Submission to the Regional Telecommunications Review 2018

August 2018

About GrainGrowers

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GrainGrowers is an independent and technically resourced, grain farmer representative organisation with 17,500 members across Australia. GrainGrowers' goal is a more efficient, sustainable and profitable grain production sector that benefits all Australia grain farmers and the wider grains industry. GrainGrowers has three divisions which work cooperatively to achieve improved grain industry outcomes: 1) Capability Building, 2) Industry Engagement and 3) Policy and Innovation.

GrainGrowers has a National Policy Group comprised of 15 elected representatives from across Australia. Five growers represent each of the three major grain-growing regions: Northern Region encompasses Queensland and Northern NSW, the Southern Region encompasses southern NSW and Victoria and the Western Region encompasses South Australia and Western Australia.

About the Australian grains industry

Australian grain farmers annually grow some 45 million tonnes of wheat, barley, oats, sorghum, canola and pulses such as chickpeas and faba bean, which at the farm gate alone is worth $13.5 billion. This production generates more than 170,000 jobs in rural, regional and metropolitan areas across Australia. Over 70% of Australia's grain production is exported, earning some $11.4bn in export earnings annually, and accounting for more than a quarter of all agricultural export earnings. Furthermore, domestic sales of grain underpin the fortunes of the domestic food manufacturing sector and other important export industries such as the red meat and dairy industries.

Trade is vital for the Australian grains industry, and grains deliver significant export earnings for Australia and employment across rural, regional and metropolitan Australia. However this is contingent on producing a quality product which suits the market, and reliably and efficiently delivering grain to these markets. Ensuring an efficient, low cost supply chain is therefore imperative as it underpins the competitiveness of Australian grains in international markets.

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1 Executive Summary

GrainGrowers welcomes the opportunity to respond to the Issues Paper for the Regional Telecommunications Review 2018.

Telecommunications is essential for grains production sector across Australia which produces goods worth $13.5 billion at farm gate each year. Connectivity (both mobile and data) is essential in a modern farming system; enabling precision agronomic practices and the real time data to be collected and analysed for sowing, spraying and yield.

Telecommunications services in regional areas are not at a level where most farmers can operate without constraint and are inhibiting the adoption of more digital technology. A survey developed by GrainGrowers, NFF and its members showed:

- 66 percent of grower survey respondents report barriers to adoption, principally due to poor connectivity (67 percent) and cost (30 percent).
- Many survey respondents have tried to improve mobile coverage, mainly through antennas and boosters. But nearly half (forty seven percent) of growers with low mobile coverage on their farm report service has got worse over the last three years.
- 15percent of grower survey respondents report 0percent mobile phone service on their farm, with 28 percent describing it as poor (less than 20percent of the farm) and 35 percent as marginal (50percent or less of farm covered).
- 15 percent report satisfactory coverage with 6 percent reporting 100percent of their farm is covered.
- 94percent of respondents use mobiles for business tasks, with 59 and 62 percent using mobiles for social and learning/research respectively.
- 88 percent of respondents built their digital knowledge and skills through learning by experience and 81 percent through learning from peers; on average respondents rated their literacy as 55/100.
- 80 percent of respondents reported problems with landline, mobile or internet in the last 12 months; most frequently relating to slow internet speed and connection problems.
- Only 61 percent of these problems were resolved; 42 percent within the same week, but 19 percent took longer than 6 months.
- Only 46 percent of respondents were connected to the nbn, and of the 53 percent not connected close to half (46 percent) said it was because the service was not available. This is in line with previous GrainGrowers survey findings and again highlights a significant issue with lack of awareness about access to Sky Muster.
- Three quarters of respondents still rely on landline, with more than half using it on a daily basis.
- Cost of services was a common concern, and more than a quarter of respondents pay in excess of $400 a month for bundled service.

2 Response to Issues Paper

GrainGrowers has regularly surveyed its members to understand the uptake of technology and the changes in the quality and access to telecommunications service in regional areas. In preparation for this review, GrainGrowers worked with the National Farmers Federation to again survey members to understand their telecommunications services and issues. The results, and trends over time, for the grains sector[1] are shown below in response to questions asked in the Review Issues Paper.

2.1 What are the main barriers to people in regional communications increasing their use of digital technologies and possible solutions for overcoming these barriers?

Close to two thirds of respondents (66 percent) to the survey said they have barriers precluding them from taking up new technology, which a major concern is given the importance of technology in modern grain production systems.

As shown in figure 1, internet connection (67percent), followed by high costs (30percent) and lack of access to new technologies (26percent) were the main barriers to increasing grain farmers' use of digital technologies. Figure 2 shows these have consistently been the major barriers identified in the last three surveys conducted.

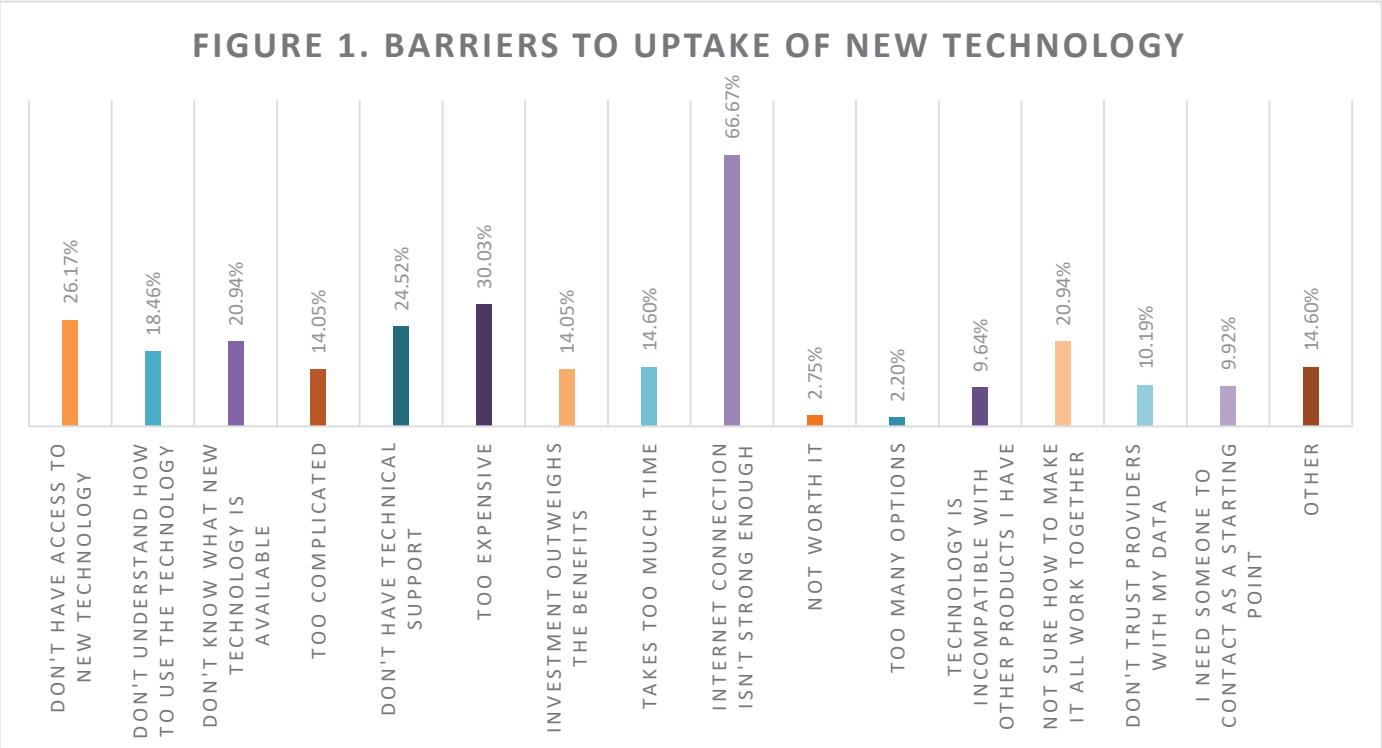
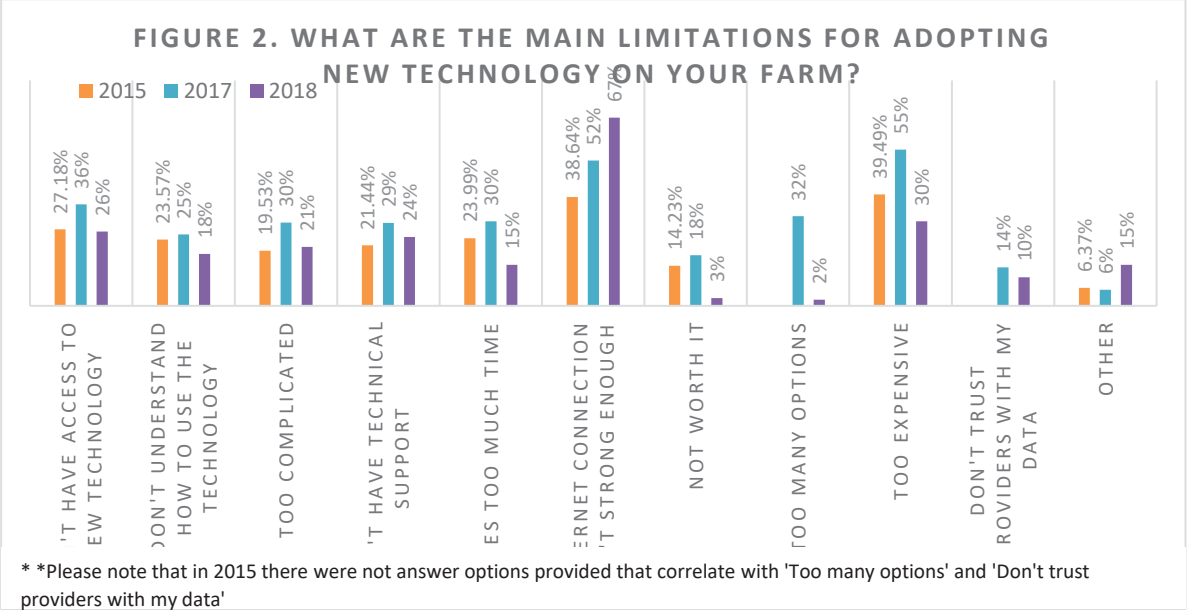


Figure 1. Barriers to increasing digital technologies

[1] Note this is a subset of the total NFF survey (748 respondents) relating only to grain farmers (461 respondents).



* *Please note that in 2015 there were not answer options provided that correlate with 'Too many options' and 'Don't trust providers with my data'

2. Barriers from 2015-2018

As shown in table 1, less than half of the respondents who identified they had barriers to the uptake of new technology were connected to the NBN (45 per cent), but of those 82percent were connected to Sky Muster (see later section for results on satisfaction levels with the nbn service). Not surprisingly respondents who did not believe there were barriers had a great percent of mobile coverage across the whole farm (an average of 50-74percent), but for those citing barriers, then on average their mobile voice and internet coverage across farm was between 1-24percent of the farm.

Table 1.

Comparison of results by response to 'Are there any barriers to taking up new technology'		
	No, there are not barriers to adopting new technology	Yes, there are barriers to adopting new technology
Percent of respondents connected to the NBN	57%	45%
Percent of respondents that have an NBN Sky Muster connection	62%	82%
Amount of mobile phone voice coverage the majority of respondents have on farm	50-74% of farm has coverage	1-24% of farm has coverage
Amount of mobile phone internet coverage the majority of respondents have on farm	1-24% of farm has coverage	1-24% of farm has coverage
The average digital literacy of respondents	55	60

To overcome internet connectivity problems (see figure 3), solutions used by farmers (at their expense) have included wi-fi boosters in their houses, building wi-fi networks across farms, addition of internet

boosting antennas and similar devices on the roof of houses. However, many commented that whilst connectivity may have been provided to their farm houses it was often too difficult/impossible to improve internet connectivity away from houses in paddocks. With many in-paddock technologies reliant on this technology, this is a further barrier to uptake of technology. Overall close to half had taken no action to improve connectivity.

The lack of reliable internet connections, low speed and low data allowances, as well as high costs for internet services were identified as limitations affecting the use of internet for education (including high school and study such as MBA's). The lack of connectivity has also been identified as a concern for some respondents in terms of OH&S and general safety of family members and staff. It can be a deterrent to seasonal workers accepting positions if they are unable to access reliable internet. Not having a strong enough internet connection was the main limitation in 2018, whilst cost was the main limitation in 2015 and 2017.

Mobile voice and connectivity

Most respondents with barriers to uptake of new technology have limited mobile voice coverage and mobile internet coverage across their farms (1-24 per cent coverage was the majority for both voice and internet). With the rise of new technologies (many connected to the Internet of Things), the potential detriment to uptake and use of new technologies because of a lack of voice and internet connectivity is a barrier to increased use of technology on farms.

In seeking to solve issues with mobile voice coverage, respondents have tried a range of technologies. The less coverage respondents have across the farms, the more they have tried different ways to improve their voice coverage. The more mobile voice coverage on-farm, the less respondents have needed to look at innovative ways to improve their voice connections.

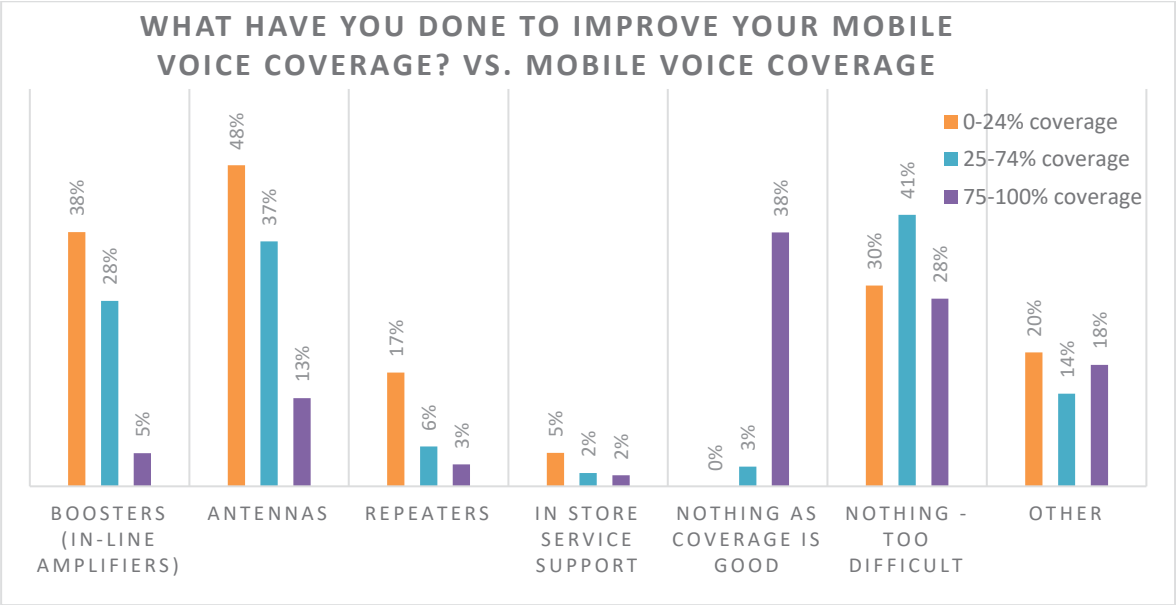


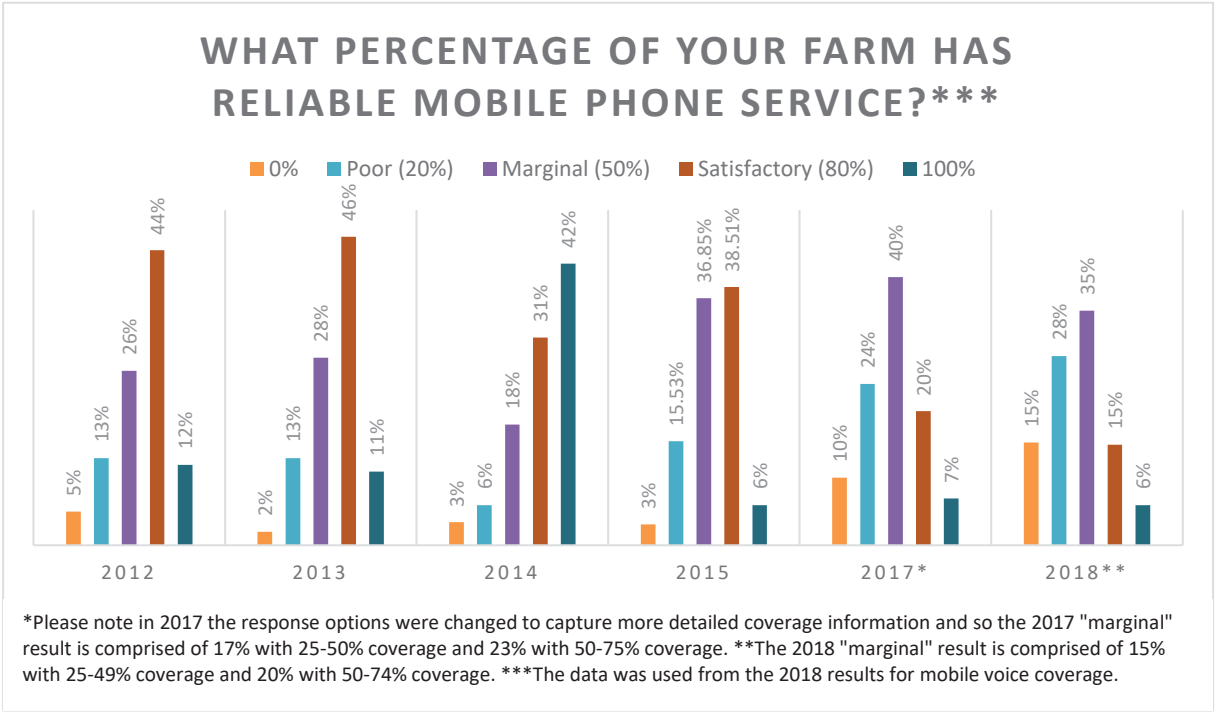
Figure 3. Actions to improve connectivity

Respondents have provided insights into the cost of technologies to improve voice coverage, with one spending over $20,000 on vehicle kits and boosters at their home to improve their mobile voice services. Others have created wi-fi networks across their farm to enable wi-fi calls to be made, some have ensured they use 'blue tick' Telstra mobiles, whilst others have phone services with different providers, so they can use different mobile networks by switching between sim cards/phones. But there have been other

responses that indicate distance from mobile service (one being 400 kilometres from reception) makes access to mobile services for voice and internet impossible. Service outages and call drop outs, including when there is increased connection from network users, are other examples of issues that occur with mobile voice connectivity.

Minimal improvements to the quality of mobile voice coverage over the past three years have been recognised by respondents. Less than 20 per cent of respondents have reported improved voice service. Respondents with 75 – 100 per cent voice coverage across their farms have not noticed any change to the quality of their voice service, while 47 per cent of respondents with 0 – 24 per cent voice coverage across their properties have had declining quality of service.

Fifteen percent of respondents had 0percent reliable mobile service and a further 28percent described cover as poor (or less than 20percent of the farm covered). As shown in figure 4, satisfaction with mobile



*Please note in 2017 the response options were changed to capture more detailed coverage information and so the 2017 "marginal" result is comprised of 17% with 25-50% coverage and 23% with 50-75% coverage. **The 2018 "marginal" result is comprised of 15% with 25-49% coverage and 20% with 50-74% coverage. ***The data was used from the 2018 results for mobile voice coverage.

Figure 4. Percent of farm covered by mobile service

service shows a declining trend from 2012-2013 to 2018.

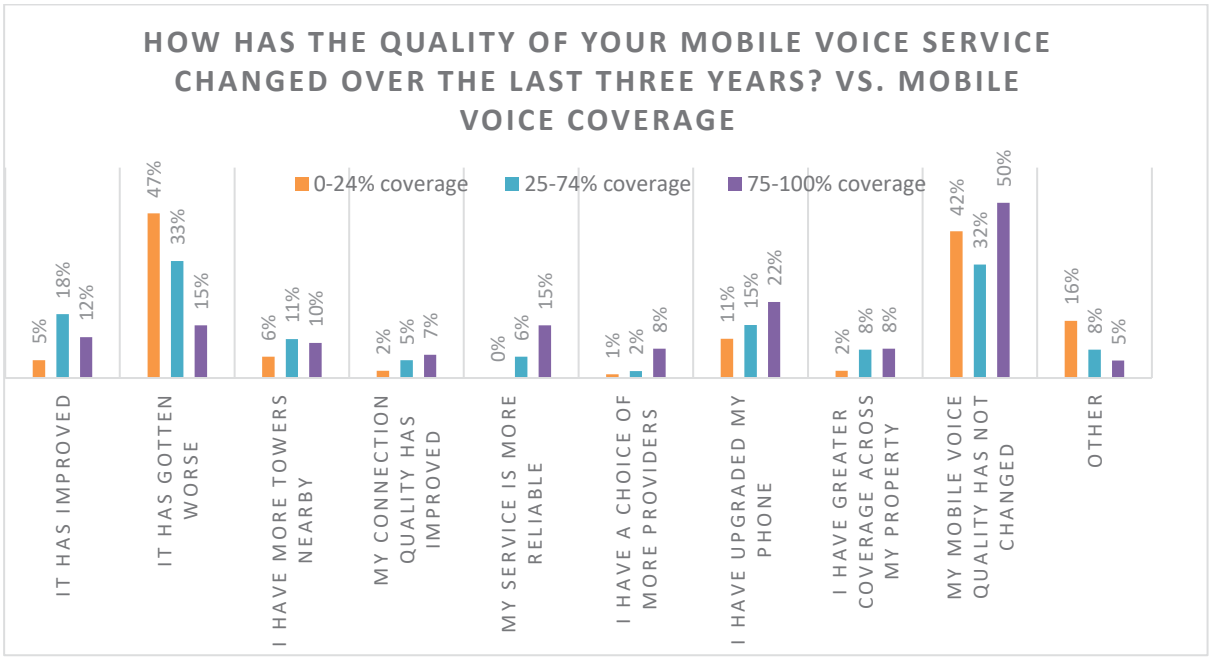


Figure 5. Quality of mobile service over 3 years

In many of these cases, users are often able to make voice calls but lack sufficient mobile internet connectivity to access the internet, use apps. that require connectivity or use wi-fi technologies on their mobiles. Mobile data is predominantly used for business tasks and equally for social, and learning and research activities.

Case study. Cropping farmer near Narrabri, New South Wales

Coverage, cost and speed were identified by this farmer as the problem to using digital technology in their farming business. It also is a barrier to the farmer adopting more digital technology. While there is close to 100percent mobile connectivity for voice and data across the farm, mobile connectivity in the region is not as good. The farmer uses Telstra as a mobile service provider because they are the only operator who provides a service that works well in the area.

Internet connectivity is inconsistent and slow internet speeds are a barrier to being able to implement more digital technology. The farm moved from a Telstra mobile internet service to Sky Muster provided by SkyMesh in the last six months and suffers regular dropouts and the service does not work when it is overcast. The farmer has experienced an improvement in the volume of data they now receive for their internet but believes that the service is expensive for the low amount of data (compared to city counterparts) and slow speed that you receive.

The farmer tried to use technologies such as 4G antennas on the house to improve internet connectivity at an approximate cost of $3000. Recently the farmer removed three antennas from the roof of the house as they were defunct and never really provided improved connectivity. This lack of ability to connect devices, equipment and machinery through the internet to software that enables easier data collection for production decisions is a barrier to the farmer increasing business efficiencies. If 100percent connectivity across the farm was achievable, the farmer would be able to collect more data in real time and use this data to make business and production decisions. Being able to capture data in real time to assist on the spot decision making would be beneficial during harvesting, especially if the technology enabled marketing decisions to be made. This would equate to financial savings in terms of staff costs and time efficiencies in that data would not need to be double handled and they would be able to make

better business decisions, which the farmer estimates would lead to a 1-2percent improvement in business profitability.

Excess data usage charges have been a problem for the farmer. When data caps were exceeded, the automatic data reload saw excessive charges applied to their accounts, doubling their phone bills. There were no warnings issued that allowed the farmer to monitor when data usage was at 50percent, 85percent and near capacity. The farmer's computers can use nearly the entire internet data allowance in one evening to perform system updates. To overcome this, the family's children now have their mobile service provided by Vodafone who provide more data at the same price. However, they also auto-reload data which can be a billing issue. Further billing issues have occurred with the internet and mobile services not being offered by the same provider. This hasn't allowed the farmer to seek better deals by bundling services.

2.2 How are people using broadband in regional communities and what data intensive activities occur in regional areas?

Figure 6 shows the vast majority of respondents use mobile data for business tasks (94 percent) with high use reported for social and learning and research (59 percent and 62 percent respectively).

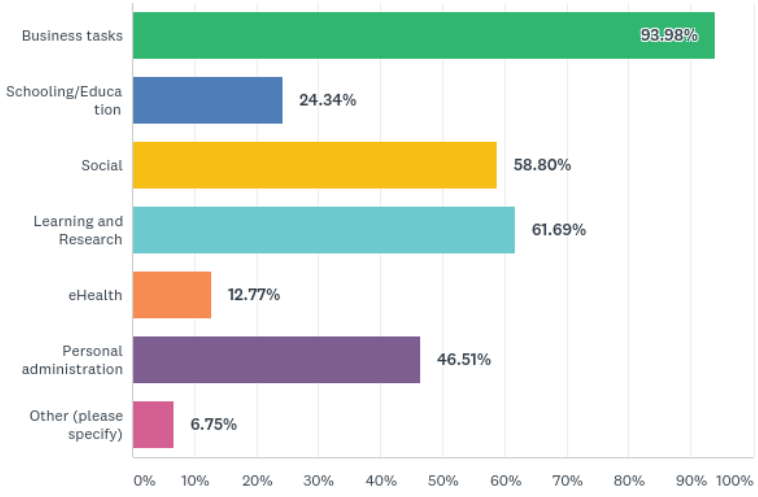


Figure 6. Use of mobile

As shown in figure 7, administrative tasks, whether personal or business, are the main uses of broadband in rural communities. On farms across the country, the use of digital technology for operational and production decision making and data recording for business management occur with a heavy reliance and strong need for internet and mobile connectivity.

Machinery is becoming more technologically advanced with examples of innovation including autosteer and GPS technology. This technology is now used by many of the respondents to the survey. Some tractors and equipment are electronically linked to dealerships and this connection is used to diagnose

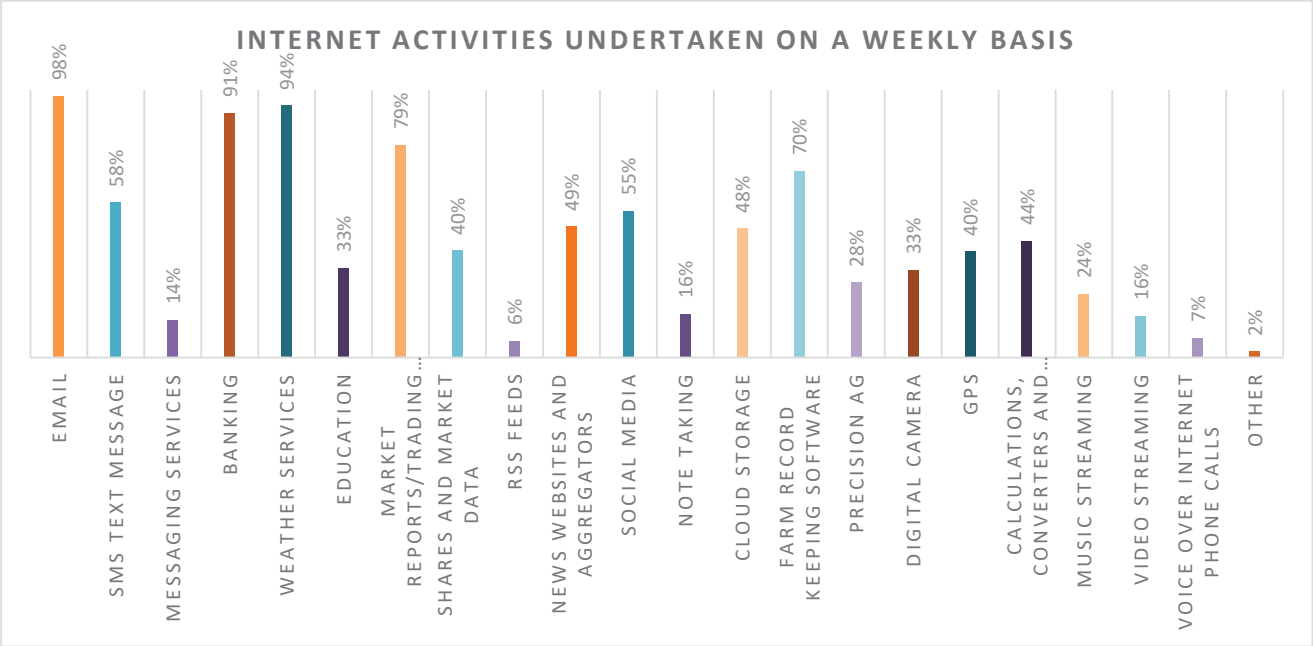


Figure 7.Regular internet activities

problems with machinery. Examples like this show it is imperative that connectivity be established that meets the digital needs of the people who live and work on farms.

With the remoteness of many farms in Australia, families rely on internet connectivity for uses including education, social activities, e-health and banking. Data and speed must be sufficient to download and upload large files, watch videos, stream podcasts and use programmes such as Skype or webcast meetings for electronic face to face interactions. Internet and mobile connectivity is also important for social aspects of living in remote locations, with farmers needing to be able to remain connected to family and friends who live off-farm.

Case study. Mixed cropping and livestock farmer near Wallumbilla, Queensland

With a combined monthly bill of $1200 for five mobiles and internet (they have seven modems), cost has been identified as the main barrier to this farmer utilising more digital technology. The farmer has a mobile internet service provided by Telstra with a recent $300 reduction in their monthly bill and higher data allowance after they were contacted by their Telstra Business Account Manager, who offered a better deal. The farmer estimates they are currently using 200GB of a 250GB data allowance.

The farmer currently uses a significant amount of digital technology in their operation, including observants on bores, a tractor live-linked to phones and iPads, Cell-Fi-Go and car kits to increase mobile coverage. Automatic drafting and walk-over weighing are new technologies the farmer is looking to use in the very near future. To get the full benefit and efficiency from any technology, the farmer says that you need to be able to get connectivity outside of the house across the farm. He estimates that this new technology would bring a saving of $15,000 - $20,000 per year to the business. Having connectivity to tractors that allows external diagnostics and servicing saves the business approximately $1000 per year on call-out fees alone.

In considering new technologies to bring into the business, the farmer identifies where there are issues in the operations that can be overcome by either an existing technology or by working with a developer to design a solution. They have been involved in developing new technology for several years.

Telstra is the current mobile phone and mobile internet provider the farmer uses. The farm has a 4GX tower 15km away and has average mobile coverage with coverage across 70percent of their farm. This increases to 95percent with the use of car kits, and 100percent using Cell-Fi-Go technology. They previously used Sky Muster for their internet service however while the service was reliable in the house, they had to outlay money on technology to try and retransmit internet connectivity around the farm. The farmer says that there is no other infrastructure available to them to try other internet services and that Telstra is the only provider for mobile phones. Currently, their internet service provides good speed and a 20GB/second download/upload rate (which sometimes can be higher for uploads).

However, compared to urban businesses the farmer does not find the cost reasonable. He estimates a reasonable cost would be a few hundred dollars a month, in line with what he believes urban counterparts would pay for the same sort of coverage. The farmer has seen other people look for better deals offered by non-Telstra providers, use these but then revert back to Telstra due to losses in mobile coverage and internet connectivity. He has investigated switching to NBN satellite internet, but as it is not able to be used outside of the house it will not provide any benefit to his business.

Over the last three years, there was an improvement in connectivity when Origin gave $30 million to Telstra to put fibreoptic cable to an existing 3G tower. This reduced congestion on the network, resolving issues such as phone calls and SMS texts not able to be made. Prior to this upgrade being made, the farmer looked at making their own investment in upgrading their ability to access a reliable service. They were quoted $25,000 to have their own link from Roma to beam to a repeater tower and then a tower on their farm. They now have invested in cell-Fi-Go and car kits to improve their connectivity. These investments have cost the farmer an estimated $10,000.

2.3 What data intense activities are occurring in regional Australia?

In 2017, GrainGrowers surveyed growers about their needs from decision support tools and digital technologies and the responses are shown in table 2. The main needs related to managing farm inventories (52 percent), online sales and marketing platform (43 percent) and accurate farm production forecasts (37 percent).

Table 2. Needs from decision support tools and digital technologies

ANSWER CHOICES	RESPONSES	
It would identify all of my key farm risks like OHS, pest, disease, and price and interest rate exposure	22.51%	120
It would quantify my major risks and suggest ways to eliminate or reduce them	14.63%	78
It would model and forecast my farm's current and future profitability	22.14%	118
It would help me select the most profitable enterprise for my business (e.g. livestock/grain/fibre/intensive)	17.82%	95
It would accurately manage my farm inventories (e.g. chemical, fertiliser, fuel, livestock, grain)	51.78%	276
It would help me identify the most effective tax and legal structure for my business	8.82%	47
It would identify sources of capital (debt and equity) and help me access them	5.44%	29
It would be a trusted platform for the online sale and marketing of my farm produce	42.78%	228
It would be a trusted farm succession planning tool	3.75%	20
It would accurately forecast my farm production (crop yield, livestock weight gain, etc)	37.15%	198
It would allow me to participate in farm policy debates on issues relevant to me	7.32%	39
It would do all of the above, all on one application	24.02%	128
I wouldn't use any of the new or existing AgTech tools out there, I don't trust them.	10.32%	55
Total Respondents: 533		

Case study. Cropping and livestock farmer near Mingenew, Western Australia

Digital technology is used by this farmer for their machinery, production planning, financial programmes and entertainment for the family. Having reliable internet and adequate data allowances are a necessity for their business, including for their professional development and video conferencing needs.

When considering new technology, it first needs to be determined if the technology will deliver a benefit to the farm, then whether the connectivity across the farm and the data allowance is sufficient for the technology to be used. The farmer estimates 80 per cent of their farm has 2-5 bar signal on their mobiles, the remaining 20 per cent has 1 bar (low). Mobile service is provided by Telstra, which is the only service provider available. The family has considered installing a booster in the house to increase signal strength.

Their internet is provided by Activ8 and they have a SkyMuster connection. They are happy with the service, however drop outs have seen the farmer miss out on winning an online auction to purchase a tractor and other machinery. Delays to work activities, lost time to get operations and supplies are examples this farmer provided of costs/losses incurred by their business due to poor telecommunications.

Case study. Cropping and livestock farmer in the Kojonup and Woodanilling shires of Western Australia

Connectivity and coverage are important for accessing services online which are used in the business and by the family. They use digital technology for business administration (e.g. payroll, taxation) and for their children's education. The farmer works part-time off-farm and uses the internet to collaborate with her colleagues. Uses for this include ZOOM web meetings, however these e-conferences use their data allowance very quickly. Other technology is used for tractor guidance, MobTracker for sheep monitoring and analysis, AgWorld for paddock recording and AgriMaster. When thinking about technology to add on farm, the farmer considers the ease of use and customer support if something goes wrong.

The farmer uses Telstra Wi-Fi for their internet service as they believe NBN is not available yet. When questioned if they had considered using SkyMuster, they asked that because they aren't remote, is the service for them? Their mobile provider is Telstra and they experience zero to poor service quality around South Kojonup, and a constant 1 to 2 bar signal strength on their Woodanilling property. They have a workers' house less than five kilometres from a mobile tower yet struggle for phone signal at the house.

The farmer is aware of solutions such as extenders to improve mobile reception but hasn't moved to try these technologies. There is currently a proposal by CBH to use railway reserves and elevator towers at their grain bins to provide high speed fibre optic connections. Many bins are at remote locations so this will help to provide mobile service in some black spot areas. provide mobile and data coverage through their bins and they are interested in seeing what eventuates from this proposal.

The farmer believes they pay too much for the service, especially compared to people living in the city and the service that you receive in metropolitan areas – it must be more equitable. Telstra is their provider for mobile and internet as they are generally reliable and the only provider. They would change provider for a better data package and reliability, if this was available.

2.4 How can regional businesses better utilise digital technologies to maximise economic benefits?

Farmers were asked what emerging digital technologies would most benefit their businesses. Responses related more to the need to have connectivity and mobile voice and connectivity service to enable emerging technologies to be used. Faster internet speeds, better data allowances and improved mobile coverage were common responses. Responses that did give examples of emerging technologies, listed remote sensing, precision agriculture technologies, water point monitoring and the use of drones. In 2017, GrainGrowers member telecommunications survey found:

- Farmers use or want to use a wide range of digital decision support and technology tools in their business
- 52percent would use these to manage farm inventories (chemicals, fertiliser, fuel, livestock, grain) and 43percent for online sales and marketing.
- Technologies currently used on farm include GPS Auto Steer (79percent), harvest yield maps (46percent) & satellite imagery (35percent)
- Main limitations for adopting new technology were cost (55percent), internet connectivity (52percent) and accessibility (36percent).

2.5 What skills do people need to get the most from their digital technologies, and where can they learn these skills?

As shown in figure 8, 88 per cent of respondents built their digital technology knowledge and skills learning by experience, and by learning from peers, friends and family (81 percent). Only about a third of respondents attended workshops (34percent) or used online resources (34percent) as a primary way to build skills.

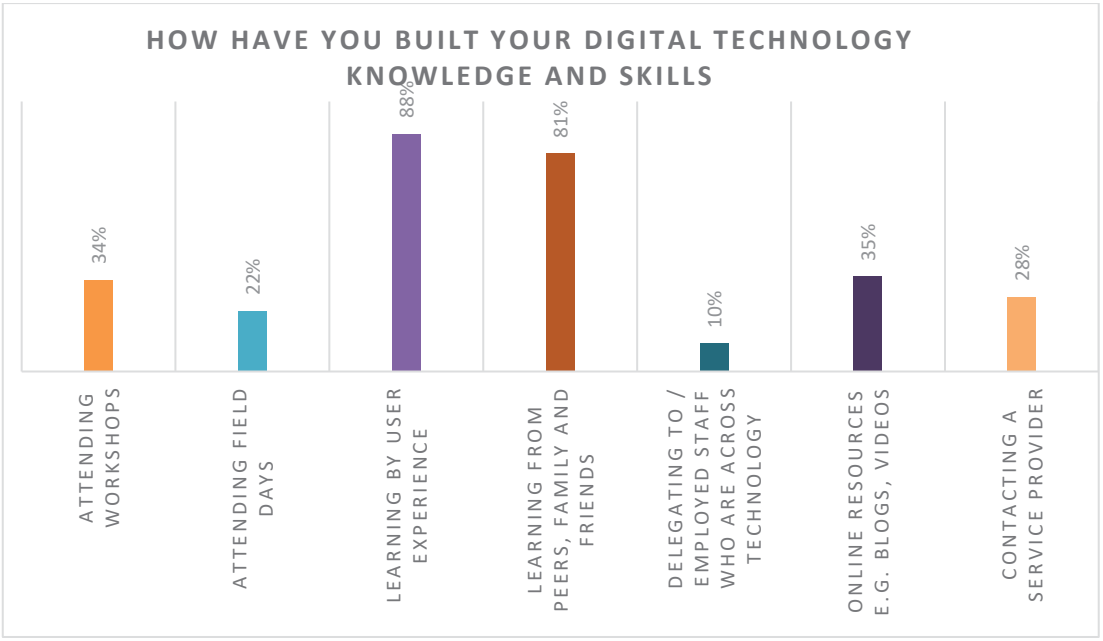


Figure 8. Building knowledge and skills

Respondents rated their own digital literacy as 55/100 and the frequency, however, as shown in figure 9, there was a broad range of literacy ratings.

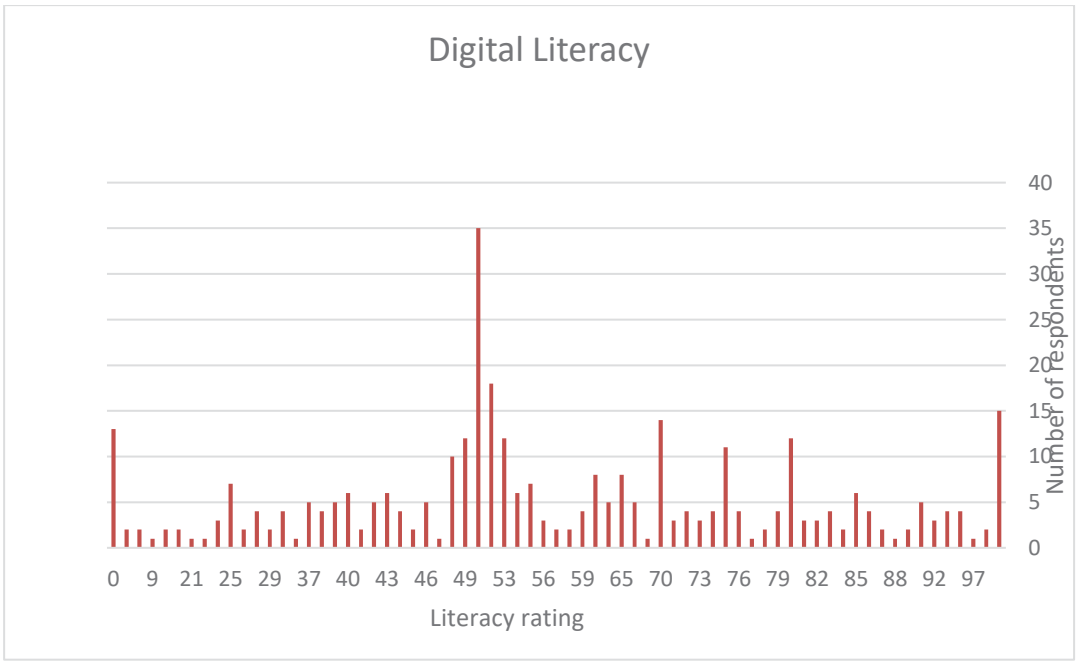


Figure 9. Digital literacy self rating

Interestingly the higher the digital literacy, the more likely they were to identify barriers to adoption of technology compared to respondents with lower literacy.

2.6 Have you had ongoing issues affecting your satellite or fixed wireless broadband service? If so how have you overcome these issues?

Respondents were asked whether they had experienced ongoing issues with their landline, mobile or internet service in the last 12 months with responses shown in figure 10. Resoundingly, 80 per cent of respondents reported problems, mainly with slow internet speed (54percent) and connection problems (51percent). Importantly close to a third reporting complete loss of landline service (28percent) which is alarming given the high reliance of landlines in rural areas. “Other’ issues included frequent service

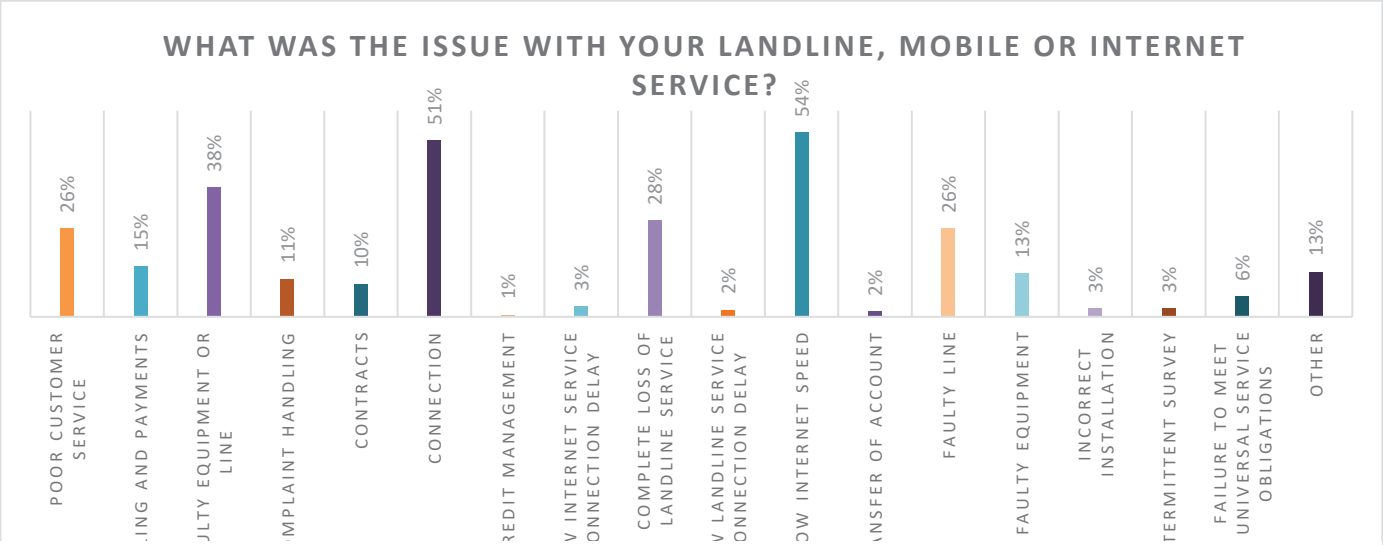


Figure 10. Issues with service

drop outs and network outages, and providers not following up on problems and complaints.

Only 61 per cent of people who had issues with their landline, mobile or internet reported that the problem was resolved. Of these,
42 per cent had their mobile, internet or landline problems resolved within the week they occur (see figure 11). However, close to 25 per cent had to wait a month for resolution (24percent), and almost 20 per cent have had to wait up to six months for a solution to their issue.

As shown in figure 12, the majority of respondents called the service provider directly to resolve issues with their services, followed by asking friends and family for support or internet searches for solutions. 23 per cent of respondents said they have done nothing to solve issues as it is too hard.

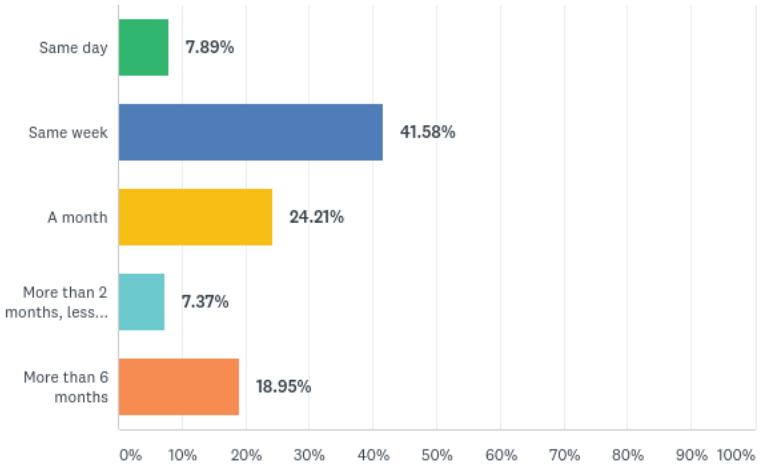


Figure 11. Time to resolve service issues

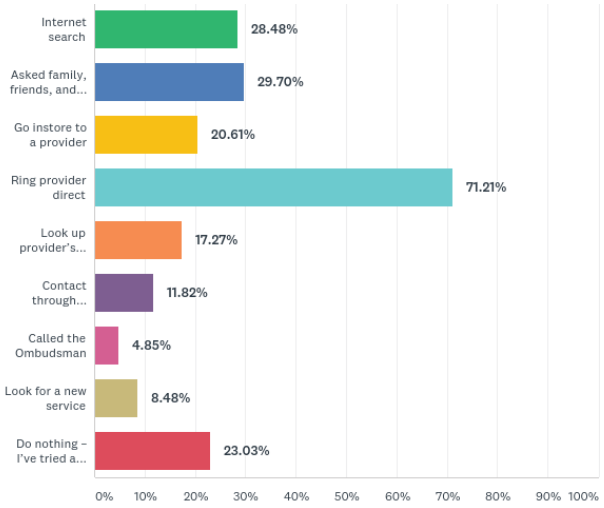


Figure 12. Method used to resolve issue

2.7 If you are in an area with access to the SkyMuster satellite service and you have not taken it up, why not?

There remains a significant issue with awareness about the availability of Sky Muster. Of the 53 percent not connected to the nbn, close to half (46 percent) said it was because the service was not available in their area as shown in figure 13.

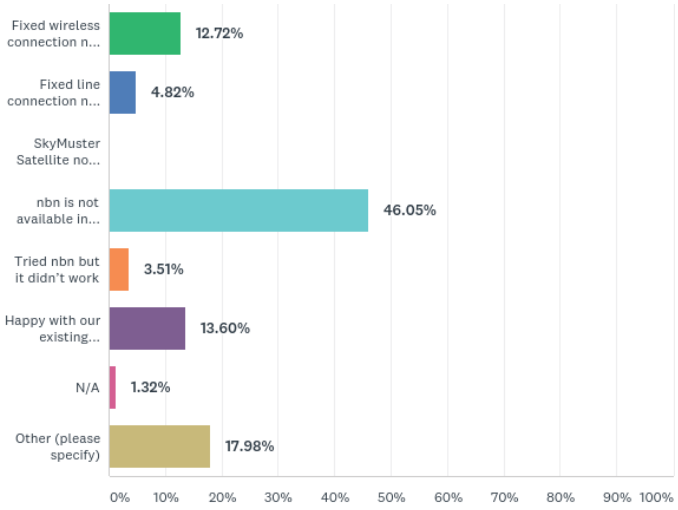
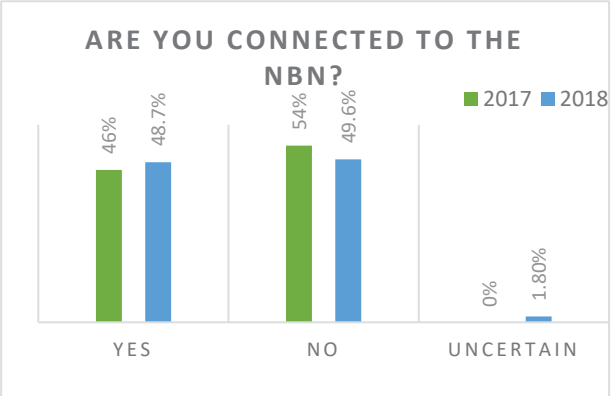
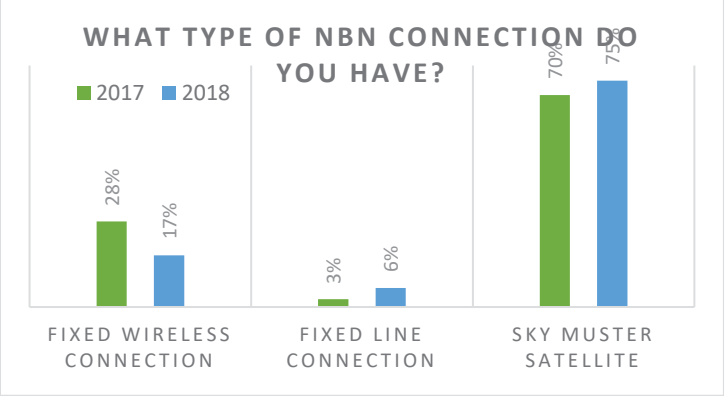


Figure 13. Reasons for not connecting to nbn

People connected to the NBN are more satisfied with their service than those connected to non-NBN internet. However, comparison of results with GrainGrowers' member telecommunications survey (2017) show that NBN customers' satisfaction with the service has fallen over the period between surveys.





NBN quality has remained either the same or has improved for most respondents (38 per cent and 31 per cent respectively) whereas for non-NBN internet customers, 44 per cent report their internet service has stayed the same over the past three years. A higher percentage (34 per cent) report their internet connection has gotten worse than NBN customers who have reported their internet connection has worsened (15 per cent).

Service drop outs and unreliable connections, slow service and no coverage/ability to connect to the NBN have been identified as issues with NBN services. Lagging service and insufficient data are other reported problems. For non-NBN internet, cost, insufficient data and slow speed are problems raised with the service.

Sky Muster is the most common type of broadband connection respondents to the survey have, however from comments it is evident that the Sky Muster service is often unreliable and suffers frequent dropouts. Low speeds and data allowances are also problems identified as issues with Sky Muster connections.

The survey asked respondents who had access to Sky Muster, but did not use it, why this was the case. One farmer in their case study mentioned that he has not used Sky Muster because he has heard that the upload speed is poor on the service. Another farmer reported that he previously used Sky Muster, but the service was reliable only in the house and he would have had to outlay more money on technology to try and transmit the connectivity around the farm. Instead he changed his internet service to 4GX mobile internet.

As shown in figure 14 most farmers with an NBN connection have not noticed improvements over the past three years to their service (38 per cent) but positively, 31 per cent of people connected to the NBN have noticed improvements to their internet. Reliability and speed have increased compared to those who do not have an NBN connection, and only 15 per cent of NBN connected farmers report that their internet has gotten worse, compared to the 34 per cent who are not connected to an NBN internet service. 'Other' responses provided by NBN connected farmers include that their service regularly drops out, their service is unreliable or their connection lags.

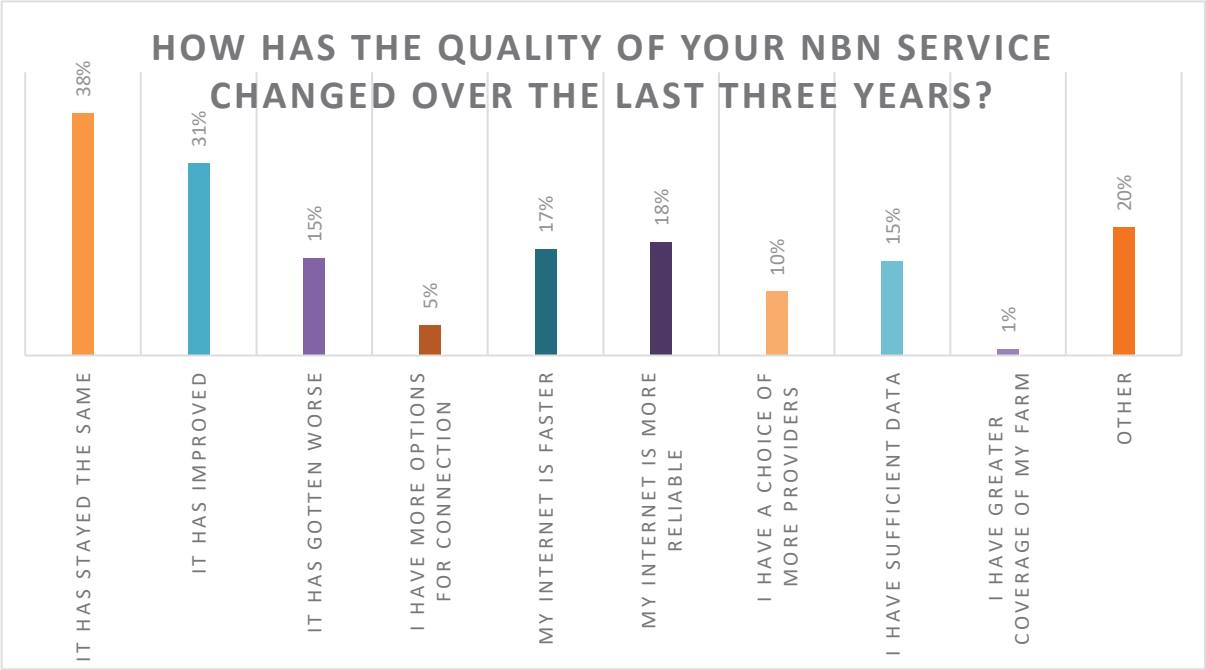


Figure 14. Changes in the quality of service

2.8 What broadband services are people using other than the NBN?

More than half respondents to the survey were not connected to the NBN (53 per cent) and of these, most have a 3G mobile internet connection (see figure 15). The main stated reason for not being connected to the NBN is that the service is unavailable in their area, followed by satisfaction with their existing connections and therefore saw no reason to change. Respondents not connected to the NBN reside mainly in New South Wales, followed by Queensland then Victoria.

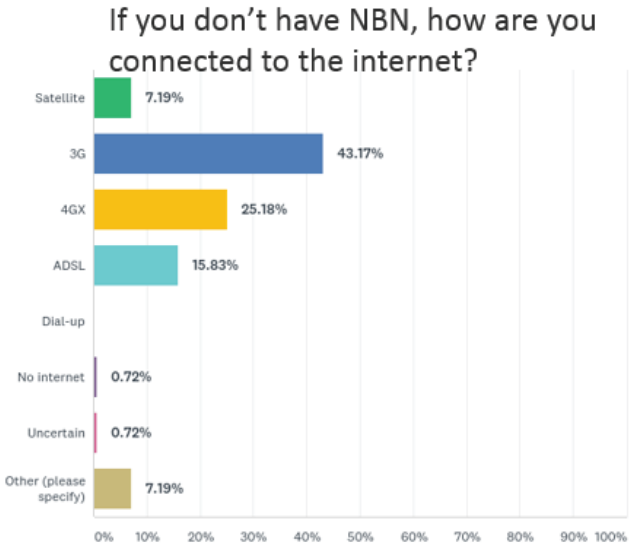


Figure 15

There has not been a positive change to the quality of non-NBN internet service over the past three years for most respondents, however 34 per cent report that their service got worse. Many would like the ability to connect to the NBN and this is evidenced by responses to 'Other' when asked how internet service has changed. Figure 16 showed that close to half the respondents (44 percent) had experienced no change in quality of service over the last three years, but over a third (34 percent) said it had got worse. Interestingly "Other" responses reflected a desire to connect to the nbn and again this emphasizes an ongoing lack of awareness in rural areas about the extent of availability of the nbn now.

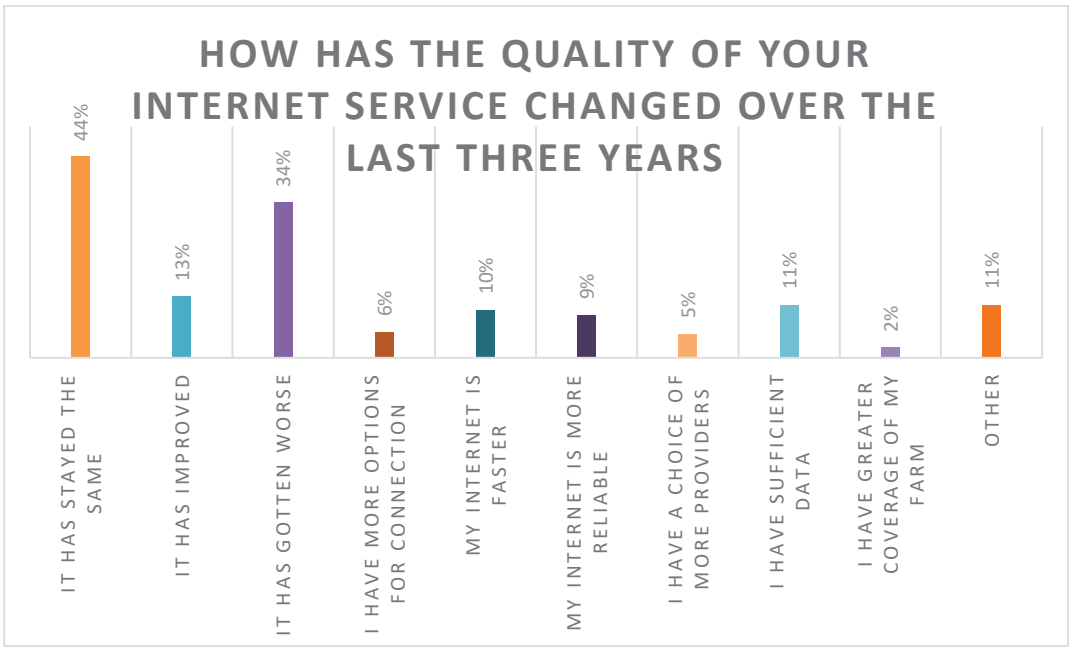
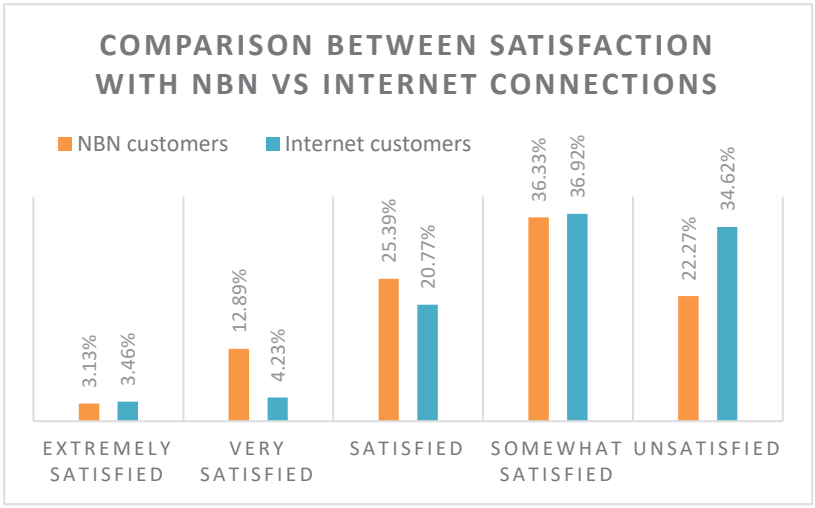
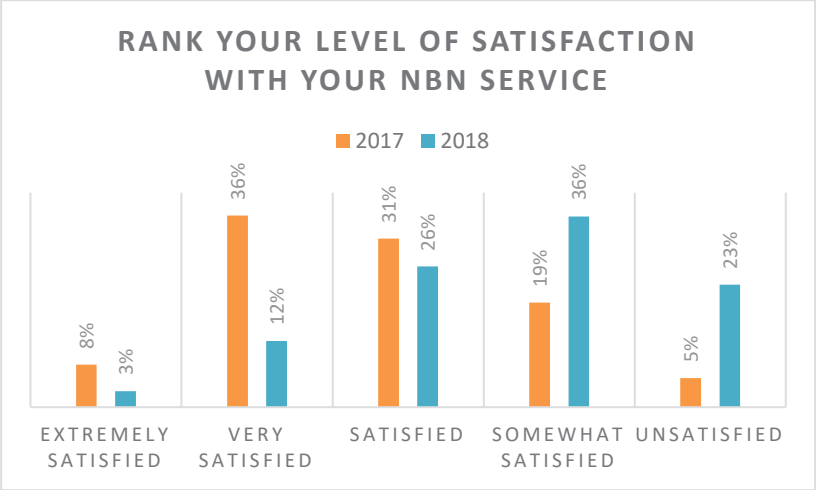


Figure 16





10. What economic or social indicators could be used to guide investment to further improve mobile coverage?

The reliance on landline telephones, figure 17, (even when a mobile phone or internet connection is available) can be used to guide investment to improve mobile coverage. The reliance on landline telephones can partly be attributed to the low levels of mobile voice coverage experienced across respondents' farms (see figure 18). Respondents with 0-49 per cent of their farm receiving mobile voice coverage accounted for 51 per cent of total survey responses, with the majority residing in New South Wales and Queensland (see figure 20). Landlines are predominantly used for business activities and personal/social calls, with the use of landlines for internet connections the lowest use identified by respondents (see figure 19).

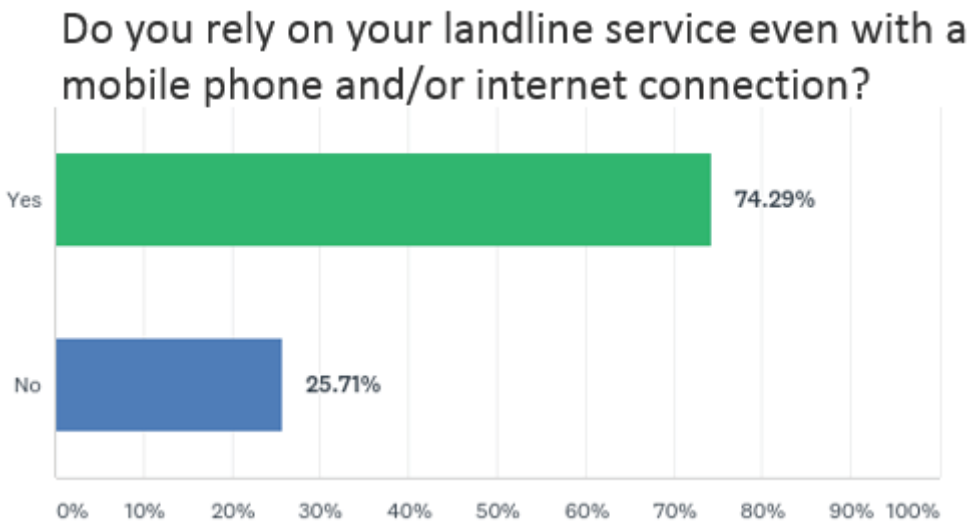


Figure 17

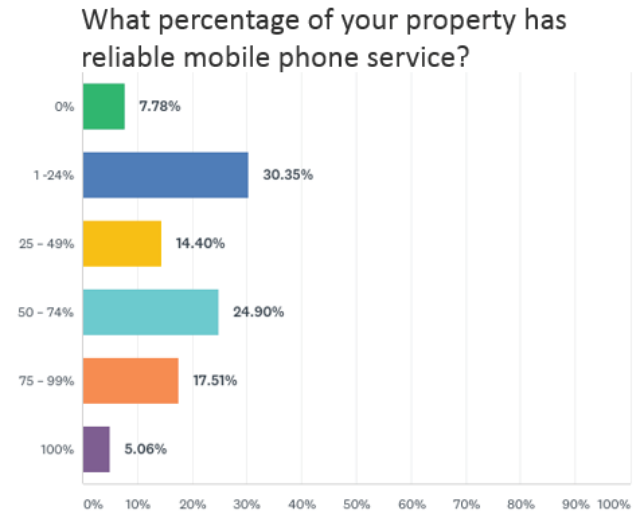


Figure 18

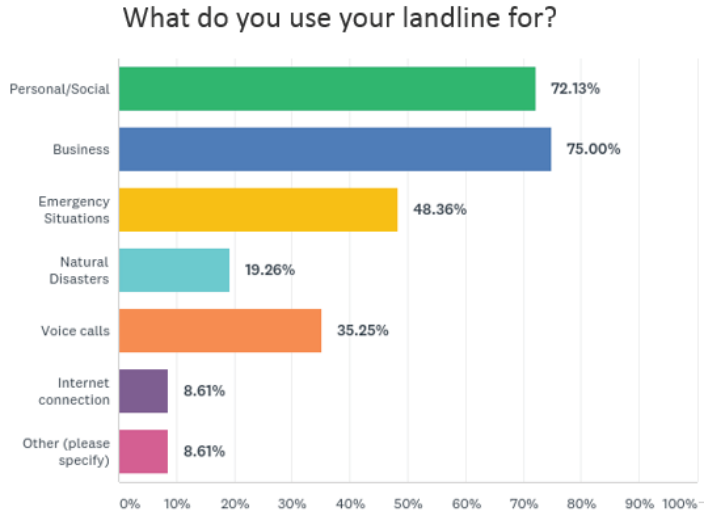


Figure 19

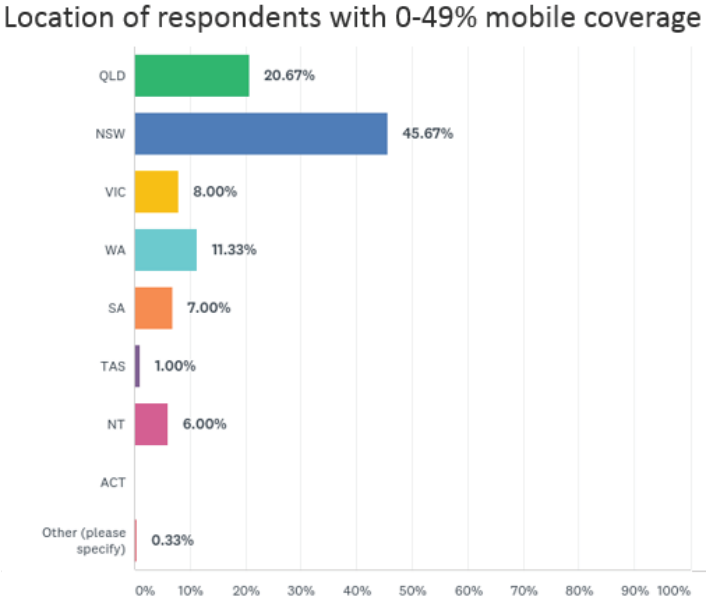


Figure 20

2.9 How can more competition be encouraged in the provision of broadband services in regional Australia?

In comments provided to the survey and in the case studies, many farmers referenced that they believe the cost of their telecommunications services are expensive for what they receive. The majority of respondents' monthly spend by telecommunication services was analysed, with bundle landline, phone and mobile customers in rural areas spending $400 or more per month as shown in figure 21 and 22.

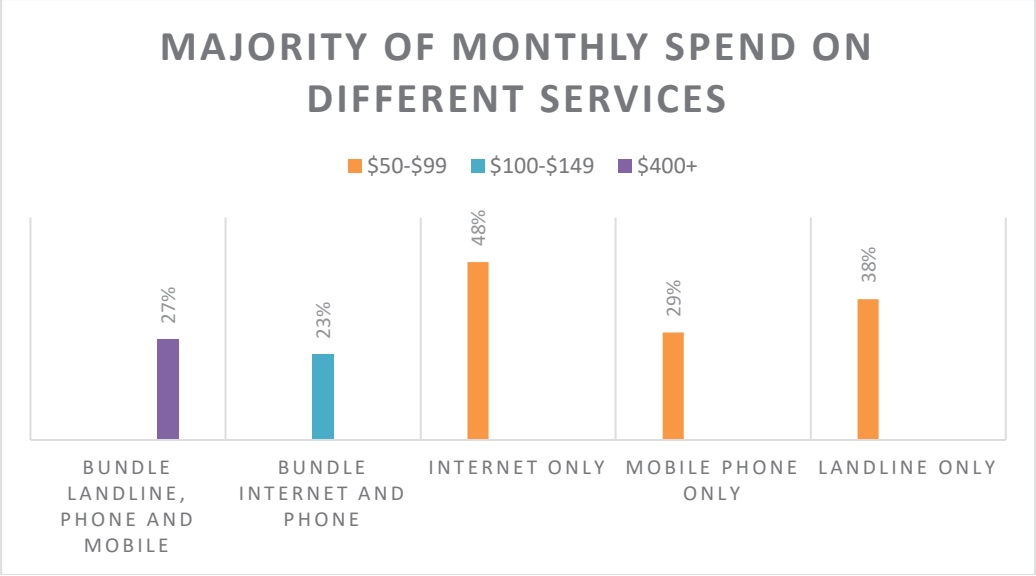


Figure 21

The graph below indicates the monthly spend by service for all responses.

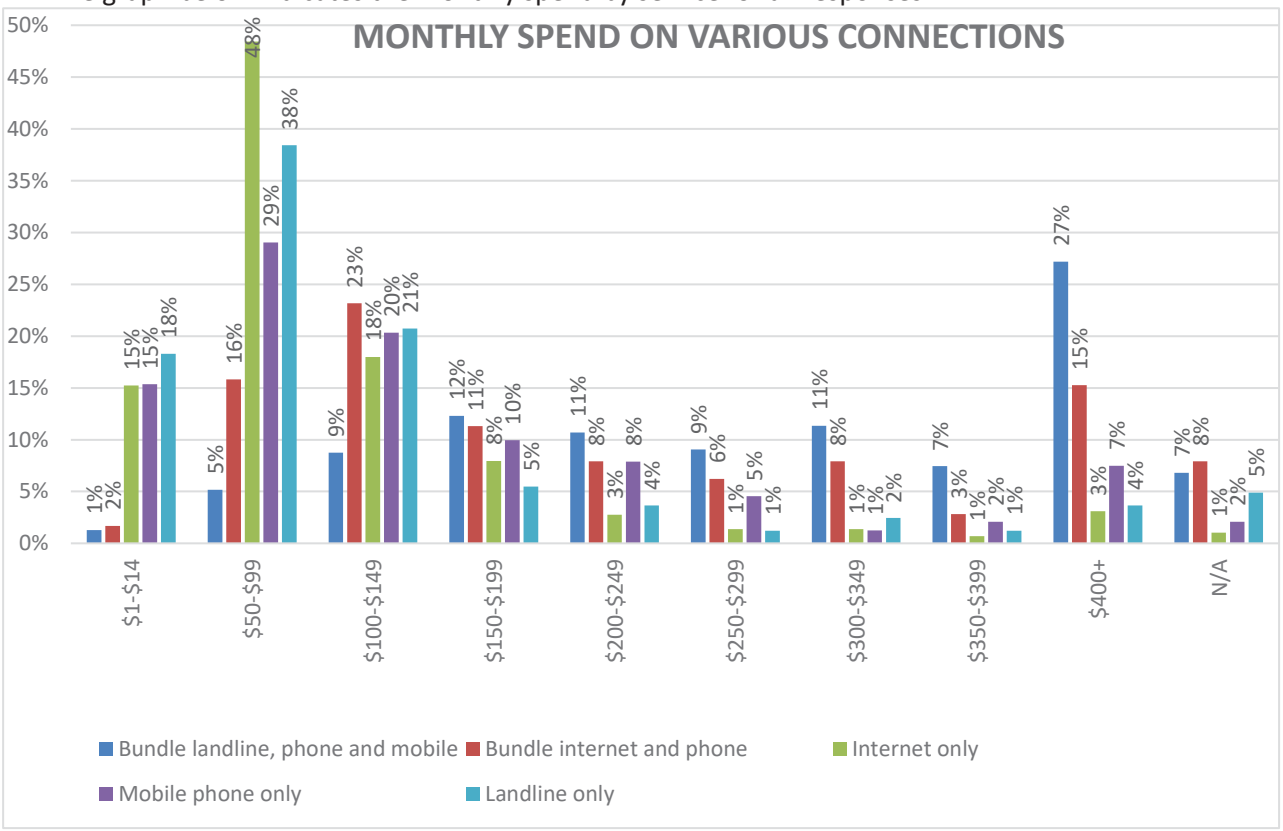


Figure 22

Disparity of costs for telecommunications services between regional and metropolitan areas

A constant theme from survey respondents and in case studies (see appendix 2) was growers feel they pay more in regional areas than people living in metropolitan areas for the same or similar telecommunications services.

Increased competition will benefit regional telecommunications consumers. The Centre for International Economics (CIE) prepared a report[2] in 2015 for Vodafone Hutchinson Australia described a more competitive telecommunications market as an outcome of:

- Removing impediments to competition – e.g. subsidies do not advantage one operator, spectrum is available in regional areas for mobile carriers and fixed line access regulations are consistently applied;
- Where competition is unlikely to occur, consider arrangements for access to drive competition 'as deeply into a market as is feasible' – e.g. co-location of mobile facilities to provide consumers with coverage and a choice for mobile services, particularly in regional areas;
- Create conditions that reward competition – e.g. provide information to consumers so they can understand the differences in the quality and prices of products available to them.

The CIE report identified disparity in spectrum holdings in regional Australia as one of five main impediments to market price premiums being observed in telecommunications markets:

- The disparity in spectrum holdings between operators and the lower availability of spectrum in regional areas is a barrier to competition;
- Releasing more spectrum in regional areas will improve network quality for mobile communications, it the licence holders uses this spectrum; and
- The high cost of spectrum creates a barrier to entry to the mobile market.

Ownership and access to facilities is another impediment highlighted by the report. The infrequency of co-located mobile facilities in regional areas is uncommon, with Telstra owning most of the mobile base stations. CIE state that up to 3.5 million regional consumers could derive benefit from improved access to competitive mobile telecommunications services. In 2015, Telstra was the only available provider for 46 per cent of fixed line services in regional areas and the price premium (depending on the amount of contracted services) was between $450 and $650 per household.

To improve telecommunications competition in regional Australia, GrainGrowers:

- Supports continuation of the Mobile Blackspots Programme, in particular to deliver services to regional areas that have unreliable or no mobile coverage;
- Encourages NBN infrastructure to be used to improve mobile services in regional areas;
- That telecommunications infrastructure be built in conjunction with other major infrastructure works (such as road, rail, electricity).

[2] The Centre for International Economics, 2015, *Final Report: Australia's telecommunications market structure: The price premium paid by consumers*, The Centre for International Economics, Canberra.

Regional Telecommunications Review 2018

August 05, 2018

Note: This is a subset of the NFF Telecommunications Survey using only grain respondents.

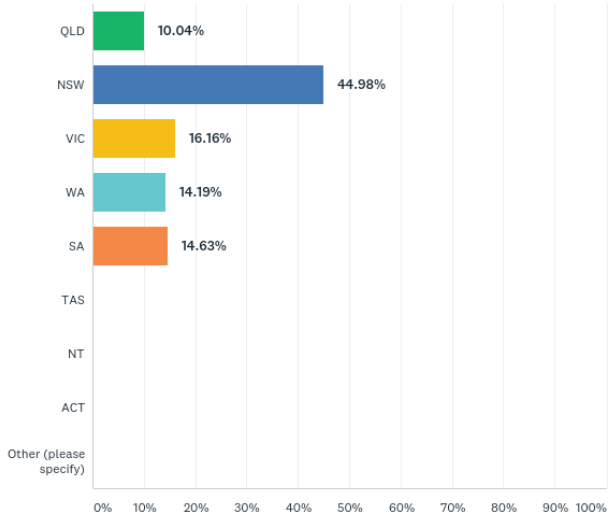
461

Total Responses

Complete Responses: 404

Q1: Which state do you live in? Note: Select one only.

Answered: 458 Skipped: 3



Q1: Which state do you live in? Note: Select one only.

Answered: 458 Skipped: 3

ANSWER CHOICES	RESPONSES	
QLD	10.04%	46
NSW	44.98%	206
VIC	16.16%	74
WA	14.19%	65
SA	14.63%	67
TAS	0.00%	0
NT	0.00%	0
ACT	0.00%	0
Other (please specify)	0.00%	0
TOTAL		458

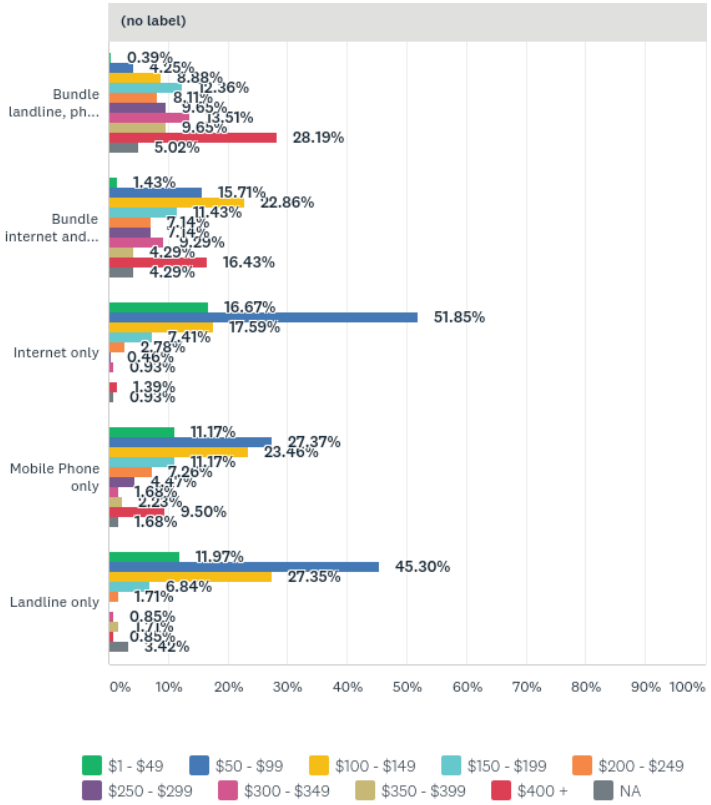
Q3: Which of the below best describes you?

Answered: 460 Skipped: 1

ANSWER CHOICES	RESPONSES	
Farmer	99.78%	459
Farm advisor/consultant	0.00%	0
Rural Business	0.00%	0
Rural Resident	0.00%	0
Other (please specify)	0.22%	1
TOTAL		460

Q5: On a monthly basis, how much do you spend on your various connections? Connection types include:

Answered: 433 Skipped: 28



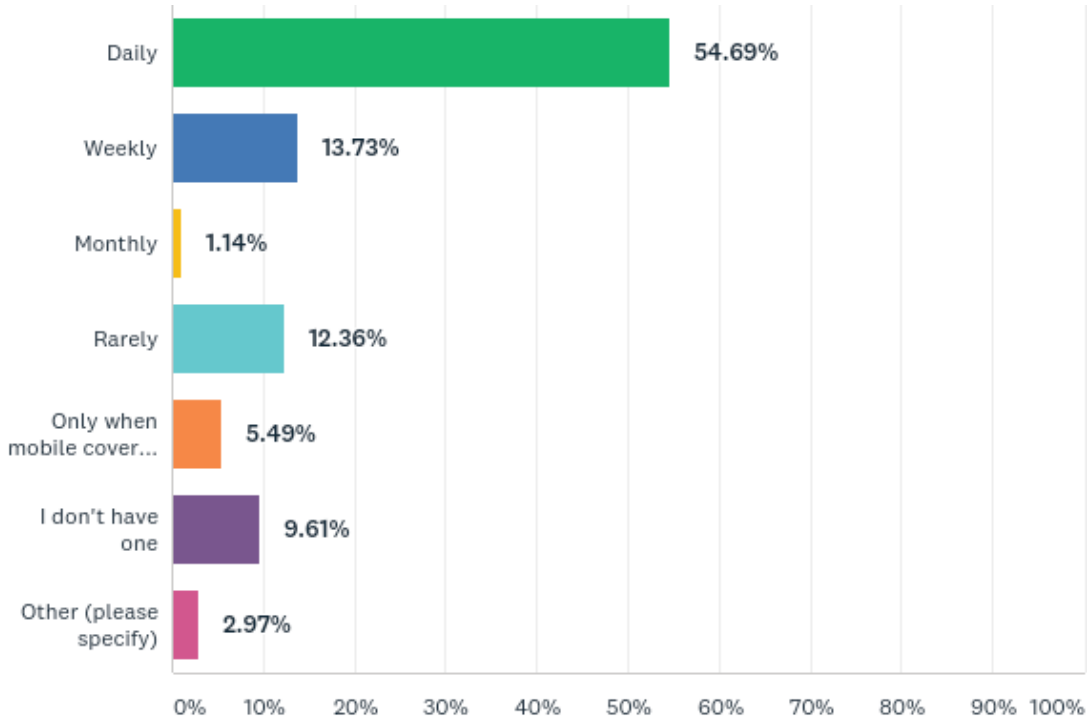
Q5: On a monthly basis, how much do you spend on your various connections? Connection types include:

Answered: 433 Skipped: 28

(no label)	$1 - $49	$50 - $99	$100 - $149	$150 - $199	$200 - $249	$250 - $299	$300 - $349	$350 - $399	$400 +	NA	TOTAL
Bundle landline, phone and mobile	0.39% 1	4.25% 11	8.88% 23	12.36% 32	8.11% 21	9.65% 25	13.51% 35	9.65% 25	28.19% 73	5.02% 13	259
Bundle internet and phone	1.43% 2	15.71% 22	22.86% 32	11.43% 16	7.14% 10	7.14% 10	9.29% 13	4.29% 6	16.43% 23	4.29% 6	140
Internet only	16.67% 36	51.85% 112	17.59% 38	7.41% 16	2.78% 6	0.46% 1	0.93% 2	0.00% 0	1.39% 3	0.93% 2	216
Mobile Phone only	11.17% 20	27.37% 49	23.46% 42	11.17% 20	7.26% 13	4.47% 8	1.68% 3	2.23% 4	9.50% 17	1.68% 3	179
Landline only	11.97% 14	45.30% 53	27.35% 32	6.84% 8	1.71% 2	0.00% 0	0.85% 1	1.71% 2	0.85% 1	3.42% 4	117

Q6: How often do you use your landline service?

Answered: 437 Skipped: 24



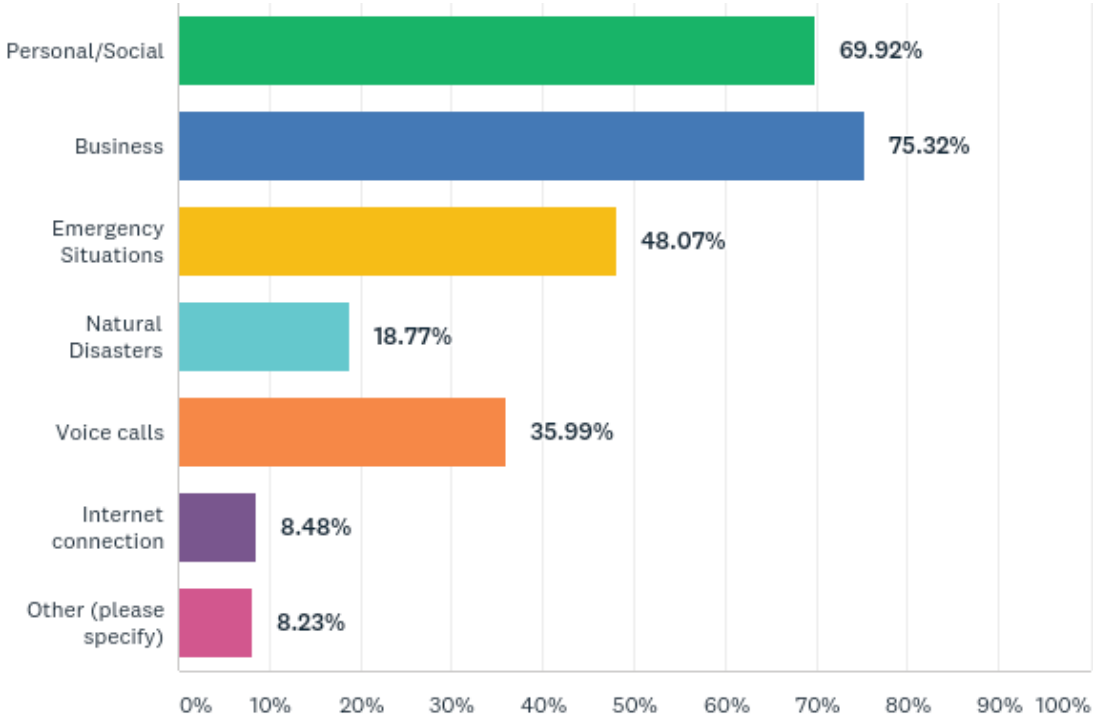
Q6: How often do you use your landline service?

Answered: 437 Skipped: 24

ANSWER CHOICES	RESPONSES	
Daily	54.69%	239
Weekly	13.73%	60
Monthly	1.14%	5
Rarely	12.36%	54
Only when mobile coverage is down	5.49%	24
I don't have one	9.61%	42
Other (please specify)	2.97%	13
TOTAL		437

Q7: What do you use your landline for?

Answered: 389 Skipped: 72



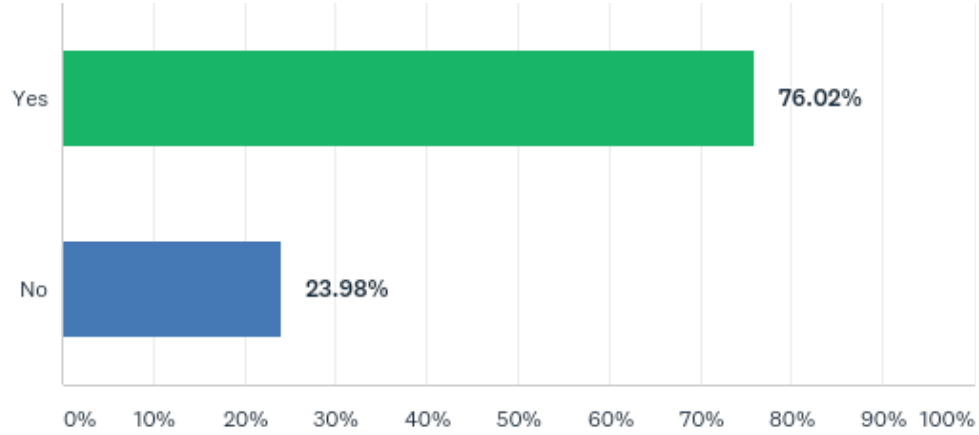
Q7: What do you use your landline for?

Answered: 389 Skipped: 72

ANSWER CHOICES	RESPONSES	
Personal/Social	69.92%	272
Business	75.32%	293
Emergency Situations	48.07%	187
Natural Disasters	18.77%	73
Voice calls	35.99%	140
Internet connection	8.48%	33
Other (please specify)	8.23%	32
Total Respondents: 389		

Q8: Do you rely on your landline service even with a mobile phone and/or internet connection?

Answered: 392 Skipped: 69



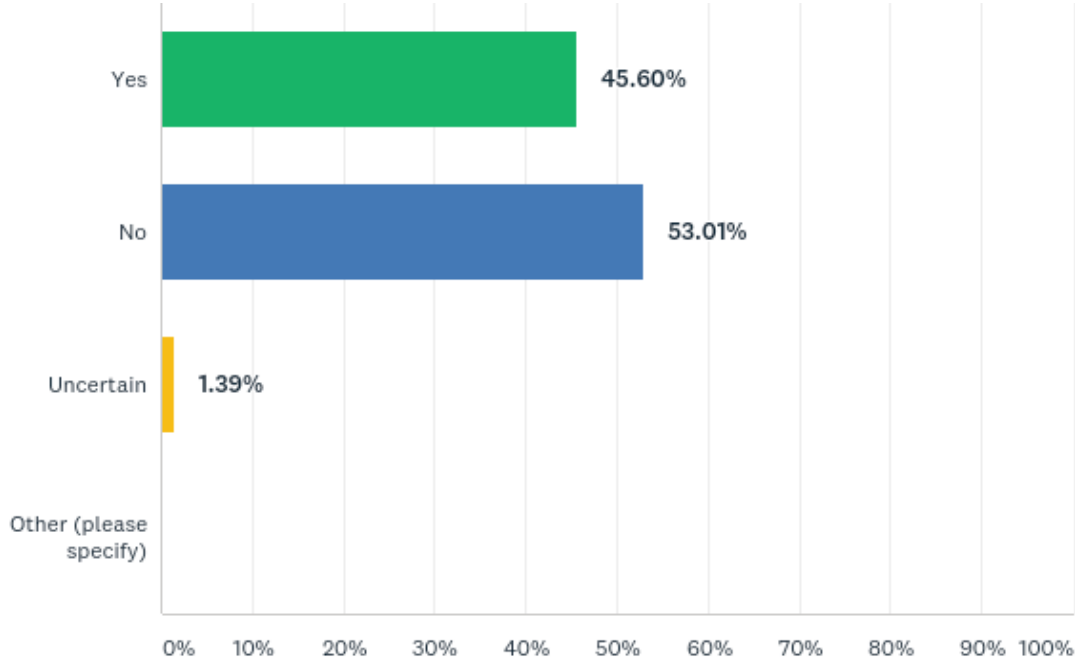
Q8: Do you rely on your landline service even with a mobile phone and/or internet connection?

Answered: 392 Skipped: 69

ANSWER CHOICES	RESPONSES	
Yes	76.02%	298
No	23.98%	94
TOTAL		392

Q10: Are you connected to the nbn?

Answered: 432 Skipped: 29



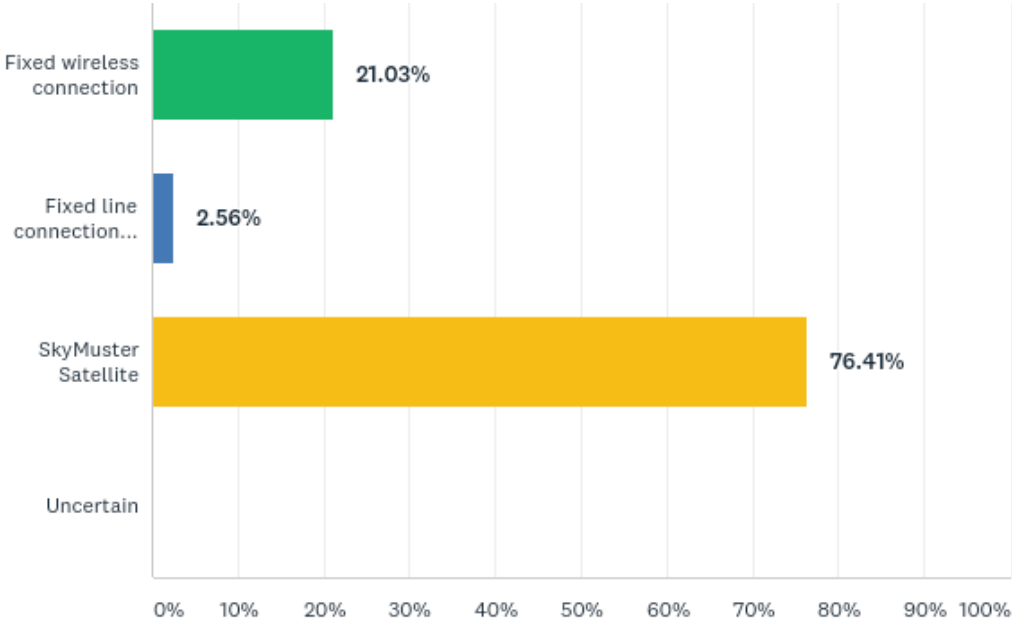
Q10: Are you connected to the nbn?

Answered: 432 Skipped: 29

ANSWER CHOICES	RESPONSES	
Yes	45.60%	197
No	53.01%	229
Uncertain	1.39%	6
Other (please specify)	0.00%	0
TOTAL		432

Q11: What type of nbn connection do you have?

Answered: 195 Skipped: 266



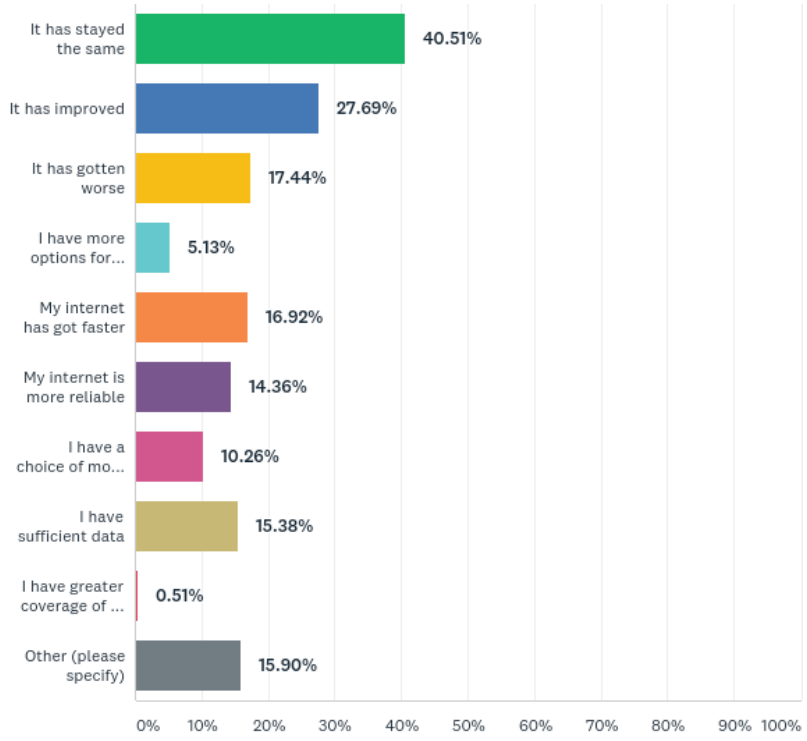
Q11: What type of nbn connection do you have?

Answered: 195 Skipped: 266

ANSWER CHOICES	RESPONSES	
Fixed wireless connection	21.03%	41
Fixed line connection (physical line runs to premises)	2.56%	5
SkyMuster Satellite	76.41%	149
Uncertain	0.00%	0
TOTAL		195

Q12: How has the quality of your nbn service changed over the last three years? Please select all that apply.

Answered: 195 Skipped: 266



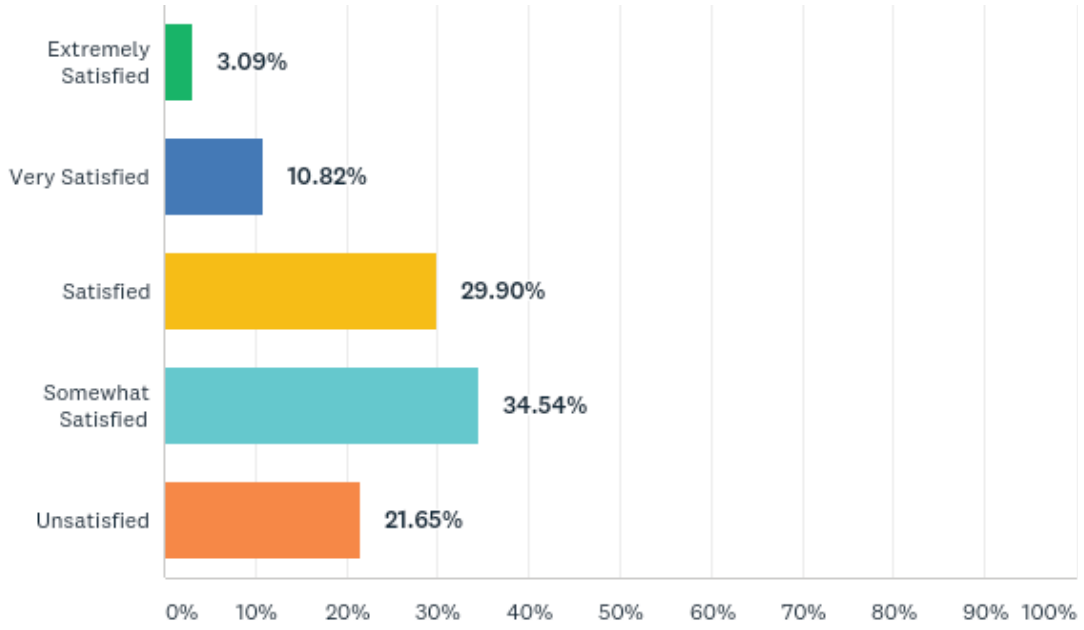
Q12: How has the quality of your nbn service changed over the last three years? Please select all that apply.

Answered: 195 Skipped: 266

ANSWER CHOICES	RESPONSES	
It has stayed the same	40.51%	79
It has improved	27.69%	54
It has gotten worse	17.44%	34
I have more options for connection	5.13%	10
My internet has got faster	16.92%	33
My internet is more reliable	14.36%	28
I have a choice of more providers	10.26%	20
I have sufficient data	15.38%	30
I have greater coverage of my farm	0.51%	1
Other (please specify)	15.90%	31
Total Respondents: 195		

Q13: Please describe how you feel about your nbn service

Answered: 194 Skipped: 267



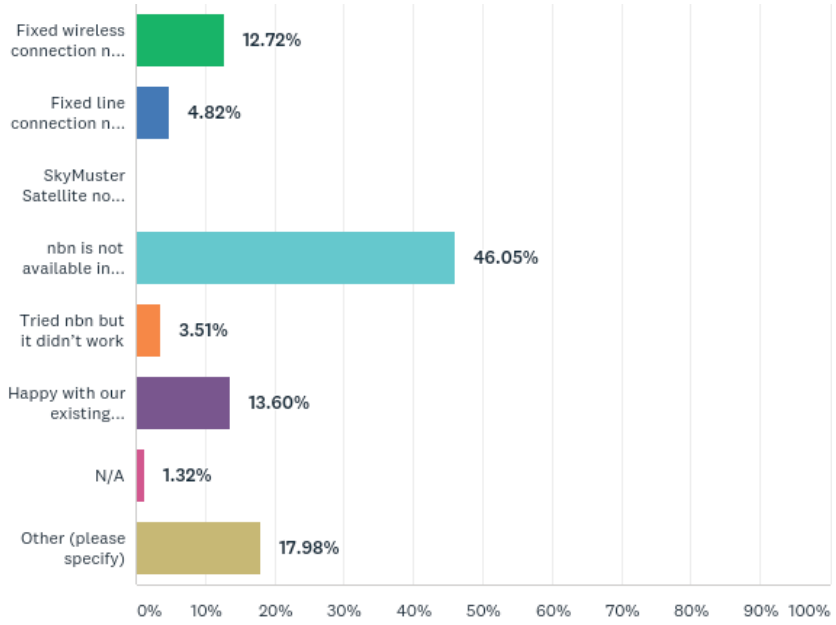
Q13: Please describe how you feel about your nbn service

Answered: 194 Skipped: 267

ANSWER CHOICES	RESPONSES	
Extremely Satisfied	3.09%	6
Very Satisfied	10.82%	21
Satisfied	29.90%	58
Somewhat Satisfied	34.54%	67
Unsatisfied	21.65%	42
TOTAL		194

Q14: Why are you not connected to the nbn?

Answered: 228 Skipped: 233



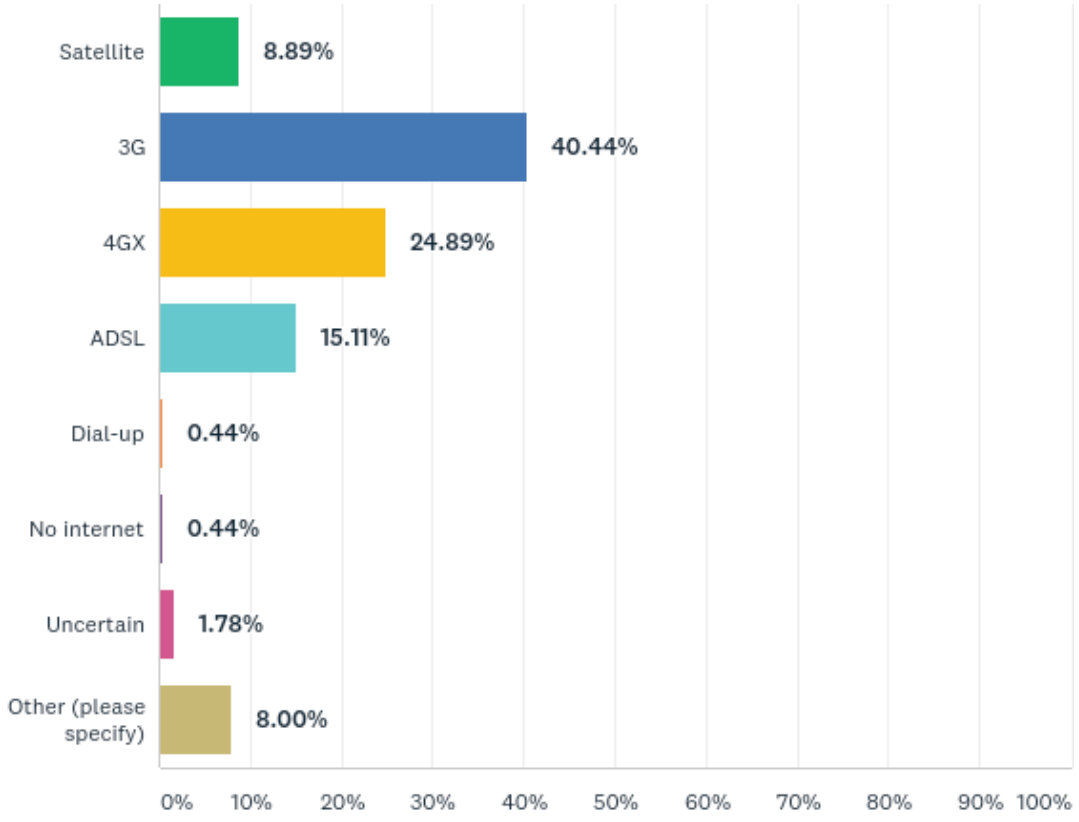
Q14: Why are you not connected to the nbn?

Answered: 228 Skipped: 233

ANSWER CHOICES	RESPONSES	
Fixed wireless connection not available	12.72%	29
Fixed line connection not available	4.82%	11
SkyMuster Satellite not available	0.00%	0
nbn is not available in our area	46.05%	105
Tried nbn but it didn't work	3.51%	8
Happy with our existing connection	13.60%	31
N/A	1.32%	3
Other (please specify)	17.98%	41
TOTAL		228

Q15: If you do not have the nbn how are you connected to the internet?

Answered: 225 Skipped: 236



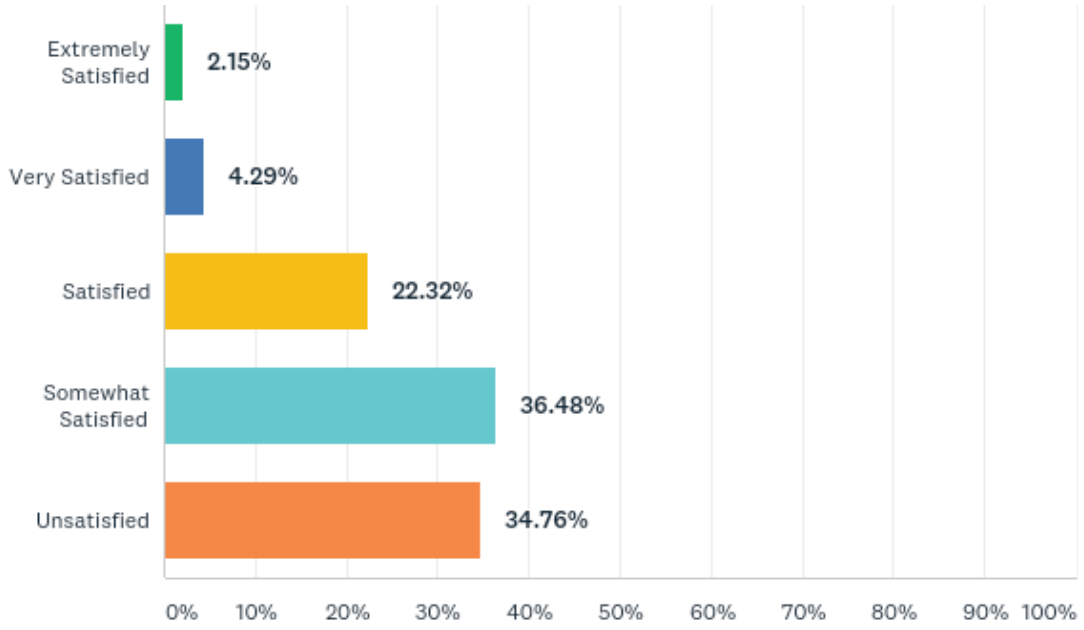
Q15: If you do not have the nbn how are you connected to the internet?

Answered: 225 Skipped: 236

ANSWER CHOICES	RESPONSES	
Satellite	8.89%	20
3G	40.44%	91
4GX	24.89%	56
ADSL	15.11%	34
Dial-up	0.44%	1
No internet	0.44%	1
Uncertain	1.78%	4
Other (please specify)	8.00%	18
TOTAL		225

Q16: Please describe how you feel about your internet service

Answered: 233 Skipped: 228



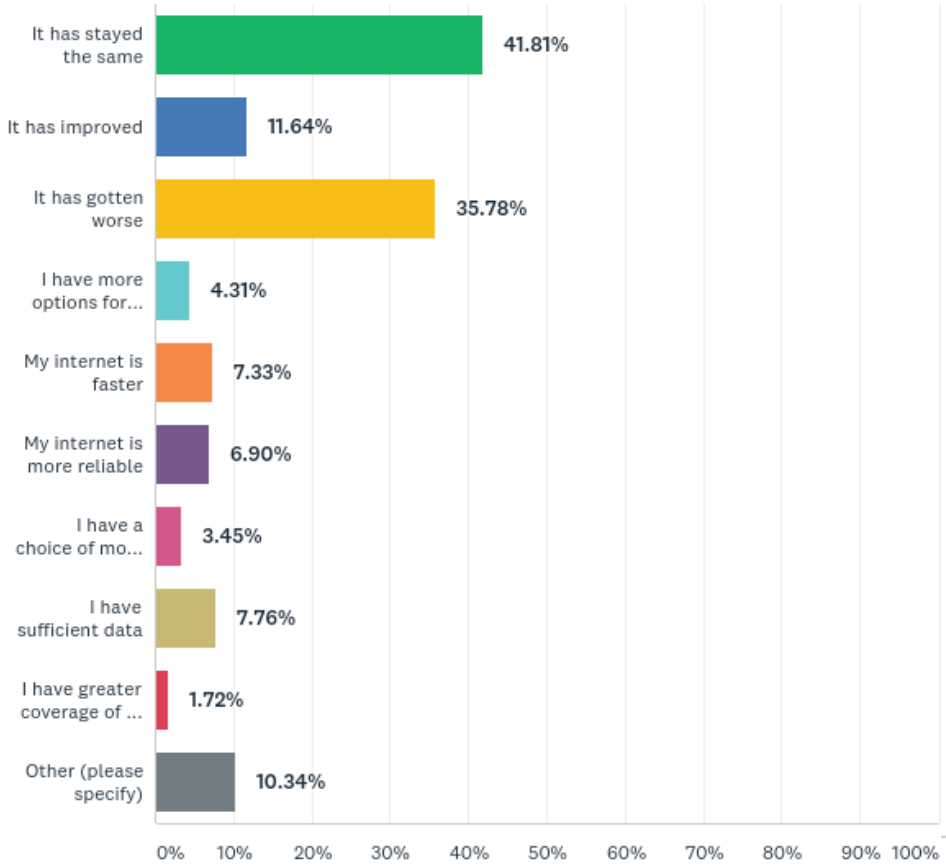
Q16: Please describe how you feel about your internet service

Answered: 233 Skipped: 228

ANSWER CHOICES	RESPONSES	
Extremely Satisfied	2.15%	5
Very Satisfied	4.29%	10
Satisfied	22.32%	52
Somewhat Satisfied	36.48%	85
Unsatisfied	34.76%	81
TOTAL		233

Q17: How has the quality of your internet service changed over the last three years? Please select all that apply.

Answered: 232 Skipped: 229



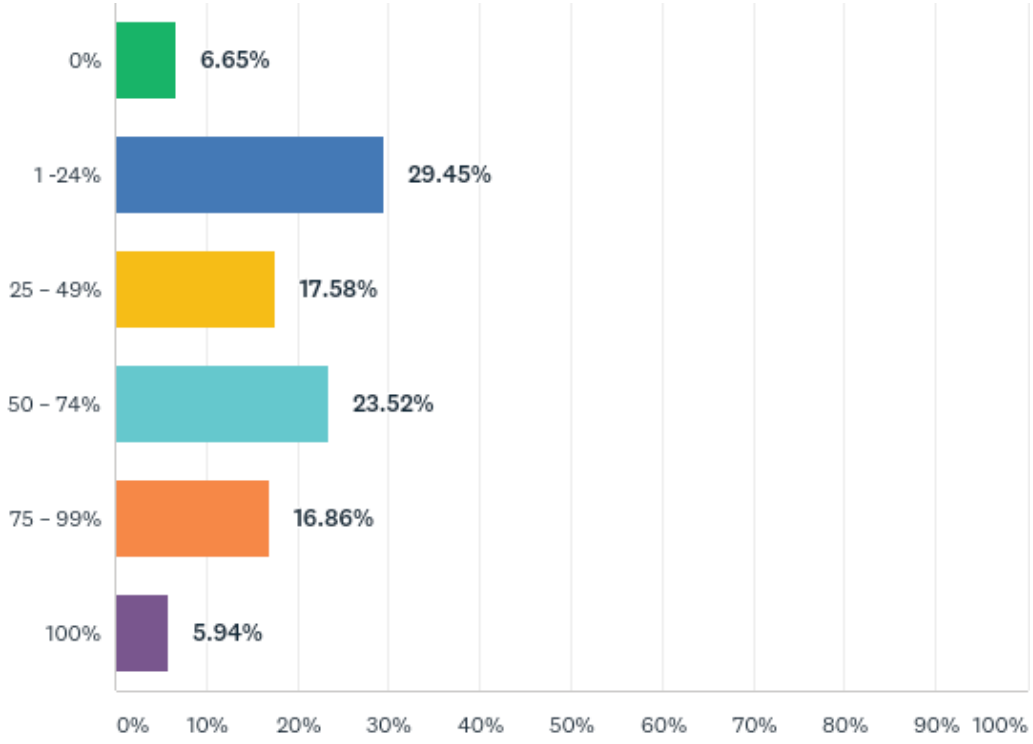
Q17: How has the quality of your internet service changed over the last three years? Please select all that apply.

Answered: 232 Skipped: 229

ANSWER CHOICES	RESPONSES	
It has stayed the same	41.81%	97
It has improved	11.64%	27
It has gotten worse	35.78%	83
I have more options for connection	4.31%	10
My internet is faster	7.33%	17
My internet is more reliable	6.90%	16
I have a choice of more providers	3.45%	8
I have sufficient data	7.76%	18
I have greater coverage of my farm	1.72%	4
Other (please specify)	10.34%	24
Total Respondents: 232		

Q18: Thinking about your mobile phone voice coverage, what percentage of your property has constant or reliable phone service?

Answered: 421 Skipped: 40



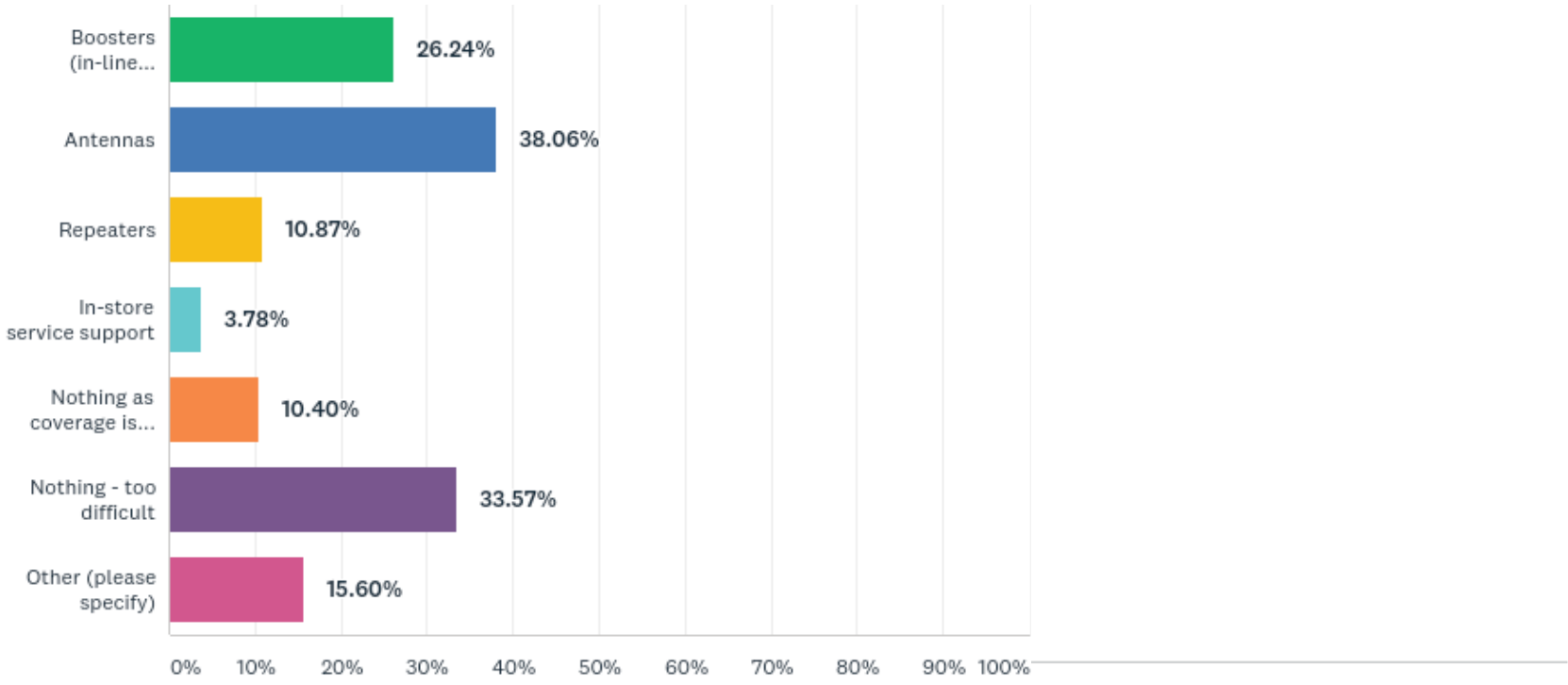
Q18: Thinking about your mobile phone voice coverage, what percentage of your property has constant or reliable phone service?

Answered: 421 Skipped: 40

ANSWER CHOICES	RESPONSES	
0%	6.65%	28
1 -24%	29.45%	124
25 – 49%	17.58%	74
50 – 74%	23.52%	99
75 – 99%	16.86%	71
100%	5.94%	25
TOTAL		421

Q19: What have you done to improve your mobile voice coverage?

Answered: 423 Skipped: 38



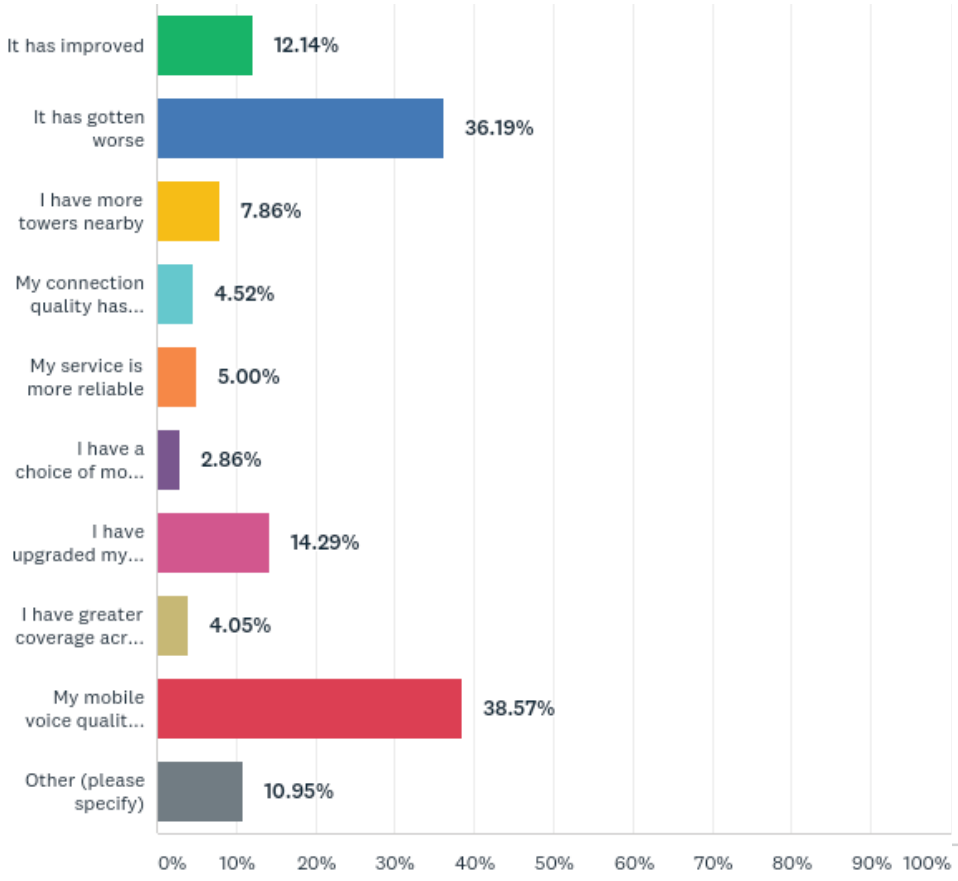
Q19: What have you done to improve your mobile voice coverage?

Answered: 423 Skipped: 38

ANSWER CHOICES	RESPONSES	
Boosters (in-line amplifiers)	26.24%	111
Antennas	38.06%	161
Repeaters	10.87%	46
In-store service support	3.78%	16
Nothing as coverage is good	10.40%	44
Nothing - too difficult	33.57%	142
Other (please specify)	15.60%	66
Total Respondents: 423		

Q20: How has the quality of your mobile voice service changed over the last three years? Please select all that apply.

Answered: 420 Skipped: 41



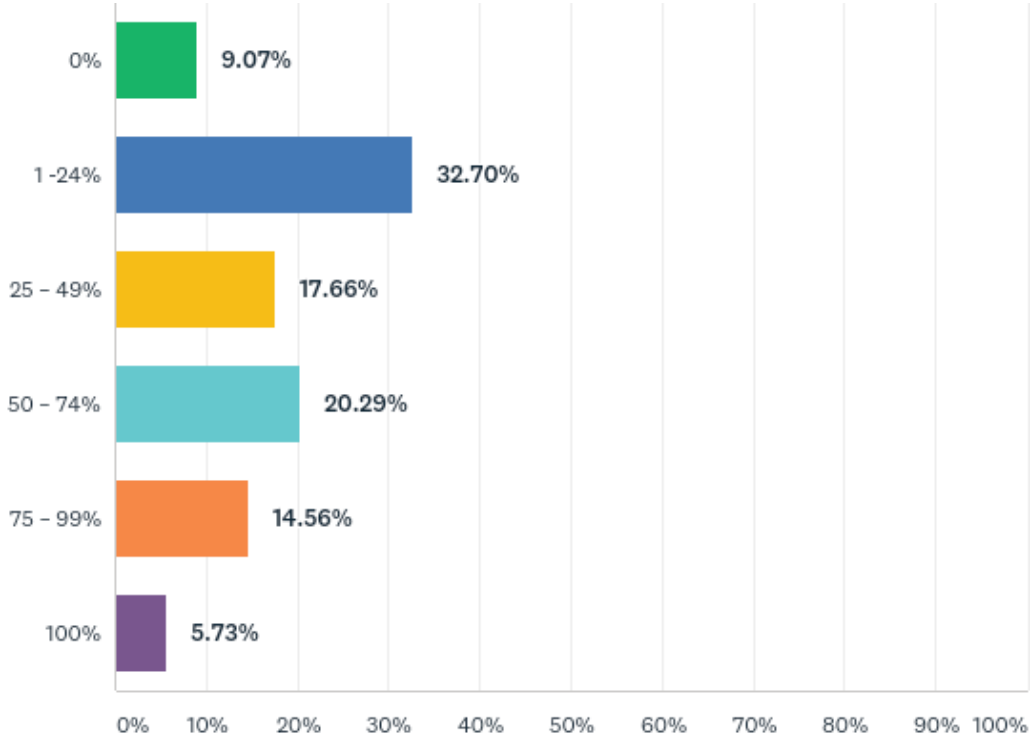
Q20: How has the quality of your mobile voice service changed over the last three years? Please select all that apply.

Answered: 420 Skipped: 41

ANSWER CHOICES	RESPONSES	
It has improved	12.14%	51
It has gotten worse	36.19%	152
I have more towers nearby	7.86%	33
My connection quality has improved	4.52%	19
My service is more reliable	5.00%	21
I have a choice of more providers	2.86%	12
I have upgraded my phone	14.29%	60
I have greater coverage across my property	4.05%	17
My mobile voice quality has not changed	38.57%	162
Other (please specify)	10.95%	46
Total Respondents: 420		

Q21: Thinking about your mobile phone internet coverage, what percentage of your property has constant or reliable internet connection?

Answered: 419 Skipped: 42



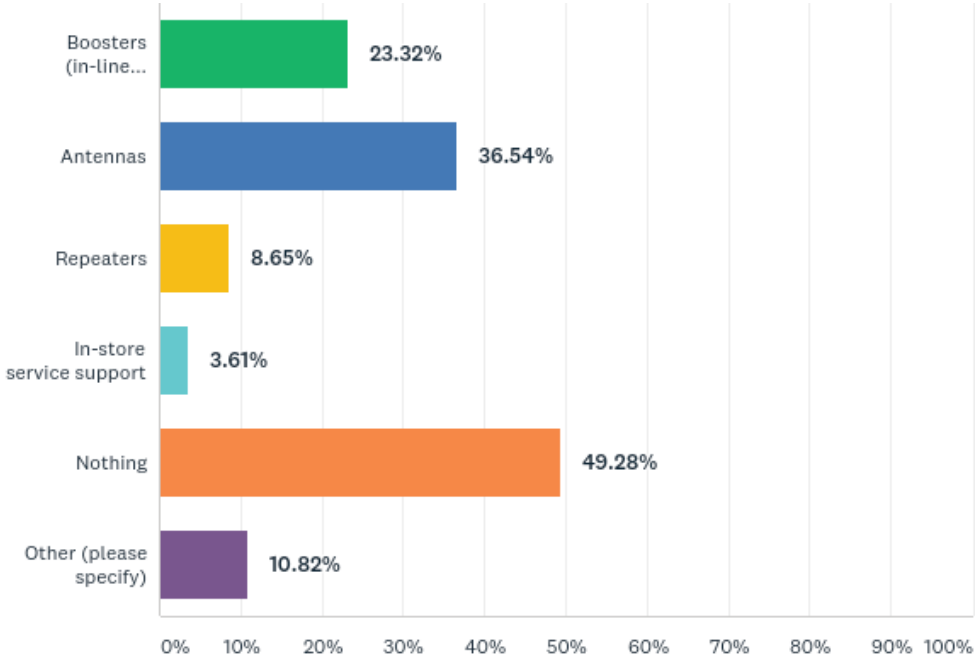
Q21: Thinking about your mobile phone internet coverage, what percentage of your property has constant or reliable internet connection?

Answered: 419 Skipped: 42

ANSWER CHOICES	RESPONSES	
0%	9.07%	38
1 -24%	32.70%	137
25 – 49%	17.66%	74
50 – 74%	20.29%	85
75 – 99%	14.56%	61
100%	5.73%	24
TOTAL		419

Q22: What have you done to improve your mobile data coverage?

Answered: 416 Skipped: 45



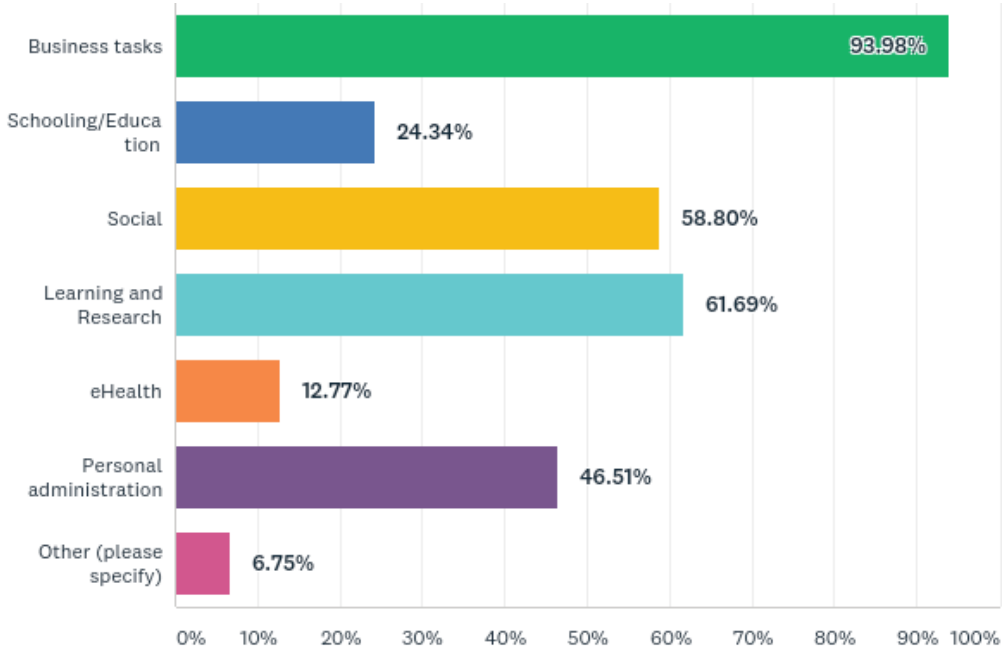
Q22: What have you done to improve your mobile data coverage?

Answered: 416 Skipped: 45

ANSWER CHOICES	RESPONSES	
Boosters (in-line amplifiers)	23.32%	97
Antennas	36.54%	152
Repeaters	8.65%	36
In-store service support	3.61%	15
Nothing	49.28%	205
Other (please specify)	10.82%	45
Total Respondents: 416		

Q23: What do you use your mobile data for?

Answered: 415 Skipped: 46



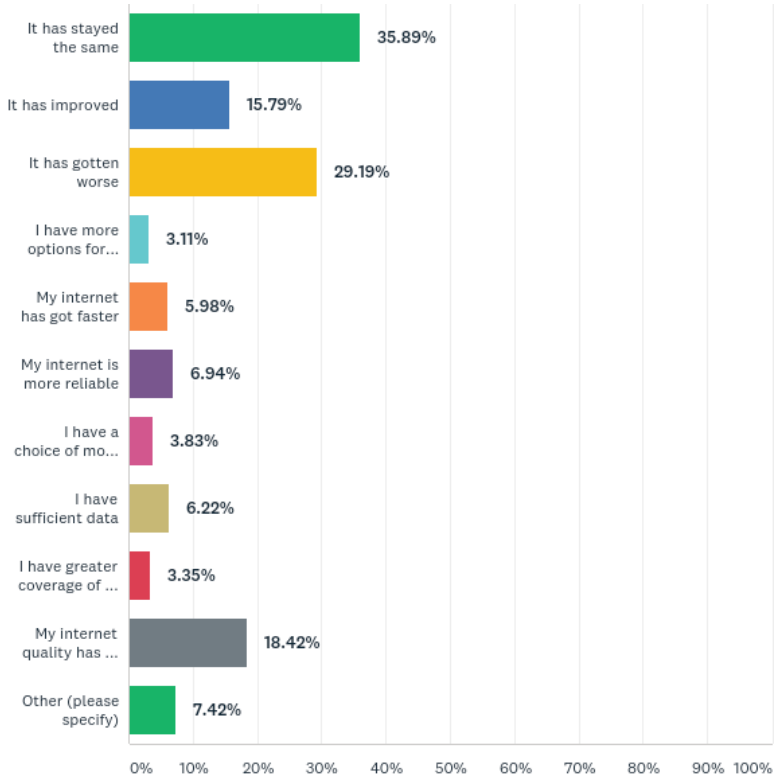
Q23: What do you use your mobile data for?

Answered: 415 Skipped: 46

ANSWER CHOICES	RESPONSES	
Business tasks	93.98%	390
Schooling/Education	24.34%	101
Social	58.80%	244
Learning and Research	61.69%	256
eHealth	12.77%	53
Personal administration	46.51%	193
Other (please specify)	6.75%	28
Total Respondents: 415		

Q24: How has the quality of your mobile data service changed over the last three years? Please select all that apply.

Answered: 418 Skipped: 43



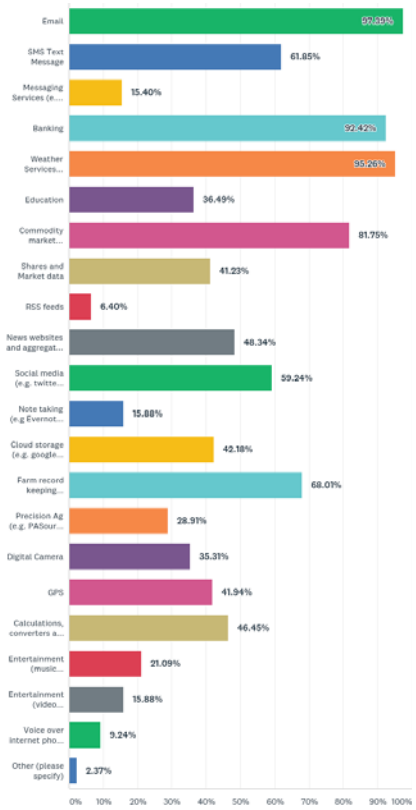
Q24: How has the quality of your mobile data service changed over the last three years? Please select all that apply.

Answered: 418 Skipped: 43

ANSWER CHOICES	RESPONSES	
It has stayed the same	35.89%	150
It has improved	15.79%	66
It has gotten worse	29.19%	122
I have more options for connection	3.11%	13
My internet has got faster	5.98%	25
My internet is more reliable	6.94%	29
I have a choice of more providers	3.83%	16
I have sufficient data	6.22%	26
I have greater coverage of my property	3.35%	14
My internet quality has not changed	18.42%	77
Other (please specify)	7.42%	31
Total Respondents: 418		

Q25: Which of the following activities are you undertaking on a regular basis (weekly) using your internet? Select multiple if necessary

Answered: 422 Skipped: 39



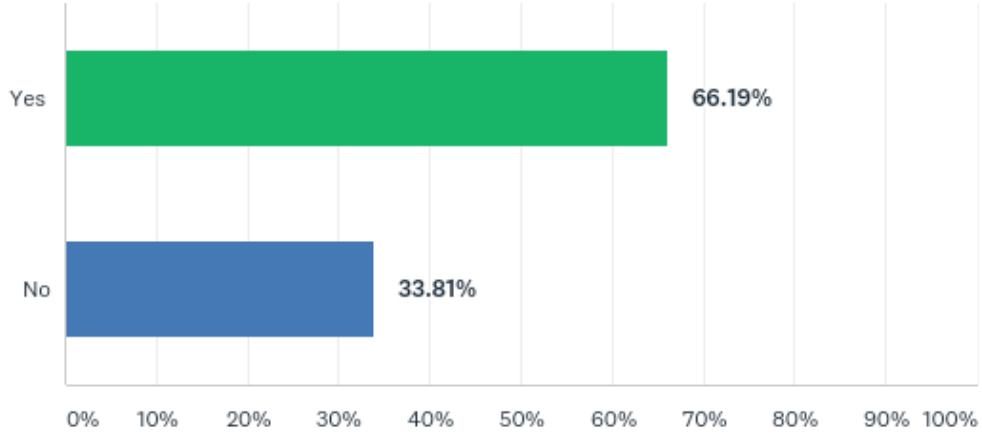
Q25: Which of the following activities are you undertaking on a regular basis (weekly) using your internet? Select multiple if necessary

Answered: 422 Skipped: 39

ANSWER CHOICES	RESPONSES	
Email	97.39%	411
SMS Text Message	61.85%	261
Messaging Services (e.g. Skype, Viber)	15.40%	65
Banking	92.42%	390
Weather Services (e.gWeatherZone, SprayWise)	95.26%	402
Education	36.49%	154
Commodity market reports/trading platforms (e.g. Auctions Plus, Clear Grain exchange)	81.75%	345
Shares and Market data	41.23%	174
RSS feeds	6.40%	27
News websites and aggregators	48.34%	204
Social media (e.g. twitter, Facebook etc)	59.24%	250
Note taking (e.g Evernote, OneNote, Keep)	15.88%	67
Cloud storage (e.g. google drive, iCloud, Dropbox etc)	42.18%	178
Farm record keeping software	68.01%	287
Precision Ag (e.g. PASource, GeoSys)	28.91%	122
Digital Camera	35.31%	149
GPS	41.94%	177
Calculations, converters and calendar	46.45%	196
Entertainment (music streaming)	21.09%	89
Entertainment (video streaming)	15.88%	67
Voice over internet phone calls	9.24%	39
Other (please specify)	2.37%	10
Total Respondents: 422		

Q26: Are there any barriers to taking up new digital technology?

Answered: 417 Skipped: 44



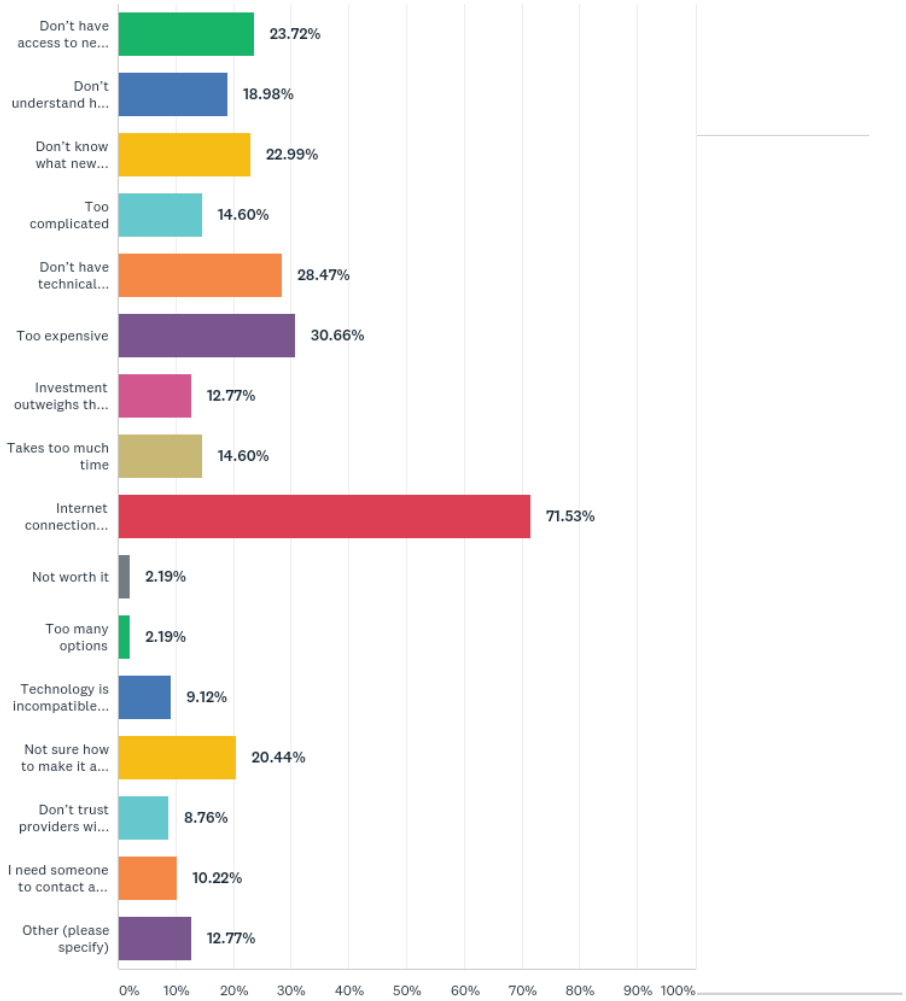
Q26: Are there any barriers to taking up new digital technology?

Answered: 417 Skipped: 44

ANSWER CHOICES	RESPONSES	
Yes	66.19%	276
No	33.81%	141
TOTAL		417

Q27: If yes what is holding you back?

Answered: 274 Skipped: 187



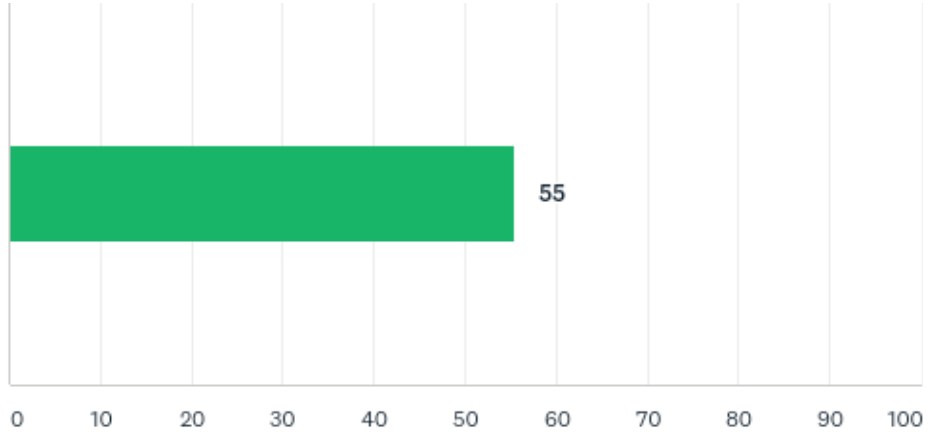
Q27: If yes what is holding you back? Note: Select multiple if necessary.

Answered: 274 Skipped: 187

ANSWER CHOICES	RESPONSES	
Don't have access to new technology	23.72%	65
Don't understand how to use the technology	18.98%	52
Don't know what new technology is available	22.99%	63
Too complicated	14.60%	40
Don't have technical support	28.47%	78
Too expensive	30.66%	84
Investment outweighs the benefits	12.77%	35
Takes too much time	14.60%	40
Internet connection isn't strong enough	71.53%	196
Not worth it	2.19%	6
Too many options	2.19%	6
Technology is incompatible with other products I have	9.12%	25
Not sure how to make it all work together	20.44%	56
Don't trust providers with my data	8.76%	24
I need someone to contact as a starting point	10.22%	28
Other (please specify)	12.77%	35
Total Respondents: 274		

Q28: How digitally literate do you consider yourself?

Answered: 416 Skipped: 45



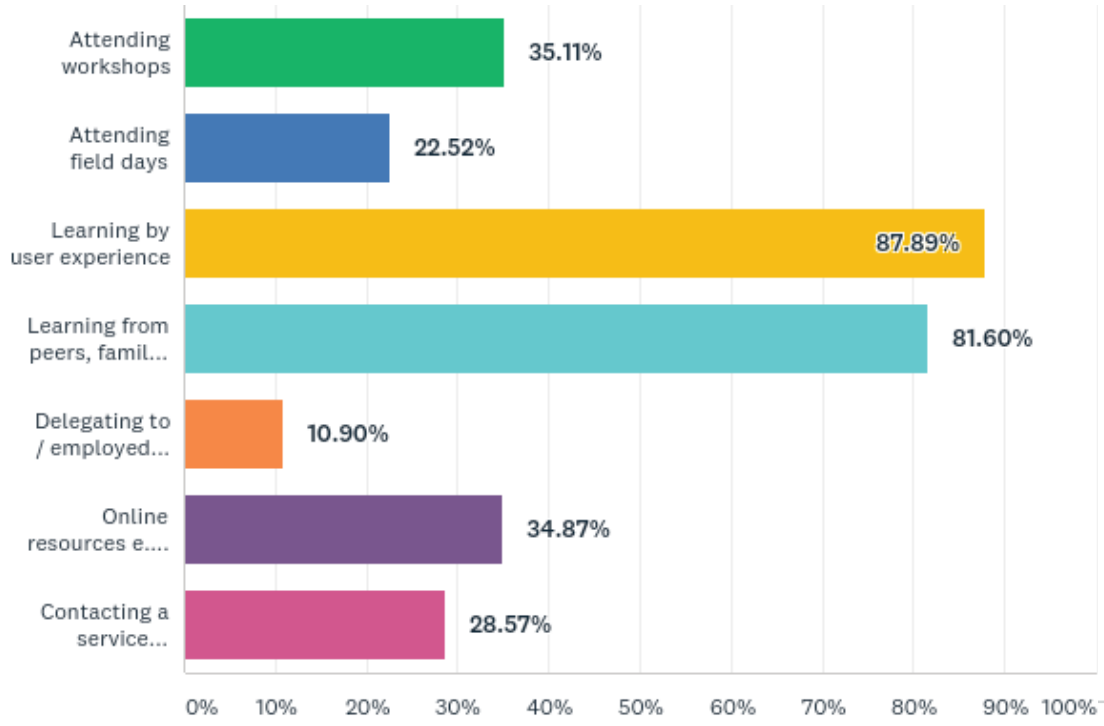
Q28: How digitally literate do you consider yourself?

Answered: 416 Skipped: 45

ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	55	23,052	416
Total Respondents: 416			

Q29: How have you gone about building your knowledge and skills in digital technology?

Answered: 413 Skipped: 48



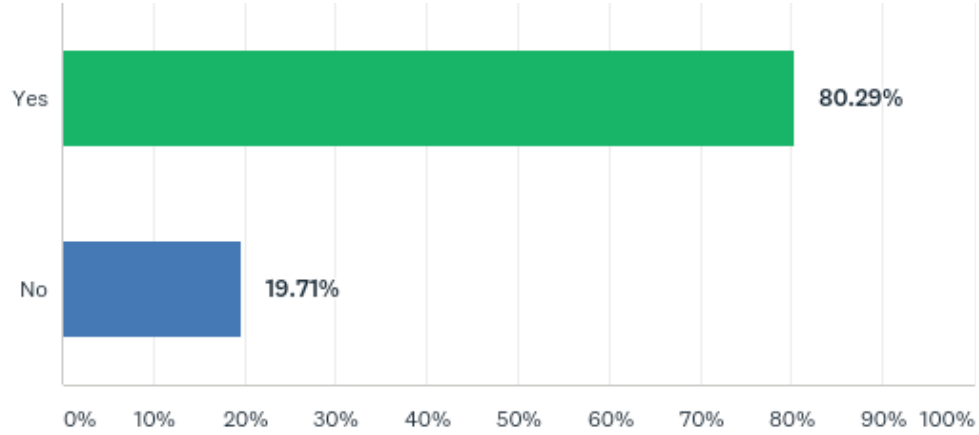
Q29: How have you gone about building your knowledge and skills in digital technology?

Answered: 413 Skipped: 48

ANSWER CHOICES	RESPONSES	
Attending workshops	35.11%	145
Attending field days	22.52%	93
Learning by user experience	87.89%	363
Learning from peers, family and friends.	81.60%	337
Delegating to / employed staff who are across the technology	10.90%	45
Online resources e.g. blogs, videos and tutorials	34.87%	144
Contacting a service provider	28.57%	118
Total Respondents: 413		

Q30: Have you experienced ongoing issues with your landline, mobile or internet service in the last twelve months?

Answered: 416 Skipped: 45



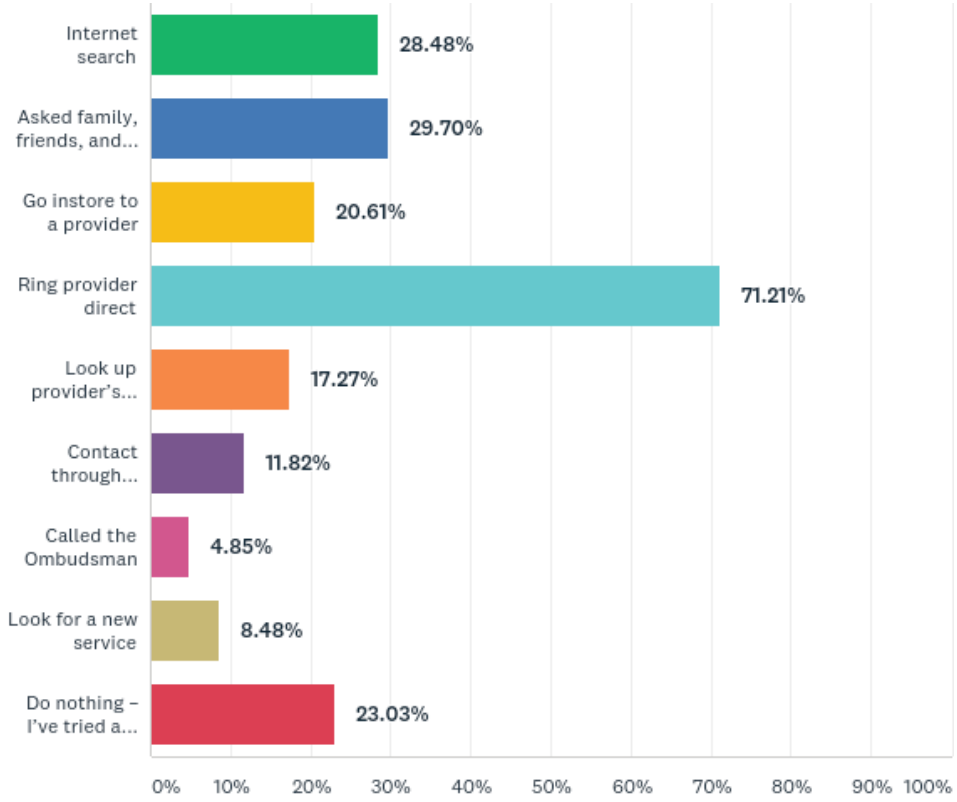
Q30: Have you experienced ongoing issues with your landline, mobile or internet service in the last twelve months?

Answered: 416 Skipped: 45

ANSWER CHOICES	RESPONSES	
Yes	80.29%	334
No	19.71%	82
TOTAL		416

Q31: How do you typically seek to resolve the issue?

Answered: 330 Skipped: 131



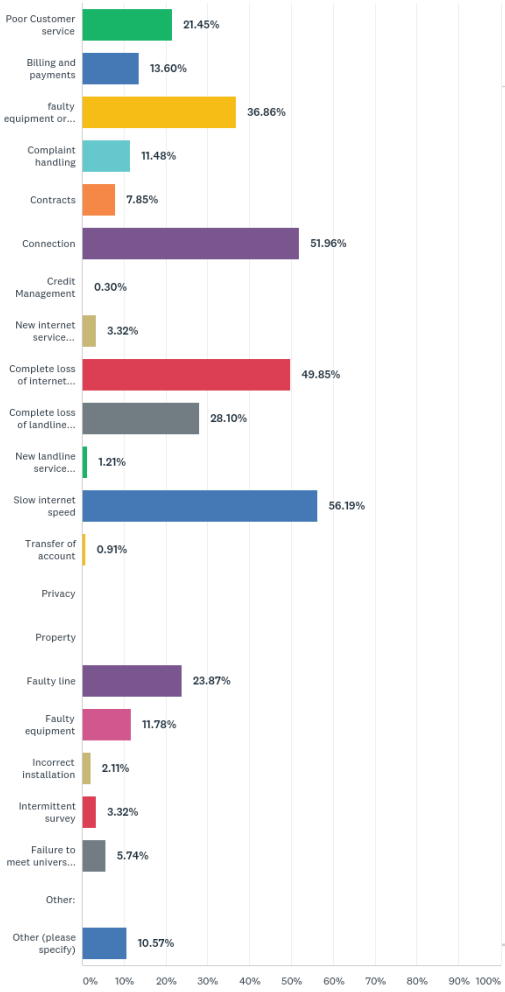
Q31: How do you typically seek to resolve the issue?

Answered: 330 Skipped: 131

ANSWER CHOICES	RESPONSES	
Internet search	28.48%	94
Asked family, friends, and colleagues	29.70%	98
Go instore to a provider	20.61%	68
Ring provider direct	71.21%	235
Look up provider's website	17.27%	57
Contact through provider's chat function online	11.82%	39
Called the Ombudsman	4.85%	16
Look for a new service	8.48%	28
Do nothing – I've tried and it's too hard	23.03%	76
Total Respondents: 330		

Q32: What was the issue?

Answered: 331 Skipped: 130



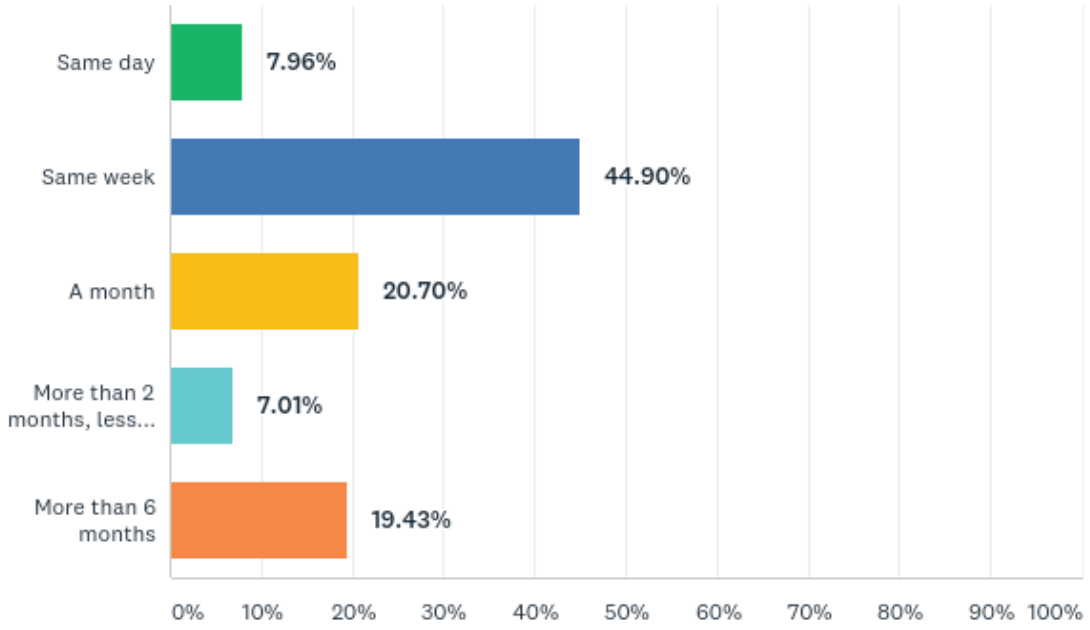
Q32: What was the issue?

Answered: 331 Skipped: 130

ANSWER CHOICES	RESPONSES	
Poor Customer service	21.45%	71
Billing and payments	13.60%	45
faulty equipment or line	36.86%	122
Complaint handling	11.48%	38
Contracts	7.85%	26
Connection	51.96%	172
Credit Management	0.30%	1
New internet service connection delay	3.32%	11
Complete loss of internet service	49.85%	165
Complete loss of landline service	28.10%	93
New landline service connection delay	1.21%	4
Slow internet speed	56.19%	186
Transfer of account	0.91%	3
Privacy	0.00%	0
Property	0.00%	0
Faulty line	23.87%	79
Faulty equipment	11.78%	39
Incorrect installation	2.11%	7
Intermittent survey	3.32%	11
Failure to meet universal service obligations	5.74%	19
Other:	0.00%	0
Other (please specify)	10.57%	35
Total Respondents: 331		

Q33: If you experienced issues with your mobile, internet or landline, what was the timeframe for it being resolved?

Answered: 314 Skipped: 147



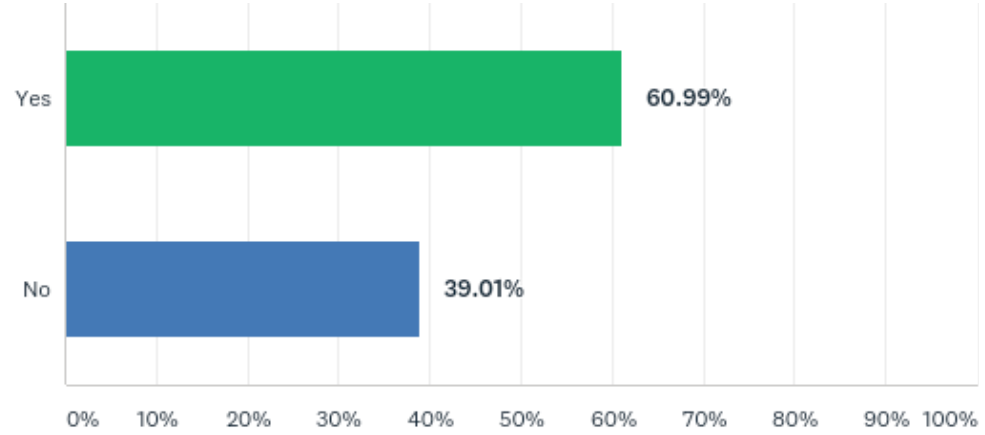
Q33: If you experienced issues with your mobile, internet or landline, what was the timeframe for it being resolved?

Answered: 314 Skipped: 147

ANSWER CHOICES	RESPONSES	
Same day	7.96%	25
Same week	44.90%	141
A month	20.70%	65
More than 2 months, less than 6 months	7.01%	22
More than 6 months	19.43%	61
TOTAL		314

Q34: Was it resolved?

Answered: 323 Skipped: 138



Q34: Was it resolved?

Answered: 323 Skipped: 138

ANSWER CHOICES	RESPONSES	
Yes	60.99%	197
No	39.01%	126
TOTAL		323

Case study 1. Mixed cropping and livestock farmer near Forbes, New South Wales

Digital technology is very important to this farmer's business. Their entire administrative and operational planning systems are web-based, with connectivity to mobile phones used to ensure data recording in the paddock transfers to a central, online database.

Internet and mobile connectivity allows increased efficiency in the business and allows for business decisions to be made quickly, as information is accessible across the farms. However, mobile connectivity across the farms is only maintained if the mobile service is contracted with Telstra. The farmer has heard from others, who have mobile services with non-Telstra providers, that they receive patchy reception in the local area and around her farm.

The farmer's internet is also provided by Telstra through the NBN offset service, which the farm was a pilot for in the area in 2015. The farm has a direct line of sight with the NBN tower at Eugowra. The service provides plenty of data and good speed, and there have been no issues with the service.

Currently the business is spending close to $500 a month for three mobiles and the internet. The farmer believes that they may be able to source a better deal to reduce the cost of the services, which currently provide unlimited calls for the mobiles and 8GB to one mobile and 15GB to the another. Their son's mobile has a smaller amount of data in his plan, and the internet provides substantial data allowance which they never near their cap on.

Currently, the farmer speaks with Telstra about once a year to try and improve their mobile and internet plan (to reduce the cost and maintain or increase the data). They don't consider other providers (even though they often can provide better value deals) because of the inconsistency in mobile service and a bad experience the farmer had with a smaller provider about 17 years ago.

Already, the farmer and their family are using a great deal of digital technology on farm. The barrier to using more lies not in the ability to do so, but more the willingness of family members to adopt new technology and the ability of different software packages to be able to integrate and work together, so there is no double-handling of farm data. For new technology to be used in the business, it must show that it will provide a time and value efficiency to the farm.

Case study 2. Cropping farmer near Narrabri, New South Wales

Coverage, cost and speed were identified by this farmer as the problem to using digital technology in their farming business. It also is a barrier to the farmer adopting more digital technology. While there is close to 100% mobile connectivity for voice and data across the farm, mobile connectivity in the region is not as good. The farmer uses Telstra as a mobile service provider because they are the only operator who provides a service that works well in the area.

Internet connectivity is inconsistent and slow internet speeds are a barrier to being able to implement more digital technology. The farm moved from a Telstra mobile internet service to Sky Muster provided by SkyMesh in the last six months and suffers regular dropouts and the service does not work when it is overcast. The farmer has experienced an improvement in the volume of data they now receive for their internet but believes that the service is expensive for the low amount of data (compared to city counterparts) and slow speed that you receive.

The farmer tried to use technologies such as 4G antennas on the house to improve internet connectivity at an approximate cost of $3000. Recently the farmer removed three antennas from the roof of the house as they were defunct and never really provided improved connectivity. This lack of ability to connect devices, equipment and machinery through the internet to software that enables

easier data collection for production decisions is a barrier to the farmer increasing business efficiencies. If 100% connectivity across the farm was achievable, the farmer would be able to collect more data in real time and use this data to make business and production decisions. Being able to capture data in real time to assist on the spot decision making would be beneficial during harvesting, especially if the technology enabled marketing decisions to be made. This would equate to financial savings in terms of staff costs and time efficiencies in that data would not need to be double handled and they would be able to make better business decisions, which the farmer estimates would lead to a 1-2% improvement in business profitability.

Excess data usage charges have been a problem for the farmer. When data caps were exceeded, the automatic data reload saw excessive charges applied to their accounts, doubling their phone bills. There were no warnings issued that allowed the farmer to monitor when data usage was at 50%, 85% and near capacity. The farmer's computers can use nearly the entire internet data allowance in one evening to perform system updates. To overcome this, the family's children now have their mobile service provided by Vodafone who provide more data at the same price. However, they also auto-reload data which can be a billing issue. Further billing issues have occurred with the internet and mobile services not being offered by the same provider. This hasn't allowed the farmer to seek better deals by bundling services.

Case study 3. Mixed cropping and livestock farmer near Wallumbilla, Queensland

With a combined monthly bill of $1200 for five mobiles and internet (they have seven modems), cost has been identified as the main barrier to this farmer utilising more digital technology. The farmer has a mobile internet service provided by Telstra with a recent $300 reduction in their monthly bill and higher data allowance after they were contacted by their Telstra Business Account Manager, who offered a better deal. The farmer estimates they are currently using 200GB of a 250GB data allowance.

The farmer currently uses a significant amount of digital technology in their operation, including observants on bores, a tractor live-linked to phones and iPads, Cell-Fi-Go and car kits to increase mobile coverage. Automatic drafting and walk-over weighing are new technologies the farmer is looking to use in the very near future. To get the full benefit and efficiency from any technology, the farmer says that you need to be able to get connectivity outside of the house across the farm. He estimates that this new technology would bring a saving of $15,000 - $20,000 per year to the business. Having connectivity to tractors that allows external diagnostics and servicing saves the business approximately $1000 per year on call-out fees alone.

In considering new technologies to bring into the business, the farmer identifies where there are issues in the operations that can be overcome by either an existing technology or by working with a developer to design a solution. They have been involved in developing new technology for several years.

Telstra is the current mobile phone and mobile internet provider the farmer uses. The farm has a 4GX tower 15km away and has average mobile coverage with coverage across 70% of their farm. This increases to 95% with the use of car kits, and 100% using Cell-Fi-Go technology. They previously used Sky Muster for their internet service however while the service was reliable in the house, they had to outlay money on technology to try and retransmit internet connectivity around the farm. The farmer says that there is no other infrastructure available to them to try other internet services and that Telstra is the only provider for mobile phones. Currently, their internet service provides good speed and a 20GB/second download/upload rate (which sometimes can be higher for uploads).

However, compared to urban businesses the farmer does not find the cost reasonable. He estimates a reasonable cost would be a few hundred dollars a month, in line with what he believes urban

counterparts would pay for the same sort of coverage. The farmer has seen other people look for better deals offered by non-Telstra providers, use these but then revert back to Telstra due to losses in mobile coverage and internet connectivity. He has investigated switching to NBN satellite internet, but as it is not able to be used outside of the house it will not provide any benefit to his business.

Over the last three years, there was an improvement in connectivity when Origin gave $30 million to Telstra to put fibreoptic cable to an existing 3G tower. This reduced congestion on the network, resolving issues such as phone calls and SMS texts not able to be made. Prior to this upgrade being made, the farmer looked at making their own investment in upgrading their ability to access a reliable service. They were quoted $25,000 to have their own link from Roma to beam to a repeater tower and then a tower on their farm. They now have invested in cell-Fi-Go and car kits to improve their connectivity. These investments have cost the farmer an estimated $10,000.

Case study 4. Mixed cropping and livestock farmer near Winchendonbale, New South Wales

Until a new tower was installed in the area approximately six months ago, the farmer described mobile coverage on his property as 'terrible'. While it is now improved, the farmer is still not satisfied with his mobile service as it regularly experiences drop-outs in reception. These drop-outs do not occur in the same places but instead occur randomly across the farm. His neighbours don't have mobile reception on their properties which he finds frustrating.

The mobile service was improved through the mobile blackspot programme, but prior to this Telstra wanted $220,000 to put up two mobile towers to improve reception. Although other providers offer mobile services in the area, the farmer has said they won't change provider because even though there would be a financial saving on plans, Telstra owns the towers and provides better reception. The farmer has also tried to use antennas to improve mobile reception, but this hasn't resolved the issue with intermittent reception.

The farmer experienced an issue with Telstra when changing a landline number when they moved property and without mobile reception he says that his business would have suffered. The number took six months to be changed over, and it was only once he involved the Ombudsman, who gave Telstra seven days to rectify the problem, that the issue was resolved.

The farmer has an NBN wireless internet connection provided by Telstra. He is happy with his speed and data allowance, and pays $300 a month for his internet, landline and mobile bundle plan. Over the past three years, he says the internet speed and the reliability of the connection has improved.

Connectivity and cost are the main factors considered by the farmer when looking at introducing new digital technology to the business. Regarding cost, he is mindful of fees and charges that will be incurred when using the technology and factors this into his decisions about whether or not to proceed. The farmer is also aware of the need to keep up to date with technology as he feels you can be left behind in business if you don't. Particularly that when it comes to communications, if people can't contact you promptly, they often will move on to the next supplier and this can cost his business. Hence the need for good mobile coverage and internet connectivity.

Case study 5. Mixed cropping and livestock farmer near Moody, South Australia

Problems with landline infrastructure and poor mobile coverage are issues that plague this Eyre Peninsula farming family. The farmer believes digital technology is essential to be able to communicate in a modern business, with society expecting online and telephone communication and shorter turnarounds that digital communication facilitates. But, the lack of connectivity for their farm makes them feel technologically behind in how they can use digital technology in their business and also family life.

According to the farmer, landline issues affect many people in the region and when it rains they experience problems with the lines crackling or going dead. They once had their landline go dead 17 times over nine months without rain causing the problem. Their landline service (costing $125 per month) is now provided by Commander as they offer a more affordable business package. However, when there are problems with their landline now, Telstra doesn't provide support as the family's landline service is not with Telstra, even though Telstra owns the copper line infrastructure.
The family's mobiles are contracted with Boost Prepaid (a Telstra service) and reception is provided from a Telstra tower, 50 kilometres from their farm. The coverage is poor and unreliable across their property, non-existent in some areas of the farm and mobile signal regularly drops out. The farmer reports signal has worsened since Optus towers were installed 20 kilometres from the farm. They do not receive service from these towers, even with a booster at the house and a Yagi aerial. On-farm communications using mobile phones are insufficient and often the farmer will stand on their equipment to try and obtain service. The lack of mobile reception is a safety concern for the family, who have provided examples of accidents in their area where lack of mobile reception has eventuated in people being unable to readily seek help from emergency services, either using the 000 or 112 mobile emergency call numbers.

The family has experienced improvements in their internet connectivity since changing to Sky Muster, provided by Activ8me. While their service still drops out at times, they are much happier with their improved connectivity from Sky Muster. With the potential need to home school their daughter for high school next year, the family is grateful for the improvements in internet connectivity as if they did not have this, the farmer's wife would have to forgo her consulting business work to teach their daughter. They are now looking to upgrade their internet data allowance to facilitate home schooling, as the closest school bus would require 80km of driving a day to send their daughter to high school on the bus.

Case study 6. Cropping and livestock farmer near Ardrossan, South Australia
This farmer believes there is growing requirement for farms to use digital technology, however not having the same connectivity as urban counterparts do is a barrier to using more technology. He uses a wide range of technology from autosteer tractors to wireless weather stations, harvest yield mapping to production decision making tools to improve fertiliser, seed and chemical applications. These technologies deliver significant cost savings to his business and being able to better respond to weather conditions enhances harvest and spraying operations.

Approximately 70% of his farm has mobile coverage, with his service provider by Telstra. He has installed a mobile signal booster at his own cost to enhance mobile coverage however service is intermittent and regularly drops out. This is an issue he says is widespread across the Yorke Peninsula. While not completely satisfied with Telstra as a provider, the farmer says that they are the better of the providers available in his area. He contracted with Telstra as they were originally the only mobile provider in his area. Increased costs result from the need to return phone calls that drop out and missed information (such as traders calling with grain prices). Time is also lost waiting for mobile signal to return to his phone.

The farmer switched to Sky Muster satellite broadband for his internet service when his previous provider was unable to continue providing the service. He believes Sky Muster is better than his previous ADSL service, but the choice to use a service other than Sky Muster is limited.

The farmer believes that with improved mobile and internet connectivity, there would be less frustration, improved safety and smoother business operations.

Case study 7. Grain grower at Alawoona, South Australia

This farmer's entire business is based around the use of technology, however blackspots across the farm have meant they have had to use different farming practices where technology is less reliable on the property. The farmer uses a range of technology including precision ag. applications, mapping, weather stations, soil moisture probes and machinery monitoring technology with John Deere Link. These technologies enhance the efficiency of the farming operation, however the benefits are lost when the technology is unable to function due to lack of connectivity. Considerations when adding new technology to the business include value-add, simplicity of use, compatibility between devices, reliability, efficiency and minimal ongoing servicing requirements.

The farmer has mixed mobile coverage across his 10,000 hectare property. He considers 40% of the farm receives excellent coverage, 40% receives average/good and across the remaining 20%, there is very poor mobile coverage. The farmer has installed aerials on vehicles to improve mobile signal in poor coverage areas. His mobile service is contracted with Telstra.

However, the lack of connectivity means that the technology he is able to access is limited, and this is holding back his farm and others in the industry. He describes the problem as highly skilled farmers having a hand brake applied to them because of poor connectivity and preclusion from participating in using new innovations. Communication with his family, staff, agronomists and business contacts is limited by lack of connectivity and time is lost during sowing operations when shared mapping between tractors drops out. The farmer uses wifi extenders to try to improve internet connectivity inside his house.

At his Alawoona property, the farmer has wireless internet which he describes as very reliable with good speed and very few issues. However, his data allowance of 80GB per month is insufficient and expensive at a monthly cost of $150. He is able to contract a cheaper data allowance with other internet providers however he says that this would compromise the speed and reliability of the service. He chose his current internet provider, Telstra as they were the only provider available when he connected to the internet.

The farmer believes access to more service providers (and their access to infrastructure) and better planning of mobile towers in regional areas would provide solutions to the regional telecommunications problems in the Mallee region of South Australia.

Case study 8. Cropping and livestock farmer at South Kwolyin, Western Australia

If full mobile coverage and connectivity was available across their farm, this farming family believe they could integrate a lot of new technology that would improve their business operation and efficiencies. Their employees, children and friends would have better access to the internet which would be especially valuable for university work. Their daughter studies in Melbourne, and rather because the connection is too slow, she returns to Melbourne to study which her parents find disappointing as they would like for her to stay longer when she reutrns home on breaks. Digital technology is crucial not only to their business, but to family life and remaining connected to their wider family.

They currently receive average reception at the home farm, but on their other properties, this reception can be less or non-existent. While their phones may work to make calls, they are unable to access internet and use data. Their phones are with Telstra and they do not have the choice of another provider. The family use SkyMuster for their internet and describe the service as satisfactory and improving. They switched to SkyMuster from broadband 12 months ago.

The family believes that secure, reliable, unlimited data connections are needed, even for voice services. They have no landline telephone service, it was replaced by a wireless VOIP system that won't work during power outages. The battery life of their mobiles ends after only a few hours and so in an emergency situation, they would be without phone service if their mobile phones died.

The family is willing to pay more for telecommunications services that are of the standard their urban counterparts receive.

Case study 9. Cropping and livestock farmer near Mingenew, Western Australia

Digital technology is used by this farmer for their machinery, production planning, financial programmes and entertainment for the family. Having reliable internet and adequate data allowances are a necessity for their business, including for their professional development and video conferencing needs.

When considering new technology, it first needs to be determined if the technology will deliver a benefit to the farm, then whether the connectivity across the farm and the data allowance is sufficient for the technology to be used. The farmer estimates 80 per cent of their farm has 2-5 bar signal on their mobiles, the remaining 20 per cent has 1 bar (low). Mobile service is provided by Telstra, which is the only service provider available. The family has considered installing a booster in the house to increase signal strength.

Their internet is provided by Activ8 and they have a SkyMuster connection. They are happy with the service, however drop outs have seen the farmer miss out on winning an online auction to purchase a tractor and other machinery. Delays to work activities, lost time to get operations and supplies are examples this farmer provided of costs/losses incurred by their business due to poor telecommunications.

Case study 10. Cropping and livestock farmer in the Kojonup and Woodanilling shires of Western Australia

Connectivity and coverage are important for accessing services online which are used in the business and by the family. They use digital technology for business administration (e.g. payroll, taxation) and for their children's education. The farmer works part-time off-farm and uses the internet to collaborate with her colleagues. Uses for this include ZOOM web meetings, however these e-conferences use their data allowance very quickly. Other technology is used for tractor guidance, MobTracker for sheep monitoring and analysis, AgWorld for paddock recording and AgriMaster. When thinking about technology to add on farm, the farmer considers the ease of use and customer support if something goes wrong.

The farmer uses Telstra Wi-Fi for their internet service as they believe NBN is not available yet. When questioned if they had considered using SkyMuster, they asked that because they aren't remote, is the service for them? Their mobile provider is Tesltra and they experience zero to poor service quality around South Kojonup, and a constant 1 to 2 bar signal strength on their Woodanilling property. They have a workers' house less than five kilometres from a mobile tower yet struggle for phone signal at the house.

The farmer is aware of solutions such as extenders to improve mobile reception but hasn't moved to try these technologies. There is currently a proposal by CBH to use railway reserves and elevator towers at their grain bins to provide high speed fibre optic connections. Many bins are at remote

locations so this will help to provide mobile service in some black spot areas. provide mobile and data coverage through their bins and they are interested in seeing what eventuates from this proposal.

The farmer believes they pay too much for the service, especially compared to people living in the city and the service that you receive in metropolitan areas – it must be more equitable. Telstra is their provider for mobile and internet as they are generally reliable and the only provider. They would change provider for a better data package and reliability, if this was available.

Case study 11. Cropping, livestock and feedlot operator from South Kumminin, Western Australia
Mobile and internet connectivity is a problem for this farmer, with 80 per cent of their farm receiving only 1-2 bars of mobile reception and spots where there is no signal. The rate of drop outs (calls and connectivity) is high, particularly when using data. The farmer uses Sky Muster for their internet, provided by Activ8 but the reliability of the service is low and worsening. Most of the data allowance falls during off-peak and often the farmer has to try to use their mobile phone personal hotspot for internet connectivity when the Sky Muster service is down.

The farmer rates the data and speed of their internet service as inadequate, but manageable. A problem the farmer encounters is that the backpacker staff they employ expect to be able to access the internet, but they are unable to provide this amenity. The farmer wants to study an MBA but the current data situation limits their ability to commence study, with the farmer saying '*everybody deserves the opportunity for education*'.

Mobile service is contracted with Telstra. The farmer also has a family member who is a volunteer fire fighter and the poor mobile coverage across the area they operate in is a safety issue for the brigade.

The farmer believes the cost for their internet and mobiles would be reasonable if they had improved service. They are willing to pay more for an improved service but want a degree of equity with urban locations where the services are provided at a lower cost.

Case study 12. Cropping and livestock farmer from the South Lake Grace region, Western Australia
This farmer rates the mobile coverage across their farm as average to good, but identified that when mobiles switch between 3G and 4G signal, calls drop out. Telstra, as the current provider, need to improve this aspect of their service. The farmer said that their business works from their mobile phone, and so they can't be without it at any time. Their mobile connectivity improved with the addition of a tower at Tarin Rock. The farmer has used a phone booster in the car and house to improve coverage.

The farmer's internet service was initially provided by Telstra and was a wifi service, but it was unreliable. Since switching to SkyMesh for Sky Muster, the farmer says their internet is now very good. They use several online software packages (such as ZERO for accounting) as well as internet banking. The data allowance is adequate, except when their son is home from school. They pay $$65 per month for additional data as required. Their internet currently doesn't allow them to use video conferencing, which is needed.

The farmer believes that their landline is too expensive ($100/month) for the amount it is used. They find the mobile costs are ok, and they are happy with their internet cost of $50/month.

The farmer uses digital technology in their business, including GPS guidance for their tractors. They use a range of apps and online systems, such as CBH LoadNet, which are integral to their business. When looking at new technology, they consider the need for completely reliable connectivity, and cost is a secondary consideration. If the farm had 100% connectivity, the farmer said they would look

at using new technologies such as virtual fencing, which would potentially increase their grazing capacity by five dry sheep equivalents.

Case study 13. Cropping and livestock farmer from Gnowellen, Western Australia

Digital technology is increasing in importance for this farmer, who doesn't believe there are currently barriers to him adopting more technology. Mobile phones are the primary means for communication on farm as they have mobile service ranging from 1 to 4 bars across the property. However, data is slow to load on phones and the farmer says this is a problem across his and surrounding districts. The same mobile reception allowed faster data downloading in northern regions.

The farmer's internet is an NBN connection with good data allowance but slow speed. They are satisfied with the service, which is provided by Westnet. He describes the cost of the plan as cheap and sufficient for their needs, so is happy with the service. However, the farmer believes that once his children begin secondary school, they may need to improve their internet service and the cost may become an issue.

If the farmer had 100 per cent connectivity across his farm, he believes he would be able to improve safety, gain operational efficiencies and consider introducing robotics. It would also see improved efficiencies in business management, including recording paddock operations and using accounting software. The farmer considers cost when looking at introducing new technologies to the business, as well as how it will contribute to business profitability and that it is able to work with varying connectivity.

Case study 14. Cropping and livestock farmer from Bencubbin, Western Australia (Tony Sachse)

The reliability of technology is important but limited by power outages in regions of Western Australia, which occur due to problems with power network infrastructure.

The farmer believes smart phones are 'fantastic' and that they have become really important for not only his business, but to remain socially connected. He has weak mobile signal inside buildings, but overall has good mobile coverage across his farm with 90 per cent covered by the 3G network and 50 per cent covered by 4G. The farmer has a booster in his son's house and will install one in his to improve signal strength and coverage.

Internet is provided by Telstra as a mobile broadband connection. The farmer believes the service is expensive and is moving to CRISP WiFi when it comes to the shire. This new internet is supplied on unlimited data plans and the farmer believes the cost will become reasonable. Currently, the data and speed are insufficient on farm but again the farmer believes CRISP will improve this.

The lack of connectivity impedes the ability for off-farm business and his spouse's employment, with services such as video conferencing not able to be used. The farmer says that if he pursues an MBA, it will be essential he has access to improved connectivity. He also said that to attract people from the city to regional areas, they must have connectivity or else they won't remain in the area.

Improved connectivity would allow for the farmer to incorporate new digital technologies, such as weather stations and soil moisture probes, cameras on water points and for security – all would improve operational efficiency and decision making. He would also be able to improve OH&S and safety on farm.

TELECOMMUNICATIONS & TECHNOLOGY SURVEY

SEPTEMBER 2017

Grain Growers

CONDUCTED FROM 30 AUG TO 13 SEPT 2017

SURVEY DISTRIBUTED BY EMAIL AND ELECTRONIC NEWSLETTER

624 TOTAL RESPONSES

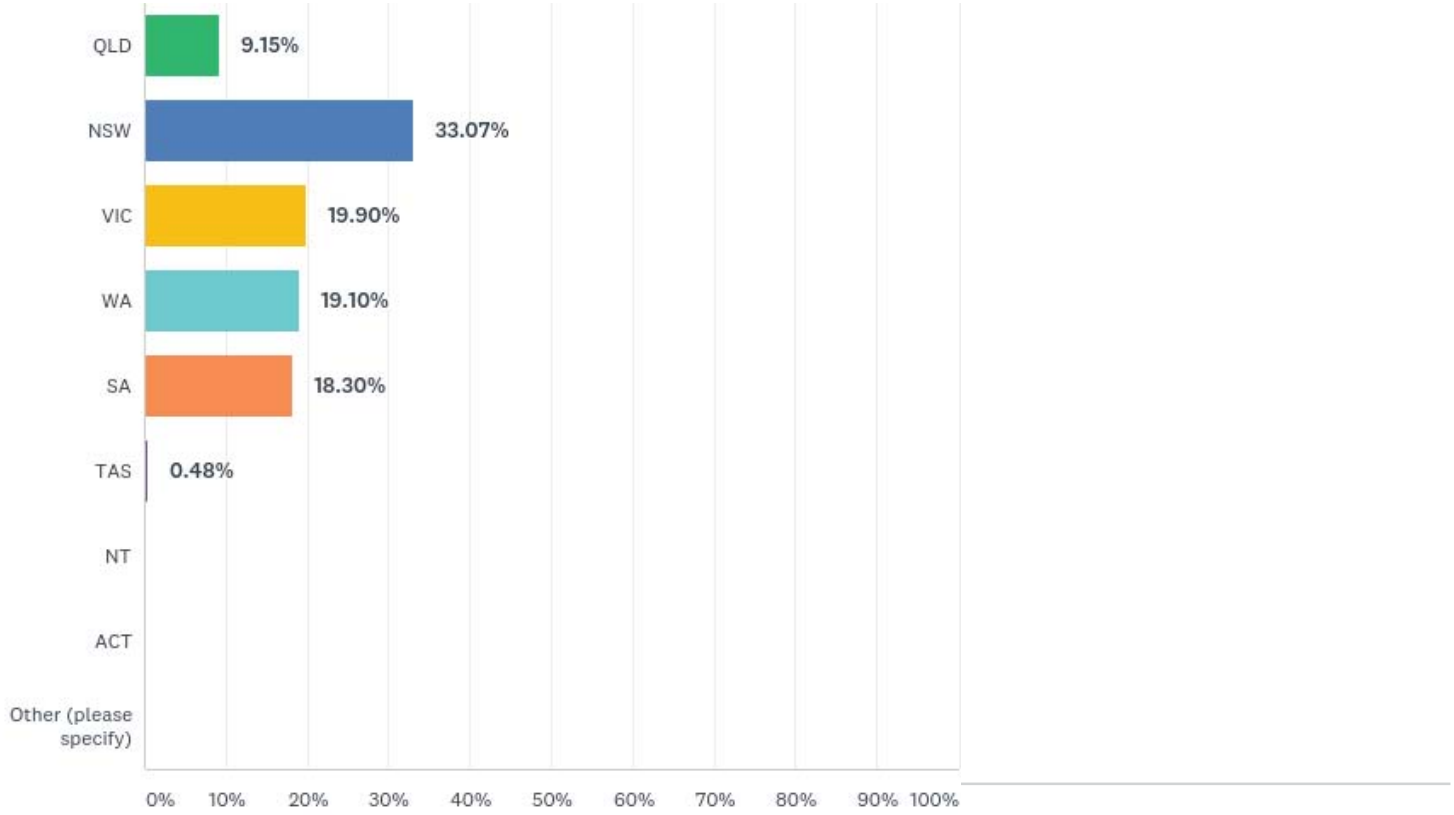
Grain Growers

KEY MESSAGES

- **Mobile service remains extremely poor in rural Australia with 71% not satisfied with the service.**
  - In WA only 17% rated the mobile service as satisfactory, compared to 43% in Victoria/Tasmania.
  - Lack of coverage was the biggest concern in each state.
  - Nearly 10% (& 17% in Qld) reported none of their farm had constant and reliable mobile phone service, while only 7% (& only 1.8% in WA) said 100% of the farm had mobile service.
  - Nearly a quarter (24%) of respondents said a quarter or less of their farm had reliable mobile coverage.
- **46% of respondents were connected to the nbn (50% in NSW and 40% in SA).**
  - 70% used Skymuster satellite and 28% used a fixed wireless connection.
  - 44% rated their satisfaction with nbn as good (36%) or excellent (8%), nearly a third (31%) rated it as average, and 25% rated it as dissatisfied (20%)/totally dissatisfied (5%).
  - Quality of connection and then speed were the two largest areas of concern.
  - Of those not connected, 74% stated the reason was because nbn is not available in their area.
- **Farmers use or want to use a wide range of digital decision support and technology tools in their business**
  - 52% would use these to manage farm inventories (chemicals, fertiliser, fuel, livestock, grain) and 43% for online sales and marketing.
  - Technologies currently used on farm include GPS Auto Steer (79%), harvest yield maps (46%) & satellite imagery (35%)
  - Main limitations for adopting new technology were cost (55%), internet connectivity (52%) and accessibility (36%).

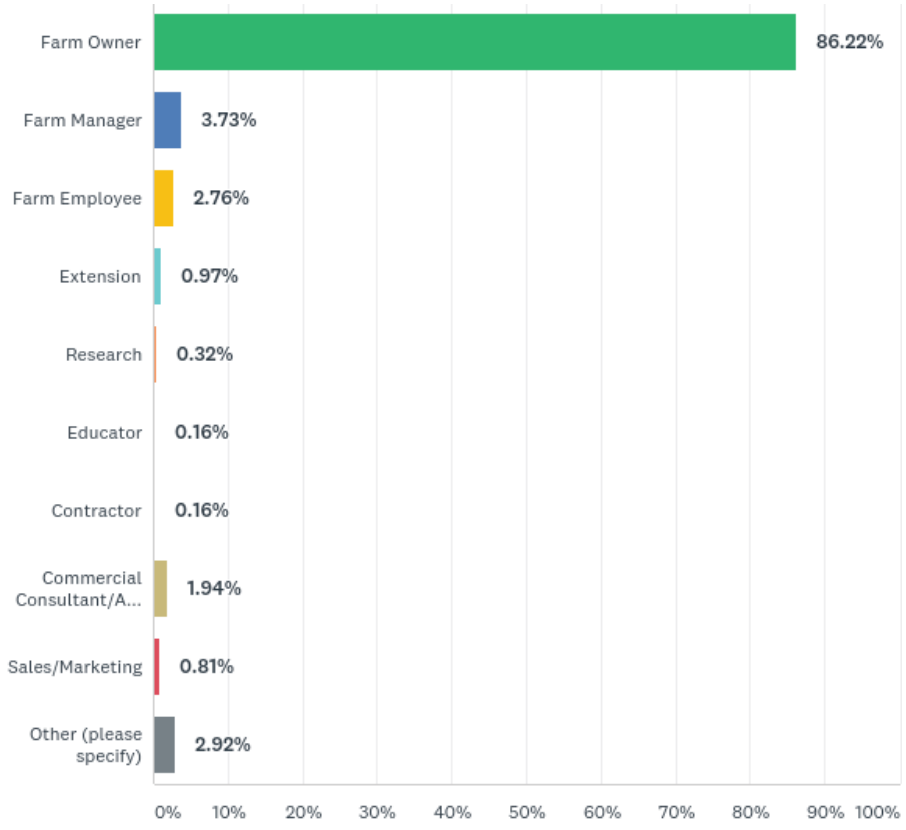
Q1: Which state do you live in?

Answered: 623 Skipped: 1



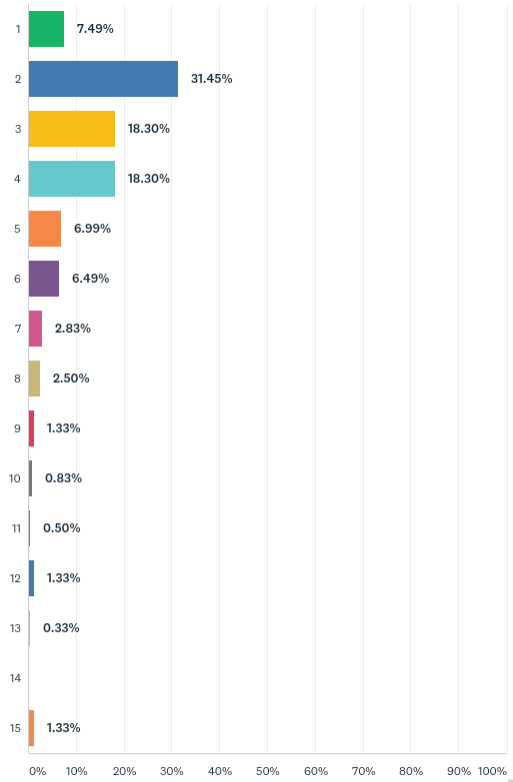
Q3: What is your current role in the agriculture industry?

Answered: 617 Skipped: 7



Q4: How many people live and work at this location?

Answered: 601 Skipped: 23



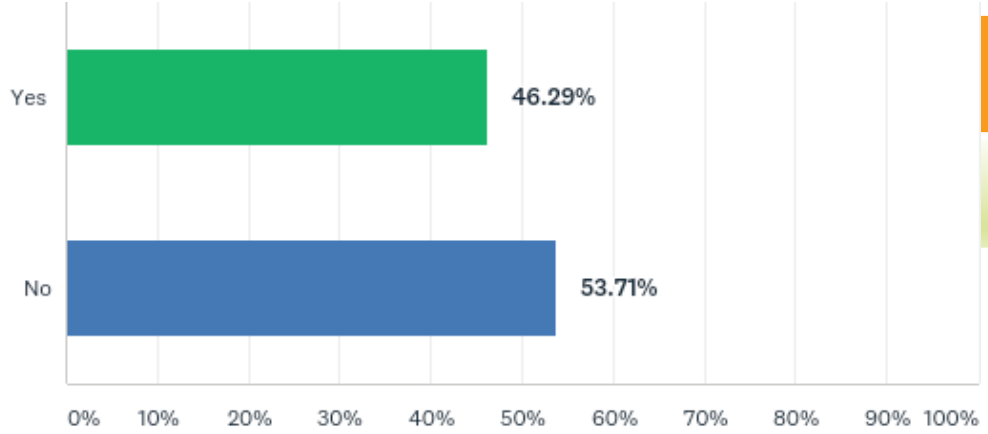
Most frequent responses by State

# people	NSW	Qld	Vic+Tas	SA	WA
1	6.6	8.9	12.3	2.7	8
2	33.5	32.1	36.89	36	18
3	20	5.4	16.4	19	22
4	18	16	5.7	14	26
5	5.08	5.4	4.1	11	8
6	6.09	10.7	1.64	4.5	10
7	2.5	0	1.64	6.31	3

7.14% in Qld had 15

Q5: Are you connected to the nbn?

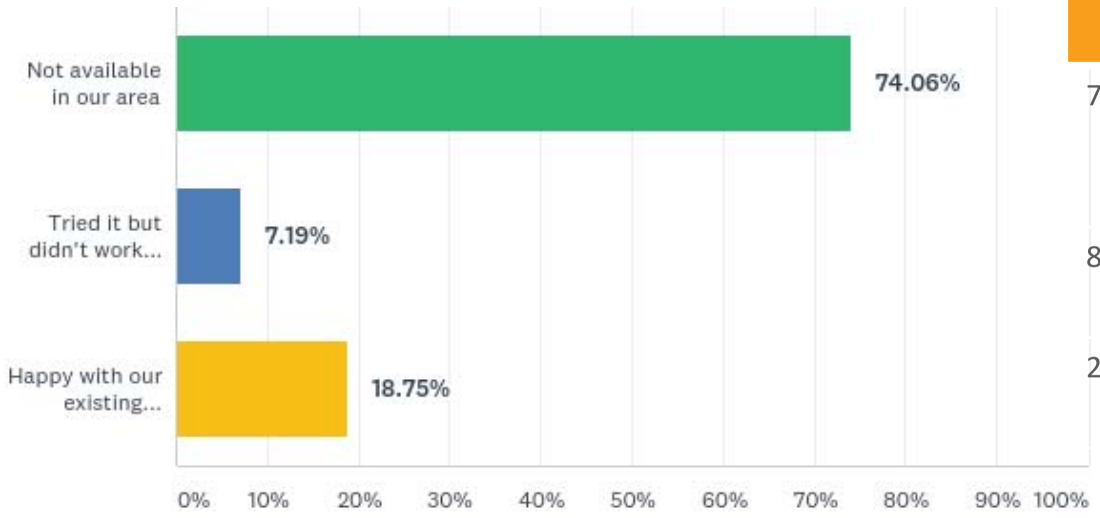
Answered: 620 Skipped: 4



NSW	Qld	Vic+ Tas	SA	WA
50.24	45.61	43.06	40.35	45.69
49.76	54.39	53.97	59.65	54.31

Q6: Why are you not connected to the nbn?

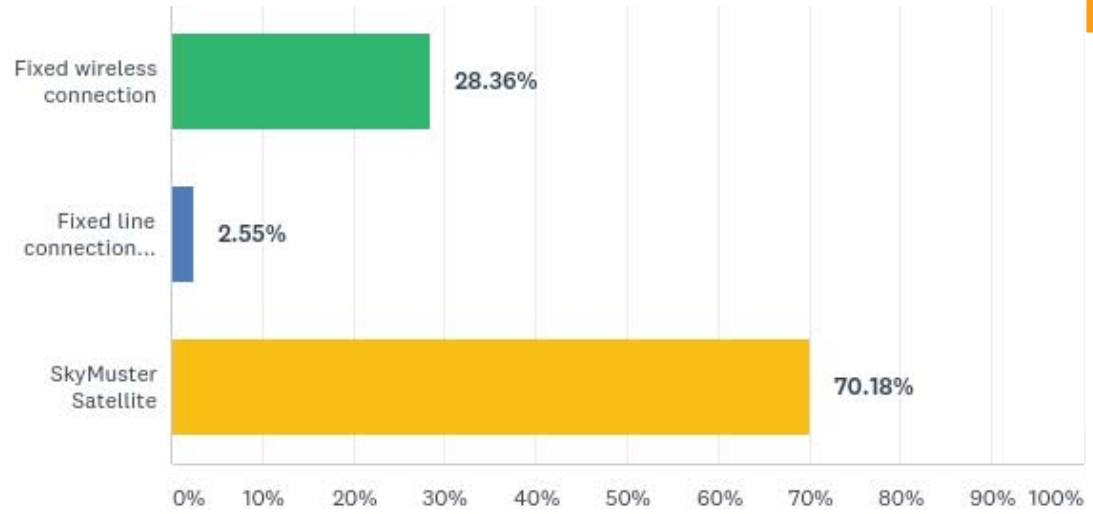
Answered: 320 Skipped: 304



NSW	Qld	Vic+ Tas	SA	WA
71.13	63.33	77.94	74.63	79
8.25	6.67	7.35	5.97	7
20.62	30	14.71	19.4	14

Q7: What type of nbn connection do you have?

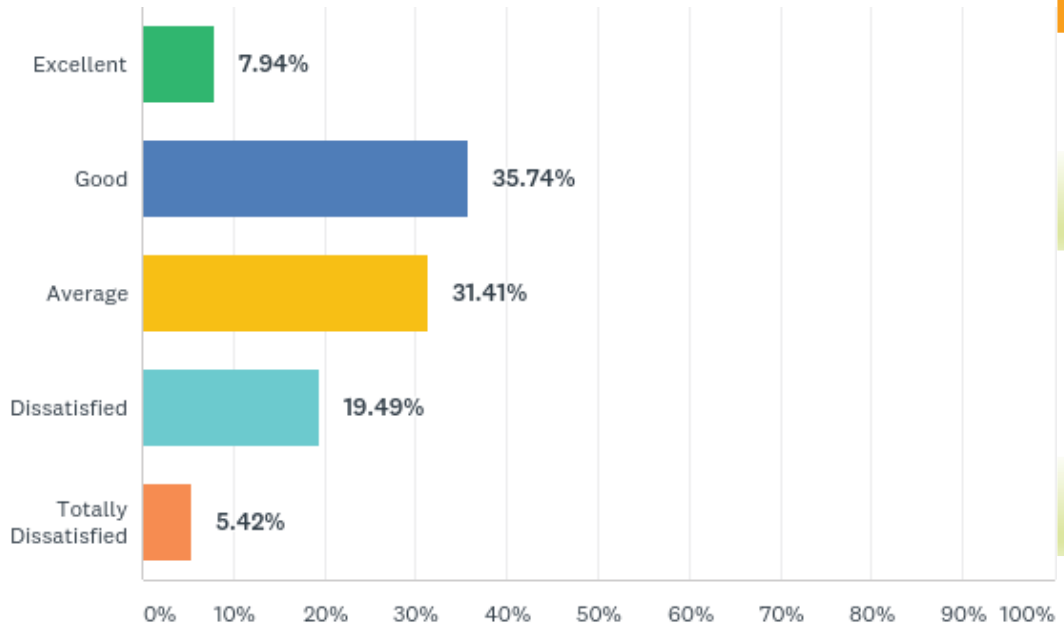
Answered: 275 Skipped: 349



NSW	Qld	Vic+ Tas	SA	WA
21.43	28	44.64	50	6
3.06	0	1.79	4.55	2
75.51	76	53.57	47.73	94

Q8: Rank your level of satisfaction with your nbn service

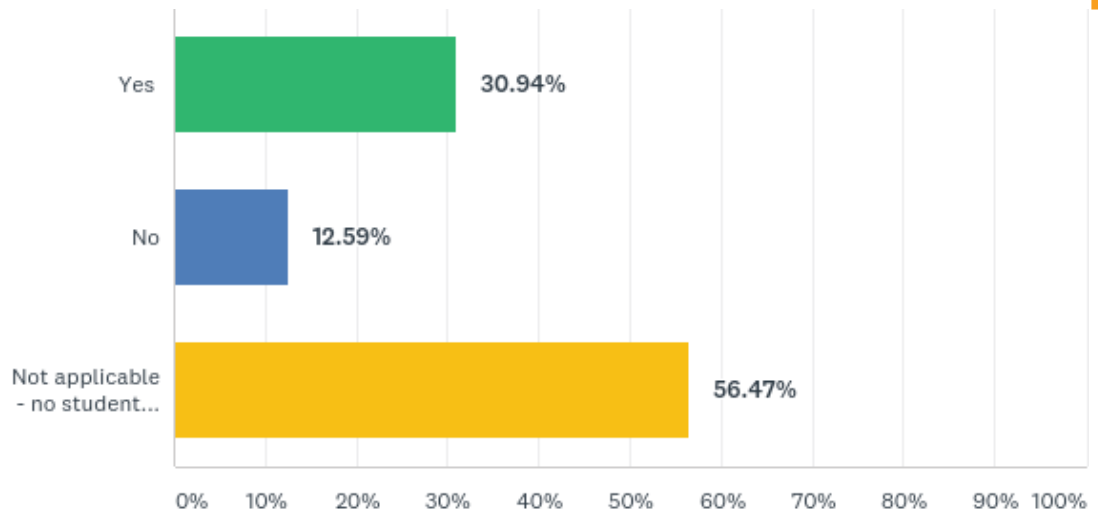
Answered: 277 Skipped: 347



NSW	Qld	Vic+ Tas	SA	WA
5.05	12	10.71	9.09	7.8
25.25	36	42.86	43.18	43
36.36	40	28.57	36.36	16
24.24	8	16.07	11.36	25
9.09	4	1.79	0	7.8

Q9: The nbn Sky Muster service has an additional data option for students being home schooled. Would you access this option if it was extended to include rural school students living at home and studying at local schools; boarding school students; tertiary students studying both on or off campus.

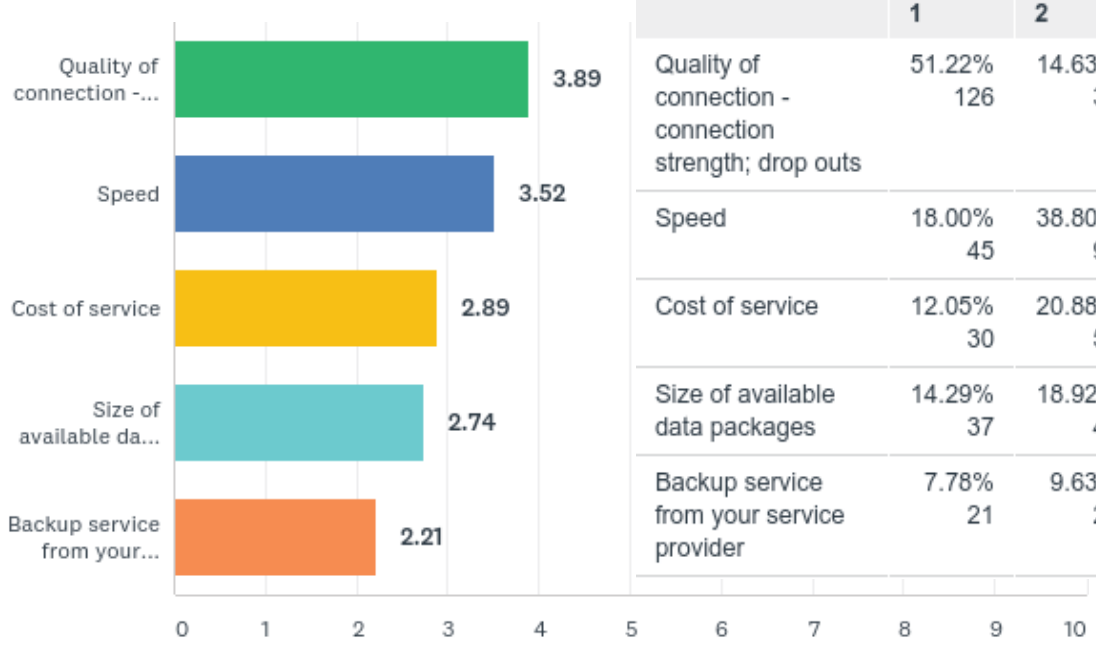
Answered: 278 Skipped: 346



NSW	Qld	Vic+ Tas	SA	WA
30.3	40	25	36.36	30
9.09	16	21.43	15.91	6
60.61	44	53.57	47.73	64

Q10: When thinking about your nbn connection please rank in order of importance, each of the following (1 = biggest issue 5 = least important) Note: you cannot use the same number twice

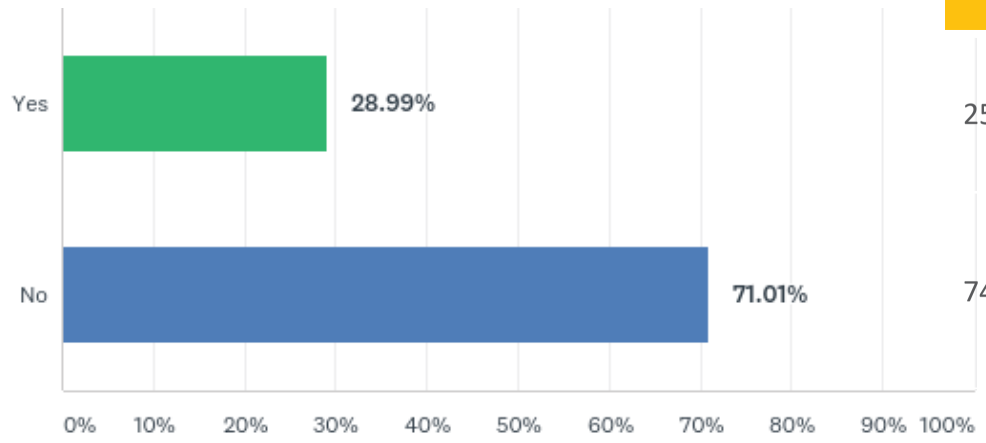
Answered: 276 Skipped: 348



	1	2	3	4	5	TOTAL	SCORE
Quality of connection - connection strength; drop outs	51.22% 126	14.63% 36	13.01% 32	13.82% 34	7.32% 18	246	3.89
Speed	18.00% 45	38.80% 97	22.80% 57	18.00% 45	2.40% 6	250	3.52
Cost of service	12.05% 30	20.88% 52	27.31% 68	23.69% 59	16.06% 40	249	2.89
Size of available data packages	14.29% 37	18.92% 49	20.85% 54	18.53% 48	27.41% 71	259	2.74
Backup service from your service provider	7.78% 21	9.63% 26	18.15% 49	24.44% 66	40.00% 108	270	2.21

Q11: Are you satisfied with your mobile phone service?

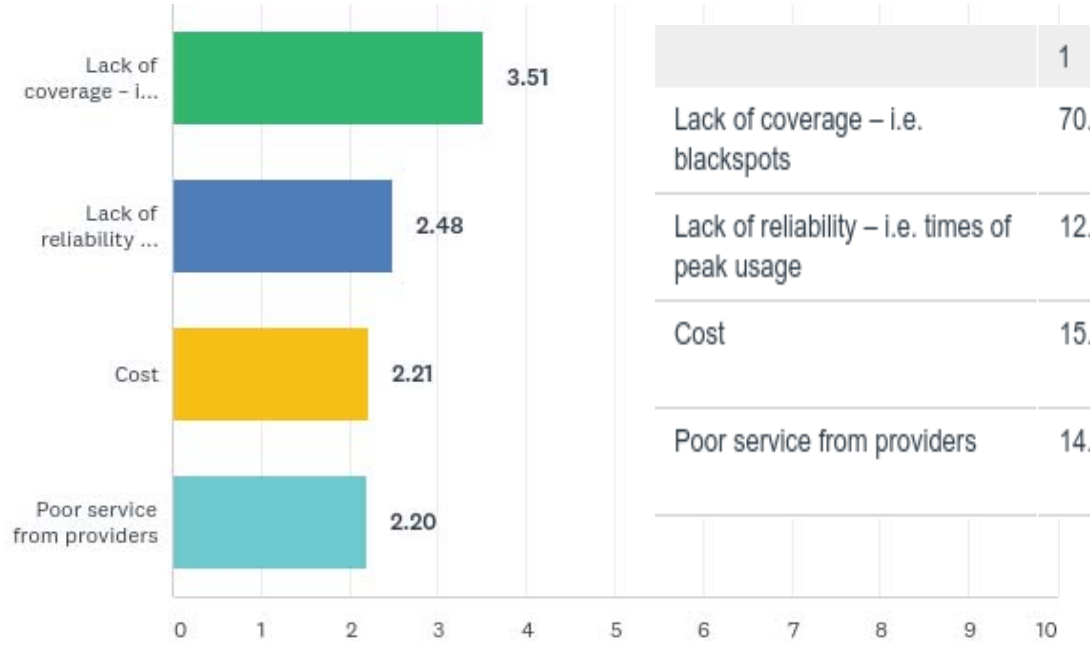
Answered: 583 Skipped: 41



	NSW	Qld	Vic+ Tas	SA	WA
Yes	25.91	24.53	43.33	32.69	17.12
No	74.09	75.47	56.67	67.31	83

Q12: Thinking of your mobile, please rank the following statements according to the degree of concern they cause you. (1 = biggest issue 4 = least important)

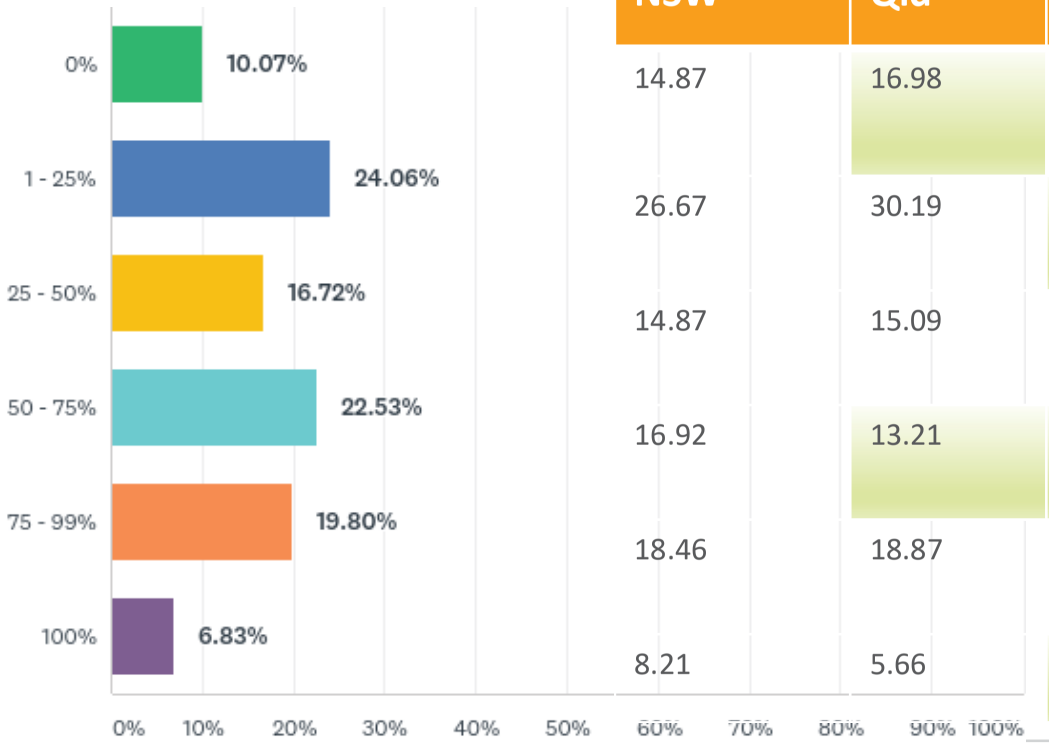
Answered: 584 Skipped: 40



	1	2	3	4	TOTAL	SCORE
Lack of coverage – i.e. blackspots	70.93% 322	15.42% 70	7.49% 34	6.17% 28	454	3.51
Lack of reliability – i.e. times of peak usage	12.63% 61	40.17% 194	29.40% 142	17.81% 86	483	2.48
Cost	15.34% 77	24.50% 123	25.90% 130	34.26% 172	502	2.21
Poor service from providers	14.60% 79	21.81% 118	32.16% 174	31.42% 170	541	2.20

Q14: Thinking about your mobile coverage, what percentage of your farm has constant and reliable mobile phone service?

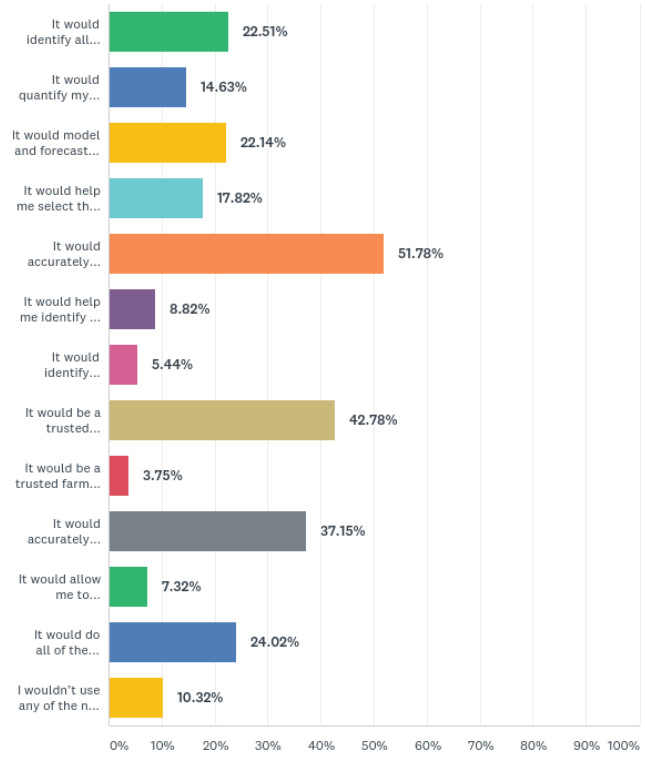
Answered: 586 Skipped: 38



	NSW	Qld	Vic+ Tas	SA	WA
0%	14.87	16.98	4.96	6.6	6.4
1 - 25%	26.67	30.19	12.4	20.75	33
25 - 50%	14.87	15.09	14.88	16.04	24
50 - 75%	16.92	13.21	31.40	25.47	25
75 - 99%	18.46	18.87	25.62	25.47	10
100%	8.21	5.66	10.74	5.66	1.8

Q15: When thinking about the most effective digital decision support and technology tool (as in the best farm App) for your farm business, what would it ideally do for you? (select your top 3 features)

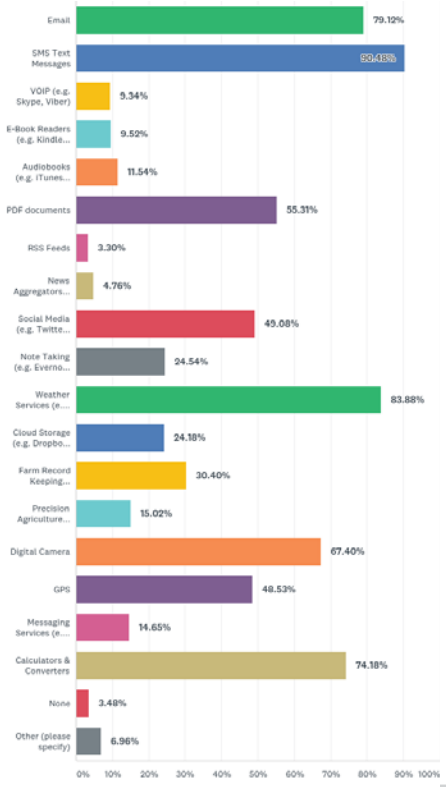
Answered: 533 Skipped: 91



ANSWER CHOICES	RESPONSES	
It would identify all of my key farm risks like OHS, pest, disease, and price and interest rate exposure	22.51%	120
It would quantify my major risks and suggest ways to eliminate or reduce them	14.63%	78
It would model and forecast my farm's current and future profitability	22.14%	118
It would help me select the most profitable enterprise for my business (e.g. livestock/grain/fibre/intensive)	17.82%	95
It would accurately manage my farm inventories (e.g. chemical, fertiliser, fuel, livestock, grain)	51.78%	276
It would help me identify the most effective tax and legal structure for my business	8.82%	47
It would identify sources of capital (debt and equity) and help me access them	5.44%	29
It would be a trusted platform for the online sale and marketing of my farm produce	42.78%	228
It would be a trusted farm succession planning tool	3.75%	20
It would accurately forecast my farm production (crop yield, livestock weight gain, etc)	37.15%	198
It would allow me to participate in farm policy debates on issues relevant to me	7.32%	39
It would do all of the above, all on one application	24.02%	128
I wouldn't use any of the new or existing AgTech tools out there, I don't trust them.	10.32%	55
Total Respondents: 533		

Q16: Which of the following technologies do you access on a regular basis using your mobile device? Tick all that apply

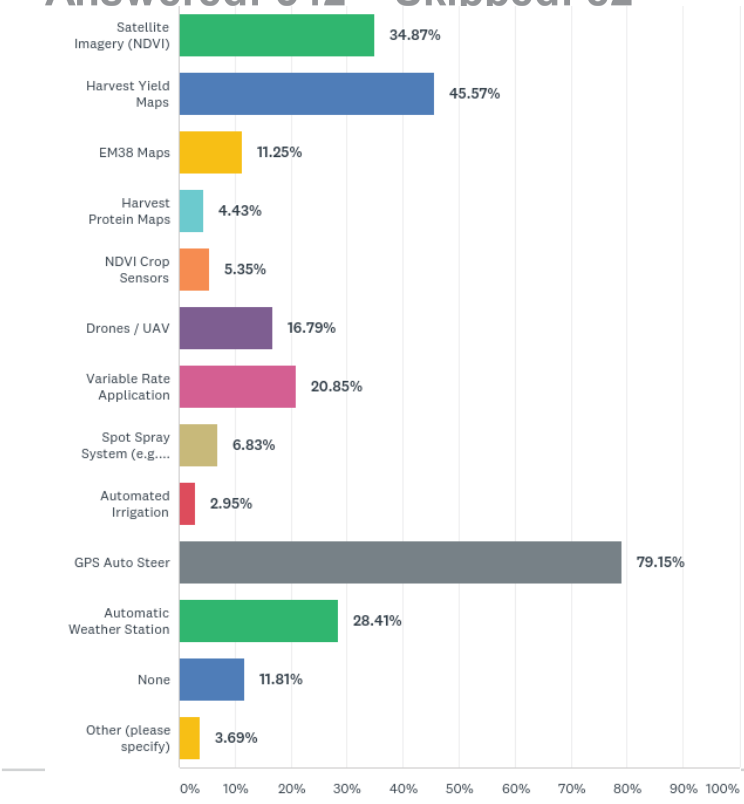
Answered: 546 Skipped: 78



ANSWER CHOICES	RESPONSES	
Email	79.12%	432
SMS Text Messages	90.48%	494
VOIP (e.g. Skype, Viber)	9.34%	51
E-Book Readers (e.g. Kindle, iBooks)	9.52%	52
Audiobooks (e.g. iTunes, Audible)	11.54%	63
PDF documents	55.31%	302
RSS Feeds	3.30%	18
News Aggregators (e.g. Feedly, Flipboard)	4.76%	26
Social Media (e.g. Twitter, Facebook)	49.08%	268
Note Taking (e.g. Evernote, OneNote, Keep)	24.54%	134
Weather Services (e.g. WeatherZone, SprayWise)	83.88%	458
Cloud Storage (e.g. Dropbox, OneDrive)	24.18%	132
Farm Record Keeping Software	30.40%	166
Precision Agriculture (e.g. PASource, Croptical)	15.02%	82
Digital Camera	67.40%	368
GPS	48.53%	265
Messaging Services (e.g. Skype)	14.65%	80
Calculators & Converters	74.18%	405
None	3.48%	19
Other (please specify)	6.96%	38
Total Respondents: 546		

Q17: Which of the following technologies do you use on your farm?

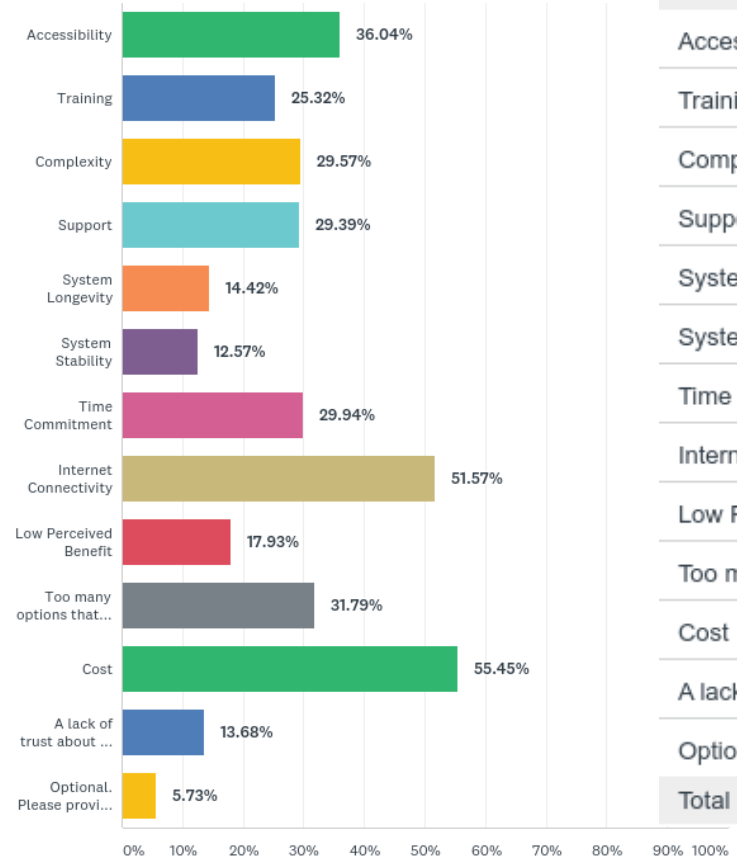
Answered: 542 Skipped: 82



ANSWER CHOICES	RESPONSES	
Satellite Imagery (NDVI)	34.87%	189
Harvest Yield Maps	45.57%	247
EM38 Maps	11.25%	61
Harvest Protein Maps	4.43%	24
NDVI Crop Sensors	5.35%	29
Drones / UAV	16.79%	91
Variable Rate Application	20.85%	113
Spot Spray System (e.g. WeedSeeker, WEEDit)	6.83%	37
Automated Irrigation	2.95%	16
GPS Auto Steer	79.15%	429
Automatic Weather Station	28.41%	154
None	11.81%	64
Other (please specify)	3.69%	20
Total Respondents: 542		

Q18: What are the main limitations for adopting new technology on your farm?

Answered: 541 Skipped: 83



ANSWER CHOICES	RESPONSES	
Accessibility	36.04%	195
Training	25.32%	137
Complexity	29.57%	160
Support	29.39%	159
System Longevity	14.42%	78
System Stability	12.57%	68
Time Commitment	29.94%	162
Internet Connectivity	51.57%	279
Low Perceived Benefit	17.93%	97
Too many options that don't "talk" to each other	31.79%	172
Cost	55.45%	300
A lack of trust about how my data is managed by the provider	13.68%	74
Optional. Please provide details of any other limitations?	5.73%	31
Total Respondents: 541		