

Digital Connectivity in Lao PDR – Lagging Behind Peers

A short assessment with
policy recommendations
to catch up




WORLD BANK GROUP



EUROPEAN UNION





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Digital Connectivity in Lao PDR

Lagging Behind Peers
**A short assessment with
policy recommendations
to catch up**

June, 2018

Introduction and key findings

Digital connectivity—access to affordable and reliable internet services—has become a key driver of economic and social development globally. Economic activities and government services are increasingly moving online. Lao PDR is well-positioned to take advantage of these trends to improve growth, competitiveness and services provision to the population, but urgent interventions are needed to ensure that Lao PDR does not fall further behind regional peers. This note reviews the status of digital connectivity in Lao PDR and options for improvement, including the respective roles of government and industry. The main findings are as follows:

- By almost every measure, Lao PDR is lagging significantly in terms of accessibility, quality and affordability of internet services compared to other comparable regional economies.
- Access to mobile broadband is increasing, but rural and more remote communities are still unserved or underserved. Actions to close this digital divide are needed urgently.
- Fixed broadband—required for high-capacity data transmission to support the next wave of digital development—is particularly limited.
- Prices for internet are comparatively high. High capacity fixed broadband services are very limited and extremely expensive.
- The minimum retail tariff regime for mobile, voice and data services may reduce the ability of operators to differentiate services and compete on price and service quality.
- Quality of service and affordability of internet are continuing concerns which are slowing the introduction and use of digital services and applications.
- Regulatory capacity and expertise is increasing, but remains comparatively low which is further limiting market growth and investment.

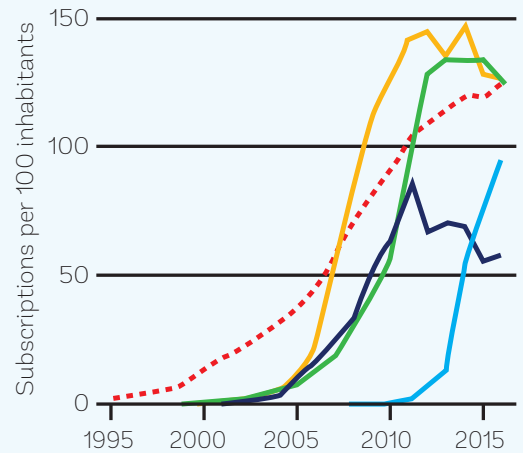
Access to mobile and fixed broadband services needs to accelerate

International standard access indicators show the extent to which Lao PDR is under-performing most countries in the Asia-Pacific region terms of mobile network coverage, mobile phone subscriptions (3G/4G), broadband access and international bandwidth per user.

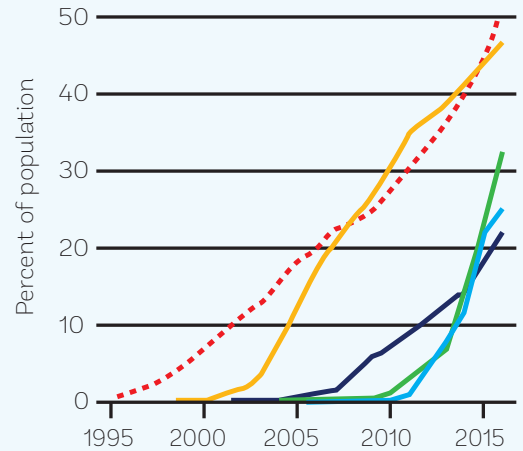
Lao PDR is well-positioned to take advantage of these trends to improve growth, competitiveness and services provision

ASEAN Cambodia Lao PDR
Myanmar Vietnam

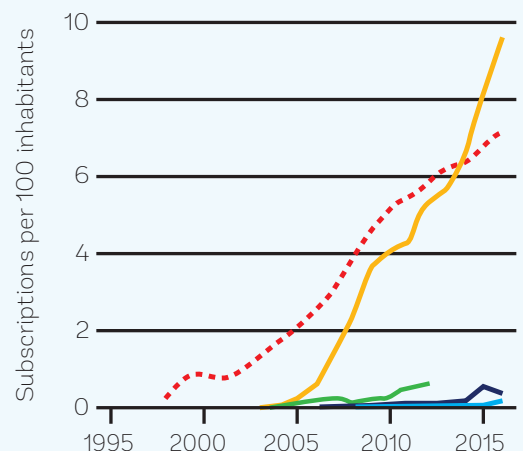
Limited basic mobile



Limited mobile broadband



Inadequate fixed broadband





Prices for mobile and fixed services are high and comparatively unaffordable

The latest available affordability data from the International Telecommunications Union (2017) shows that mobile broadband prices in Lao PDR are just below the average for Asia-Pacific (4.2% of GNI per capita for 1 GB, compared to 5.4% for Asia-Pacific), but that fixed broadband prices are notably higher than in neighboring economies (16.5% of GNI per capita for Lao PDR, compared to 14.5% of GNI per capita for Asia-Pacific). On broadband pricing, a recent survey of 196 countries ranked Lao PDR as the 192nd most expensive at US\$231.76 per month. By comparison, the cost in Cambodia was US\$52.89, Vietnam US\$62.86 and Myanmar US\$76.76.

The relatively high cost of services is slowing access to digital services. Mobile phone subscription rate in Lao PDR is around 87 percent, mobile broadband Internet is around 35 percent and fixed broadband around 3 percent, all lower than in most neighboring economies. Lao PDR's underperformance in digital connectivity has contributed its low rankings across other digital development indicators. The World Economic Forum (WEF) 2017 report shows that Lao PDR is lagging its peers. Increasing access to high quality, low cost, broadband services is critical to support the next phase of digital development in Lao PDR and to support improvements in its global competitiveness.

2017 World Economic Forum Global Competitive Index in the region¹

	Lao PDR	Cambodia	Vietnam	Thailand	Malaysia	Indonesia	Philippines
9th pillar: Technological readiness	3	3.4	4	4.5	4.9	3.9	3.8
Ranking	110	97	79	61	46	80	83
9.01 Availability of latest technologies	3.9	4.3	4.0	4.9	5.5	4.8	4.6
Ranking	113	93	112	56	35	67	73
9.02 Firm-level technology absorption	4.1	4.2	4.2	4.9	5.4	5.0	4.7
Ranking	102	90	93	42	17	39	51
9.03 FDI and technology transfer	4.1	4.6	4.1	4.8	5.4	4.7	4.5
Ranking	88	54	89	40	13	44	63
9.04 Internet users % pop.	21.9	25.6	46.5	47.5	78.8	25.4	55.5
Ranking	116	107	87	86	32	109	74
9.05 Fixed-broadband internet subscriptions /100 pop.	0.3	0.6	9.9	10.7	8.7	1.9	5.5
Ranking	114	111	72	69	75	103	87
9.06 Internet bandwidth kb/s/user	17.5	23.6	91.3	49.2	42.6	24.9	43.4
Ranking	99	92	47	75	79	90	78
9.07 Mobile-broadband subscriptions/100 pop.	34.7	50.2	46.6	94.7	91.7	67.3	46.3
Ranking	99	81	88	24	26	56	89

Quality of Service needs to improve to support digital applications

Quality of service (QoS) oversight is typically undertaken by regulatory authorities, but reports are not publicly available, so official data on QoS is limited. However, the Open Signal Map application provides a publicly available source of data throughput speeds across various countries, which indicates that the average 2G/3G mobile throughputs per mobile operator in Lao PDR are on the low side at 0.9 – 4.4 Mbps, compared with regional level throughput in the range of 2.5 – 8.5 Mbps. While the average 4G/LTE throughput per mobile operator in Lao PDR is at 14.4 Mbps, well within the regional range of 4.7 – 23 Mbps, Lao PDR is the only country in the region with 4G/LTE throughput data for only one mobile operator. Penetration for 4G/LTE services is very low compared to the rest of the region which is also likely skewing the result. Ookla Speedtest, another publicly available data source of data speeds across countries, indicates that fixed broadband speeds for Lao PDR are significantly lower than in the benchmark countries at around 8.7 Mbps, compared with 10.9 Mbps in Cambodia and 24.2 Mbps in Vietnam.

¹ World Economic Forum, The Global Competitiveness Report 2017–2018: <http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf>



No internet

Try:

- Checking the network cables, modem, and router
- Reconnecting to Wi-Fi

ERR_INTERNET_DISCONNECTED

Customer attitudes and experiences shows strong levels of dissatisfaction

To complement benchmarking data on price and quality of services, the World Bank undertook a user survey (SurveyMonkey, posted on Facebook) in between February to April 2018, to gauge opinions on quality and pricing of internet services. In total 1,177 respondents filled in the survey, likely representing a more digitally engaged cross section of the country. The profile of the respondents was as follows:

65%

of the respondents were from Vientiane, the rest distributed across Lao PDR.

85%

of the respondents were residential users, 15% business.

55%

of the respondents used 4G/LTE, 35% used 3G and 10% used fixed broadband.

The main findings of the survey were that:

- Internet speeds are generally slow, and service is less than reliable, particularly outside Vientiane.
- Users generally have low expectations regarding quality of service.

- Users perceive low value for money, but are also not willing to pay a great deal more for service possibly due to a perception that higher cost services do not deliver higher quality.
- Users generally do not switch providers due to associated costs (no number portability).
- There is demand for online government services suggesting a demand pull from more local content availability.

A user survey also revealed a high rate of dissatisfaction with the quality and affordability of internet service, not only in rural areas but also in larger population centers. Typical comments received were as follows:

- “The Internet is slower than a turtle”.
- “The rate of service charges is not transparent” (users purchase prepaid vouchers, typically for 10,000 Kip, and find that these are used up very quickly).
- “4G has the quality of 2G and the speed of 0.5Mbps or less. Consumers are taken advantage of”.
- “All networks are slow and costly. At some places, contracts are not shown. WIFI is not available in general shops. There is a need to make improvements in order to achieve the same level as in our neighboring countries”.
- “4G is similar to 3G; quality does not match with the price; signal disruption; too slow; service is not widely available and has not covered all areas of the country”.

Improving the affordability and quality of service across urban and rural areas is essential to drive uptake of digital services and promote widespread digital development. Regulatory and customer protection issues also need to be addressed urgently to improve investment incentives and give users comfort that they are getting the quality and level of services that are promised by operators. The full results of the survey are included in Annex 1.



Legal and regulatory reforms are needed to promote investment and protect consumers

Lao PDR has made considerable progress in recent years, particularly its efforts to give effect to commitments under the WTO Telecommunications Reference Paper. It has established a Regulatory Department within the Ministry of Post and Telecommunication. A Law on Prevention and Combating Cyber Crime was passed in 2016. Other subordinate instruments, including interconnection, competition and licensing, have been approved. Now urgent attention is needed to implement the enabling legal and regulatory framework for telecommunications and to build capacity within the new Regulatory Department. Further work is also needed to develop and implement regulations on issues such as wholesale access and infrastructure sharing, number portability, roaming, consumer protection and quality of service.

An immediate issue would be to assess the appropriateness of maintaining the minimum tariff regime for telephone and internet fees and whether it negatively affects competition among operators. The minimum pricing regime is focused on “equal, fair and on the principle of protecting the rights and benefits of service providers”, but further analysis is needed to see whether this regime is unduly impacting on the ability of operators to differentiate themselves in the market on the basis of price and quality of service. The impact of the minimum tariff regime on investment incentives for operators to rollout into new areas and to introduce new services also needs consideration. The market now includes three international operators, under JV arrangements with local operators, which is also likely to put further pressure on the regulator when it comes to operationalizing the existing regulatory instruments (licensing, competition, interconnection) and developing new regulations (wholesale access, infrastructure sharing, quality of service, customer remedies, etc.). Support for capacity building and development of regulatory capacity will be critical to improve the investment climate and improve sector outcomes.

The wider legal and regulatory enabling environment for digital commerce is also comparatively underdeveloped. While the regulatory environment contains some elements necessary to support greater participation in e-commerce, other areas need strengthening.² A Law on Consumer Protection was passed in 2010, but does not cover electronic commerce. An electronic transactions law was passed in 2012, but has not yet been fully implemented. Developing and implementing legislation for the protection of personal data, strengthening consumer protection, and implement the regime for electronic signatures will be key to improve the legal enabling environment for the digital economy.

2 For a detailed analysis, see Bartley Johns, Marcus; Hoppe, Mombert; Molinuevo, Martin; Nghard-sayson, Konesawang; Daza Jaller, Lillyana Sophia. 2018. Taking Advantage of E-Commerce: Legal, Regulatory and Trade Facilitation Priorities for Lao PDR (English). Washington, D.C. : World Bank Group. <http://documents.worldbank.org/curated/en/318431534860299926/Taking-Advantage-of-E-Commerce-Legal-Regulatory-and-Trade-Facilitation-Priorities-for-Lao-PDR>

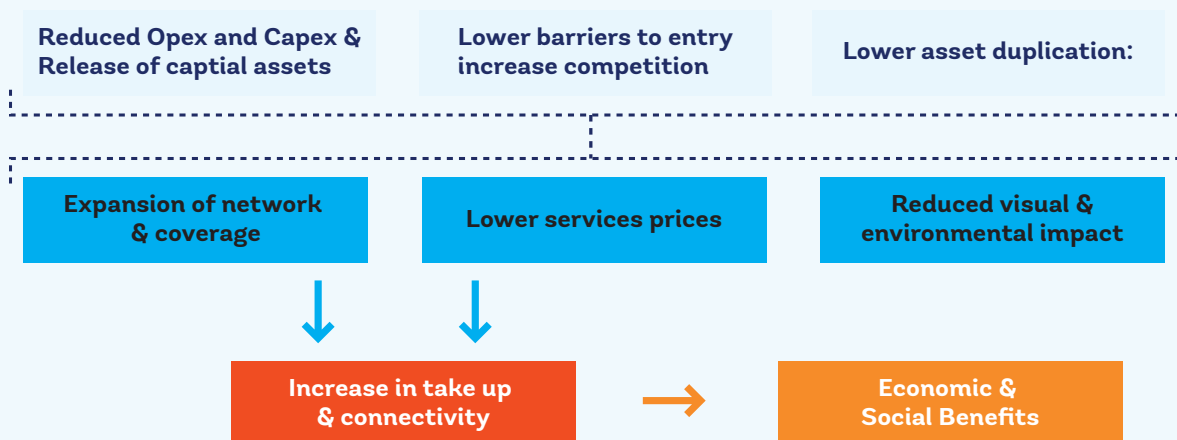


Recommendations

The 2016 World Development Report³ outlined how the internet contributes to economic growth through three channels: inclusion, increasing efficiency, and supporting innovation. However, this requires access to the internet to be universal, affordable, open, and safe. This in turn requires strengthening the internet “supply” along the value chain from the point that it enters a country through to the final consumer. This can be achieved through the introduction of new technology, competition policies, public-private partnerships, and effective regulation. The WDI also stresses the need to improve policies affecting the demand for internet which includes addressing challenges relating to cyber-security, privacy, content filtering, and more generally internet governance.

For Lao PDR, international benchmarking and survey results emphasize the urgent need to improve access, quality and affordability of fixed and mobile broadband services in Lao PDR. This will require a combination of policy, legal and regulatory reforms by the Government to stimulate investments by industry in the infrastructure needed to deliver the next generation of digital services. Increased private participation and strategic use of public sector financing to support investments in less commercially viable regions, for example through the use of Private-Public Partnerships (PPPs) is critical. Support for capacity building and development of regulatory capacity is also important to improve the investment climate and ensure the efficient use of resources.

³ World Bank. 2016. World Development Report 2016: Digital Dividends. Washington, DC. World Bank.



The Government of Lao PDR, through the Ministry of Post and Telecommunications, has issued an ICT Masterplan. However, the Masterplan does not quantify the level of investment required for improving access, affordability and quality of digital infrastructure. To make the Plan more effective, more specific performance targets and monitoring and evaluation approaches as well as a clearer timeframe and allocation of responsibilities are needed. A first step could be for Government, in consultation with industry, to review in detail the status of the national fiber optic backbone network to identify any bottlenecks, either regulatory, technical or new infrastructure needs, to deliver much larger volumes of data traffic over the coming years.

Second, a similar review could be carried out for the access network to identify the main unserved and under-served, in particular rural and remote areas. A key component of this review process is to identify investments that could be carried out through PPPs and what the implications are for the current legal/regulatory environment. Opportunities for infrastructure sharing should be investigated, particularly sharing “passive infrastructure” such as towers, ducts, poles, dark fibers, rights of way, and associated civil works etc. This would help to reduce the cost of deploying mobile networks and optical fiber for fixed broadband. Allowing sharing of “active infrastructure” (radio equipment) can also be promoted to facilitate cost-efficiency, while still allowing competition and technological innovation.

Fixed broadband infrastructure will require large investments in expanding national backbone networks and rolling out fiber to close the last mile to premises and homes (FTTx). Typically, at least 70-80% of the investment in fixed broadband networks is for passive infrastructure. Given the large investments required in the infrastructure, sharing would bring benefits in terms of reduced capital and operational spending, and help to stimulate competition and promote innovation. There are a number of policies that will encourage passive infrastructure sharing, speed up fixed and mobile broadband deployment and reduce the costs of deployment while safeguarding a competitive market structure.

Other regulatory measures that may also be prioritized to support development of digital infrastructure and improve outcomes for users include:

- Improving the quality (and prospectively the transparency) of industry reporting on access, pricing and service quality.
- Reviewing the appropriateness of the minimum retail tariff for mobile, voice and data services, which may reduce the ability of operators to differentiate their services and compete in the market based on price and service quality.
- Promoting investments in backbone and international internet backbone infrastructure.
- Introducing wholesale access rules to promote infrastructure sharing.
- Improving the regulatory framework in the area of consumer protection as well as privacy (data protection).

Annex 1. User survey

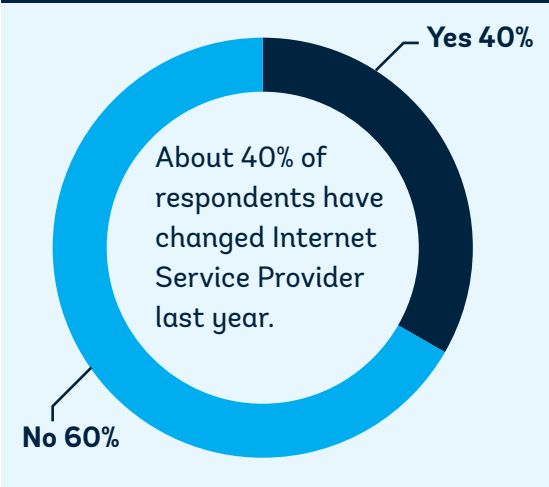
Q1. Why did you choose this provider?

- 26.68% Special promotion
- 28.36% Low price (cheaper data)
- 36.47% Speed
- 25.84% Reliability
- 43.56% Coverage
- 13.90% Customer service



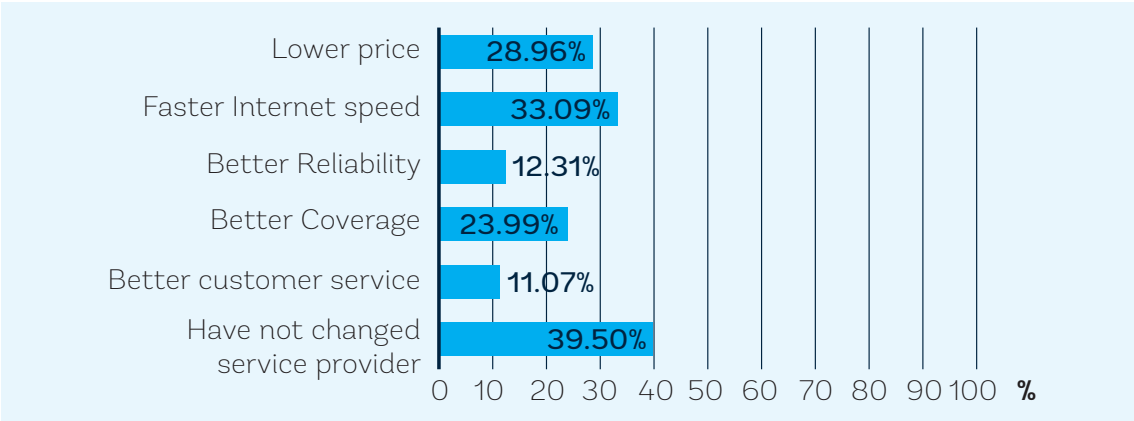
The dominant reasons for selecting a provider are coverage and speed.

Q2. Did you change Internet Service provider last year?



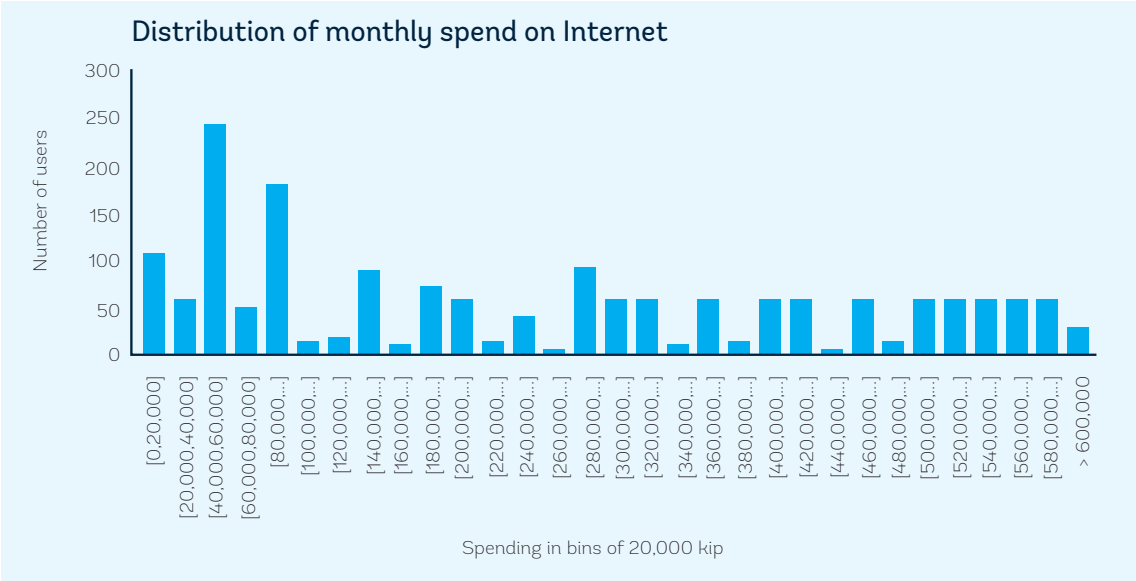
Q3. If you have changed provider in the past year, does your new internet service provider offer:

The response shows that the new Internet Provider was able to offer faster Internet at a lower price. Better coverage was also mentioned but although better coverage scored highest in the selection criteria the change of provider seems to be not always delivering better coverage. In this context it is worth highlighting that there is as yet no regulation on mobile number portability, so a change of number entails some cost and inconvenience to users.



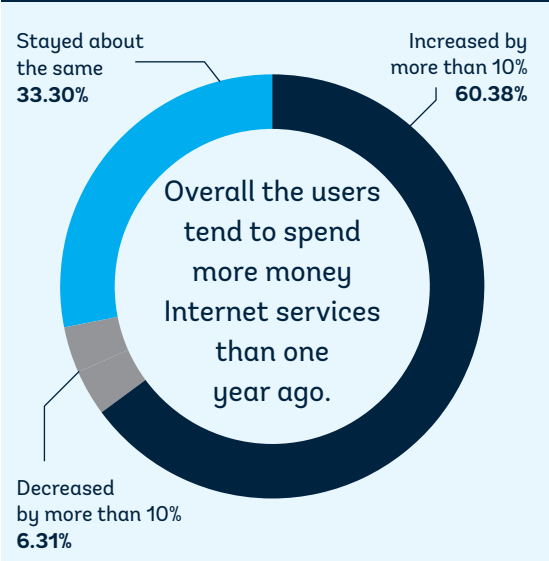
Annex 1. User survey

Q4. How much do you pay for internet service every month (in Lao Kip)? . . .



The graph was based on 1095 usable responses to show the distribution of the monthly spend on Internet services. 50,000 Lao Kip (about US \$ 6) is the most popular option. 100,000 Lao Kip (about US \$ 12) is second while some people spend in the range up to 300,000 Lao Kip. A small number of users reports much higher amounts, possibly for fixed broadband services. 50,000 Lao Kip provides a mobile Internet package of 1.5 GB with a validity of 1 month.

Q5. Has your monthly spending on internet increased or decreased since the same time last year?

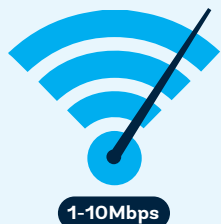


Q6. How much data do you purchase per month for all mobile devices (including mobile phones and hotspots)?

This response shows that the overwhelming majority (89%) of the users are consuming > 1 GB. A small majority (58%) is consuming > 10 GB or has an “unlimited” package.

2.44%	500 Mb Less than 500Mb
8.54%	500Mb - 1Gb
30.66%	1Gb - 10 Gb
24.56%	10Gb More than 10Gb
25.61%	Unlimited
8.91%	I don't know

Q7. Fixed internet users, what speed do you receive?



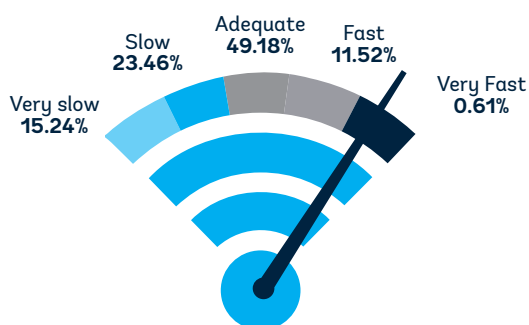
Those fixed users who responded report mostly 1-10 Mbps speed.

- 3.90% 1Mbps Less than 1Mbps
- 25.95% 1 – 10Mbps
- 4.37% 11 – 100Mbps
- 2.76% 100Mbps More than
- 45.44% Not applicable (mobile only user)
- 17.59% I don't know

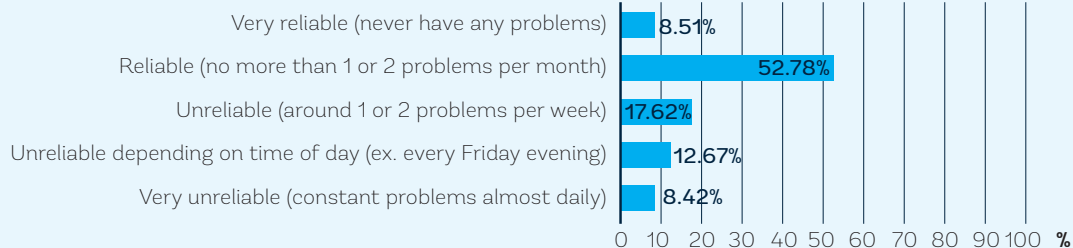
Q8. How do you rate your internet speed?

39% considers their Internet speed slow or very slow.

61% consider their Internet speed to be adequate or (very) fast. However, the comments attached to the survey suggested that internet speeds were typically slow.



Q9. How reliable is your internet connection?



Although reliability issues have been mentioned, the picture is not consistent. In the survey it seems that a majority of 61% consider their Internet connection to be reliable but a sizeable proportion of 39% consider their Internet unreliable. Most likely this depends very much on what users are used to and how much they use the internet and for what purpose. Typically, the requirements go up when users rely more on their Internet connection.

Q10. Have you ever complained to customer service?



Yes
51.26%



No
48.74%

About half of the users have complained to customer service.

Annex 1. User survey

Q11. Do you have any difficulties with the quality of your internet access?



- 21.16%** No difficulties
- 53.20%** Difficulties for some applications (e.g. video calls, streaming videos, YouTube)
- 25.64%** Difficulties for even basic functions (e.g. email, Line, Whatsapp, voice calls, Facebook)

This response seems to indicate that difficulties are experienced with video streaming services are the largest issue even though some more basic services also cause difficulties for 25% of the users. Difficulties with video streaming are quite typical since these services create a heavy load on mobile networks, and mobile networks are the main option for Internet access. On top of that in Lao PDR the large majority of the users are still on 3G instead of on LTE which makes things worse.

Users might want to use video streaming services and the mobile networks are not capable to deliver that at good quality at large scale. This confirms the findings of the report that existing mobile broadband service is not adequate to support large scale data transmission.

Q12. Is your use of the internet limited by?



13.60% Poor quality of service



33.51% High price



41.05% Both quality and price



11.84% No limits on my use of the internet

This response indicates that Internet service offer in Lao PDR does not meet expectations of users. 88% feels limited by price and/or quality. The heavy reliance on mobile Internet and the limited number of fixed broadband connections is making this worse.

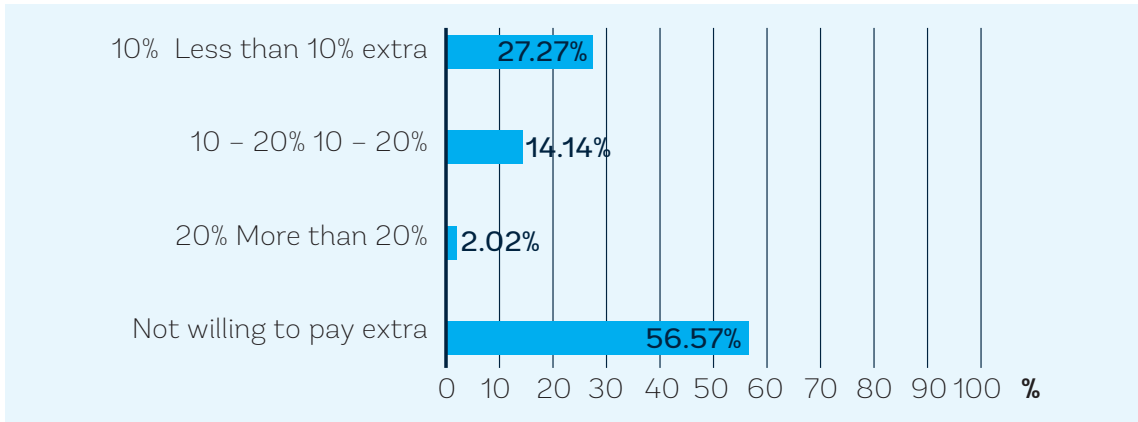
Q13. Would you be interested in better internet?



Faster Internet and more data ("unlimited") are high on the wish list. Reliability is an issue but not as dominant. Clearly very few users are actually satisfied with the current Internet service.

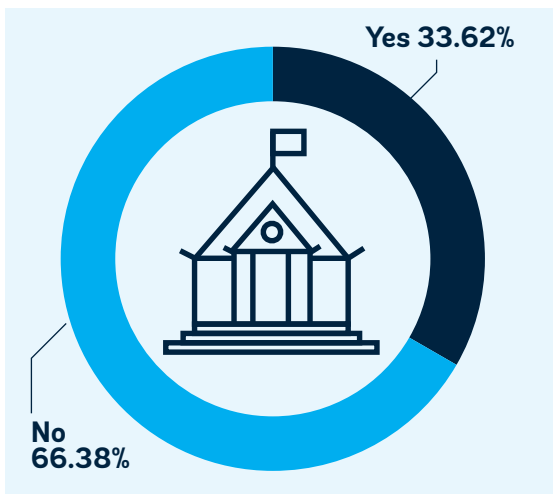
- 61.89%** Faster internet connection
- 37.31%** Better reliability
- 66.14%** (Unlimited) More package options, including unlimited
- 3.98%** No, internet service is satisfactory

Q14. How much more money would you be willing to pay for better internet?



The willingness to pay more is quite limited which seems to indicate that better Internet for a premium price isn’t an option for most of the respondents.

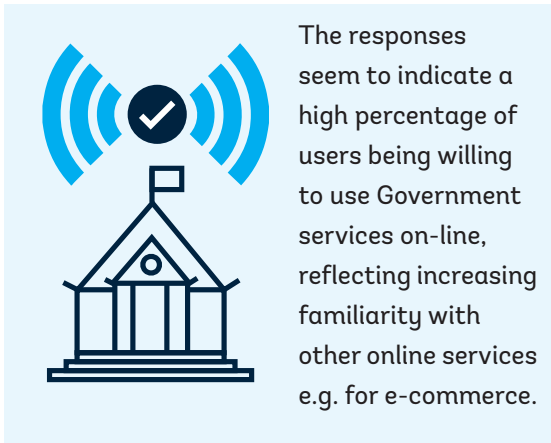
Q15. Have you ever used a Lao Government service online?



The survey notes that one third of users reports that they have used some kind of Lao Government service online, suggesting that demand for Government e-services may be higher than previously anticipated. The survey did not question which services were used, but this issue may be investigated further.

Q16. How likely would you be to use a Lao Government service online if it were available?

- 41.90% Very likely
- 39.98% Likely
- 12.15% Somewhat likely
- 2.48% Not likely
- 3.46% Never





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