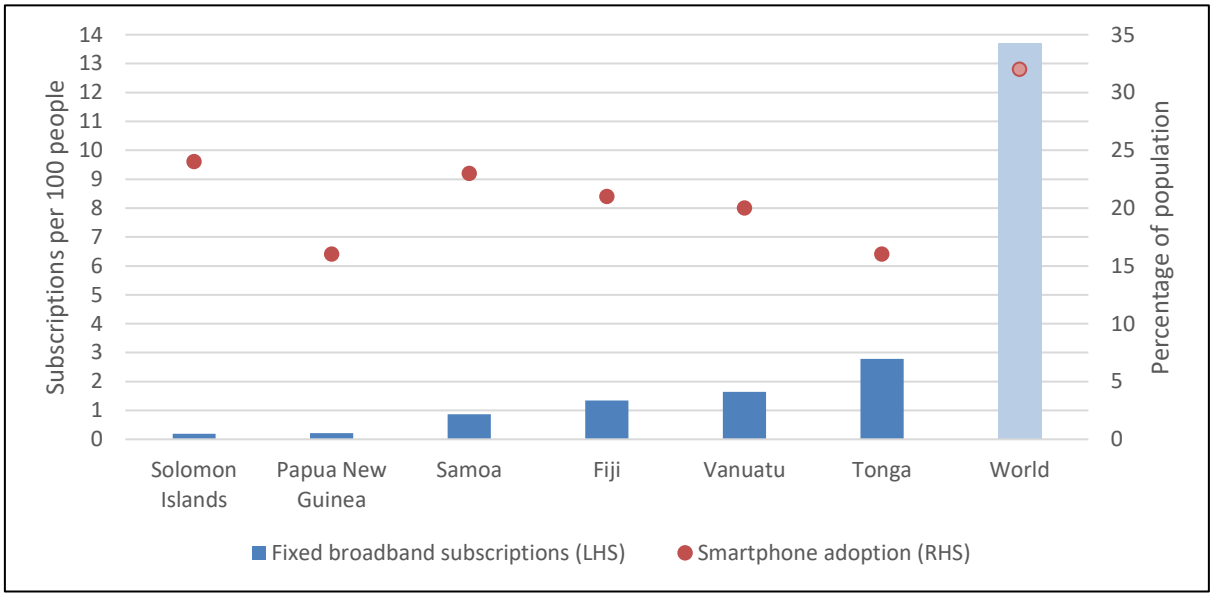
Source: Authors, based on GSMA (2019b) and SendMoneyPacific (2019).

Ensuring an adequate supply of fintech-based remittance services is not enough; there will still be strong individual preferences for traditional remittance services even if fintech companies are operating in the receiving country. In fact, survey data shows that 72 per cent of Fijians and 92 per cent of Samoans receive money from abroad through traditional money transfer operators like Western Union. Western Union's services alone are used in Tonga by about 83 per cent of the individuals who receive international remittances. Bank transfers and hand-delivery of cash were the second and third most chosen cash transfer mechanisms. This trend is also common in the remaining Pacific SIDS. Less than 10 per cent of the households reported using mobile money or electronic methods to receive money from within or outside their nations. This reflects the still under-developed demand for fintech-based remittances.

The second rung of the ladder is the degree of **Accessibility** of fintech to the consumers. In other words, are there any constraints preventing fintech services from being readily accessible, especially by those who do not live in urban areas. Online platforms' services require internet connection and a device which allows internet browsing. Figure 9 shows that the number of fixed

broadband subscriptions in the Pacific region is small, an indicator of the low usage levels of personal computers. Similarly, smartphone penetration rates are also very low. Pacific islanders are therefore not familiar with the internet. In 2017, only about 33 per cent of the Pacific population was using the internet, versus 49 per cent worldwide and 79 per cent in the OECD member-States (World Bank, 2018b).

Figure 9. Fixed broadband subscriptions and smartphone adoption, 2017.



Source: World Development Indicators, Pacific Financial Inclusion Programme (2018a), Statista (2018).

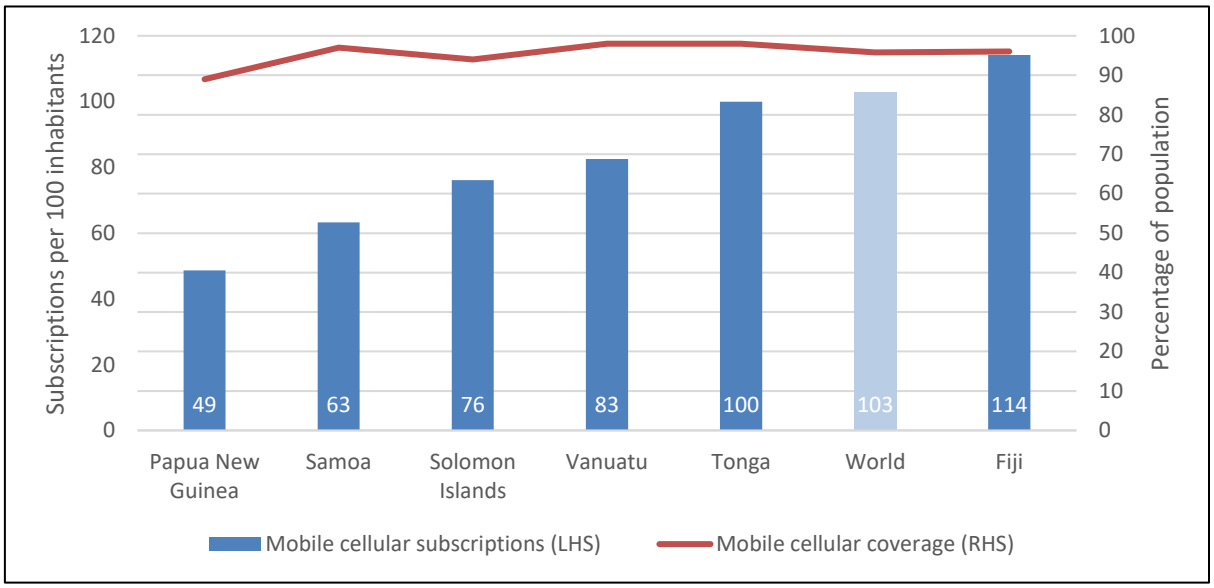
On the other hand, mobile money is readily accessible to a great part of the Pacific islanders. To utilize a mobile money product, a customer is only required to own a mobile phone (not necessarily a smartphone) and an active SIM card with access to a 2G network. Aggregate data shows that the majority of the population meets both requirements (figure 10). Moreover, survey data shows that in Fiji, Samoa, Tonga and Vanuatu, 76, 71, 77 and 67 per cent of the respondents own a mobile phone. This implies that among all fintech categories, the Pacific would be more prone to use mobile money services.

Overall, the **Accessibility** dimension is not yet verified on the online platforms level; for effective usage of online services, internet adoption must be more widespread in the region. On the other hand, a majority of the population has a relatively easy access to mobile money services. Further analysis, therefore, considers only this last category of fintech, particularly in those countries where mobile money providers operate internationally (Fiji, Samoa and Tonga).

The third rung of the ladder highlights **Awareness** of fintech-based remittance services. These services may be available and accessible to Pacific islanders, but unless they know about their existence, they will never change their behaviour. For this, the *Financial Services Demand Side Surveys* investigated the level of awareness of mobile money services and found that in Samoa less than 40 per cent of the respondents had previously heard of mobile money. In Tonga and Fiji, on the contrary, the challenge is to move beyond awareness: even though most people know about

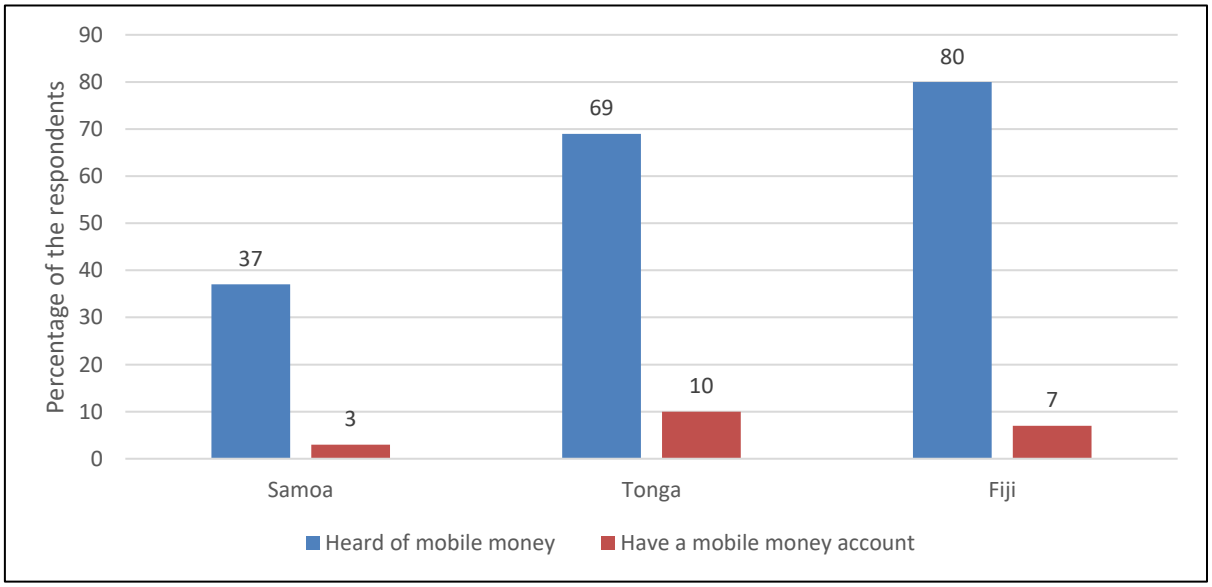
the existence of these services, the rates of mobile money account ownership are still very low (figure 11).

Figure 10. Mobile phone subscriptions and coverage of mobile network, 2017



Source: ESCAP database and World Development Indicators.
Note: Mobile cellular coverage is defined as the percentage of inhabitants within range of a mobile-cellular signal, irrespective of whether or not they are subscribers or users.

Figure 11. Awareness and ownership of mobile money services, 2015/2016



Source: Financial Services Demand Side Surveys.
Note: Values regarding mobile money account ownership are not available for Vanuatu.

Lack of product understanding further explains why people who are aware of mobile money may not use it. This is the idea introduced by the fourth rung – **Literacy**. Educating people about mobile money should be a priority for three different reasons. First, individuals must see the value in using these services – efforts should be done to disseminate information about the benefits of mobile money. These benefits include lower transaction costs, lower access costs (commuting time is reduced), and increased security and speed in receiving the funds. Second, it is fundamental to aim for a more universal understanding of the operability of mobile money accounts. In Samoa, 36 per cent of the respondents who had heard of mobile money reported that they did not know how to use it, which prevented them from registering. A survey led in Fiji on consumer behaviour and perception towards mobile money enquired about the factors that would persuade already informed respondents to use mobile money services more. Around 30 per cent of the respondents answered "Provide training at public gatherings", and over 55 per cent answered "Provide more information on how to use the service through radio and television" (PFIP, 2012). Third, improving the levels of literacy also implies deconstructing misconceptions held by uninformed people. Having the wrong idea of how these services operate might keep potential customers away. Samoan respondents admitted they would not try mobile money services because they were afraid of losing their phones and hence their money. However, the former does not imply the latter, since there is a personal access code protecting the mobile money account, and customer support services readily available to help manage these situations.

Financial education campaigns can be a good vehicle to promote the general understanding of fintech services. These can be aimed at both children and adults. Some countries in the Pacific have already started incorporating financial education contents in national school curricula, namely Fiji and Vanuatu. In Papua New Guinea and Solomon Islands, pilot programmes are being implemented, whereas in Samoa and Tonga this plan is still under discussion (PFIP, 2018b). For adults, financial education campaigns can take the form of workshops or digital materials. MoneyMinded, for instance, is a financial literacy programme led by the bank ANZ that focuses on building money management skills, knowledge and confidence. It is currently available in seven Pacific SIDS: Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu. The impact of this programme has been positive so far in various dimensions, particularly on savings behaviour. The share of participants in Fiji, Samoa, Tonga and Vanuatu who reported saving regularly increased by 56, 44, 56 and 40 per cent, respectively, after taking part in the MoneyMinded programme (ANZ, 2018). On a different note, in 2017 the Reserve Bank of Fiji released the first season of its financial education television show, in collaboration with the Fiji Broadcasting Commission. The program is entitled "Noda i Lavo" ("Our Money"), and covered a wide range of topics, including remittances (Reserve Bank of Fiji, 2017).

The last rung of the ladder is **Trust**, the ultimate step of the individual process of using fintech-based remittance services. Understanding how a service works and recognising its advantages are not sufficient to convince people to start using fintech-based services. It is essential that potential customers perceive the mechanisms and their providers as trustworthy. Lack of trust can be explained by cash culture and unfamiliarity with the providers.

Economies of the Pacific SIDS are extremely cash-oriented, which helps explaining the hesitation of Pacific islanders in using digital transactions. As a matter of fact, 89 per cent of Fijian adults and 57 per cent of Samoan adults prefer to use cash instead of electronic payments; in these two countries, respondents justified this preference by saying cash was more convenient and easier for budgeting. The prevalence of cash is also observed in Tonga, where 98 per cent of the adults pay school fees in cash. The way workers get their salaries can be a key driver for this phenomenon. In Tonga, 96 and 70 per cent of agricultural and private income, respectively, are received in cash.

In Vanuatu, the scenario is similar: all the respondents working in agriculture reported receiving their income in cash, while only 31 per cent of the private sector workers received their income electronically.

Another obstacle to potential customers taking a step into the rung of **Trust** can be the unfamiliarity with the fintech companies. When asked whether they would like to try mobile money, Samoans answered that they were concerned about the "dishonesty of people or agents to who the money is sent to". In Fiji, over 50 per cent of the respondents reported not trusting mobile money agencies to provide a good service (PFIP, 2012). It is therefore very important to promote a good branding of fintech services in order to guarantee customer confidence.

B. Policy implications

Apart from being a useful tool for the assessment of the current landscape of the region regarding fintech, the framework also sheds light on the areas in need of reform. As the Pacific SIDS are in various stages of fintech adoption, we discuss different policy actions in promoting fintech implementation, accounting for individual characteristics of each Pacific island country.

There are several key measures for countries in the Pacific to promote a more widespread use of fintech-based remittance services. Table 3 summarises those which should be considered. The priority areas highlighted for each country are derived from the ladder framework analysis presented previously. Often, more than one policy action is necessary in a specific country. If so, only the more pressing issue, in light of the ladder framework, is mentioned. The first column of table 3 groups the countries where fintech services are non-existent or very limited, and hence share similar challenges and needs. The remaining six columns outline the six more developed countries of the Pacific SIDS with respect to fintech services availability, by degree of development.

Table 3. Key policy considerations regarding fintech in the Pacific SIDS

	Kiribati, Marshall Islands, Micronesia, Nauru, Palau, Tuvalu	Solomon Islands	Vanuatu	Papua New Guinea	Samoa	Tonga	Fiji
Support an innovative business environment	•						
Foster cross-border mobile money services		•	•				
Improve network performance		•	•	•			
Invest in basic infrastructure and devices				•			
Adopt Below-the-Line marketing campaigns					•		
Promote financial education campaigns						•	
Implement G2P digital transfers					•	•	
Focus on reaching rural areas							•

Source: Authors.

Fintech money transfer operators are still not present in many countries of the region. This is particularly true for blockchain-based remittance service providers, since there is currently no such company operating in the Pacific. The emergence of this business model could be supported by policymakers, perhaps through the implementation of tax incentives or the creation of innovation hubs. Papua New Guinea has put forward a bill for the declaration of a blockchain-focused Special Economic Zone in the coastal town of Finschhafen (GSMA, 2019c). In 2018, the National Institute of Digital Currency Research was established in Vanuatu with the objective of studying the application of blockchain technology in different economic and social areas (Reuters, 2018). Vodafone Fiji's Innovation Lab has been operating since 2017 with the support of the Pacific Financial Inclusion Programme (PFIP, 2019); its aim is to resource structured and focused design and innovation initiatives that leverage digital platforms. Some of the efforts taken in the region have been fruitful, as some Pacific countries are currently awaiting the launch of a blockchain-based remittance service to be provided by IBM in partnership with Stellar and KlickEx (Corner, 2017).

An equally important factor determining the degree of availability of fintech services is the market characteristics of the remittances' sender countries (first mile). In face of the bilateral nature of remittance flows, money transfer operators have to either be present in both the sending and receiving countries or develop partnerships with foreign operators. Therefore, the business environment of first mile markets has an impact in the supply of alternative remittance services in last mile markets. Aneja (2016) finds that ensuring an enabling and regulatory environment in the first mile market like Australia is essential to foster the emergence of a more innovative and affordable provision of remittance services in Papua New Guinea and Tonga.

Another important aspect for regulators is the implementation of an appropriate consumer protection framework and Know-Your-Customer (KYC) requirements. First, some issues to be considered regarding consumer protection are fraudulent, misleading and unfair commercial practices, as well as the safeguard of data privacy and security. Also, consumers should have the right to dispute any unauthorized transaction. Second, a key obstacle for Pacific islanders to use financial services is the lack of official documentation to open accounts. For example, workers in the rural or informal sector are less likely to have wage slips or proof of domicile and therefore might end up lacking the requirements to open an account. In the light of this problem, regulators should establish appropriate KYC account opening and documentation requirements in order to avoid financially excluding legitimate consumers and businesses. Moreover, blockchain technology could be leveraged as a tool to lower customer verification costs.

Online platforms do not operate in Nauru, Palau, Micronesia (Fed. States of) nor Marshall Islands, and competition is extremely limited in Kiribati and Tuvalu. Given the importance of remittances in these economies (except in Nauru and Palau), policymakers should ensure a supportive business environment to foster this type of business models. A first step would be to recognize the contributions to the remittance market of non financial sector players, through adequate licensing. Standardised and transparent licensing criteria is essential to facilitate business planning and encourage investment. A research led by AFI (2018) revealed that only three of the 15 surveyed countries had a regulatory framework that allowed non-bank institutions to provide digital cross-border remittance services.[10] Moreover, a sound and supportive regulatory framework must also be predictable. In other words, the relevant laws and regulations should not change often and

[10] The sample of countries studied by AFI (2018) did not include any Pacific SIDS; it was composed of eight African, four Asian and three Latin American countries.

should be consistently enforced by the authorities. These measures should also promote the availability of mobile money services in the countries where they are not yet provided in any form (Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, Palau and Tuvalu).

The scenario is different in the Solomon Islands and Vanuatu, where mobile money operators already allow domestic transfers within each country. In light of the low-cost and extra convenience features of cross-border mobile money services, policymakers in these countries should prioritise the promotion of this type of fintech for remittances. A more in-depth study is needed to understand the reasons why international mobile money services are not available in these two countries. A possible explanation could be the size of their internal demand for remittance services, which should be relatively small in comparison to other Pacific SIDS. In the past, a key reason for the success of cross-border mobile money providers has been the existence of sufficiently mature domestic mobile money services. Efforts should thus be taken in the Solomon Islands and Vanuatu to ensure a solid distribution and adoption of the already operational domestic services.

In the Pacific countries where fintech-based remittance services are available, a relatively high share of the population is covered by network signal. However, this does not always translate into good network performance. The GSMA Mobile Connectivity Index rates the network performance of the Solomon Islands and Papua New Guinea in 2017 as the worst in the Pacific, and part of the 20 per cent worst of the world (GSMA, 2019a). In Vanuatu, surveys reported that almost one-quarter of Ni-Vanuatu adults who use a phone said that network reliability was infrequent and/or had to change locations in order to obtain service. In 2018, Samoa saw the arrival of an undersea cable system, which brought more affordable and reliable international connectivity to the country. This major development in ICT infrastructure was financed through a public-private partnership, given that the investment costs were too high to be supported by the private sector.

Papua New Guinea lags in terms of mobile phone and fixed broadband subscriptions, compared to the rest of the Pacific island countries. These poor levels of accessibility to network connection justify that, in 2017, only 11.2 per cent of the population was using the Internet, the lowest figures in the region (World Bank, 2018b). Policymakers in Papua New Guinea should start by prioritising universal access to electricity, which in 2016 was accessible to only 22.9 per cent of the population. Electrification is essential to charge mobile phones' batteries and computers. Furthermore, some level of government or institutional financial support may be necessary to provide devices for schools or public libraries, for instance. A recent initiative by Fiji's Vodafone ATH Foundation set out to offer devices and free Wi-Fi connectivity to schools and students in rural parts of the country (GSMA, 2019c).

In Samoa, regional awareness of fintech-based remittance services, in particular of mobile money, is still relatively low. Alternative advertising strategies should be considered by their providers, namely Below-the-Line marketing campaigns. This strategy avoids advertising through mainstream channels (like the internet or the television) and aims to reach consumers directly. In Papua New Guinea, the mobile money provider Nationwide invested in this form of advertising by sending representatives to villages and plantations, and by organising workshops to promote their product. Another tactic used by Nationwide to raise awareness was the selection of ambassadors to spread the word about the advantages of mobile money. Specifically, the company recruited active mobile money users from the capital Port Moresby to share their experiences in other districts (Scharwatt and others, 2014).

Financial education campaigns are a great way to promote fintech-based remittance services and product understanding. They should be especially considered by Tonga, one of the few countries which still has not put this initiative into practice. Financial education campaigns could be introduced in schools, covering not only personal money management and investment topics, but also digital services. In Fiji, financial education has been part of the primary and secondary school's curriculum since 2013. The results have been very positive and, starting in 2018, this subject would be tested in all major national examinations (PFIP, n.d.). In the Solomon Islands, a pilot programme started in 2018 with the objective of training teachers to deliver financial literacy classes in schools (UNDP, 2018). Also important are financial literacy classes for adults, which should be tailored to migrant workers and communities, and ensure that they reach women as well as men. From 2014 to 2018, around 188,000 Papua New Guinean adults (of which 47 per cent women) received financial training developed by the Centre for Excellence in Financial Inclusion partnering with the Microfinance Expansion Project (PFIP, 2018b).

The Samoan and Tongan governments can catalyse the creation of a digital ecosystem by moving its payments from cash to bank transfers or even mobile money. By doing so, authorities would be contributing for an increased familiarity of their citizens with the digital economy. A government-to-person (G2P) digital transfer model was implemented by the Fijian government in 2011, for the first time in the region. It successfully linked social transfers to branchless banking services, making it a major driver of financial inclusion (Leonard, 2012).

In Fiji, about 63 per cent of mobile money users lived in urban areas; nevertheless, rural households are as likely to receive remittances as urban ones. Therefore, efforts should be made to reach the more isolated parts of the country. These areas are where most of the unbanked individuals live and where cash-culture is more deeply rooted. Among rural respondents, 54 per cent do not have a bank account versus 26 per cent in urban areas. A good strategy could be targeting important industries and promoting fintech adoption in related activities. A joint project led by the Australian Government, PFIP and ANZ Bank was launched in 2016 in the Solomon Islands to encourage the application of digital banking services in the coconut industry. This sector was chosen because most workers live in rural areas (distant from traditional banking services) and also due to its economic relevance (UNDP, 2016).

Before concluding, the importance of data collection for future policy action is noted. The Pacific region suffers from a lack of relevant and reliable data, which makes it harder for policymakers to take informed decisions on how to address the issues at stake. The research scope of the present paper is particularly challenged by data scarcity. Nauru, for instance, does not report the volume of remittances received, making it impossible to assess how important these flows are to its economy. In Palau, data on the level of ICT development is virtually non-existent. Recently, efforts have been made by development partners and national authorities to provide information on the transaction costs of remitting money to the Pacific, as well as detailed descriptions of fintech companies operating in the region (SendMoneyPacific, Remittance Prices Worldwide, Mobile Money Deployment Tracker). However, several countries are still excluded from these databases, namely Marshall Islands, Micronesia (Fed. States of), Nauru and Palau, some of which are highly dependent on remittance inflows. Furthermore, household survey data regarding financial inclusion and connectivity is scarce and outdated. The *Financial Services Demand Side Surveys* (led by national central banks in cooperation with the Pacific Financial Inclusion Programme) were only conducted in Fiji, Samoa, Solomon Islands, Tonga and Vanuatu, leaving more than half of the Pacific SIDS unstudied.

All in all, the Pacific region still faces many challenges regarding fintech adoption. Whereas some countries like Kiribati, Marshall Islands, Micronesia (Fed. States of), Nauru, Palau and Tuvalu could start by encouraging the availability of fintech services, the more pressing issue for countries like Papua New Guinea, Solomon Islands and Vanuatu is the degree of accessibility of their populations to fintech services. As for the more advanced countries in terms of fintech adoption, such as Samoa and Tonga, a policy emphasis should be geared towards awareness, financial education and consumer confidence. In countries where fintech is already well-established as a tool for financial inclusion in the urban areas, as in Fiji, a focus should be placed in promoting inclusivity for those who live in rural and more isolated regions. Lastly, improved data availability across Pacific countries and across time is crucial.

VI. Conclusion

Over the years, the small island states of the Pacific have shown large influxes of cross-border remittances. At the same time, transaction costs of sending money to the region are among the highest in the world. Given the great number of households that rely on these flows, measures must be taken to address this issue and the development of the remittance-dependent communities. Unlocking the transformative potential of people and the private sector to support sustainable development is of paramount importance (ESCAP, 2018).

Among the causes for the establishment of costly remittance corridors serving the Pacific SIDS is the geographical constraints of these countries. Their isolation, remoteness and population dispersion provoke severe infrastructure gaps which, in turn, generate high operational costs. To overcome this challenge, fintech companies emerge as viable alternatives to traditional remittance service providers. Because they rely on digital technology rather than physical infrastructure, fintech companies have proven capable of providing more affordable remittance services.

If policymakers wish to promote fintech adoption in remittance services, several stages have to be met by the potential consumers. These stages are conceptualized in a ladder framework with five rungs: availability, accessibility, awareness, literacy and trust. Because this process of engagement is gradual, the ladder methodology constitutes a useful tool for the analysis of the fintech landscape in the region. Moreover, it sets the grounds for the design of policy action.

In the Pacific, there is room for improvement in the fintech arena. Some fintech-based remittance services are still not provided in the region, like blockchain-based ones, and others face little competition. A large share of the Pacific population lacks access to online services, which is hindering the acceptance of innovative services. Even though mobile money exists in some of the Pacific SIDS, many consumers are still not aware of its existence, or else do not understand how they work. Trust in the digital economy is also a key barrier hindering the universal adoption of fintech-based remittance services.

The present paper faces some limitations. Given the qualitative nature of this research, the reliability and validity of the conclusions are often difficult to demonstrate. Future research could test, through questionnaires or interviews, the accuracy of the ladder of consumption in conceptualising the change of individual consumer behaviour. Furthermore, additional causes for high remittance transaction costs could be investigated, perhaps by applying econometric techniques to the available data.

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Appendix 1. List of UN-Member SIDS by region

Region	Country	Least developed country (United Nations definition)	Small State (World Bank definition)
Atlantic and Indian Oceans, Mediterranean Sea and Maritime South-East Asia	Bahrain		x
	Cabo Verde		x
	Comoros	x	x
	Guinea-Bissau	x	x
	Maldives		x
	Mauritius		x
	Sao Tome and Principe	x	x
	Seychelles		x
	Singapore		
	Timor-Leste	x	x
Caribbean	Antigua and Barbuda		x
	Bahamas		x
	Barbados		x
	Belize		x
	Cuba		
	Dominica		x
	Dominican Republic		
	Grenada		x
	Guyana		x
	Haiti	x	
	Jamaica		x
	Saint Kitts and Nevis		x
	Saint Lucia		x
	Saint Vincent and the Grenadines		x
	Suriname		x
	Trinidad and Tobago		x
Pacific	Fiji		x
	Kiribati	x	x
	Marshall Islands		x
	Micronesia (Fed. States of)		x
	Nauru		x
	Palau		x
	Papua New Guinea		
	Samoa		x
	Solomon Islands	x	x
	Tonga		x
	Tuvalu	x	x
	Vanuatu	x	x

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