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Bridging the digital divide in the islands of Oceania

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Abstract:

With the advent of the Information Age, it has become feasible to consider providing electronic access to library tools (bibliographies, indexes and directories) published in the South Pacific. That something is feasible however, does not necessarily make it desirable. To explore this further, a research project was initiated as part of a Masters thesis at Charles Sturt University to survey four countries in the South Pacific: Fiji, Samoa, Solomon Islands, and Vanuatu. The survey looked at several areas: potential formats for the delivery of current, print-based library publications; user preferences for the type of format for publications, i.e. print or electronic; the practicalities involved in information personnel in the region being able to access library publications electronically (and whether or not this contributes to bridging the digital divide); the status of telecommunications in the region, including access to the Internet; the extent of computer equipment and its use; and the skills level of library staff and users in accessing and using computers and the Internet. Knowledge gained from this survey will help determine the most suitable format for, and the best approach to publishing library publications in the South Pacific.

Introduction

Is it possible to introduce island nations in the Pacific, developing countries almost one and all, without you the audience conjuring up in your minds images of azure blue seas, endless white, palm-fringed beaches, Gauguin and Tahiti? Possibly not, so this introduction is intended to contribute to a better appreciation of the circumstances the region finds itself in, before investigating the less glamorous world

of the digital divide as it pertains generally to this region, and specifically when it comes to making decisions on approaches to adopt that don't compromise the future social and economic development of the region.

The term 'Oceania' is used to designate that area that includes Australia, New Zealand and the island countries and territories of the Pacific Basin, numbering some 22 political entities. Excluding Australia and New Zealand in our definition of 'islands of Oceania', we are left with approximately 7.6 million people (0.13 per cent of the global population) scattered across an area of 30 million km², roughly comparable in size to the continent of Africa, and certainly larger than North and Central America combined. (Tongan academic Epeli Hau'ofa's description of the region as "a sea of islands" is perhaps closer to the mark than the perception of the vastness of the Pacific Ocean dotted with the occasional island).

Geographic considerations are critical to understanding the digital divide in this region. Even the largest nation in the region, both in terms of landmass and population, Papua New Guinea, is considered a small nation; the smallest independent country is Tuvalu, just 9,900 people on nine atolls the total land area of which is 26 km². Of the 22 countries and territories, only one has a population greater than one million; 12 countries have a population less than 100,000.

Table 1. An overview of some Pacific Island countries and territories

Country	Population (estim. 2000)	Land area (km ²)	Sea area (EEZ) (km ²)	Per capita GDP (USD)
Cook Islands	18,700	237	1,830	3,525
Fed States Micronesia	118,100	701	2,780	1,281
Fiji Islands	824,700	18,333	1,290	1,621
Guam	148,200	541	218	26,795
Kiribati	90,700	811	3,550	393
Nauru	11,500	21	320	18,275
New Caledonia	212,700	18,576	1,740	22,454
Papua New Guinea	4,790,800	462,243	3,120	769
Samoa	169,200	2,935	120	708
Solomon Islands	447,900	28,370	1,340	592
Tokelau	1,500	12	290	–
Tuvalu	9,900	26	900	883
Vanuatu	199,800	12,190	680	1,017

Source: Secretariat of the Pacific Community, 2000.

Average per capita GDP in this region in 2000 was USD 4,430; this includes countries whose GDP is distorted by various factors such as a large military presence (Guam) or high-value commodities such as phosphate (Nauru) and nickel (New Caledonia). The average GDP of 'normal' countries, those relying on export of primary produce and tourism, is closer to the USD 1,315 mark (and Papua New Guinea, with its vast mineral wealth, has a per capita GDP of just USD 769). By way of contrast, the 1997 GDP figures for Africa are USD 560; for Asia, USD 730; and for Latin America, USD 4,230 (www.usaid.gov/pubs/cp2000/afr/afr_over.html).

What has been shown so far is that the island countries and territories of Oceania are geographically small, and in most cases, have only small populations. Though the region as a whole, in common with other

developing countries, suffers from urban drift, the majority of the population still live in the rural areas. In most of the Pacific, this often means living on remote outer islands. The burden this places on national infrastructures is considerable: where roads are laid, they only go so far before they become rutted tracks; shipping and transportation services to and between outer islands is subject to the vagaries of the weather, deteriorating ships; electricity is not available to all, particularly if it means bringing a power line many kilometres where it ends at a village of less than 100 inhabitants; telephone distribution is similarly complicated, with HF radio sometimes the only available, reliable link. Services such as health, education and the police are more basic in the rural areas, and the quality of such services low. A modern airport, good roads, five-star hotels and Internet cafés are not the norm, but the exception.

Understanding the digital divide

The term 'digital divide' has been used to describe the gap between those nations that have utilised information and communication technologies to allow them to access the informational and decision-making resources that ensure continued economic, social and educational development, and those nations whose resources limit access to these resources, for whatever reason, and are thus unable to share in the opportunities that would otherwise be open to them. It is not just about a lack of (suitable) computers and inexpensive (and reliable) Internet, nor just about the skills needed to make best use of these resources, but it is also about basic infrastructures and thus capacity to support the introduction of the technology; it is about government policies and strategies in the long-term; but most of all, it is about content, about access to content that is relevant and timely, delivered in an appropriate manner. Inevitably, the digital divide has come to be seen as just another manifestation of the gap between the 'haves' and the 'have-nots', between developed countries and developing countries, or between the North and the South.

How the developing world is able to participate in the new information age has come to be seen as a defining moment for the world as a whole. Indeed, bridging the digital divide has been taken up at the highest level by various international agencies such as the World Bank, Unesco and the United Nations, culminating in an appearance at the G8 Meeting on Okinawa in 2000. There are suggestions that bridging the digital divide will increase democratisation in nations, will facilitate greater participation by citizens in developing the social and economic aspects of societies as well as their own stake in society. Bridging the gap is seen as the digital equivalent of the right to freedom from hunger.

The digital divide and the Pacific

What makes the digital divide in the Pacific different from other developing regions? One major difference, as noted already, is the geographical factor. Other differences emanate from that. A smaller population means that the provision of basic services such as power, water, transport and telecommunications infrastructure cost disproportionately more per head of population than in a more populous country. Therefore, harnessing new information and communication technologies may be considered prohibitively expensive, with the result that there is uneven and inadequate development using these tools.

Socio-economic situation in the region

The islands of Oceania are characterised as being dependent on the export of primary commodities and tourism. This places the region among those areas that are vulnerable in terms of economic stability; for instance, a fall in copra prices will impact smallholder enterprises in the region among those sectors of the community already marginalised, in the subsistence and semi-subsistence sector. Over 80 per cent of the region's population relies on subsistence agriculture for their livelihoods. As a consequence of this there is reduced revenue to support state initiatives.

Government departments are, in general, poorly-resourced and underfunded; this leads to mediocre services to the wider population, and particularly those in the rural areas. The social cost of this may have

been a contributing factor to the unrest in Fiji, Solomon Islands and Papua New Guinea in recent years. While there is recognition that the issue of rural alienation and the dissatisfaction that lies behind it is a critical one, and that its resolution must have priority, there are few signs that effective solutions are being developed let alone implemented.

A burden that Pacific countries share with many other developing nations is that basic utilities are supplied by government-controlled and/or government-owned monopolies. Telecommunications companies in the Pacific are significant earners for governments through share dividends and taxes, so it is unlikely that they would want to see deregulation of the market. As a result, Internet access is available in the majority of countries, but in general it is costly and not widely distributed (confined mostly to one or two urban areas with a well-developed phone system). Only in a few countries, such as Guam, Papua New Guinea, Tonga and Samoa is there any choice of provider but this does not seem to impact on the cost.

Information resources and access in the region

In general, in the region, libraries are not well-developed despite having been in existence for decades. What is more disconcerting is that there is a lack of staff, a lack of well-trained staff, and a lack of resources. Government policies to date, in their implementation, have emphasised the need to have a library, but have not supported its resourcing, which means that many 'librarians' are constrained by working in a badly-constructed, poorly-resourced room that may not see users for weeks on end.

This situation has come about as a result of a significant lack of appreciation of the role and importance of libraries. There is little understanding of the importance of relevant, appropriate and timely information to critical decision-making. For example, a recent survey of quarantine officers in the Pacific region (to determine the feasibility of a formal training programme) revealed that a significant majority thought they had no or poor access to information, and as well a majority claimed that lack of, or poor libraries and bookshops would impact their capacity to study successfully (Walton 2001, pers. comm.). This example proves that there is a long way to go in providing access to and encouraging the use of essential information resources for the development of the region.

The solution being mooted, of course, is technology, principally the Internet. This can help overcome the tyranny of distance; it can provide better access to more information to a greater number of people at a lower cost; and it's a very topical approach to problem-solving.

A case study

An overriding factor is that in many cases, new information and communication technologies are introduced only because they can be: "This problem is the tendency to transplant technologies 'because they are there' to be transplanted" (Jacobson 1994, p. 750). For librarians and other information professionals, the challenge is to harness information technology without further alienating your users. For example, enthusiastic individuals within government departments initiate the development of web sites and other resources with little thought as to whether or not this benefits their immediate clients. This doesn't mean to say that there isn't some benefit that may be derived from these activities, it's just not the right approach. A better way is first to identify where the need is and explore appropriate solutions determined by the environment, such as the state of a country's infrastructure, the number and skills of staff and likely maintenance costs and responsibilities.

A research project was initiated as part of a Masters thesis at Charles Sturt University to explore a particular aspect of information dissemination and access in the South Pacific; namely, to find out whether it was feasible *and* desirable to publish library publications (e.g. indexes and bibliographies) electronically. Publications have been produced by the University of the South Pacific's Pacific Information Centre in print format since the early 1980s. Although computers were adopted in 1989 to facilitate the production of these publications, the availability of new technology posed the question:

would it be better to produce these publications in one electronic format or another, e.g. as CD-ROM databases or the Internet, thereby saving printing costs and providing a more useful and accessible product in terms of timeliness, searchability and flexibility? This question is at the heart of the 'digital divide' debate – the hypothesis that new communication and information technologies are presumed to bring significant benefits to more users and in better ways than ever before. That may be true, to a lesser or greater extent, in the developed world; but to what extent and how will developing countries benefit, specifically the island nations of the Pacific region? Thus the need arises to study the current situation in order to determine whether what is technically feasible is at the same time desirable, for the target group.

Survey results of relevance

Mention was made earlier of the geographical aspect unique to the island region, and that this leads to constraining factors such as the limited resource base both in terms of people and infrastructure: in particular, access to computers, access to the Internet, skills level of library staff and users, use of library publications and potential formats.

The discussion on the digital divide in the islands of Oceania is informed by these results, and those from other surveys and anecdotal evidence. The survey was carried out between July 2000 and June 2001 in four countries: Fiji, Samoa, Solomon Islands and Vanuatu. Those surveyed were mostly professional or paraprofessional librarians and information users, represented mainly by individuals conducting research; 260 completed questionnaires were returned.

Access to computers

Over the last 10 years there has been a significant increase in the numbers of computers in the region, and they are cheaper to buy. Nevertheless, more people use or have some acquaintance with a computer in their daily lives than ever before; for example, automatic teller machines (ATMs) and point-of-sale machines are found in the urban centres of most large and many smaller island countries.

Given the population being surveyed – librarians, academics and technical officers – it should be of no surprise that 98.1 per cent said they had used a computer before. Naturally, this high figure does not give any indication as to how frequently they used a computer, nor their level of competence. What is known is that 96.2 per cent have used a computer for word processing, 87.3 per cent for email, 85.4 per cent for accessing the Internet, 65.4 per cent for searching a library database and 58.1 per cent for searching other databases; only 61.2 have used computers for games and 37.7 per cent for computational activities.

Some information is known about the type (and standard) of computers in use by those surveyed. Most who responded ((79.6%) indicated that their computer was fairly up to date: Pentium processor 1 or 2, 80.2 per cent. Still, 4.8 per cent were using a 386, and 14.0 per cent a 486; these technologies cannot be described now as leading edge. Just over half the computers (54%) had 64 MB of memory, or greater; 15.5 per cent had 16 MB or less. The most prevalent operating system is Windows 98 (56.9%), followed by Windows 95 (31.5%). In terms of storage capacity, most computers (61.2%) had 1 GB or more hard drive; a very large number had a CD-Rom drive (83.9%), and a majority of which ran at speeds greater than 20x. A large number of respondents (70%) had a Zip disk drive. What these data show is that generally, the computer equipment in use in the four countries surveyed is reasonably up to date, with only a few anomalies.

Access to the Internet

Whereas having a computer may, even in developing countries, be considered the norm, the same cannot be said of access to the Internet; being well-dressed nowadays means being web-addressed.

A large percentage of those surveyed, 84.2 per cent, have access to the Internet at work; of the remainder, a similar percentage said they anticipated obtaining a connection. Given that many of the community surveyed work at the University of the South Pacific, a regional institution serving 12 Pacific Island countries, with a state-of-the-art, satellite-based intranet, the results are hardly surprising. Those among you who have used the Internet, even those in developed countries, will know that having access to the Internet and being in a position to best make use of it are two different things. This is particularly so in developing countries. The first concern is cost: are there sufficient funds to pay subscription and usage fees? In many ways, Internet access has increased rapidly in the Pacific Islands region; but it is also true that most countries have only one Internet provider, usually a state-owned even if corporatised monopoly that tends to set a high fee schedule.

Beyond the purely financial, constraints to Internet access have to do with infrastructural capacity. A large percentage of respondents stated that the Internet connection is always or mostly reliable (75.6%); very few (2.1%) said it was never reliable. However, those surveyed were mostly urban- or capital city-based and thus are more likely to experience better connections than other users. If the 'Letters to the Editor' column in *The Fiji Times* is anything to go by, there are considerable difficulties with accessing the Internet even from other urban centres that happen to be on other islands. Mostly, the complaint is that access speeds are too low or not low enough to guarantee a successful experience on the Internet. This is particularly true in Papua New Guinea where trying to access the email server from any of the five Highlands provinces is difficult to say the least. The telecommunications infrastructure is just not capable of delivering a good quality service. Of those who answered the question on access speeds, 36.2 per cent did not know their speed; 29.6 per cent had speeds less than or equal to 28.8 kbps; only 34.2 per cent had speeds in excess of 28.8 kbps, e.g. in Fiji the maximum speed from the local Internet provider is 33.6 kbps. The result of this is that accessing web resources or undertaking transactions can be time-consuming, and therefore costly and frustrating. Despite this, 45.4 per cent rate their Internet service as good, and 31.9 per cent satisfactory; only 10.0 per cent rate the service as poor.

In places where there is Internet access, the greatest use of it is for email (82.7%) and web searching (80.4%). A surprising number, 60.0 per cent, use their access for downloading files; little use is made of the Internet chat facility (13.8%). Of those who stated they use the Internet for web searching, what they are mostly searching for (78.8%) is information, however that might be defined. Only 43.1 per cent are searching library catalogues; that this is the response from a group more likely than others to be searching library catalogues is of concern.

Much comment is made of the poor supply of electricity in developing countries, with frequent brown-outs (power fluctuations) and blackouts (power outages). In the four countries surveyed, most (53.4%) stated that brown-outs were infrequent; but 22.5 per cent reported weekly brown-outs. Blackouts – the total loss of power – were infrequent also (62.1%), but 18.0 per cent reported them as occurring monthly, and 17.6 per cent, weekly. There are variations, as expected, by country: both Fiji and Vanuatu can expect to have fewer frequent power problems than Samoa or Solomon Islands. Just under half of all those surveyed protecting their equipment and safeguarded their work by using a UPS (uninterrupted power supply).

Skills level of library staff and users

It is almost universally accepted that there are too few well-trained staff in libraries in the Pacific, despite years of training programmes. It is also accepted that too few users could be said to possess 'library skills'. There is more anecdotal evidence to support this viewpoint than hard fact. What appears to be happening is that whereas there are a good number of people who have undertaken certificate and diploma programmes in librarianship (i.e. post-secondary), they remain largely unsupervised in situations, such as government departments, where their status is low and their role ill-defined or misunderstood. Only regional organisations and tertiary institutions have the resources and perceive the need, generally

speaking, to equip, staff and manage their libraries effectively. As for the users, too few people in the Pacific Islands region have had the opportunity to experience quality library services, and fewer yet the advantages that new information and communication technology can offer. There is grave concern that information literacy skills are lacking in the average user.

Use of library publications

Some evidence was obtained during the survey which showed that the three kinds of library publications under consideration – abstracts and indexes, bibliographies, directories – have been used by a large percentage of respondents: 77.6 per cent have used abstracts and indexes; 75.8 per cent have used bibliographies; and 55.2 per cent have used directories. Given that the community being targeted was done so on the strength that they were ‘librarians or library users’ perhaps higher percentages could have been expected. Of the very few (14.2%) who never use these publications, 37.8 per cent said they were of no use to them, and 62.2 per cent said that the publications were not easily accessible.

The few who used these types of resources daily (3.8–5.6%) or weekly (9.5–16.0%) probably reflects librarian respondents; the majority though said they used these resources infrequently, at around the 50 per cent mark. Of those never using the resources, 6.1 per cent never used abstracts and indexes, 4.3 per cent never used bibliographies and 20.5 per cent never used directories. A large percentage of those using these resources did so in print format (93.4%); but a large number did so electronically (60.9%) although those responding to this question were only 61.9 per cent of the total community.

In recognition of the fact that the study as a whole has its origins in trying to determine an appropriate strategy for producing the various publications of the Pacific Information Centre, specific questions on the use and frequency of use of these print publications was included. Almost half the total community (43.8%) had used the Centre’s flagship publication, *South Pacific bibliography*. Fewer, 35.0 per cent, had used the *South Pacific periodicals index*, and only 29.2 per cent had used the *South Pacific research register*. In terms of frequency of use, most did so infrequently.

Potential formats

Naturally, the question was asked: would you like to be able to access these three publications in electronic format? And just as naturally, a large percentage said they would (92.4%, 91.5% and 89.9% respectively). It is worth investigating the reasons why there was such a positive response (although one can’t escape the thought that it is because this is the modern, up-to-date thing to do). A large percentage thought that publishing electronically would give speed of access (78.5%), improve searchability (77.1%) and more flexibility of access (66.4%); only 50.2 per cent gave ‘keeping up with the times’ as a reason. With so few stating that they did not want these publications in electronic format, there are too few responses upon which to draw any conclusions as to why not, except that a handful thought that print was easier to read.

The electronic format being proposed was not stated on the questionnaire, although two formats are being considered: CD-ROM and the Internet, i.e. a web-accessible information resource. Use of these two formats is quite high: 91.7 per cent have used the Internet; and 84.4 per cent have used CD-ROMs. The Internet is most used on a daily basis (62.0%) or weekly (17.3%); CD-ROMs on the other hand are most used infrequently (36.7%) or weekly (26.2%). Use of diskettes as an electronic medium was high (92.0%), as was its frequency of use, mostly daily (45.8%) or weekly (19.8%).

Preliminary conclusions

The results presented in this study indicate that electronic versions of library publications should be developed, thus fulfilling a need expressed by users in the Pacific region. Although a large percentage of them want this to happen, the danger is that it maintains the division between the information-rich and the information-poor, thus further consolidating the digital divide. The figures to note are those that suggest

fewer than half of the respondents had used the three titles published by the Pacific Information Centre. Given that the population being surveyed was chosen to represent users of this type of information resource, the low usage may be indicative of one of several things:

- that the publications do not contain information that is considered useful or appropriate
- that the information is not presented in a useful way
- that there is little awareness of the existence of these publications.

Based on experience and interviews that were carried out with users, it is more likely to be the extent of awareness that determines usage. Further, whilst the survey considered very specific types of information and information products, experience in the Pacific region leads to the conclusion that this is a common phenomenon: too little use is made of relevant and appropriate resources in the region because of the lack of awareness of their existence and the knowledge of how best to use them.

This leads one to consider whether the right question has been asked. What if, instead of trying to determine an alternative, technological solution to disseminating and providing access to information, the question had been asked, ‘In what way could more effective use be made of existing resources?’ The idea is that by publishing these bibliographies as CD-Rom databases or on the Internet, it will result in a better product, which is more easily accessible and thus more useful. In other words, if we were to conclude that new information and communication technology offers a better future, then this would be masking the problem – that of too few people being aware of and using the existing resources. In saying this, however, it is accepted that perhaps the print distribution medium does not offer the best solution; but it is not unusable; it is just unused or under-used. Therefore, perhaps a solution to this is to look at ways to improve use of existing resources. This echoes concerns that *the* major constraint in the information age is that of information illiteracy.

In a recent paper, Ross Shimmon suggested that many people do not know how to find the information they need; as he says, “we are experiencing information illiteracy on a large scale, worldwide” (2001). Information illiteracy transcends both the developed and developing world; but is a more critical constraint in the developing world. In 1999, Jimba commented that in a world increasingly global (in trade, politics and culture), it is strange from a historical point of view, that the more information technology holds out a promise of a gilded future, the less advances are made by developing countries. His reasoning is that “disparities in wealth and standards of living are a function of available information and the technology to control and propagate it” (Jimba 1999, p. 81). Thus a danger to be aware of is the possibility that only elite groups will be served, as only they have the technology and ability to use it effectively, further disenfranchising the ordinary person. Any cost-benefit analysis of the desirability of publications in electronic format is without value if the analysis does not also factor in the cost of training users and their acquisition of skills to benefit from the technology.

Solutions are long-term, and involve a complete rethink of the role of education, redesign of curricula at all levels, and an awareness of the consequences of improved information literacy on individuals and societies as a whole. By definition, an information literate population is going to be able to think for itself, to pose questions and find answers, to participate in the opportunities that define a dynamic society. Solutions that rely merely on the technical, e.g. providing access to the Internet at all schools in a particular country, are only but scratching the surface; solutions that determine more precisely the needs of individuals, groups or communities as a whole, that consider carefully what constitutes an appropriate response (content, medium), and recognise that providing the skills to access and utilise these resources effectively are the only solutions that can mitigate the perceived digital divide. For example, installing a computer and providing access to the Internet in a school in rural Fiji, will be of little use to the community unless members of that community are able to use the equipment and have the necessary skills to search for and retrieve information from the Internet, information that they are able to determine as

being relevant, timely and appropriate to their needs, information that they are able to use to develop their community or realise their own potential. In fact, it is not too far-fetched to say that an improvement in information literacy will inevitably lead to a reduction in the digital divide by putting technology and resources to best practical use. Improved information literacy will not in and of itself increase budgets for information services or the number and calibre of staff; it will not reduce Internet costs and improve the reliability of the phone system; but it will change national and individual priorities that accept that these changes are necessary.

It is no coincidence that for this year's Biennial Convention, the Fiji Library Association will have as its theme, 'Information literacy: pathways for Fiji and the Pacific'. This is a beginning.

References

- Hau'ofa, E. (1993). Our sea of islands. In: *A new Oceania: rediscovering our sea of islands*, pp.2–18. Suva, Fiji: University of the South Pacific.
- Jacobson, T.L. (1994). The electronic publishing revolution is not "global". *Journal of the American Society for Information Science*, 45, pp. 745–752.
- Jimba, S.W. (1999). Information technology and underdevelopment in the third world. *Library review*, 48(2), pp. 79–83.
- Secretariat of the Pacific Community (2000). *Selected Pacific economies: a statistical summary*, no. 15. Noumea, New Caledonia.
- Shimmon, R. (2001). From digital divide to digital opportunity.
http://www.unesco.org/webworld/points_of_views/shimmon.shtml.
- Walton, P. (2001), Agricultural Information Specialist, Suva, Fiji. 30 June, pwalton@is.com.fj.