The Elephant Broke the Room – Digital Innovation is Hampered by a Lack of Digital Competency and Self-Managed Technical Support

Lachlan Hardy  
*University of Tasmania, Lachlan.Hardy@utas.edu.au*

Erin Roehrer  
*University of Tasmania, erin.roehrer@utas.edu.au*

Soonja Yeom  
*University of Tasmania, soonja.yeom@utas.edu.au*

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The Elephant Broke the Room – Digital Innovation is Hampered by a Lack of Digital Competency and Self-Managed Technical Support

Full research paper

Lachlan Hardy
School of Information and Communication Technology
University of Tasmania
Hobart, Australia
Email: Lachlan.hardy@utas.edu.au

Erin Roehrer
School of Information and Communication Technology
University of Tasmania
Hobart, Australia
Email: erin.roehrer@utas.edu.au

Soonja Yeom
School of Information and Communication Technology
University of Tasmania
Hobart, Australia
Email: Soonja.yeom@utas.edu.au

Abstract

Digital Innovation is hampered by a lack of digital skills and competencies especially in regional areas. Due to Tasmania’s location, digital skills (or lack there-of), and current economic situation it is well positioned to be a research base for digital innovation with global implications. Workers need to be able to support the digital innovations entering their workplace and lives, especially as the digital economy grows, but how they achieve this is poorly understood. This research seeks to answer that through a mixed-method study of Tasmanian’s digital competency and how they engage with technical problem solving in and out of the workplace. Results indicate digital natives aren’t as competent as previously thought, understanding of (digital) safety is lacking across generations and is getting worse among women under 36, and that those not in technology or education have a lack of digital competency making participation in digital innovations difficult.

Keywords Digital competency, regional location, digital innovation, technical support, digital economy
1 Introduction

Digital innovation is hardly a new area, but as it has matured the focus has increasingly narrowed to organisation specific digital innovation (Caruso 2018, Ciriello, Richter et al. 2018, Kohli and Melville 2019). This narrowing has caused many outlooks around digital innovation to have missed or forgotten the workers who are involved in those digital innovations, and the society at large who are the ‘beneficiaries’ of digital innovations. Often the organisations who are engaging in digital innovation or creating digitally innovative products and services fail to meet the needs of everyone in society (Pirhonen, Lolich et al. 2020). This failure, however, is not recognised by those same actors because the focus of digital innovation is on getting the innovation implemented, or to market, before the competition – rather than on how it best serves society. Once the digital innovations are ‘out there’ in the market or society, the question of supporting them has been long forgotten, which results in significant disadvantages for members of society that don’t fit the vision of the digital innovators (Choudrie, Pheeraphuttranghkoon et al. 2020, Mubarak and Petraite 2020, Pirhonen, Lolich et al. 2020). As the bulk of society doesn’t fit in the model of a digitally driven and skilled worker (or member of society), it begs the question of whether people, especially regional, have the digital skills and competencies to engage with the newly developing digital landscape.

Much of the focus over the last two decades has been on building digital literacy and skills among youth (Hague and Payton 2011, Spante, Hashemi et al. 2018, Reddy, Sharma et al. 2020), who then leave the school system and go out into the world to use those skills. The idea is that those digitally literate people would retain and grow their digital skills in the workplace which would contribute to a digitally competent society (Marsh 2021). The issue with this line of thought is that few people have sought to verify if the digital skills were retained post schooling and if the digital skills learned during schooling were useful for the occupations the students eventually went into. The research on adult digital skills is rather sparse and concentrates on specific groups such as retirees (Schlomann, Seifert et al. 2020), farmers (Drewry, Shutske et al. 2019), or those already working with technology such as creative or knowledge professionals (van Laar, van Deursen et al. 2019). These types of surveys are useful to understand digital literacy or competency in specific groups, but the surveys and methods used are often structured for that group, limiting their applicability. This means the understanding of digital skills and competencies are non-reflective of society at large and begs the question of whether the educational focus on digital skills has cemented itself in society.

The COVID-19 pandemic has affected the use of digital technology in widespread and unforeseen ways. The early stages of the pandemic resulted in many lockdowns across the globe which impacted the normal course of business, as a means of reducing this impact many employees transitioned from an office environment to a work-from-home environment (Mustajab, Bauw et al. 2020, Zhang, Gerlowski et al. 2022). As the use of lockdowns has become less prevalent across the globe, the trend for workers to continue working from home has remained high (Bao, Li et al. 2022) which is creating a unique challenge for supporting business technology use in a home environment. Under traditional (digital) work models, any problems with technology during work would be solved by the workplace either through internal or external means. The pandemic has seen this model effectively curtailed because the workers needed the technology in their home office and often meant the use of their personal technology in place of work technology due to the sudden and unplanned change to working environments by lockdowns. The transition into a hybrid work model is extending the challenge of supporting diverse and dispersed technological environments for workplace activities and begs the question of whether workers can support their own technology use outside of traditional workplaces.

2 Literature Review

Digital technology is, unarguably, one of the leading forces in increasing social, economic, and individual performance across societies (Fitzgerald, Kruschwitz et al. 2014, Serpa and Ferreira 2019). More people now are adopting and accessing digital technology than ever before, and the rate is increasing year on year due to the social and economic factors associated with digital innovation (Fitzgerald, Kruschwitz et al. 2014). Further, the population is becoming more digitally literate (Spante, Hashemi et al. 2018, Reddy, Sharma et al. 2020) and the digital literacy is penetrating further into generations that missed out on early education opportunities (Marston, Shore et al. 2020, Schlomann, Seifert et al. 2020).

While this may seem like a digital paradise where nearly everyone can use and access digital technology there is a critical issue that has been poorly researched – the issue of supporting digital technology and solving technical problems. The adoption of digital technology across society, and the penetration of digital technology into society, is starting to show that society isn’t ready to do more than use technology at a surface level – when there’s a problem people struggle to solve it. To further grow in the digital
innovation space and support digital technology adoption through society we need to understand what current populations look like, especially in regional areas where technology is slower to reach – but often has more impact.

Regional areas around the globe are often not the first adopters of digital technology, far from it they tend to be left behind due to several factors of age, geographical location, education, wealth, change resistance, and access to support (Alam and Shahiduzzaman 2015, Alam, Erdiaw-Kwasie et al. 2018, Drewry, Shutiske et al. 2019, Popova, Demina et al. 2019, Mubarak and Petraite 2020). Digital innovation often happens in large population centres where a variety of high-technology industries benefit from increasing their capabilities (Fitzgerald, Kruuschitz et al. 2014, Serpa and Ferreira 2019), however the regions often focus on primary production and manufacturing which sees less of the benefits. Further, the average age of people in regional environments is higher than that of cities and older generations tend to adopt less technology and have greater difficulty integrating it into their daily life (Andrews, Nicoletti et al. 2018, Choudrie, Pheeraphuttranghkoon et al. 2020, Martínez-Dominguez and Mora-Rivera 2020, Pirhonen, Lolich et al. 2020). The factors that hold regional people back are three-fold, first is consistent and stable access to internet technology (Alam and Shahiduzzaman 2015, Andrews, Nicoletti et al. 2018, Drewry, Shutiske et al. 2019, Forman and van Zeebroeck 2019, Martínez-Dominguez and Mora-Rivera 2020). Second is education and experience with technology in and outside of the workplace (Drewry, Shutiske et al. 2019, Martynov, Shavaleeva et al. 2019, Choudrie, Pheeraphuttranghkoon et al. 2020, Schlomann, Seifert et al. 2020) which allows for a safe place to grow confidence and ‘fail’ without consequence. Third is a lack of support in a timely and meaningful capacity (Andrews, Nicoletti et al. 2018, Schlomann, Seifert et al. 2020) which reduces incentives to adopt technology in the first place as often the focus is on minimal external reliance (Andrews, Nicoletti et al. 2018, Drewry, Shutiske et al. 2019, Popova, Demina et al. 2019).

Tasmania is recognised as among lowest educational outcomes among Australian states with Western Australia being slightly higher and South Australia being slightly lower by a single point (Smith, Parr et al. 2019). Tasmania’s population is constrained by geographical features, being an island, which contributes to the low socio-economic status (SES) of much of the population outside of the capital city (Hasan, Wang et al. 2017). Major innovations tend to radiate out from population centres (capital cities) and into regional communities, however the distance isn’t very far outside of innovation corridors such as the Melbourne-Sydney-Brisbane line. The lack of travel for major innovation and development is impacted by regional SES and other effects like average age, employment opportunities, educational outcomes, and service access (Hasan, Wang et al. 2017). As regional centres tend to have older populations, due to younger people moving to the capital cities for employment, they tend to have fewer opportunities to develop or employ innovations, especially technical, as the major users of such system are the youth. This is exacerbated by educational outcomes being poorer in the regional areas (Hasan, Wang et al. 2017, Smith, Parr et al. 2019, Thomson 2021) which means the few youths that stay behind are often the less educated of their peers resulting in a drain on digital and educational capabilities in regional areas. In many cases the regional areas in Tasmania are to Hobart (the capital) as Tasmania is to the mainland of Australia and much of the educational and digital competence moves to the larger population centres (Hasan, Wang et al. 2017).

Over the last decade Tasmania’s economy has been improving, with most of the growth concentrate in the last 5 years to 2022 (Eslake 2016, Eslake 2020, Eccleston, Hyslop et al. 2021). There are five sectors of the Tasmanian economy that account for 49% of employment: agriculture, forestry and fishing; retail trade; accommodation and food services; public administration and defence; and healthcare and social assistance (Eslake 2020). The population of Tasmania is too dispersed to engage in financial, technical, professional, or administrative services seen in larger population centres, this also applies to the Hobart, the largest population centre in Tasmania (Eslake 2020). While the population is dispersed, the aging population sees an increase in productivity and capabilities for aged care and nursing, similarly Tasmania’s natural resources and landscape see increasing productivity and value in tourism and agriculture (Eslake 2020). That said, Tasmania has the lowest levels of digital skills of all states in Australia which has a significant impact on the ability to engage in a more digitally advanced global economy (Commission and Commission 2019, Eslake 2020, Eccleston, Hyslop et al. 2021). The industries that are growing are often doing so without the use of digital technology or advanced skills, instead relying on imported labour to fill in the gaps that the population currently has. The lack of digital skills in Tasmania are driven by its low SES, low affordability of technology, low rates of higher education, and high population over 65 (Eslake 2020). Despite Australia being ranked to take advantage of new technologies and innovation, it hasn’t yet taken advantage of this. Tasmania doesn’t have the excellent placement of workers and skill yet in relation to the rest of the country (Commission and Commission 2019).
Many studies show strong evidence between socioeconomic indicators such as the educational status of parents or the household income and the learning outcomes of students (Baker, Goesling et al. 2002, Chevallier and Lanot 2002, Co-operation and Development 2011). These studies report the possibility of low success of a lower SES status which is frequently found in regional areas where education and technology resources are fewer. COVID-19 has accelerated the need for digital skills across economies due to the reduced geographical movement early in the pandemic, and the extension of the work practices that have come in the later stages of the pandemic (Eccleston, Hyslop et al. 2021). Where the digital skills divide is struggling to close is in the regions like Tasmania which are disconnected from technological hubs, have dispersed populations, and lower educational outcomes. As remote work increases and becomes a fixture of the modern workforce there is a need for greater levels of digital skills and digital self-sufficiency in the workforce. Further, regional locations are well positioned to market themselves as a remote worker haven, where they can enjoy the nature associated with the regional lifestyle while not sacrificing their pay and benefits associated with metropolitan knowledge-worker roles. To be able to capitalise on the economic benefits associated with the new digital economy, regional locations like Tasmania must invest in digital innovation to curtail and improve digital competency and skills. Further, support mechanisms must be in place to allow that digital innovation to flourish – but they must start from the position of improving current skills and competencies rather than adding to an already strained situation.

These factors make Tasmania an excellent location for conducting further research into digital innovations that can improve society and be beneficial and applicable to other regional areas in Australia, across Asia, and globally. But first the support mechanisms need to be developed and put in place concurrent with the digital innovation.

3 Methodology

This study seeks to identify digital competencies of people across Tasmania to understand how digital competency affects self-managed technical support and what impacts self-managed technical support may have on digital innovation. The three research questions this study seeks to answer are:

RQ1: What is the current level of digital competency across Tasmania?
RQ2: How will the digital competency level affect self-managed technical support?
RQ3: What impacts will this have for digital innovation in Tasmania and similar regions?

This study uses thematic analysis and descriptive statistics on results collected from 47 participants across Tasmania in two rounds of data collection between October 2021 and March 2022. As this study captured digital competencies and self-managed technical support skills across an entire state, it differs from similar digital competency studies that focus on a single knowledge area or organisation – a limitation in supporting technology across populations.

The selection of digital competency over digital literacy was based on the need to assess skills across several digital participation domains and engage with different levels of participation. This study was based on the DigComp 2.1 framework (Carretero, Vuorikari et al. 2017) which was created as a self-assessment tool independent of industry or organisation. The DigComp 2.1 framework is based on 8 levels of competence across 5 categories. Each level of competence is self-assessed using the questions in the DigComp 2.1 framework where a score of 1 corresponds to someone who needs guidance to complete simple digital tasks such as opening a word document. A score of 3 corresponds to someone who can complete well-defined and routine tasks within their knowledge domain or solve straightforward problems using simple solutions. A score of 5 corresponds to someone who can complete a range of different tasks and solve a variety of problems, and they can guide others to do so as well. A score of 7 corresponds to someone who can solve complex problems with limited known solutions and can integrate and contribute to professional practice and guide others. It would be expected that few people would achieve a consistent score of 1 or 8 in any of the five categories, as completing the digital survey would require someone consistently scoring 1 to have assistance the whole time. Consistent scores of 8 would be rare, especially in a regional area where access to a range of digital technologies and industries would be needed to find complex problems or propose new ideas and processes.

There are also five categories with several questions per category. The categories are as follows:

Information and Data Literacy had three questions related to the use, analysis, and comparison of data; articulation of information needs and search strategies for data and information; and organising, storing, and retrieving information and content from digital environments. Communication and
Collaboration had six questions related to interacting through and understanding communication on various digital platforms; sharing data, information, and content with others through appropriate technologies; participating in public and private digital services and seeking self-empowerment through digital technology; using digital tools and technologies for collaborative processes; be aware of behavioural norms and know-how while using digital platforms; and to create and manage one of many digital identities. Digital Content Creation had four questions related to creating and editing digital content in various formats; modify, refine, and improve content into existing bodies of knowledge to create new and original knowledge; understand how copyright and licences apply to data, information, and content; and planning and developing a sequence of instructions for computer systems to solve tasks. Safety had four questions related to protecting devices and digital content and understanding risks and threats; protecting personal data and privacy in digital environments; avoiding health risks both physical and psychological while using digital technologies; and being aware of digital technologies environmental impacts. Problem Solving had four questions related to identifying and solving technical problems when using devices and digital environments; identify and select digital tools and technologies to solve assessed needs; use digital tools and technologies to create knowledge and innovate processes and products; and to understand where one's own digital competence needs to be improved or updated.

The framework was then adapted to include open ended questions on how technical problems would be solved by the participants in and out of the workplace to gain an increased understanding of processes expressed by Tasmanians when supporting themselves in solving technical problems.

### 4 Analysis and Discussion

#### 4.1 Descriptive Statistics

The survey was conducted across the state of Tasmania with a total of 47 participants (M=24 and F=23) with an average age of 38.79 (F=37.83 and M=39.75), the minimum age was 18 and the maximum age was 67.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and Data Literacy</td>
<td>5.61</td>
<td>5.93</td>
<td>5.28</td>
<td>-10.96%</td>
</tr>
<tr>
<td>Communication and Collaboration</td>
<td>5.33</td>
<td>5.65</td>
<td>4.99</td>
<td>-11.68%</td>
</tr>
<tr>
<td>Digital Content Creation</td>
<td>4.62</td>
<td>4.97</td>
<td>4.26</td>
<td>-14.29%</td>
</tr>
<tr>
<td>Safety</td>
<td>4.73</td>
<td>5.08</td>
<td>4.37</td>
<td>-13.98%</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>4.69</td>
<td>5.13</td>
<td>4.13</td>
<td>-19.49%</td>
</tr>
</tbody>
</table>

*Table 1. Response scores for each of the DigComp 2.1 framework categories showing the aggregate score of total, male, and female.*

As seen in Table 1 female respondents rated themselves lower than male respondents across all categories which is in line with many surveys on digital literacy and competency (Baker, Goesling et al. 2002, Hague and Payton 2011, Pagani, Argentini et al. 2016, Spante, Hashemi et al. 2018, Choudrie, Pheeraphuttrangkhoo et al. 2020, Reddy, Sharma et al. 2020). Where these results differ is the male participants averaged ratings tend to be higher than expected with an average score around 5. A score of 5 corresponds to the ability to guide others to achieve their goals across different tasks and problems, which, based on Tasmania’s education outcomes (Eslake 2020, Crato 2021, Eccleston, Hyslop et al. 2021) is less likely to be the case indicating an over-inflated self-assessment score. While female scores are lower than their male counterparts, they tend to reflect a better self-assessment that fits in to the educational outcomes of Tasmania. However, the large difference between male and female participants on Problem Solving is a cause for concern in supporting new and existing technologies entering the market or adapting technology to meet changing needs.

Participants were asked to provide their primary industry of employment as part of this survey, current students were asked to provide Education as their place of employment assuming they were full-time students seen in Table 2. The highest number of participants were in Education (17) and Technology (7), there were 6 other occupational groups mentioned with a total of 16 respondents. As most digital competency surveys focus on a single industry it’s necessary to understand how the population outside of those industries might differ.
As seen in Table 3 the differences between Tech. and Non-tech. are consistent with expectations based on employment industry, where those working in technology have higher average scores across the five areas than those who don’t. However, the scores are not significantly higher than the general average outside of Information and Data Literacy from Table 1. Those in the education field, being teachers and students, also have higher scores than their non-education counterparts, being quite comparable to those in technology. Where the striking difference comes in is those not in education have significantly lower average scores which may indicate a large problem in adapting to new technology for people not engaging with technology daily.

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It’s clear that people working in education and technology are much better equipped to handle digital innovation than people outside of education and technology. In Table 4 the higher values of Information and Data Literacy and Communication and Collaboration are indicative of communication methods that arose due to COVID-19 (Eccleston, Hyslop et al. 2021). The lower values of Digital Content Creation, Safety, and Problem Solving are of concern for the adoption of digital innovation and technology. Based on DigComp 2.1 a score in the 3’s indicates the ability to deal with well-defined and routine tasks and straightforward problems (Carretero, Vuorikari et al. 2017). It would be rare for a problem to be straightforward in a digitally advancing age, especially with innovation being synonymous with complication for technology use. It is also an indicator that people outside of rapidly changing occupations have difficulty adapting to changing technology use as, with a score of 3, they can use digital technology they are familiar with in their occupational role but outside of that they struggle with new technologies, or even using older technologies in innovative ways.

The argument used in education is that the digital skills will be learned and passed on by those exiting education and moving into the workplace which will have a positive effect on the overall digital competence of the environment (Jackman, Gentile et al. 2021). Simple linear regression was used to test if generational age played a role in increasing digital competence as generational age increases in the workplace. The overall regression was statistically significant ($R^2 = 0.997, p = 0.002$). It was found that generational age does play a cumulative effect in increasing digital competence in the workplace.
Table 5. Shows the difference between the three age categories where those 25 and under are classified as digital natives, those 26 to 45 are middle adopters, and those 46+ are late adopters.

In Table 5 there is a direct challenge to this idea though, as the digital natives (those 25 and under) who have had technology throughout their whole lives and playing a leading role in their education, have demonstrably lower digital competence scores than the middle adopters (26 to 45). The middle adopters are those who accessed technology during their schooling but the access and range of technology available was limited, often by socio-economic status. Compared to the digital natives who have access to significantly more quality information and resources, there is less of a need to explore and understand the digital technology being used as any solution will be presented in an easily accepted format. This limitation is one possible cause of the difference between the two, as the internet was less developed which meant digital resources were scarce and sometimes unreliable – necessitating a digital pioneer attitude to content and problems, compared to a consumer attitude present in digital natives.

In Table 5 we can see the digital competency of Tasmanian’s is highest among the middle adopters of digital technology which consistent with education initiatives and the early need to seek information rather than consume content. The lower scores of those over 46 is consistent with late adoption of digital technology in the workplace and home life, however the surprising factor was the lower-than-expected score of the digital natives. That this generation was saturated with digital technology hasn’t led to noticeable increases in digital competency, rather, the competency levels are less than their preceding generation. This suggests that digital education and literacy programs are having some impact, but the impact is less than what occurred in prior generations – the main difference being the shift from exploration and problem solving to consumption and convenience. In Table 3 we can see that women consistently rate themselves as less competent than their male peers, while this is consistent with generational trends, it is reducing. Those 35 and under (Table 6) show consistently lower differences than compared to the total population split on sex (Table 1) and have reversed the trend in Information and Data Literacy having a lead of 4.85% over their male peers. However, the difference in Digital Safety scores -13.98% (Table 1) compared to -18.87% (Table 6) shows a worsening gap (4.89%) between the sexes. It’s unclear why the self-assessed digital safety is worsening but suggests one area of focus for educators and future campaigns.

Table 6. Shows the differences between male and female participants aged 35 and under with their averaged scores along with the percentage difference between male and female.

In answering research question 1 we can see that Tasmanian’s have some degree of digital competency; however, this competency is clustered in those aged 26 to 45 and again in those currently in the technology or education fields who get exposed to digital skills daily. For Tasmanian’s outside of those occupational areas or age range, the digital competency is markedly lower, suggesting difficulty in participating fully in digital innovations with a regional focus. The lower digital competency scores among the digital natives bring into question whether they will be able to upskill their older colleagues in the workplace – directly challenging the current educational push-through idea.
4.2 Thematic Analysis

The survey also had questions related to the experience of technical problems inside and outside of the workplace and asked participants to describe what they would do if they encountered a technical problem. Thematic analysis was conducted on the final round of codes created for inside workplace (Table 7) and outside workplace (Table 8).

<table>
<thead>
<tr>
<th>Themes</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tools</td>
<td>Phone, Log a Ticket, Reboot, Factory Reset, Standard Operating Procedures, Troubleshooting</td>
</tr>
<tr>
<td>Attitude</td>
<td>Suffer until resolved, Deliberate, Existing knowledge matters, Help-seeking first, Self-support first, Self-assessment of issue</td>
</tr>
<tr>
<td>Enablers</td>
<td>Quick, Experience and knowledge, Information seeking at end</td>
</tr>
<tr>
<td>Organisational support</td>
<td>Help portal, Contact IT support last, contact IT support first</td>
</tr>
<tr>
<td>Proactive</td>
<td>Iterative process, hierarchy, help seeking second</td>
</tr>
<tr>
<td>Go-to</td>
<td>Reputable sources, social support, technical communities</td>
</tr>
</tbody>
</table>

*Table 7. Themes and codes for solving technical problems at work*

<table>
<thead>
<tr>
<th>Themes</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tools</td>
<td>Standard Operating Procedures, reboot</td>
</tr>
<tr>
<td>Pull resourcing</td>
<td>Knowledge communities, YouTube, Interactive investigation, first information search, information searching</td>
</tr>
<tr>
<td>Person centred</td>
<td>Age, social contacts (general), Social contacts (knowledgeable)</td>
</tr>
<tr>
<td>Awareness</td>
<td>Knowledge and skill, self-assessment, understanding, problem solving, diagnose problem, information quality, self-learning</td>
</tr>
<tr>
<td>Too hard basket</td>
<td>Replace item, hardware issues difficult</td>
</tr>
<tr>
<td>Modus operandi</td>
<td>Preferred process, self-solution first, professional solution first</td>
</tr>
</tbody>
</table>

*Table 8. Themes and codes for solving technical problems outside of work*

With removal of the same theme of Tools present in both Table 7 and Table 8, there are some similarities between the groups processes, namely that some people seek help from others, and some try to solve the issue on their own. There’s a distinct understanding of how one’s knowledge and skills can help to solve technical problems but also that there’s a point where further investigation would prove pointless. One of the main differences between the theme groups is when professional help would be sought; in the responses for the workplace themes (Table 7) people expressed they were more willing to seek professional technical support and to do so earlier in the process than outside of the workplace. This could indicate that traditional models of organisational technical support are preferred when they are freely available, however when there is an associated cost to them people would prefer other methods of solving the issue. Where this preference would be tested is during periods without easy access to workplace supported technology such as during lockdowns or more recent hybrid work modes. As people may have some of their work technology (a laptop) but would rely on personal technology to achieve the connection (home internet access), while others might solely have their home technology and use that for work purposes – falling outside of the scope of traditional technical support models.

The other major difference between the themes is the seeking of help from family and friends (Table 8), something rarely done in the workplace though colleagues were represented (Table 7). Which indicates extended social circles are useful for providing and overcoming gaps in knowledge (actual or perceived) however in older participants there was a perception that youth (grandchildren) were more competent with technology. As seen in Table 5 it would be the case that youth are more competent than their grandparents in most situations, however the slightly older (parent) generations were often more competent with digital technology. This could mean there is an issue in recognising the digital competence of other individuals relative to one’s own competence, higher levels of competence are
recognisable but based on the specific responses this would be age-based bias – i.e., ‘they are young so they must know’.

The reliance on extended social circles to solve technical problems outside of the workplace suggests a lack of digital competence to engage with the problems and a desire to have intervention in the process. This is reflected in the workplace problem solving process where many of the respondents indicated they would seek professional support either first or second in their process, few would try and solve the problem until they succeeded. In answering research question 2 it’s clear that people prefer an intervention to solve technical problems rather than self-reliance which can be seen in population wide scores for problem solving (Table 1) and age separated scores (Table 5). For people outside of education or technology, problem solving was the largest self-assessed rating difference at -32.99% (Table 4). Which suggests that regionally dominant industries like primary production and associated support wouldn’t be able to cope with the self-managed technical support needs of hybrid working conditions or modern (low support) digital innovation.

In answering research question 3, the lower digital competence in regional areas like Tasmania typically means there are fewer available ways to support the drive for digital innovation. An older population typically links with less technology education therefore there are fewer people with the skills and competence to provide local support for any innovation drive. The lack of recent digital skills training also hampers adoption, as current self-support mechanisms rely on complicated jargon to convey relevant information. Understanding the jargon requires a certain level of digital competence which is frequently missing in the regions, especially as most support mechanisms were developed with generally large city-based populations in mind. So long as the focus of digital innovation is on getting a product or idea to market there will be a lag in regional areas for uptake and continued use without relevant, prolonged, and targeted support in place for those communities. With digital innovation’s reliance on communities having the digital competence to engage, there needs to be an understanding of the shape of digital competence across the population, which includes the regional areas. Failure to consider digital competence in the population risks further entrenching the digital divide between large and small populations, wealthy and poor populations, and those with access to fewer resources who would most benefit from some of the new digital innovations available. There also needs to be a consistent method of providing some level of technical support that works across industries and communities to facilitate the expansion of digital innovation, without something that can be universally applied for that purpose those communities will remain in a digital deficit.

5 Conclusion

In answering research question 1, we found that digital competency is clustered in the young to middle age demographic and those recently engaging with some form of education or digital training. In answering research question 2 we found that people in regions prefer a solution to be provided rather than their own effort to solve the problem, which means the low support mechanisms of current digital innovation would result in limited success in regional areas where change is slow. In answering research question 3 we found that not addressing the lack of digital support would entrench the digital divide experienced in the regional areas, further, that more effort needs to be spent by the innovators to provide adequate and meaningful support to the regional areas where they want to embed their innovations.

To succeed with digital innovation for regional centres more thought and effort needs to be spent on supporting digital technology and digital competency, independent of the technology, brand, or organisation. People in regional locations often lack access to digital technology and the associated skills and competencies that come with the technology. This means they lack the mechanisms required to self-support during technical problem solving, creating an adoption and innovation vacuum that hampers uptake and technological longevity. More research is necessary to understand how to better support people in regional areas with digital technology and self-managed problem solving. Simply adding more communication technology (internet access) won’t solve the issue, as there is a lack of trust in new technology and design of the digital technology often doesn’t meet the needs of regional areas and instead focusses on the needs of large population centres. More research is necessary to understand how people self-manage technical problems, as common traits or attributes could be sued to design better support mechanisms or provide better tailored support to meet community needs.

Digital innovation is currently focussed on blue-sky thinking, looking to the future, and trying to create big new platforms and changes. In areas where these changes can work this style of design and planning can work, however in regional areas that are often forgotten by the blue-sky approach may lead to a sharp drop off the cliff of reality. Digital innovation should be built on a platform of supporting the users across all regions and population centres rather than trying to create an edge in a saturated environment.
and not capitalising on untapped markets. The approach to digital innovation that should be considered is a holistic process of involving people and technology across a meaningful lifecycle, where the goal is to support people in accessing and using digital technology. In doing so, comprehensive support mechanisms can be built into the innovation process and the technology itself, which may lead to a larger future audience as they will be better equipped for their environment and change.

6 References


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