

Work and technology over the lifecycle

FINAL REPORT

Cecilia Moretti, Sara Howard, John Spoehr, Ann-Louise Hordacre and Kate Barnett
February 2014

WISeR
Informing Decisions



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WISeR also specialises in socio-economic impact assessment including the distributional impacts and human dimensions of change on different population groups and localities. Our research plays a key role in informing policy and strategy development at a national, local and international level.

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EXECUTIVE SUMMARY

This report presents the experiences and attitudes of employees of a finance organisation about Information Communication Technologies (ICTs) in the workplace. ICTs include computers and computer technologies (for example, personal computers, laptops, hand-held organisers, the Kindle and the iPad); mobile phones; the Internet and the Intranet; email; video conferencing; and new mediums for social exchange (like Skype, Second Life, You Tube, Twitter, MySpace and Facebook). Interest in this area has been driven by the transformation of people's lives as ICTs have increasingly integrated across a broad spectrum of human activity and experience. The present interest has been on the implications for new organisational work practices and what these mean for worker health, safety and well-being.

The finance industry was targeted for the present study as the literature showed that this sector was an early business leader in recognising the potential for, and investing in, new ICTs (Productivity Commission, 2004). The participating organisation demonstrated many of the characteristics of ICT engagement identified in the literature for finance organisations more broadly, in terms of pursuing increasingly sophisticated ICT platforms and applications to deliver improved efficiencies and innovation in product development and delivery (Australian Bureau of Statistics, 2011; Werthamer & Raymond, 1997).

The project commenced with scoping interviews conducted with selected senior managers from the organisation, followed by a focus group with five staff members. These consultations explored staff ICT engagement and related issues. Information gathered from the consultations was used to inform survey development (in addition to an extensive literature review on the topic). The survey was also piloted among the five staff members who participated in the focus group. The survey instrument - the Australian Workplace and Technology Index (AWATI) – was administered online to the Adelaide office of the finance organisation. One hundred and three staff responded.

Respondents to the survey were typically female, approximately 40 years of age and had worked for the organisation for almost seven years. The majority of respondents worked in a non-customer facing role and came from English speaking backgrounds. More than half of all respondents did not have any care-giving responsibilities and 78% of all staff rated their overall health as good or very good.

Fifteen percent of responding staff were in management positions and these staff members tended to be males from Generation X¹. Consistent with job descriptions, staff in management roles were more likely to work longer hours (i.e. 38 hours or more a week compared to the average of 36 hours).

Computers, email and the internet were all used very frequently by staff whereas tablet use was uncommon. Despite low usage of some types of technology, confidence about using all the technologies listed was fairly high. Furthermore, even though usage was generally much greater for management, other staff showed comparable confidence in all areas of technology use, except for teleconferencing.

Survey results showed that overall, the majority of participants felt satisfied with their jobs, supported by colleagues and supervisors and perceived an adequate balance between electronic and face-to-face communication. Workplace technology was viewed as largely beneficial and not too invasive on personal time. However important differences were observed between management and other positions,

¹ Baby Boomers were born between 1946 and 1964 - aged between 48 and 66 years;; Generation X was born between 1965 and 1979 - aged between 33 and 47; and Generation Y was born between 1980 and 1994 - aged between 18 and 32 at the time of the survey .

between generational cohorts and whether a staff member is ‘technologically stressed’² or not (these are summarised in a section that follows).

CONSULTATION FINDINGS

Consultation findings showed that the organisation is in a dynamic state of development in terms of rolling out new IT platforms and processes, and that staff capacity is still catching up. It was generally acknowledged that many staff had sufficient ICT knowledge and skills to perform their role adequately, but there was scope to deepen their capabilities in order to extract maximum potential from available technologies.

On the whole, staff are positive about ICTs in the workplace, recognising benefits in terms of streamlined, time saving processes and enhanced communication lines. However they also recognise potential risks in terms of increasingly complex roles, managing information overload, and balancing speed and measured response in the transmission of information. Technological tethering (also see section on technostress) was seen as a more pronounced issue for management level employees.

Role-specific rather than generic or ‘one size fits all’ training in ICT use was seen as important. Buddying and/or mentoring systems were also flagged by staff as potentially useful ways to develop ICT confidence and skills. Having clear guidelines about ICT use in the workplace is important, particularly in terms of staff awareness of the risks of social media in relation to bullying and compromising corporate reputation. Related survey results showed that:

- 80% of responding staff agreed or strongly agreed that the organisation had *clear guidelines about using the internet or social media for personal purposes at work* (10% neither agreed nor disagreed and 10% disagreed to some extent).
- 19% of employees *have heard of technology being used to bully people in their workplace* (16% neither agreed nor disagreed and 64% disagreed to some extent).

INNOVATIVE ACTIVITY AND FACILITATION OF WORK

The increase of ICTs in the workforce has fostered a number of positive changes in workplace culture such as enhanced global communication; increased workplace flexibility and innovative activity. Slightly less than two-thirds of employees agreed in the current study that technology helps them *come up with new ideas relating to their job*.

Previous research has showed that around three-quarters of employees agreed that technologies made it easier to do their job well and 13% felt that technologies made their work more complicated (The Work Foundation, 2009).

In the current study, 93% agreed that technology *improves the quality of their work*, 96% agreed that it *helps them work more efficiently* and less than 10% felt that *new technologies are making work harder (not easier)*. However, more than a third (42%) of staff believed that *the information systems required for their work are quite complex to navigate*.

² Technology-related health status has been formed from the question *time taken off work due to technology-related stress or illness*. Twenty-one individuals either left work early or took a day or more off work on at least two or more occasions. They are considered to be ‘repeat sufferers’ and as such their health is more heavily impacted by technology use than others. Technology-related health status is labelled as ‘stressed’ or ‘not stressed’ in this report.

HEALTH

Around half to three-quarters of employees tended to rate technology as causing very little or no impact on various aspects of their health. However, eye strain, fatigue and headaches were the most notable health issues with around 10% of staff reporting they have been affected by eye strain and headaches to a great extent and more than a third of staff reporting they have been somewhat affected by eye strain and fatigue.

Health impacts are generally not isolated (i.e. are co-morbid) with half (n=12) of the 25 people whose health was reported to be affected to a *great extent* by technology reporting an impact for more than one health problem (e.g. for both eye strain and fatigue). Survey results showed that:

- Approximately half of respondents agreed to some extent that their *organisation arranges activities to promote their physical health* (15 % neither agreed nor disagreed and 34% disagreed to some extent).
- 39 % of staff agreed to some extent that they *make good use of health promotion activities provided by their organisation* (31% neither agreed nor disagreed and 21% disagreed to some extent).
- Just over a third of staff reported they *often feel physically cramped from sitting too long at the computer*.

TECHNOSTRESS

There are many elements that form the construct 'technostress'³. Those most relevant to the current survey are presented below. Developing strategies to address these 'symptoms' is important in order to maintain employee health and productivity as well as job satisfaction and retention. Currently, 72% of the finance staff reported *feeling satisfied with their job* (16% neither agreed nor disagreed and 13% disagreed to some extent) although around half considered their *job to be stressful* (27% neither agreed nor disagreed and 25% disagreed to some extent).

Increased pressure to multi-task

- One third of staff strongly agreed that as a result of technology, they are expected to *perform multiple tasks at the same time*.
- Similarly, around 20% of staff strongly agreed that because of technology they feel it is expected they *experience frequent interruptions to the flow of their work*.

Higher productivity expectations

- As a result of technology, approximately one third of staff strongly agreed that they are expected to be *more accountable to the organisation*.
- Just under one quarter of staff felt they were expected to *work much faster*.
- Similar proportions of staff both disagreed (38%) and agreed (28%) that because of technology they are expected to *do more work than they can handle* (31% neither agreed nor disagreed and 3% were unsure).

Erosion of work-life balance

- Around a third of employees reported *never* engaging in work activities in their personal time.
- When individuals did engage in work activities outside of work hours, this was most commonly done by checking work emails (8% reported doing this very frequently) and accessing work files (5% reported very frequently).

³ This term is used to describe a range of negative psychological effects associated with ICTs.

- As for employees' acceptance of being contacted in their personal time for work purposes, 8% strongly agreed that they *do not mind*, increasing to 11% *if it is something important*.
- Almost a third of employees indicated some agreement that *they accept working in their personal time as part of their role*. However only a quarter of staff did *not mind working in their personal time*. This suggests that approximately 7% of participants perceived some out of hours work was part of their role but that they were not completely comfortable with that arrangement.

Erosion of boundaries that separate work and home ('chronic connectivity')

- Technology was endorsed by staff for helping to *balance work and life commitments* (80% agreed to some extent) and *staying connected with important commitments outside work* (84% agreed to some extent).

Expectation that workers are always available ('technologically tethered')

- 28% believed that they are *expected to always be available because of the new technology* (47% disagreed to some extent, 23% neither agreed nor disagreed).
- 20% of staff were concerned that *new technologies invaded their personal time* (18% neither agreed nor disagreed and 59% disagreed with this statement to some extent).

Frustrations with hardware/software and time delays due to breakdown or equipment failure

- 41% either agreed or strongly agreed that they *are often frustrated by problems with IT*.
- Nearly three-quarters of employees agreed that they are able to *source adequate IT support within my organisation if I need it* (15% neither agreed nor disagreed and 11% disagreed to some extent).
- Slightly more than half of staff agreed that *the training provided by their organisation helps them adapt to new technologies* (23% neither agreed nor disagreed and 20% disagreed to some extent).
- 5% of staff did not think technology *facilitates getting help and support quickly* (11% neither agreed nor disagreed and 85% agreed to some extent).

Constant demands to up-skill/keep pace with rapidly evolving technology

- Around 20% of staff strongly agreed that because of technology they feel it they are expected to *constantly update their IT skills*.
- 26% agreed to some extent that they *feel pressured to constantly update their skills to maintain their job*.
- Nearly all (95%) employees agreed to some extent that *it's important to actively build their skills in relevant information systems and programs*.
- 61% of respondents considered that the organisation *encouraged staff to try out new technologies* (27% neither agreed nor disagreed and 10% disagreed to some extent).

The de-personalisation of communication (loss of face to face contact)

At least three-quarters of employees agreed to some extent that:

- *they are happy with the level of face-to-face interaction with co-workers* (86%).
- *they have sufficient opportunity to get up from their desk and move about* (77%).
- *there is an appropriate balance between electronic and face-to-face communication* (76%).

Increase in cognitive demands required to carry out work tasks

- *12% indicated they need a long time to understand and use new technologies*.
- *8% felt they did not know enough about this technology to handle their job satisfactorily*.
- *5% often found it too difficult to understand and use new technologies*.
- Slightly more than half of employees (57%) felt they *could work more efficiently if they had a deeper understanding of the systems/programs they use* (14% neither agreed nor disagreed and 26% disagreed to some extent).
- *15% felt threatened by co-workers with better technology skills*.

GROUP DIFFERENCES

Analysis by sub-group identified distinct patterns around some aspects of technology. These can be summarised as:

Organisational Role

- Non-management staff were significantly⁴ more likely to report feeling *disconnected from the workplace* and that *new technologies threaten my job security*.
- Frequency of engaging in work outside of work hours and the acceptability of this is largely a function of organisational role. Management staff were significantly more likely to work in their personal time and were more likely to consider it appropriate, especially if it is something important.
- Managers were statistically less likely to report having *an active imagination* and being *considerate and kind to almost everyone* compared to other staff.

⁴⁴ This refers to a statistical difference when two averages are compared. Please see the body of the report for more details.

Age Group

- Baby boomers were significantly less confident in their use of computers, mobile phones and tablets. This was particularly the case for tablets with older employees reporting only some or no confidence in using them.
- There was a significant difference between age groups in regard to technology helping to *improve the quality of my work* – Generation Ys agreed with this statement significantly more than Baby Boomers (albeit there was still overall agreement with this statement).
- Highlighting differences in exposure to technology, Baby Boomers were significantly more likely to report *I often find it too difficult to understand and use new technology* compared to both Generation Xs and Ys. This difference also held for Baby Boomers reporting *needing a long time to understand and use new technologies* compared to Generation Y.
- Interestingly, Generation X staff were significantly more likely to agree that the *organisation arranges activities to promote health* compared to Generation Y staff.

Technology-related health status

- ‘Stressed’ individuals tended to feel the weight of expectation more than others; they were significantly more likely to agree that because of technology I am expected to do more work than I can handle.
- ‘Stressed’ staff were also significantly more likely to have heard of technology being used to bully people in my workplace.
- Stressed staff members were significantly more likely to feel *threatened by co-workers with better technology skills*.
- Just over a third of staff (36%) reported they *often feel physically cramped from sitting too long at the computer*, with this response significantly more likely in those experiencing technology-related stress or illness.
- Those who experience technology-related stress and illness were significantly more likely to *find fault with others* than their non-stressed colleagues.

1 INFORMATION AND COMMUNICATION TECHNOLOGY IN THE WORKPLACE

In recent years there has been a proliferation of Information Communication Technologies (ICTs) including: computers and computer technologies (for example, personal computers, laptops, hand-held organisers, the Kindle and the iPad); mobile phones; the internet and the intranet; email; video conferencing; and new mediums for social exchange (like Skype, Second Life, You Tube, Twitter, MySpace and Facebook). The increase of ICTs in the workforce has fostered a number of positive changes in workplace culture such as enhanced global communication; increased workplace flexibility; and a reduction in the number of occupations which require menial work or manual labour (Florida, 2003a, 2003b).

Other positive correlates of ICTs in business include innovative activity (Todhunter & Abello, 2011) and promotion of stronger social capital and social relationships at work leading to higher job satisfaction. For example, The Work Foundation found that people who used ICTs at work had greater trust in their colleagues doing their work properly, while people with access to new technologies in their workplace were more likely to feel their organisation had a culture of mutual trust and loyalty. In addition, attitudes to ICTs were generally positive with 74% of employees agreeing that technologies made it easier to do their job well. However, 13% of employees felt that technologies made their work more complicated (The Work Foundation, 2009).

In contrast, much less is known about the psychosocial, health and safety implications of technology dense working lives and the impact of particular combinations and applications of ICTs on individuals under differing circumstances. For example, gender, age, health and education have been reported to influence how an individual responds to using ICTs and the specific demands of ICTs vary by occupation and industry.

Some of the psychosocial aspects of work that have the potential to lead to stress include workload, work pace, work schedule, career security factors, organisational role, interpersonal relations, and job content and design (Grimshaw, 1999). The term 'technostress' has been coined to describe a range of negative psychological effects associated with ICTs (Tarafdar, Tu, & Ragu-Nathan, 2010):

- Increased workload
- Information overload
- Increased pressure to multi-task
- Higher productivity expectations
- Erosion of work-life balance
 - Erosion of boundaries that separate work and home ('chronic connectivity'; Gregg, 2011)
 - Expectation that workers are always available – 'technologically tethered'
- Frustrations with hardware/software and time delays due to breakdown or equipment failure
- Constant demands to up-skill/keep pace with rapidly evolving technology
- The de-personalisation of communication
 - Loss of face to face contact
 - Social isolation
 - Difficulties with supervision and teamwork associated with increased work from home
- Increase in cognitive demands and a decrease in the level of specialised knowledge required to carry out work tasks

- Addiction to SMS texting, gaming etc.

Given evidence suggests that the finance sector is an early business leader in recognising the potential for, and investing in, new ICTs (Productivity Commission, 2004), it provides a logical setting to investigate the relationships between stress, ICTs and work. This study explores perspectives of employees of a finance company about ICTs, their patterns of use and the consequences of these.

2 ABOUT THE PARTICIPATING FINANCE ORGANISATION

The participating finance organisation provides investment, superannuation, and retirement income products, investment administration services, financial advice and insurance solutions through its leading brands. While the group is nation-wide, this project involved a sample of around 500 staff connected with the Adelaide site, sixty of whom work from home with contact centre equipment provided.

While underlying systems of the organisation were reported to be somewhat out of date, the organisation has invested heavily in wrap-around technologies and telecommunications. Notably, staff have been required to adapt to significant changes affecting how workplace engagement and performance management is conducted.

3 METHOD

The project involved three stages which were:

- Consultation with the finance organisation;
- Survey development; and
- Survey administration.

3.1 CONSULTATION PROCESS

Scoping interviews were conducted with three senior managers followed by a focus group with five staff members from the participating finance organisation. The consultations focused on:

- Current workforce profile, including the range of roles, types of ICTs used across the organisation, relative intensity of engagement, and level of confidence of users across different organisational sections.
- Organisational thinking and planning in relation to ICT engagement among the broader workforce, including evolution of systems, gaps in IT capability, development opportunities, emerging ICT-related issues, and planning for potential risks, such as the existence of guidelines etc.
- Identifying organisational and program documentation to inform survey development.

A key outcome of the initial interviews was setting up contact with the organisation's communication officer who acted as liaison and facilitator for all subsequent project activities. This relationship was crucial to the success of the project, in terms of accessing and encouraging the participation of staff members and optimising the timing of different research activities from an organisational perspective. The communication officer actively promoted the research through the organisation's

newsletter, and assisted in recruiting staff members for a catered lunch-time focus group. Five staff members volunteered to participate in the focus group, from across a range of organisational divisions. The focus group utilised the same questions as the manager interviews, to give the staff perspective.

3.2 SURVEY DEVELOPMENT

The initial design of the survey instrument – the Australian Workplace and Technology Index (AWATI) was informed by an extensive literature review in the area of stress, technology and the workplace. In particular, the tool has drawn on a validated technostress scale developed by Tarafdar and colleagues which addresses the five domains of technological overload, invasion, complexity, insecurity and uncertainty leading to stress in the workplace (Tarafdar, Tu, Ragu-Nathan, & Ragu-Nathan, 2007).

Subsequent consultations with management and staff in the participating finance sector organisation resulted in refinement of the tool to capture the distinct elements of working with technology in this sector, and the nature of the workforce. An iterative process was used with key management staff to ensure the concepts, language and targets of the survey were appropriate.

The survey was designed to:

- Identify the extent of use of various ICTs, how staff feel about them, and how they impact upon work practices, health and well-being of staff, and examine these across demographic, employment, personal and broader work culture factors.
- Balance the information requirements of the research project with keeping the survey to a manageable length (i.e. respondent burden), so as to maximise response rates.
- Ensure respondents understand their responses are secure and confidential.

The survey was piloted among the five focus group participants. On the basis of feedback received from all five participants, some small wording changes were made. Pilot participants confirmed that the survey took around fifteen minutes to complete.

3.3 SURVEY ADMINISTRATION

Recruitment of survey participants was managed by the participating finance organisation. WISeR worked with the participating communications officer to prepare promotional material about the project. This was published in the staff newsletter to prepare staff for the distribution email the following week. The survey was administered online using the Survey Monkey web platform. The survey link was emailed to the compiled staff distribution list on 20 November 2012.

In an unanticipated development, a 15 minute survey was distributed by the finance organisation's parent company at the same time as the WISeR survey, running from 26 November to 7 December 2012. This survey was a follow up to an earlier survey conducted in 2010. As a result of the overlapping survey, senior management at the finance organisation were reluctant to send a reminder email for the WISeR survey to the full staff list, citing the problem of staff overload. The agreed alternative was to send the reminder email with the generic link embedded to team leaders to forward at their discretion along with a request to encourage their teams to participate. This approach resulted in a response rate of 20%.

3.3.1 ANALYSIS

Data were imported from the online survey medium, Survey Monkey, to the statistical software package SPSS (version 19) where further variables were computed and various analyses carried out. Minor data cleaning was required as the online survey method prohibited missing data and invalid responses.

Analyses typically involved descriptive statistics and some parametric tests (e.g. independent t-tests and analysis of variance), where appropriate. Statistical significance indicates whether data points or 'observations' reflect a pattern or have occurred by chance. Some results reached *statistical significance*⁵ indicating, for example, a difference between two or more groups. Where this has occurred we have commented on it.

4 RESULTS

4.1 CONSULTATION FINDINGS

Consultation findings highlighted the view that ICTs have important finance applications from a customer perspective in streamlining communications, e.g. interactive voice response systems, and automated workflows. There are still departments within the organisation that use manual processes so bringing people along the technology-assisted automation journey is crucial, noting that some will and some won't embrace the developments.

One view was that ICT does not create undue levels of stress in the organisation's workforce, except where systems are frustratingly slow. The organisational culture or environment is not seen as overly stressful on the whole; general staff work hard in their allotted time, but do not tend to feel pressure to work overtime. The organisation is also seen as having a productive focus on staff wellbeing, providing OH&S support, social sports and yoga opportunities, and conducting a staff wellbeing survey.

There was a general view that ICTs were positively received by staff (and this was borne out in findings), particularly in their ability to streamline various processes and thereby save time. Another benefit is the sense of enhanced interconnectedness across the organisation and across geographical distance (i.e. with personnel at interstate offices), although the flip side is a tendency to feel increasingly deskbound. Staff are aware of strategies to mitigate this risk, including printing to distant printers, and being conscious of 'walking to talk' rather than emailing.

A downside of ICTs is managing the sheer volume of emails, although a benefit of email systems is being able to keep track of information and communications across time. Staff recognise that ICTs contribute to an instant, impatient culture of information dissemination, with associated risks including 'fast response', (i.e. not sending a suitably measured response) and inadvertently sending a 'reply-all'. Surveillance was not seen as an issue: *'provided you are doing your job right, it shouldn't be a problem.'*

The use of PDAs is more prevalent for management than general staff, and is associated with a sense of 'never being let go'. Work-life boundaries are seen as much more blurred than they were five years ago, highlighting the need to develop

⁵ The probability ("p") values or limits of what is considered statistically significant are conventionally set at "p<.05" ('significant') or "p<.01" ('highly significant'). The former means there is only a 5% chance of this result being a coincidence and the latter meaning only a 1% chance of the result being a coincidence.

strategies to manage IT pressures such as email management (e.g. setting boundaries).

It was observed that roles at the organisation are becoming more complex through ICT, and that not everyone is coping with the pace of developments. There is a tension between the potential for improved organisational efficiencies and the capacity of staff to develop to the requisite level of ICT skills to support these efficiencies. For example, most people are familiar with Excel, but not to the level of proficient use of pivot tables. There are capabilities that ICT systems carry, but inconsistent/insufficient understanding of these at staff level.

Training is considered a key component of managing IT/social media risks, from the perspective of staff and the organisation. However there is a view that 'one size fits all training' is less useful compared with role-based training; hence training modules should be adapted for purpose (this is not currently happening). There is a sense among staff that they know enough about technological applications to do their job, but could and should know more. Training is one side of the story, but having time to play in a self-directed way with the applications is also important, as are opportunities to buddy with and/or receive mentorship from people with expertise. Online training has potential on the level of convenience, however relies on people's motivation to complete the program.

There is a need for an adequate Code of Conduct for ICT and social media use, particularly with respect to co-worker bullying (on- and off-site, e.g. by way of Facebook), and posting negative work-related comments via social media outlets (e.g. Facebook, Twitter). It is considered important for staff to understand potentially serious commercial and reputational implications for the organisation, and where the boundaries between personal and public communication of issues are blurred in social media settings. It was observed that younger staff tend to be more aware than older staff of ICT/social media related issues.

Concerns were also expressed by management about the heightened rate of work-related injury reported by home-based workers, and the need to better understand this.

4.2 SURVEY FINDINGS

One hundred and seven employees commenced the online survey. There were a few cases of incomplete data (n=4) where individuals chose not to finish the remainder of the survey. The subsequent analysis has been conducted on the 103 complete surveys.

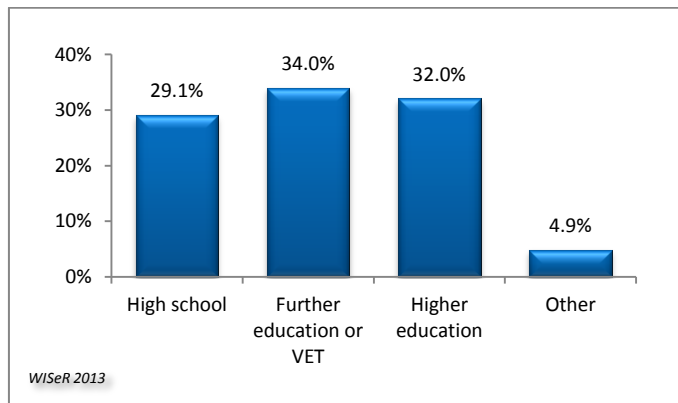
Results have been presented in a way that maintains confidentiality, thus sub-groups of five people or less have been combined with other groups as appropriate.

4.2.1 DEMOGRAPHIC CHARACTERISTICS

Sixty-nine percent of staff were born in Australia with nearly *all* respondents speaking English as their first language (93.2%). For those not born in Australia, just over half were born in the United Kingdom and the remainder came from countries scattered around the world.

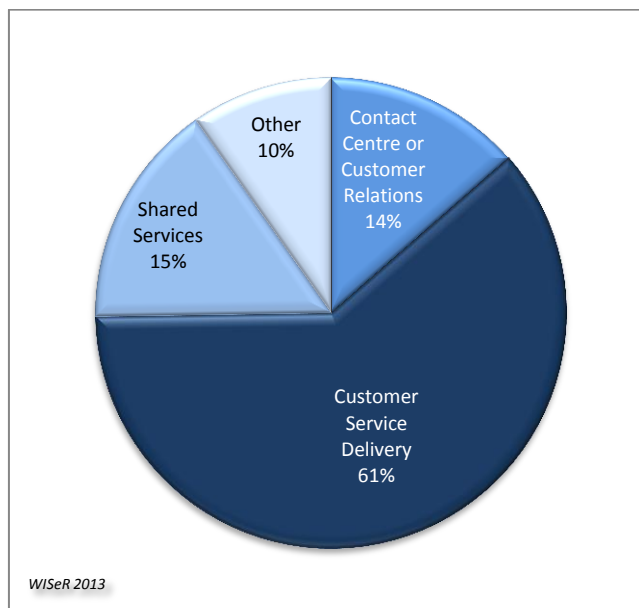
Twice as many females (n=71) than males (n=32) participated in the survey which is similar to the gender distribution found in this finance organisation. The overall average age was 39.7 years (ranging from 22 to more than 65 years). There was no significant difference in the average age of males compared to females. Similar proportions of employees achieved high school, further education or vocational education and training (VET), or higher education (i.e. university) as their highest educational attainment (see Figure 1) with males more likely to have participated in higher education (43.8%) than females (26.7%).

FIGURE 1: EMPLOYEES' HIGHEST EDUCATIONAL ATTAINMENT



The majority of respondents (76.7%) were permanent full-time employees, followed by permanent part-time (13.6%) with a small proportion (7.8%) non-permanent full-time staff. The remainder had other non-permanent positions. Nearly two-thirds of participating staff were in a non-customer facing role, nearly a quarter were in a customer facing role (including telephone) and the remaining 15% were from management (including team leaders and senior and department managers). As shown in Figure 2, respondents were primarily from the Customer Service Delivery Division, followed by Shared Services and the Contact Centre or Customer Relations Division.

FIGURE 2: PROPORTION OF STAFF WORKING IN EACH DIVISION

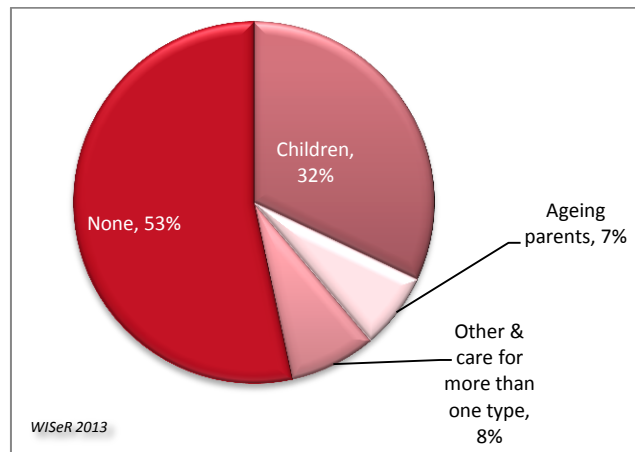


Employees had worked at the organisation for an average of 6.7 years (ranging from less than 12 months to 25 years). The average hours worked in the week prior to survey completion was 36 hours (ranging from 0 to 52 hours). Individuals working more than 38 hours a week tended to be permanent full-time employees, non-customer facing staff or management from the Customer Service Delivery Division or Shared Services Division. Those working longer hours comprised around half of all male staff compared to a third of all females but accounting for this, males were more likely to be in management positions than females (28.1% of males are managers compared 8.5% of females).

NON-WORK RESPONSIBILITIES

More than half of all respondents reported no personal care giving responsibilities. For those with such responsibilities, caring for children was the most common scenario (32%) followed by care for ageing parents (7%). A small number of staff reported caring for ‘others’ and a handful indicated they had caring responsibilities for both children *and* ageing parents (also see Figure 3). Interestingly, whilst females were more likely to report caring for ageing parents or others, a higher proportion of male staff (50%) reported care giving responsibilities for children compared to 30% of females. However, what may be thought of as ‘care giving responsibilities’ may differ between genders.

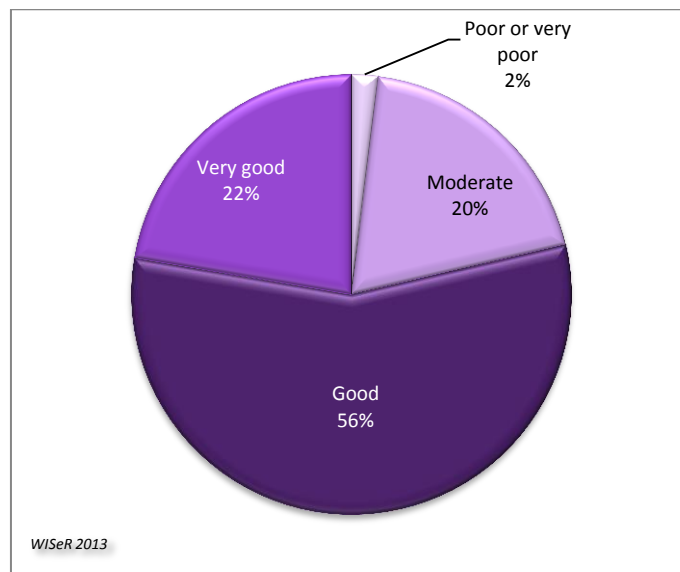
FIGURE 3: NON-WORK CARE RESPONSIBILITIES



HEALTH

Overall health status was assessed with one question. Employees responded to ‘Generally, how do you rate your health?’ using a 5 point Likert scale (1= Very poor, 2= Poor, 3= Moderate, 4= Good and 5= Very good). As shown in Figure 4, staff were typically in good to very good health⁶.

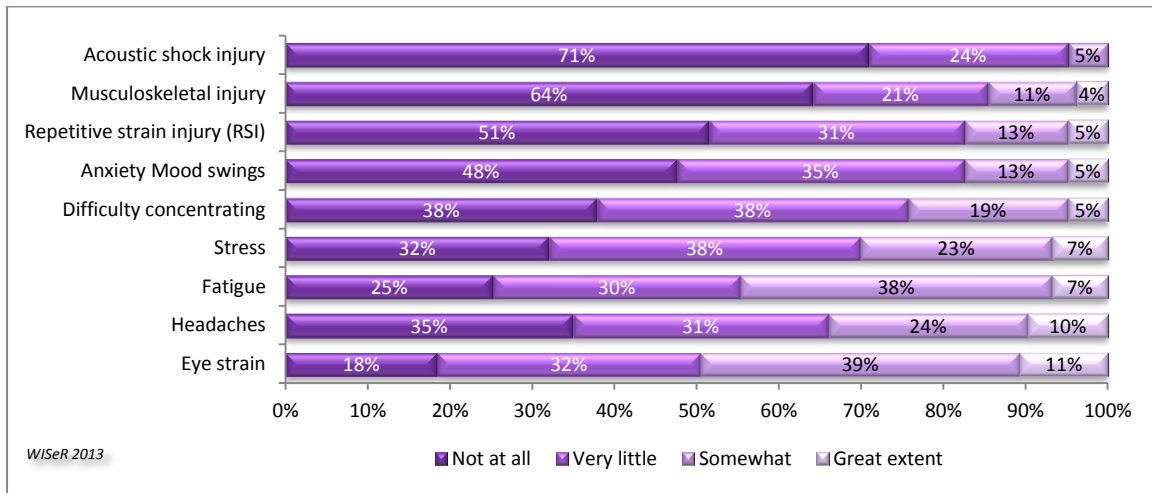
FIGURE 4: STAFF RATING OF THEIR OVERALL HEALTH



⁶ Due to a small number of responses in some health categories, an ‘other’ category was formed to maintain confidentiality.

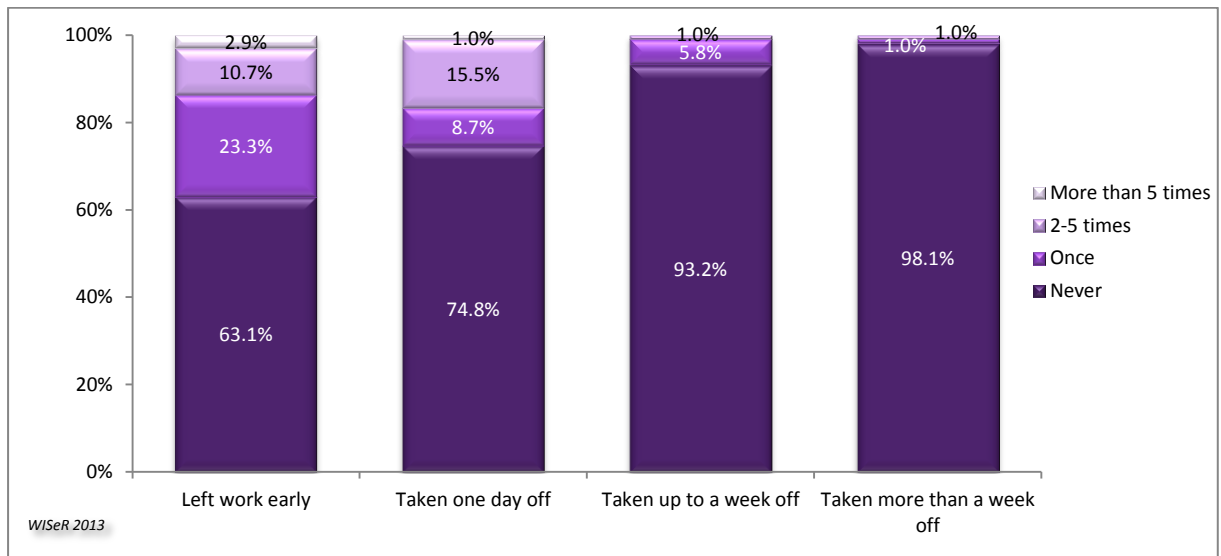
More specific questions were included addressing health in relation to technology use. Around half to three-quarters of employees tended to rate technology as causing very little or no impact on various aspects of their health (Figure 5). However, eye strain, fatigue and headaches were the most notable health implications with around 10% of staff reporting they have been affected by eye strain and headaches to a *great extent* and more than a third of staff reporting they have been *somewhat* affected by eye strain and fatigue. Health impacts are generally not isolated (i.e. are co-morbid) with half (n=12) of the 25 people whose health was reported to be affected to a *great extent* by technology reporting an impact for more than one health problem (e.g. for both eye strain and fatigue).

FIGURE 5: RESPONSE TO DIFFERENT HEALTH EFFECTS CAUSED BY TECHNOLOGY



However, technology-related stress or illness tended not to lead to time off work for most staff experiencing these health impacts. For example, two-thirds (63%) of respondents had never taken any time off work for this reason. Figure 6 shows that where staff reported leaving work due to technology-related stress or illness this tended to be only once (e.g. 23.3% of symptom sufferers left work early once in the last 12 months) and the frequency of taking time off decreased as the duration of the time off increased (i.e. 2.0% of symptom sufferers took more than a week off on multiple occasions).

FIGURE 6: EXTENT OF TIME TAKEN OFF WORK DUE TO TECHNOLOGY RELATED STRESS OR ILLNESS



4.2.2 MEDIATING VARIABLES

The following constructs – organisational role, age and health status - have previously been reported to be related to information and communication technology (ICT) use and can mediate the nature and effects of ICTs. Therefore, items in the survey (where appropriate) will be analysed through these lenses.

ORGANISATIONAL ROLE

Organisational role compares management responses (n=15) with those from other staff (n=88). Noting that organisational role is related to gender (28.1% of males are in a management role compared to 8.5% of females) and education (which also intersects with gender).

AGE GROUPING BY GENERATION

Generational difference was used to categorise age groups – Generation Y (born between 1980 and 1994 - aged between 18 and 32 at the time of the survey), Generation X (born between 1965 and 1979 - aged between 33 and 47) and Baby Boomers (born between 1946 and 1964 - aged between 48 and 66 years)⁷. Recoding age in this way is likely to capitalise on different generational experiences with and developments in technology. The sample has 34 Generation Ys, 40 Generation Xs and 29 Baby Boomers.

TECHNOLOGY RELATED HEALTH STATUS

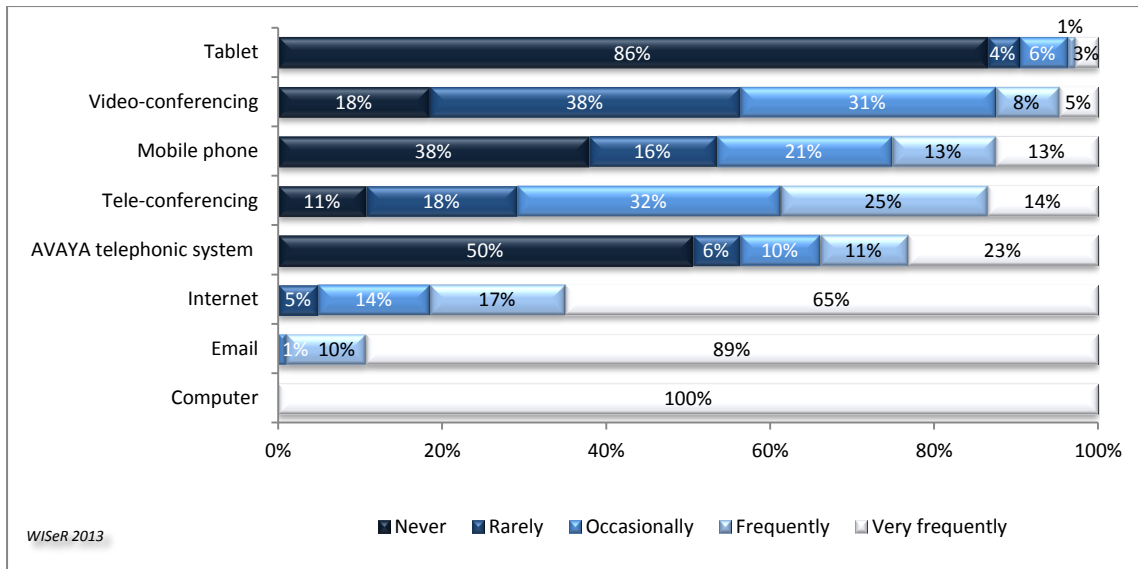
Technology-related health status has been derived from the question *time taken off work due to technology-related stress or illness*. Twenty-one individuals either left work early, took a day or more off work on at least two or more occasions. They are considered to be ‘repeat sufferers’ and as such their health is more heavily impacted by technology use than others. Technology-related health status is labelled as ‘stressed’ or ‘not stressed’ in this report.

⁷ Age range for generations was taken from <http://www.changedrivers.com.au/Articles/generational-change.htm>; note one person was beyond the age range for the Baby Boomer Generation but included for simplicity.

4.2.3 USE OF AND FAMILIARITY WITH TECHNOLOGY

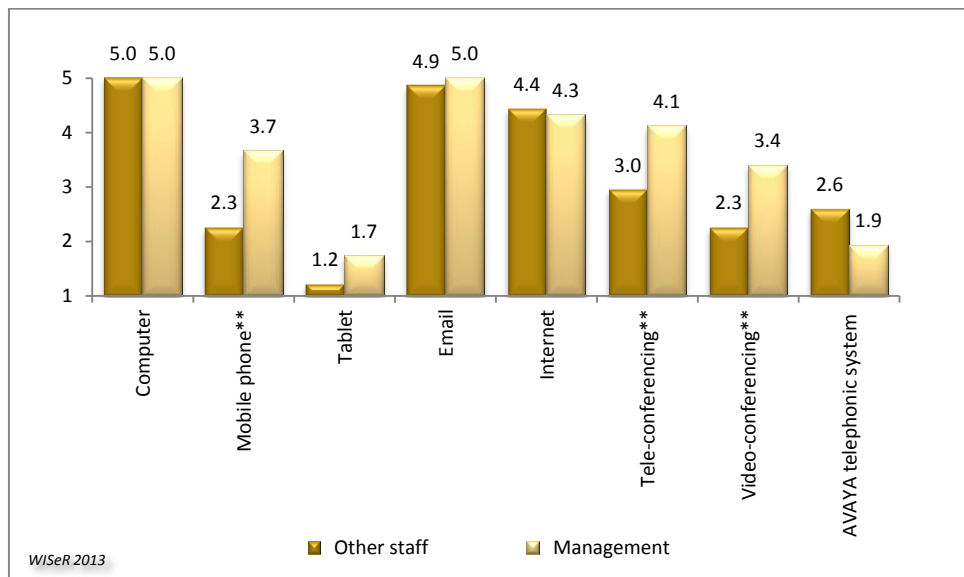
Computers, email and the internet were all used very frequently by staff (see Figure 7). All staff indicated they used computers very frequently and all but one were frequent users of email. However, only 13.6% of staff indicated they used Tablets in any capacity.

FIGURE 7: ACTIVE TECHNOLOGY USE



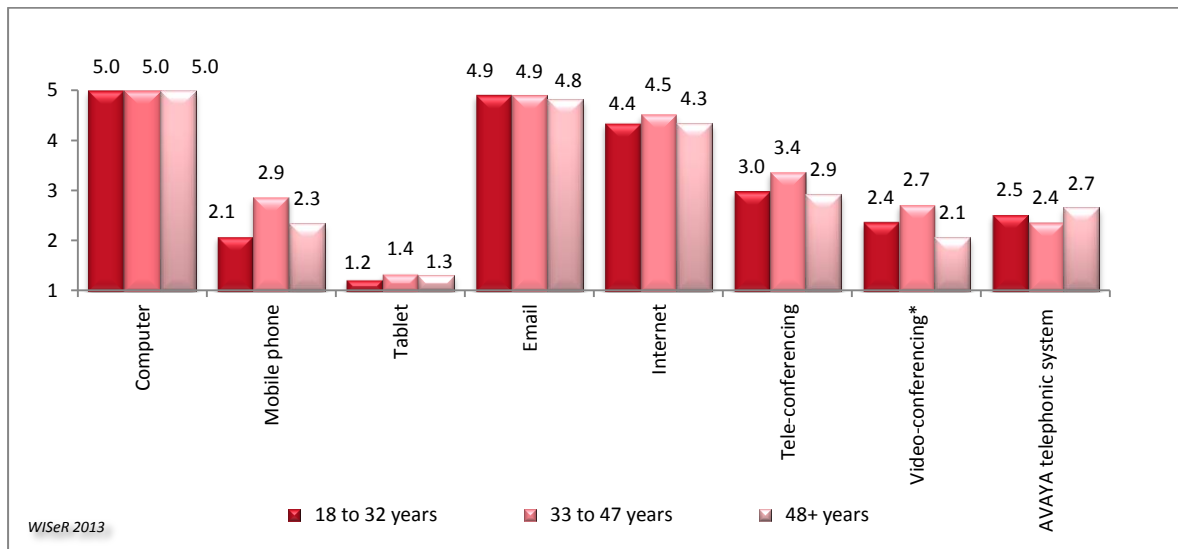
Management were significantly more likely to use most types of technology (i.e. mobile phones and tele/video-conferencing; see Figure 8). Use of video-conferencing was significantly greater for Generation Xs (33-47 years) compared to Baby Boomers (48+ years) but this is likely to be related to the management roles of Generation X, comprising slightly more than half of the management staff (Figure 9).

FIGURE 8: ACTIVE TECHNOLOGY USE BY ORGANISATIONAL ROLE



Note, ** denotes a highly statistically significant difference; 1= Never, 2= Rarely, 3=Occasionally, 4= Frequently and 5= Very frequently.

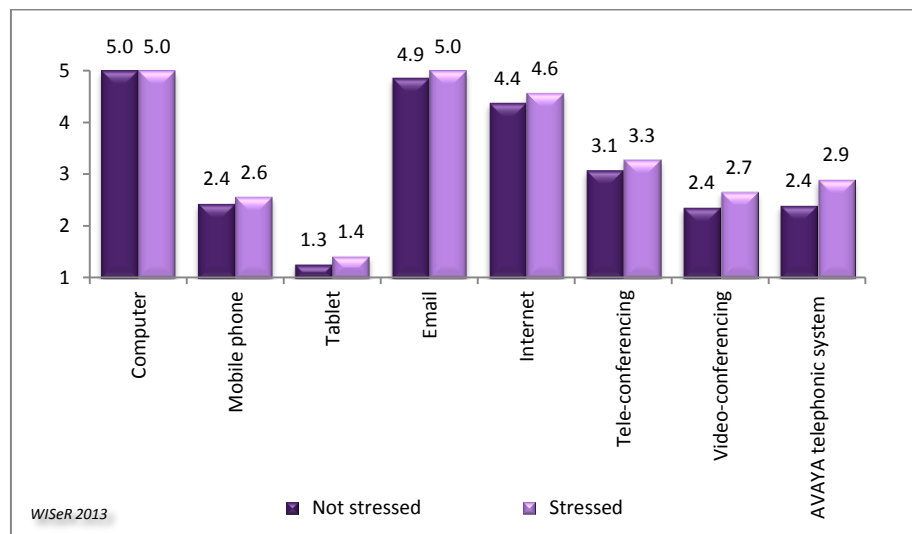
FIGURE 9: ACTIVE TECHNOLOGY USE BY GENERATION



Note, * denotes a statistically significant difference; 1= Never, 2= Rarely, 3=Occasionally, 4= Frequently and 5= Very frequently.

There was a tendency for those experiencing higher degrees of technology-related stress or illness to use technology more frequently but this did not reach statistical significance (Figure 10).

FIGURE 10: ACTIVE TECHNOLOGY USE BY TECHNOLOGY RELATED HEALTH STATUS



Note, 1= Never, 2= Rarely, 3=Occasionally, 4= Frequently and 5= Very frequently.

Despite low usage of some types of technology, confidence about using all listed technologies was fairly high (see Figure 11). The exception to this was for confidence around using a tablet where nearly half of respondents reported ‘unsure or not applicable’; this response corresponds to very low tablet usage rates by most staff. Furthermore, even though usage was generally much greater for management staff, other staff showed comparable confidence in all areas of technology use (refer to Figure 12).

FIGURE 11: CONFIDENCE WHEN USING DIFFERENT TYPES OF TECHNOLOGY

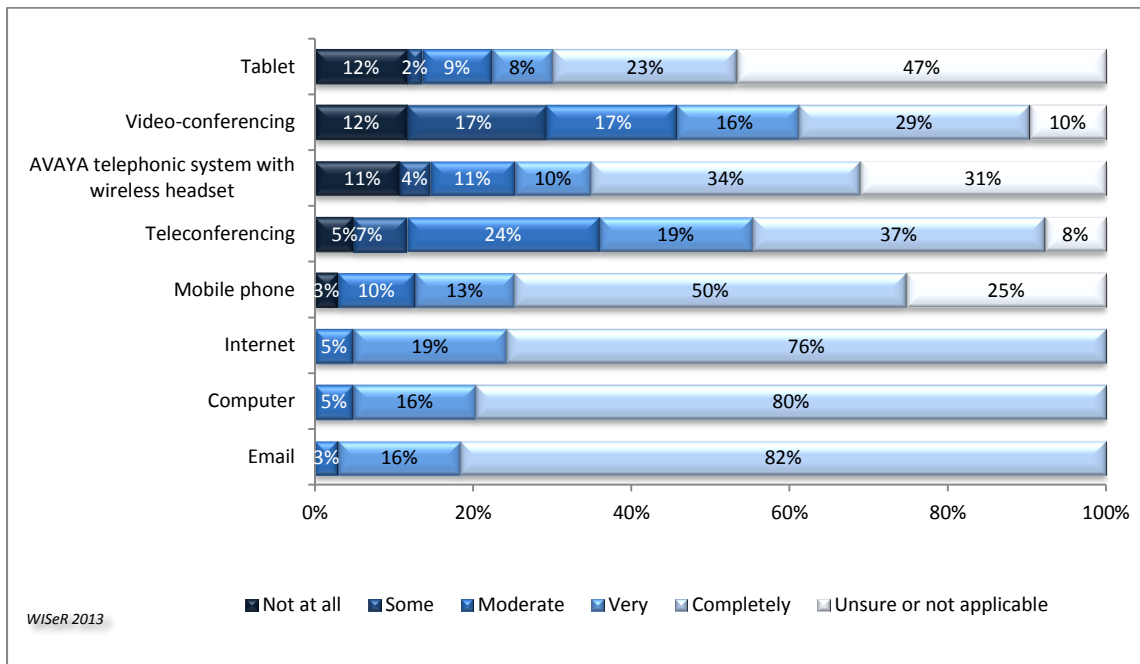
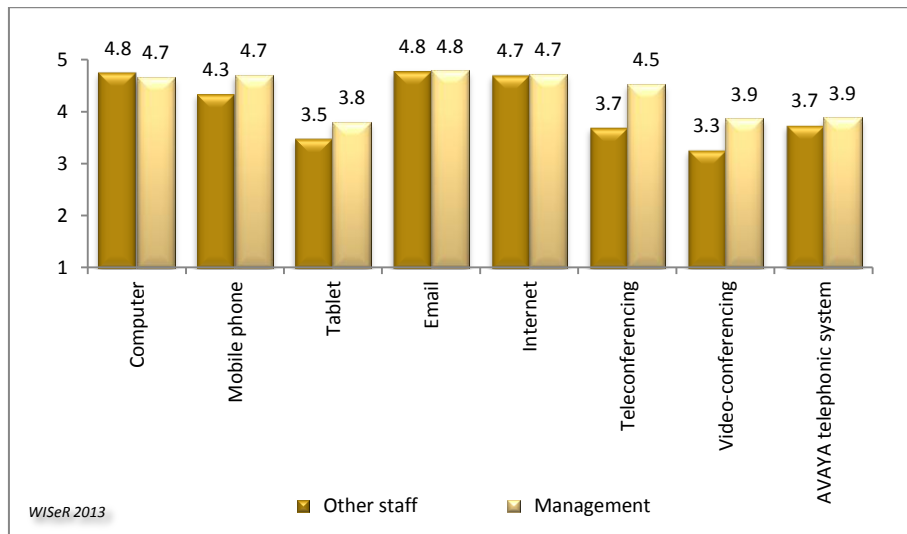


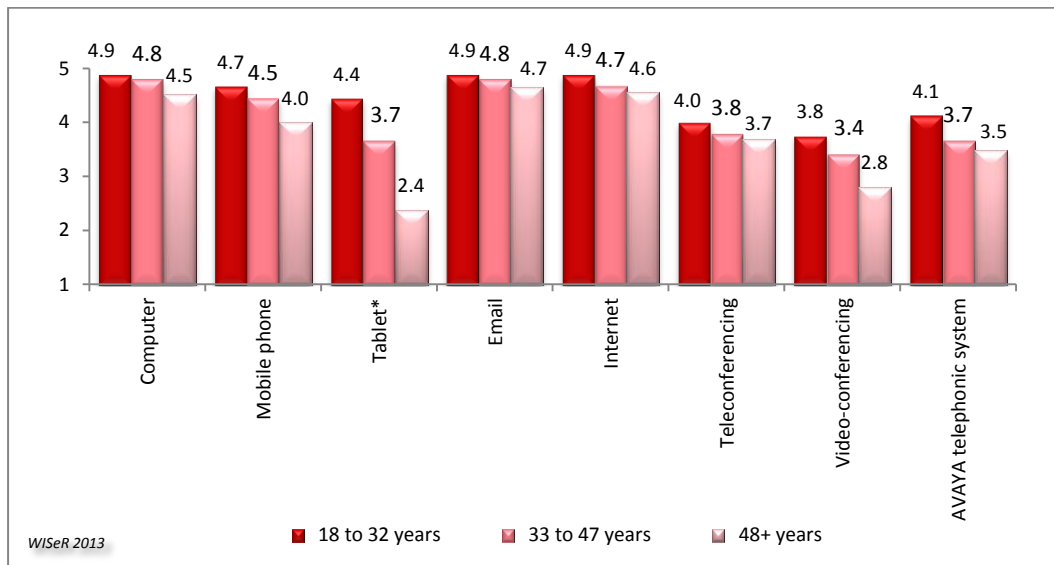
FIGURE 12: CONFIDENCE WHEN USING DIFFERENT TYPES OF TECHNOLOGY BY ORGANISATIONAL ROLE



Note, 1= Not at all, 2= Some, 3= Moderate, 4= Very and 5= Completely.

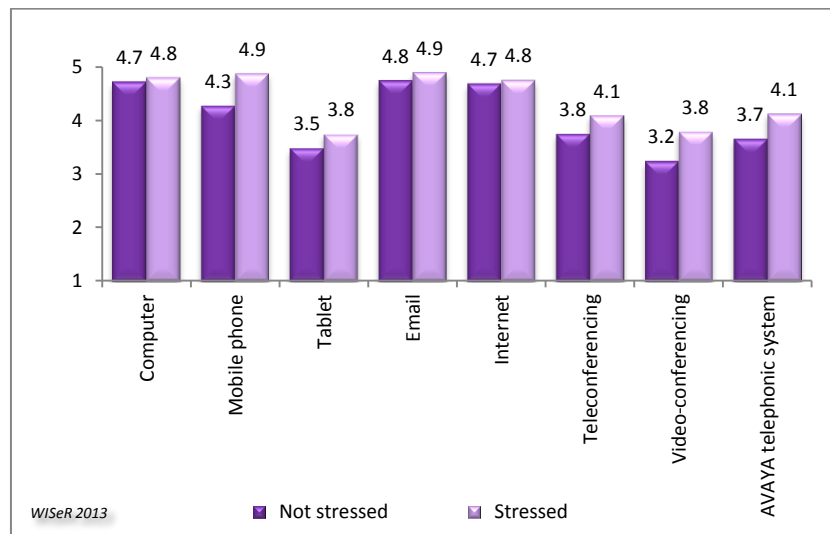
Baby boomers were significantly less confident in their use of tablets (see Figure 13) with older employees reporting only some or no confidence in using them. Overall, technology-related health status did not influence confidence levels (Figure 14).

FIGURE 13: CONFIDENCE WHEN USING DIFFERENT TYPES OF TECHNOLOGY BY GENERATION



Note, * denotes a statistically significant difference; 1= Not at all, 2= Some, 3=Moderate, 4= Very and 5= Completely.

FIGURE 14: CONFIDENCE WHEN USING DIFFERENT TYPES OF TECHNOLOGY BY TECHNOLOGY RELATED HEALTH STATUS



Note, 1= Not at all, 2= Some, 3=Moderate, 4= Very and 5= Completely.

4.2.4 HELPFULNESS OF TECHNOLOGY

On average, there was strong agreement from all staff that technology helps many facets of work, in particular it: *improves the quality of my work*⁸, *helps me work more efficiently*⁹ and *connect to the workplace*¹⁰.

Technology was also endorsed by staff for *balancing work and life commitments* (79.6% agreed to some extent, 12.6% neither agreed nor disagreed and 5.8% disagreed to some extent) and *staying connected with important commitments*

⁸ 93.2% agreed to some extent, 5.8% neither agreed nor disagreed and no one showed any disagreement.

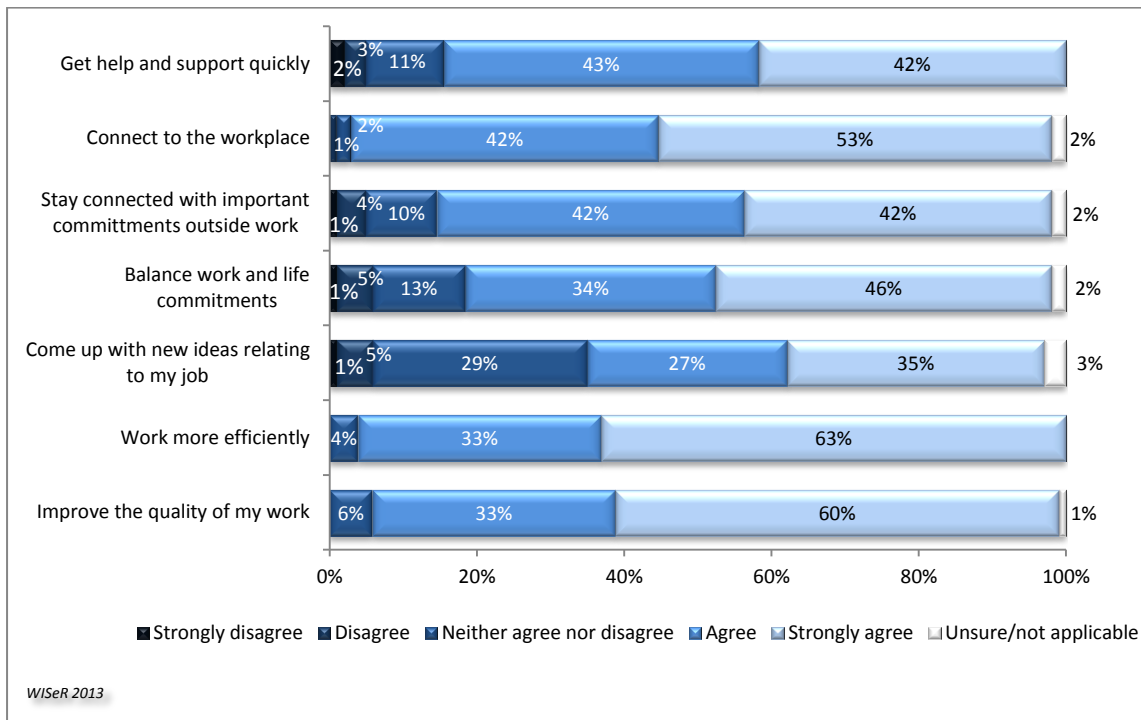
⁹ 96.1% agreed to some extent, 3.9% neither agreed nor disagreed and no one showed any disagreement.

¹⁰ 95.1% agreed to some extent, 1.9% neither agreed nor disagreed and 1.0% disagreed.

outside work (83.5% agreed to some extent, 9.7% neither agreed nor disagreed and 4.9% disagreed to some extent).

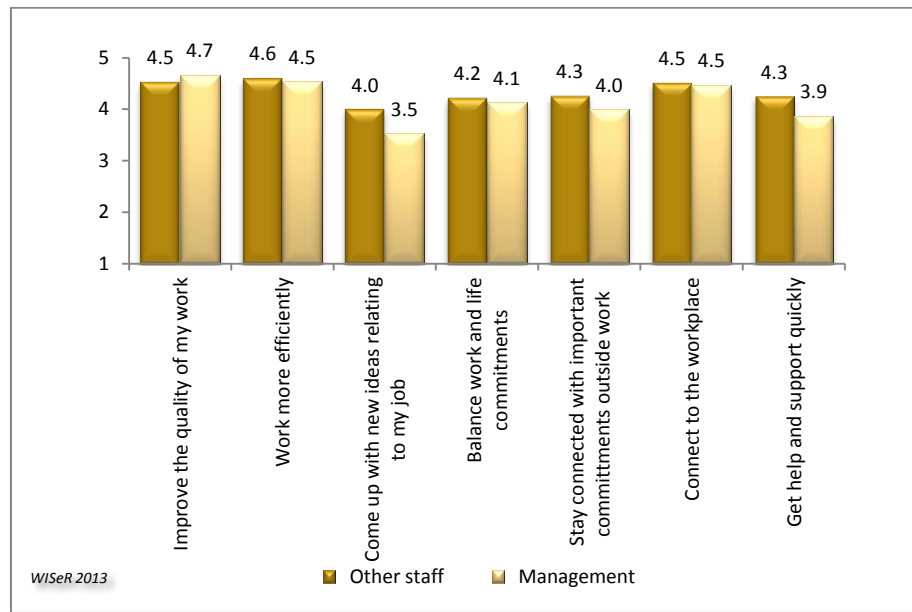
Whilst still showing overall agreement, technology was less positively rated for helping to *come up with new ideas relating to my job* (62.1% agreed to some extent, 29.1% neither agreed nor disagreed and 5.8% agreed to some extent; see Figure 15) and approximately 5% of staff did not think technology *facilitates getting help and support quickly* (10.7% neither agreed nor disagreed and 84.5% agreed to some extent).

FIGURE 15: OPINION ABOUT THE HELPFULNESS OF TECHNOLOGY



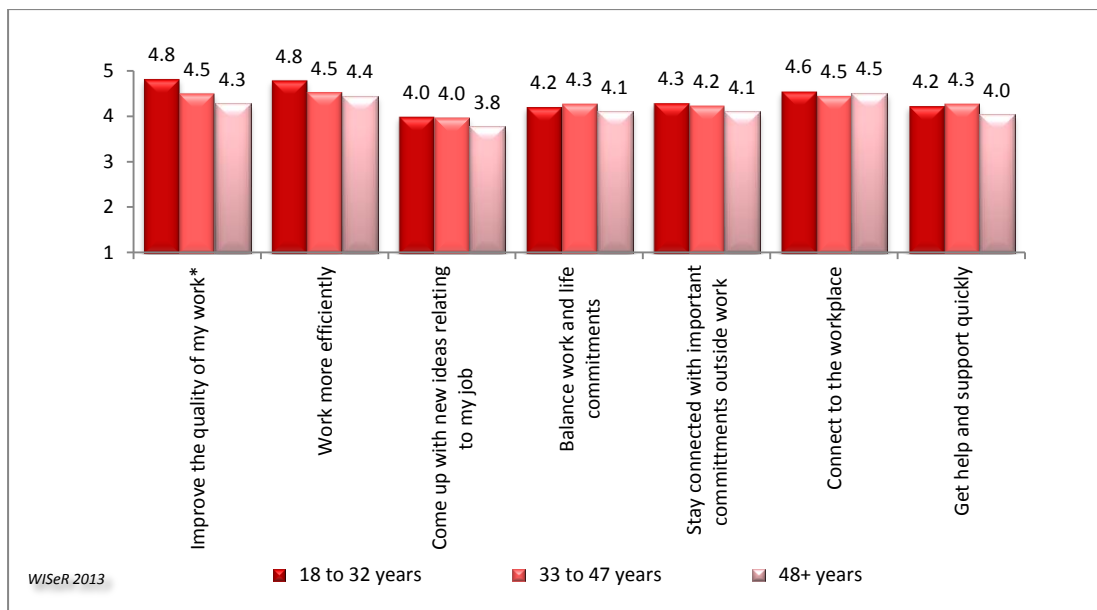
Organisational role (Figure 16) and technology-related health status (Figure 18) did not significantly influence a staff member’s attitudes towards the helpfulness of technology. However, there was a significant difference between generations in regard to technology helping to *improve the quality of my work* – Generation Ys agreed with this statement significantly more than Baby Boomers (albeit there was still overall agreement with this statement; see Figure 17).

FIGURE 16: HELPFULNESS OF TECHNOLOGY BY ORGANISATIONAL ROLE



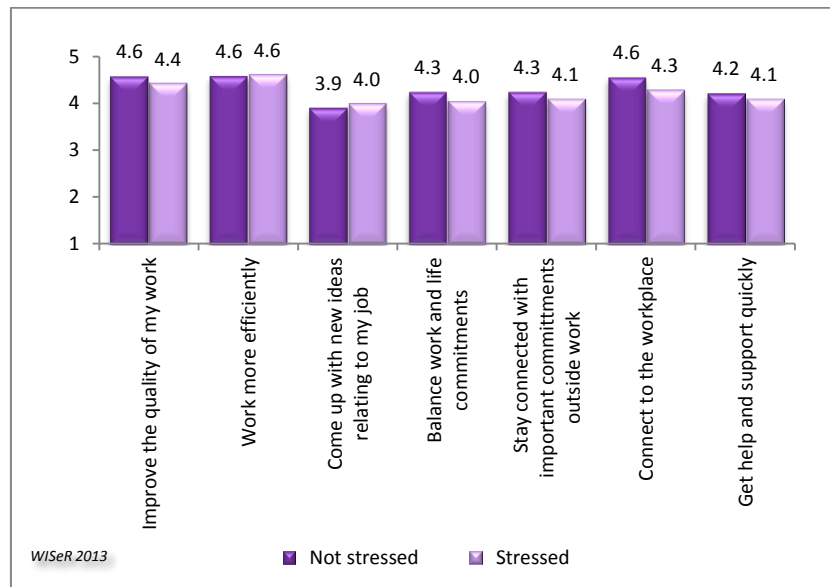
Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 17: HELPFULNESS OF TECHNOLOGY BY GENERATION



Note, * denotes a statistically significant difference; 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 18: HELPFULNESS OF TECHNOLOGY BY TECHNOLOGY RELATED HEALTH STATUS



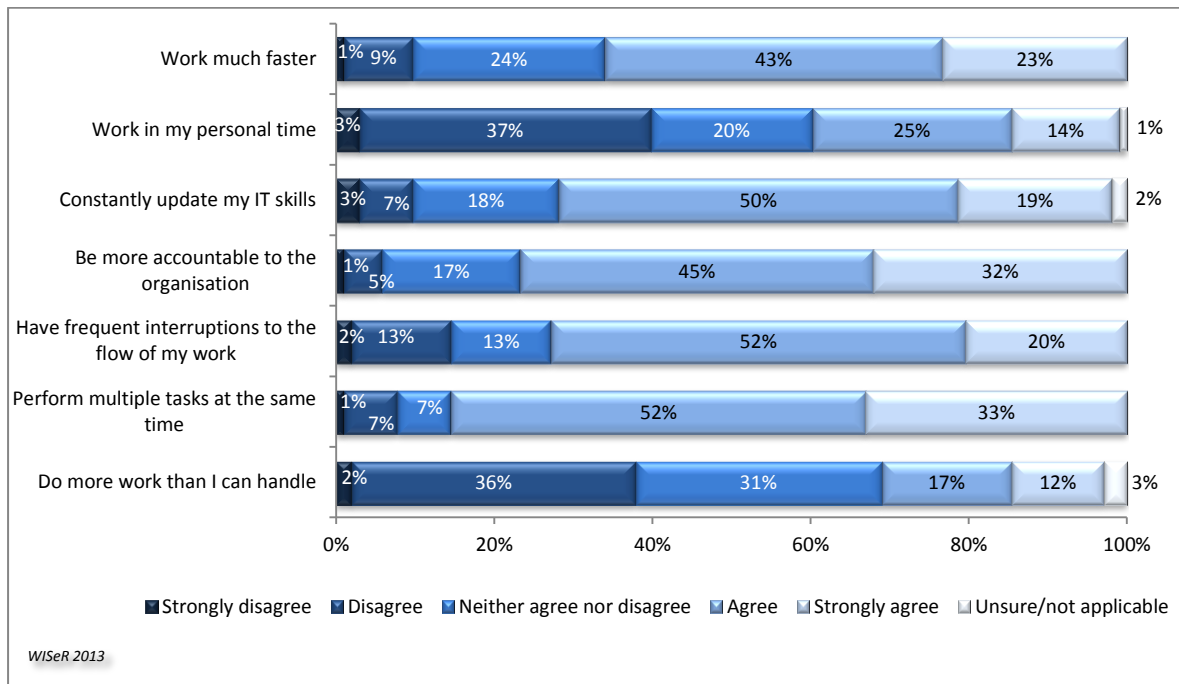
Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

4.2.5 EXPECTATIONS ASSOCIATED WITH TECHNOLOGY

Compared to other questions in the survey, there was response variability around what staff believe they are expected to do because of technology. As a result of technology, approximately one third of staff strongly agreed that they are expected to *perform multiple tasks at the same time* and *be more accountable to the organisation* and just under one quarter of staff reported in this way for the expectation to *work much faster* (see Figure 19). Around 20% of staff strongly agreed that because of technology they feel it is expected to *experience frequent interruptions to the flow of their work* and *constantly update their IT skills*.

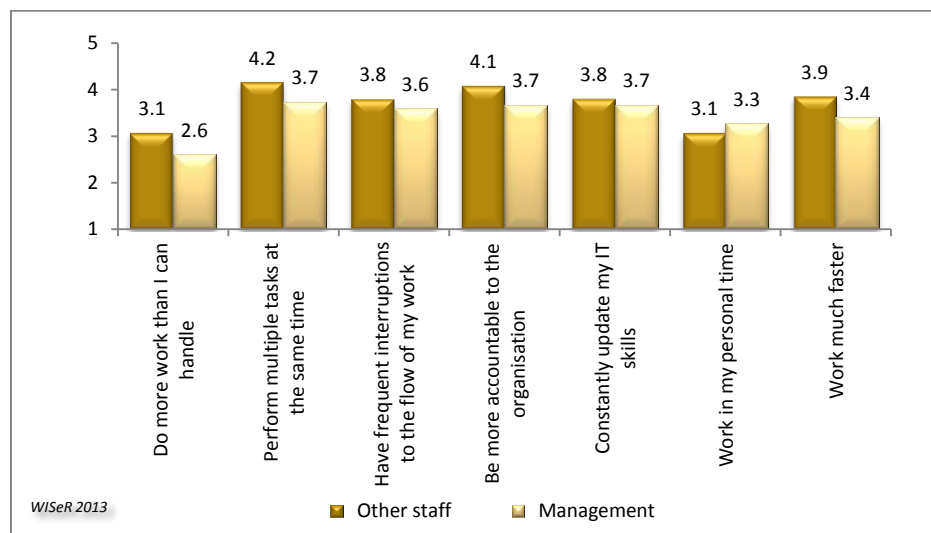
Generally, relatively even proportions of staff both disagreed and agreed that because of technology they are expected to *do more work than they can handle* (28.2% agreed to some extent, 31.1% neither agreed nor disagreed and 37.9% disagreed to some extent) and *work in their personal time* (38.8% agreed to some extent, 20.4% neither agreed nor disagreed and 39.8% disagreed to some extent). It should be acknowledged that more than 10% of staff strongly agreed to each statement regarding expectations resulting from technology. Despite this, less people reported they *strongly agree* with these statements compared to other questions/sections.

FIGURE 19: EXPECTATIONS ABOUT WHAT STAFF WILL DO BECAUSE OF TECHNOLOGY



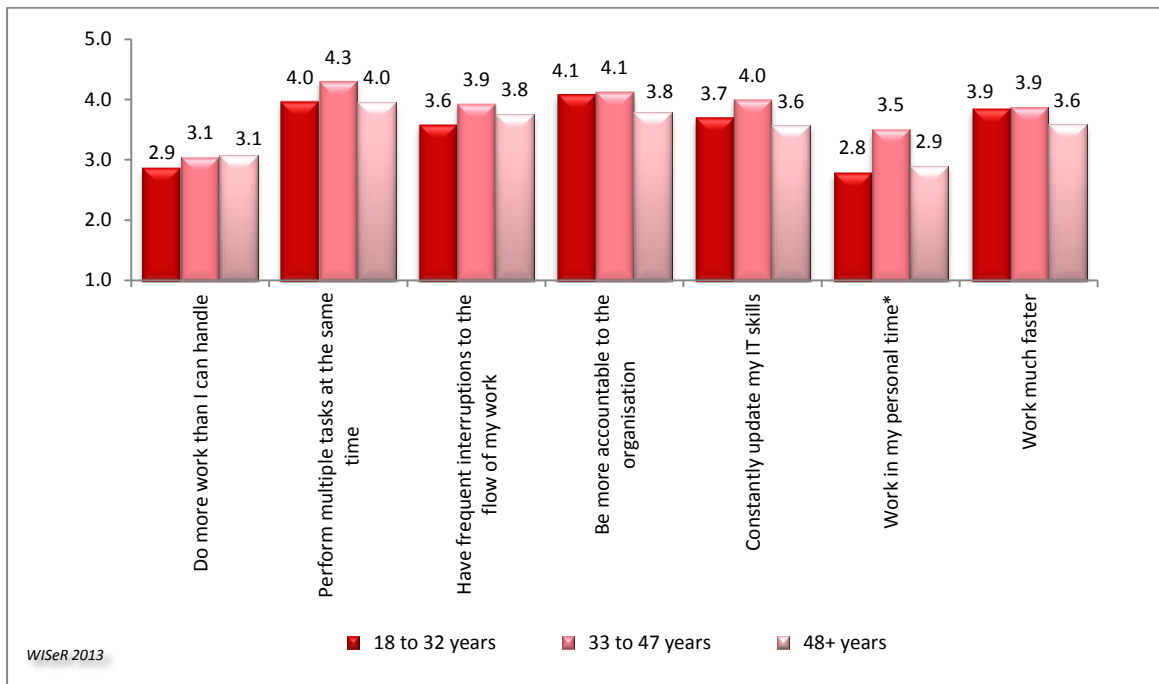
Expectations did not vary significantly by organisational role (Figure 20). There was a significant difference for *working in your personal time* by generation – Generation Xs were more likely to endorse this statement than Generation Ys (Figure 21). Technologically ‘stressed’ individuals tended to feel the weight of the expectation, *do more work than I can handle*, more than others (see Figure 22).

FIGURE 20: EXPECTATIONS ABOUT WHAT STAFF WILL DO BECAUSE OF TECHNOLOGY BY ORGANISATIONAL ROLE



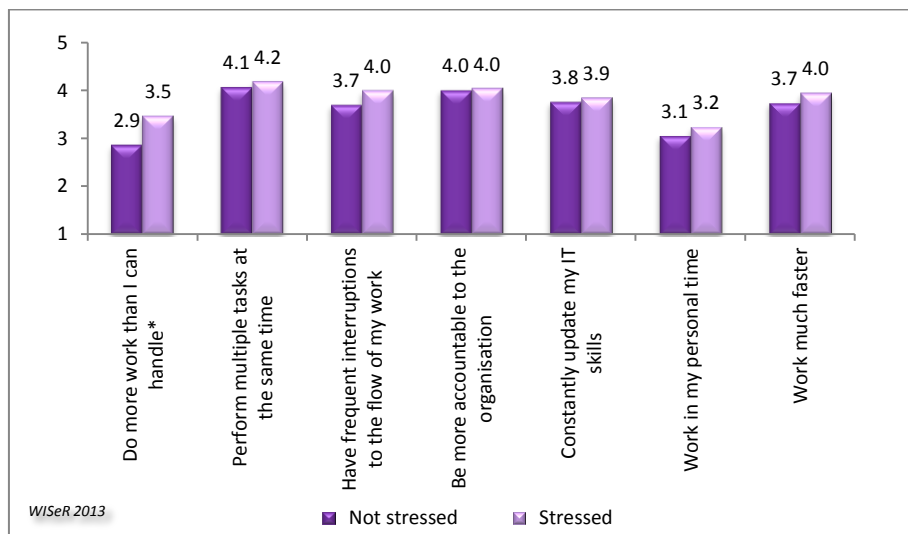
Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 21: EXPECTATIONS ABOUT WHAT STAFF WILL DO BECAUSE OF TECHNOLOGY BY GENERATION



Note, * denotes a statistically significant difference; 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 22: EXPECTATIONS ABOUT WHAT STAFF WILL DO BECAUSE OF TECHNOLOGY BY TECHNOLOGY RELATED HEALTH STATUS



Note, * denotes a statistically significant difference; 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

4.2.6 ANXIETY ABOUT TECHNOLOGY

Information in this section captures ratings provided around three key themes: change and uncertainty with technology, contribution of technology to work insecurity, and the complexity of technology. Consistent with previous sections, these themes have been investigated overall (Figure 23, Figure 24, Figure 25) and by organisational role (Figure 26), generation (Figure 27) and technology-related health status (Figure 28). For simplicity, the findings are summarised below thematically.

FIGURE 23: ANXIETY AROUND CHANGE AND UNCERTAINTY WITH TECHNOLOGY

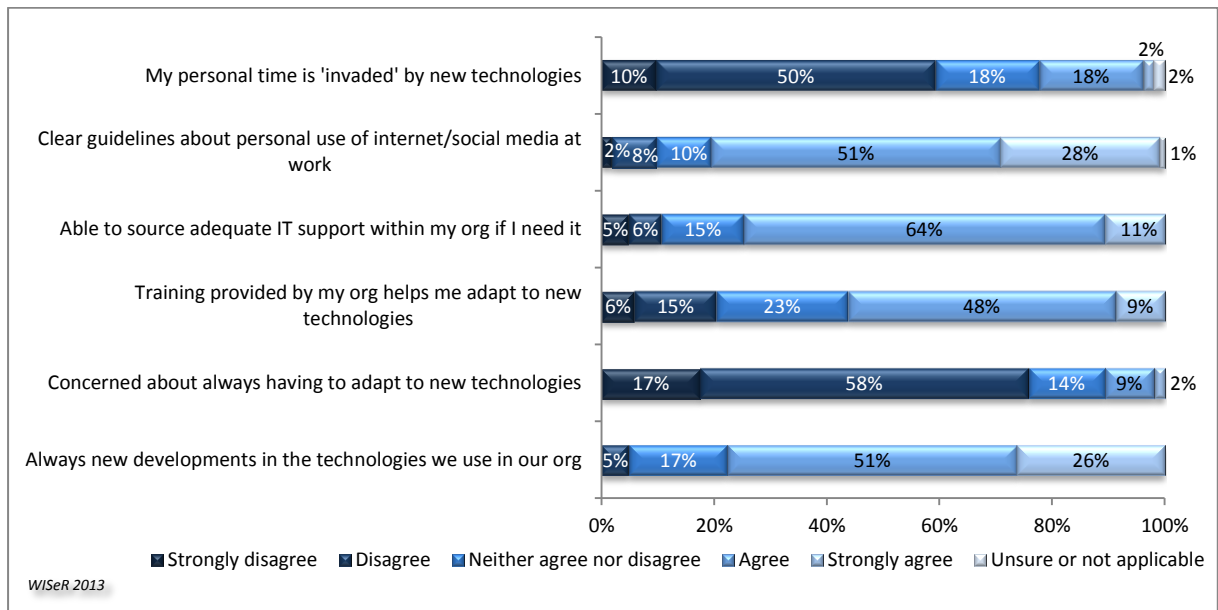


FIGURE 24: CONTRIBUTION OF TECHNOLOGY TO WORK INSECURITY

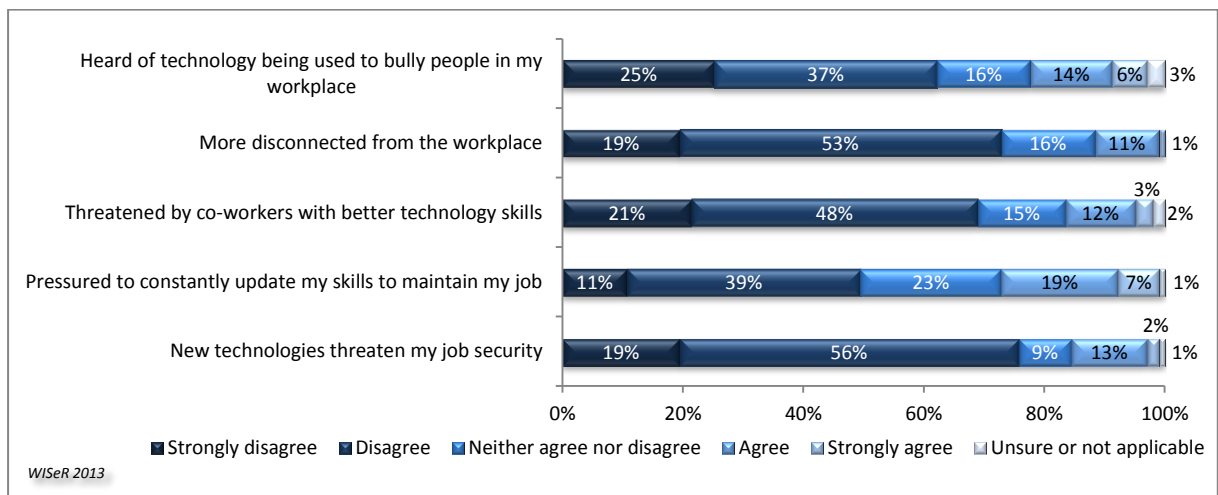
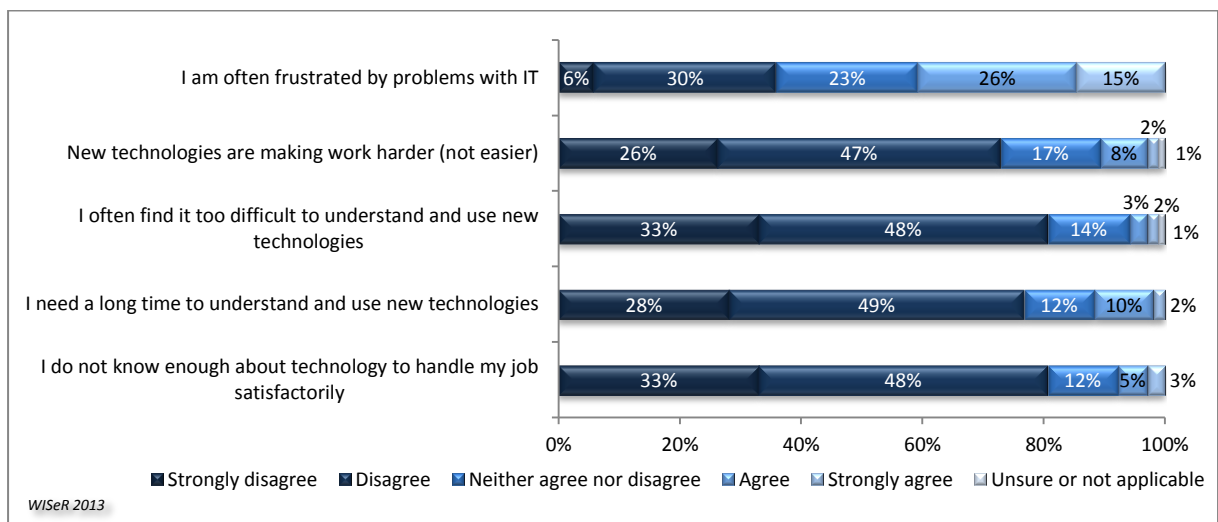


FIGURE 25: ANXIETY AROUND TECHNOLOGY COMPLEXITY



CHANGE AND UNCERTAINTY WITH TECHNOLOGY

While 77.7% of employees agreed to some extent with the statement *there are always new developments in the technologies we use in our organisation*, this did not translate into anxiety about technology. Overall, respondents were not concerned that new technologies invaded their personal time (20.4% agreed to some extent that their personal time is 'invaded' by new technologies, 18.4% neither agreed nor disagreed and 59.2% disagreed with this statement to some extent; see Figure 23) nor were they concerned *about always having to adapt to new technologies* (10.7% were concerned/agreed to some extent, 13.6% neither agreed nor disagreed and 75.7% were not concerned/disagreed to some extent).

There was strong affirmation that the organisation had *clear guidelines about using the internet or social media for personal purposes at work* (79.6% reported they either agreed or strongly agreed with this statement, 9.7% neither agreed nor disagreed and 9.7% disagreed to some extent) but less for *sourcing adequate IT support* (74.8% agreed to some extent, 14.6% neither agreed nor disagreed and 10.7% disagreed to some extent) and *training that assists in the adaptation to new technologies* (56.3% agreed to some extent, 23.3% neither agreed nor disagreed and 20.4% disagreed to some extent).

Analysis by sub-group did not reveal any significant differences for the six statements that comprised this theme.

CONTRIBUTION OF TECHNOLOGY TO WORK INSECURITY

This theme consists of five statements. For most, there was either disagreement or ambivalence around technology contributing to work insecurity. For example, half to three quarters of employees *disagreed* to some extent that -

- *new technologies threaten my job security* (78.0%)¹¹;
- *they feel more disconnected from the workplace* (72.8%)¹²;
- *they feel threatened by co-workers with better technology skills* (68.9%)¹³;
- *they have heard of technology being used to bully people in my workplace* (64.0%)¹⁴; and
- *they feel pressured to constantly update my skills to maintain my job* (49.5%)¹⁵.

However, forty six staff members (44.7%) agreed or strongly agreed with at least one statement about technology increasing work insecurity (twenty-six of these agreed with more than one item). The two items of most concern were *feeling pressured to constantly update my skills to maintain my job* and *having heard of technology being used to bully people in my workplace*. Staff reporting in this manner were predominantly in non-management positions, female and did not experience technology related stress or illness. All generations were relatively evenly represented in this cohort of staff members also. One person strongly agreed with all aspects of technology contributing to work insecurity; she was a relatively new staff member to the organisation and was from Generation Y and not in a management position.

Non-management staff were significantly more likely to report feeling *more disconnected from the workplace* and that *new technologies threaten my job security* (refer to Figure 26). As far as feeling *threatened by co-workers with better technology skills*, 'stressed' staff members were significantly more likely than others to agree

¹¹ 8.7% neither agreed nor disagreed and 14.6% agreed to some extent.

¹² 15.5% neither agreed nor disagreed and 11.7% agreed to some extent.

¹³ 14.6% neither agreed nor disagreed and 14.6% agreed to some extent.

¹⁴ 15.5% neither agreed nor disagreed and 19.4% agreed to some extent.

¹⁵ 23.3% neither agreed nor disagreed and 26.2% agreed to some extent.

with this statement in addition to them being more likely to have *heard of technology being used to bully people in my workplace* (refer to Figure 28). No significant generational differences were found.

COMPLEXITY OF TECHNOLOGY

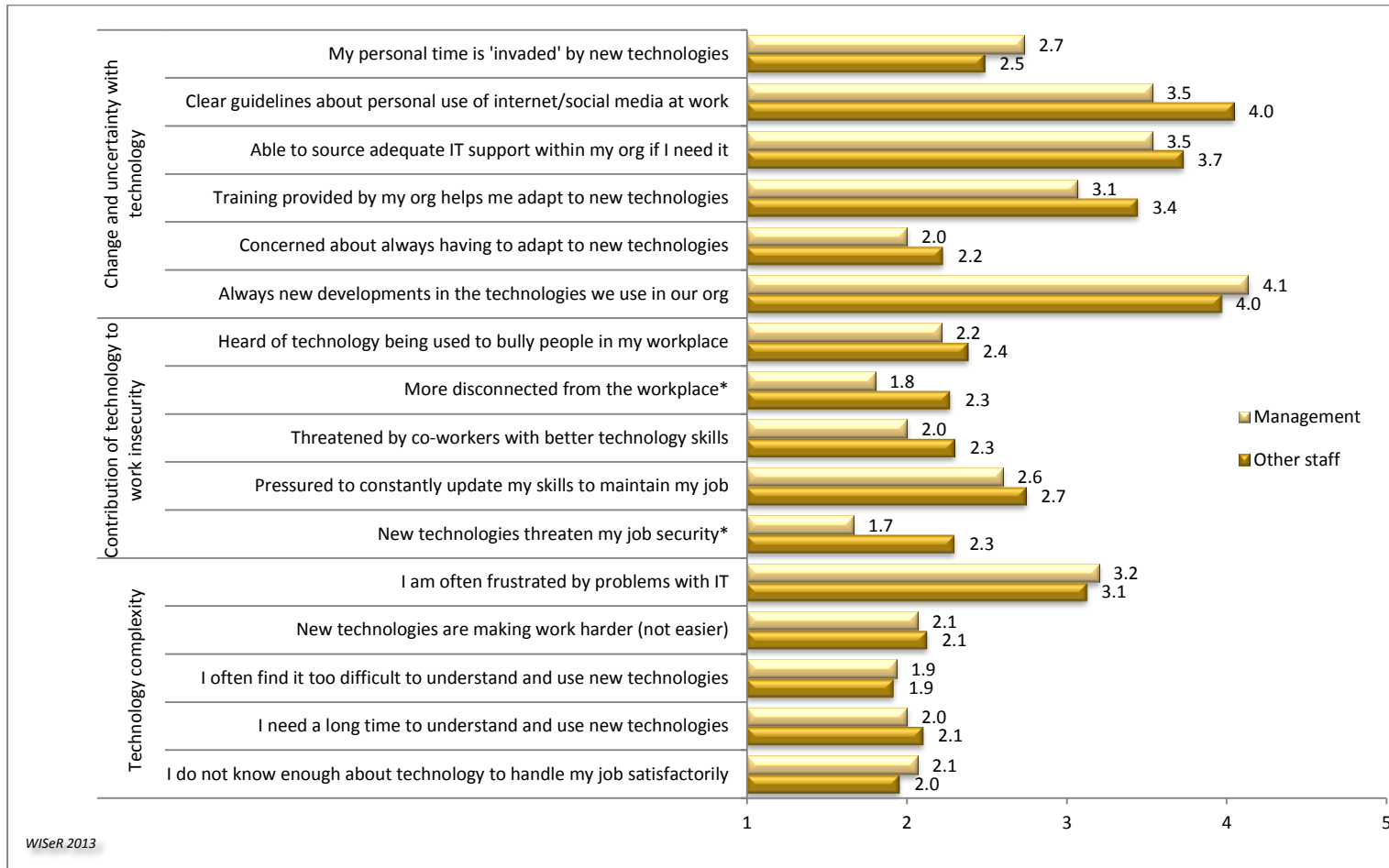
The majority of staff did not consider technology was too complex to be beneficial (based on the five items provided). Very few indicated major difficulties with complexity, for example:

- 11.7% indicated they *need a long time to understand and use new technologies*; and
- 7.8% felt they *did not know enough about this technology to handle my job satisfactorily*;
- 9.7% thought *new technologies are making work harder (not easier)*; and
- 4.9% often found it *too difficult to understand and use new technologies*.

Of greatest concern is that 40.8% either agreed or strongly agreed that they *'are often frustrated by problems with IT'* (see Figure 25). However, this may be related to general problems with IT infrastructure and breakdowns.

Highlighting differences in exposure to technology, Baby Boomers were significantly more likely to report *I often find it too difficult to understand and use new technology* compared to Generation Ys. This difference also held for Baby Boomers reporting *needing a long time to understand and use new technologies* compared to Generation Y (see Figure 27). There were no statistically significant differences in responses for this theme between management and other staff and for technology-related health status.

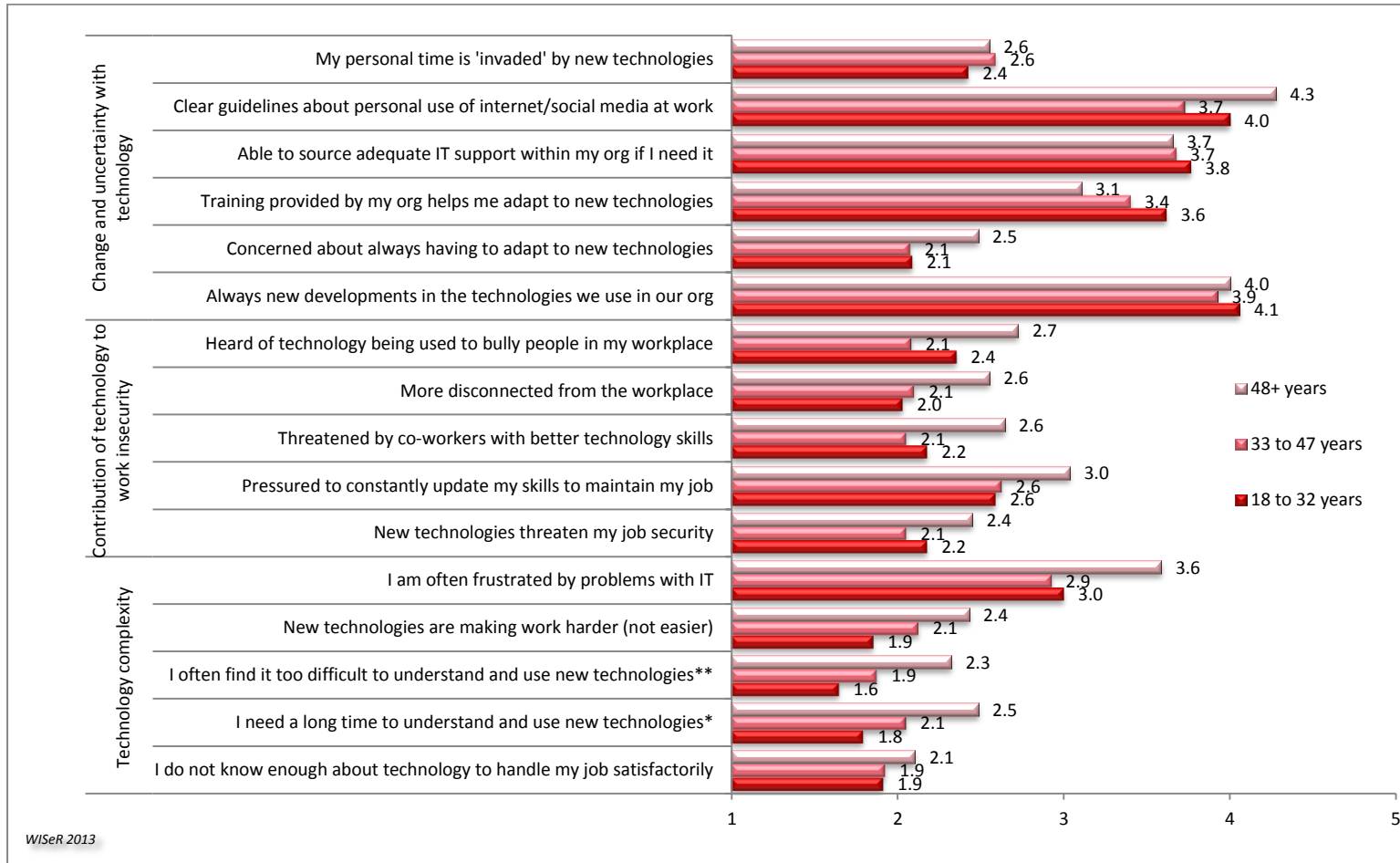
FIGURE 26: ANXIETY AROUND TECHNOLOGY BY ORGANISATIONAL ROLE



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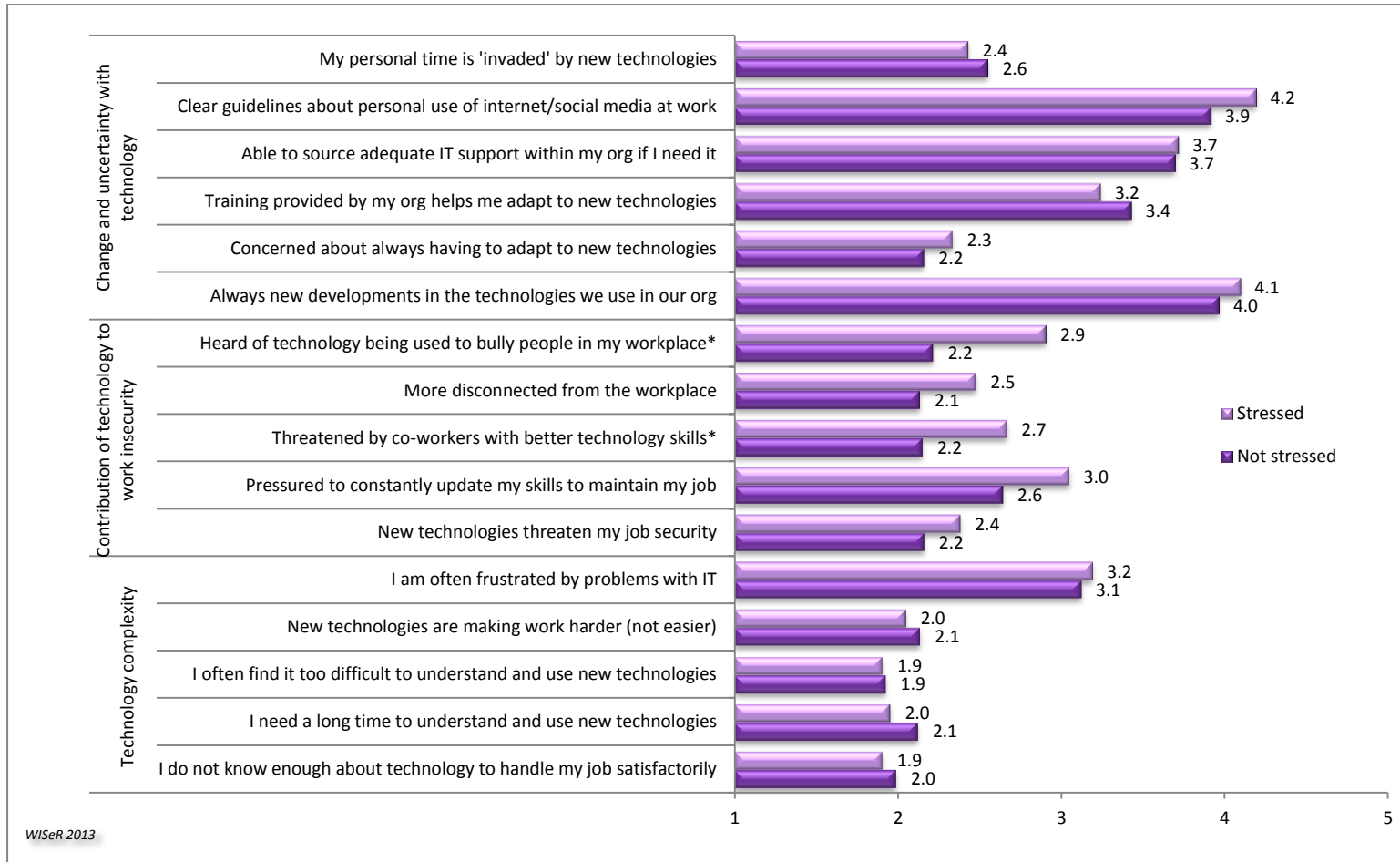
Note, * denotes a statistically significant difference; 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 27: ANXIETY AROUND TECHNOLOGY BY GENERATION



Note, ** denotes a highly statistically significant difference and * denotes a statistically significant difference; 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 28: ANXIETY AROUND TECHNOLOGY BY TECHNOLOGY RELATED HEALTH STATUS



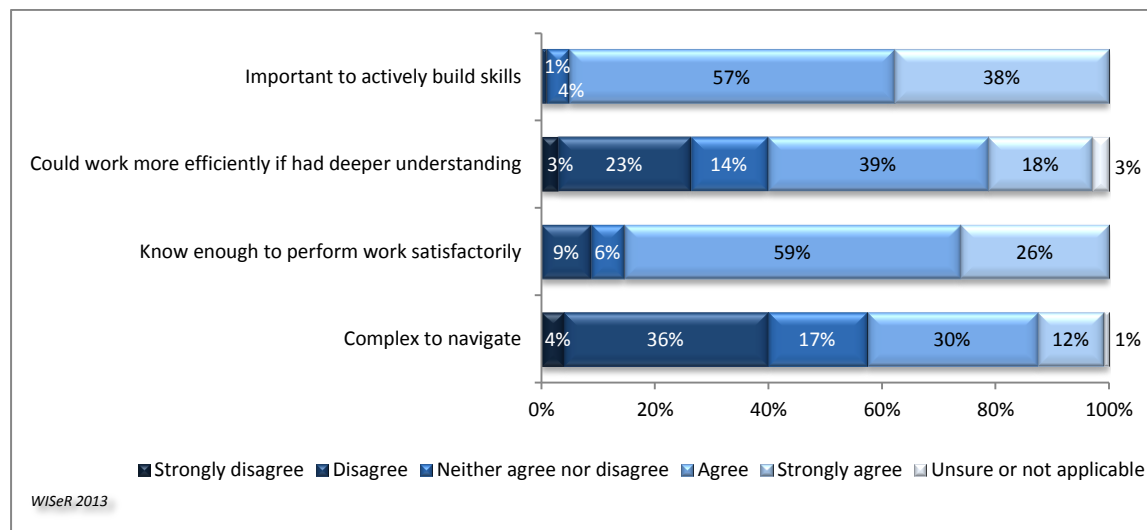
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Note, * denotes a statistically significant difference; 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

4.2.7 USING TECHNOLOGY IN THE WORKPLACE

While most (85.4%) staff either *agreed* or *strongly agreed* that they *know enough to perform their work satisfactorily*¹⁶ more than a third (41.7%) indicated that the systems and programs were *complex to navigate* (39.8% disagreed to some extent about the complexity and 17.5% neither agreed nor disagreed; see Figure 29). Slightly more than half of employees (57.3%) felt they *could work more efficiently if they had a deeper understanding of the systems/programs they use* (13.6% neither agreed nor disagreed and 26.2% disagreed to some extent) and nearly all (95.1%) agreed to some extent that *it's important to actively build their skills in relevant information systems and programs*¹⁷.

FIGURE 29: VIEWS ON COMPUTER-BASED INFORMATION SYSTEMS AND PROGRAMS

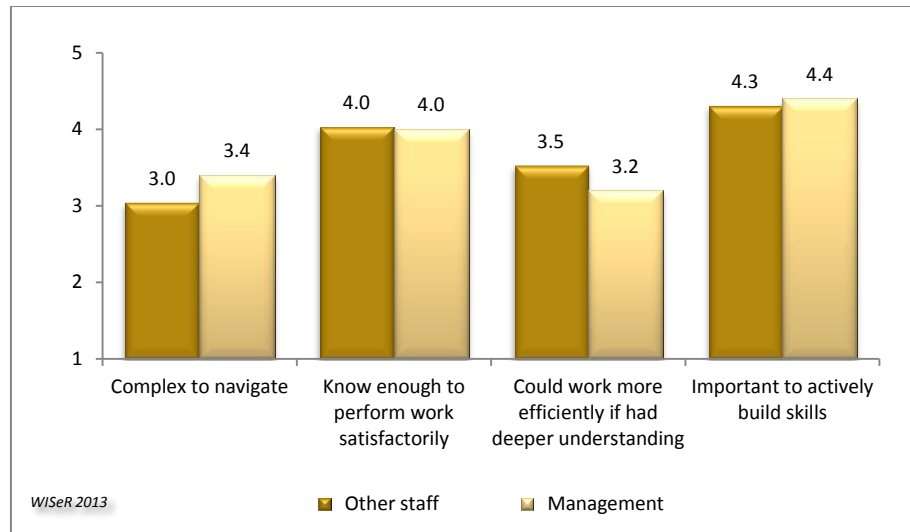


There were no significant differences in the responses of Management compared to other staff (Figure 30), Generation X, Y and Baby Boomers (Figure 31) or between technology-related health status (Figure 32).

¹⁶ No employees strongly disagreed with this statement, 8.7% disagreed and 5.8% neither agreed nor disagreed.

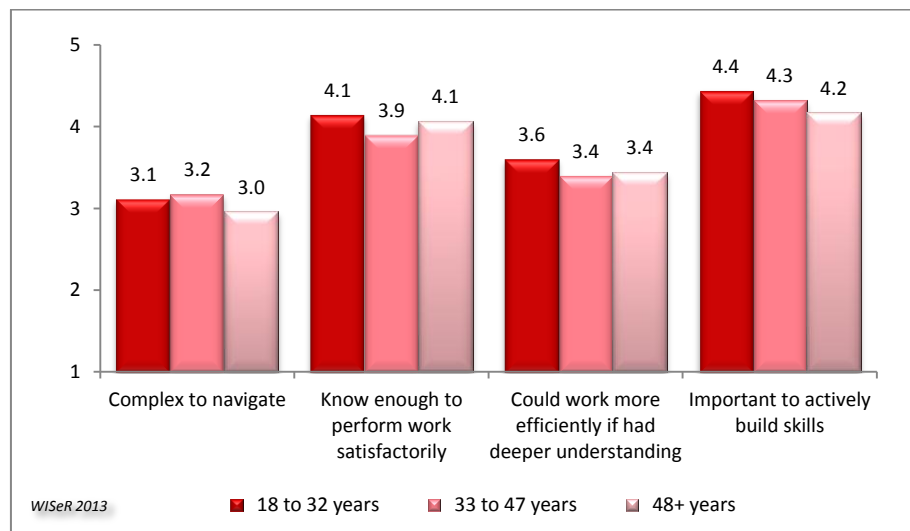
¹⁷ No employees strongly disagreed with this statement, 1.0% disagreed and 3.9% neither agreed nor disagreed.

FIGURE 30: VIEWS ON COMPUTER-BASED INFORMATION SYSTEMS AND PROGRAMS BY ORGANISATIONAL ROLE



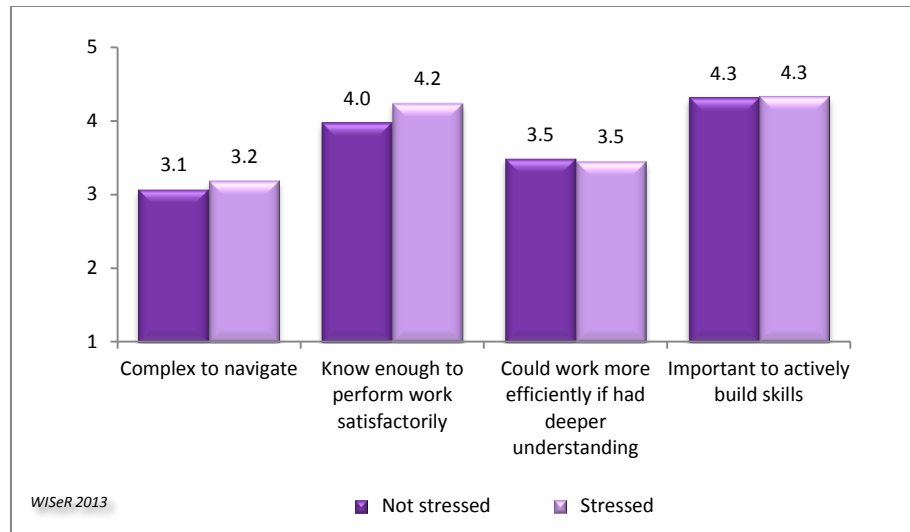
Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 31: VIEWS ON COMPUTER-BASED INFORMATION SYSTEMS AND PROGRAMS BY GENERATION



Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 32: VIEWS ON COMPUTER-BASED INFORMATION SYSTEMS AND PROGRAMS BY TECHNOLOGY RELATED HEALTH STATUS



Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

There was variability around how staff viewed the implementation of technology within the organisation. For example, 61.2% of respondents considered that the organisation *encouraged staff to try out new technologies*¹⁸ whereas there was less agreement for being consulted *before the introduction of new technologies* with just under half of employees (47.6%) agreeing to some extent (about a third disagreed to some extent and 17.5% neither agreed nor disagreed; see Figure 33). Greatest disagreement was shown for *expected to always be available because of the new technology* (46.6% disagreed to some extent, 23.3% neither agreed nor disagreed and 28.2% agreed to some extent).

Twenty-one staff felt they *were* expected to always be available but all categories (management, other staff, males, females, all age generations and technologically stressed and ‘not stressed’) were represented in this group.

There were no significant differences in the responses of Management compared to other staff (Figure 34), Generation X, Y and the Baby Boomers (Figure 35) or between technology-related health status (Figure 36).

¹⁸ 27.2% neither agreed nor disagreed and 9.7% disagreed to some extent.

FIGURE 33: IMPLEMENTATION OF TECHNOLOGY

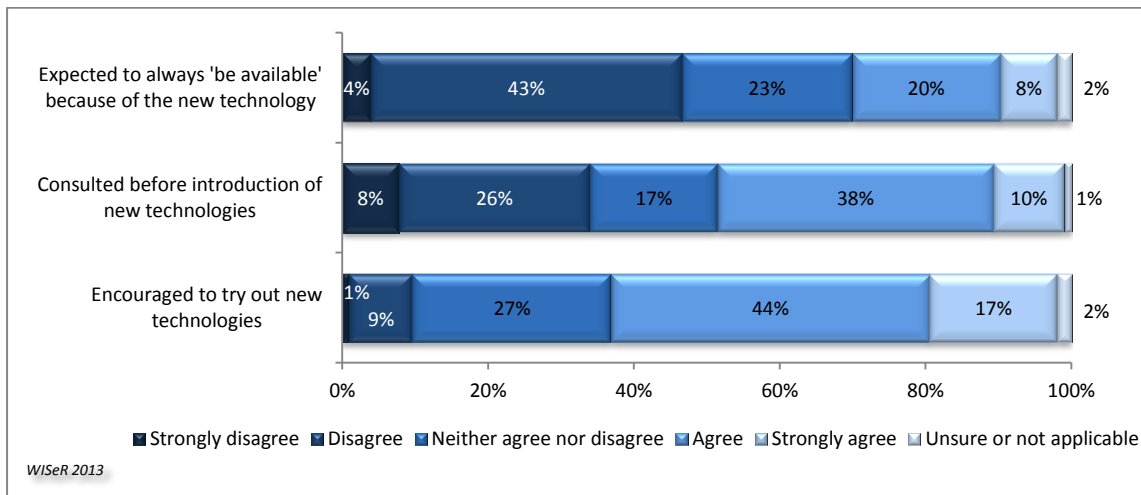
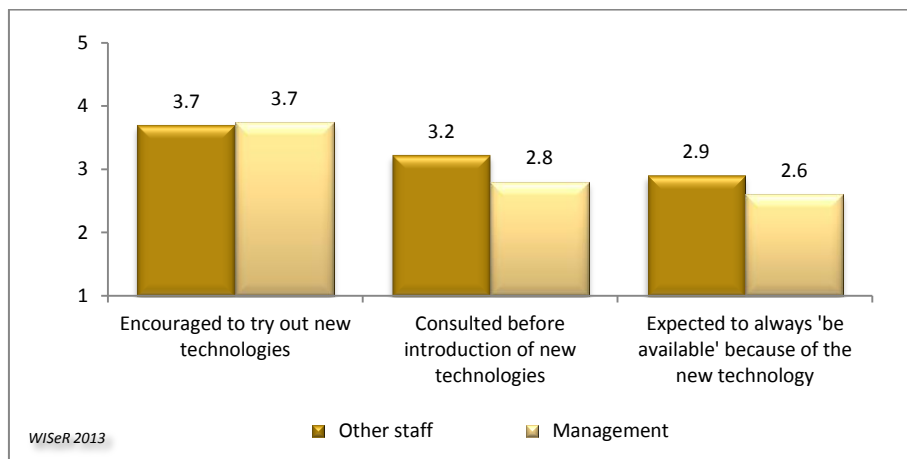
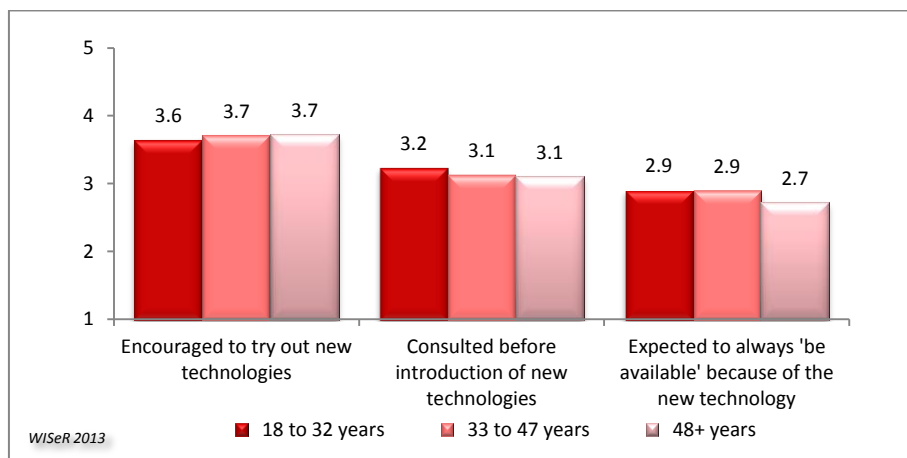


FIGURE 34: IMPLEMENTATION OF TECHNOLOGY BY ORGANISATIONAL ROLE



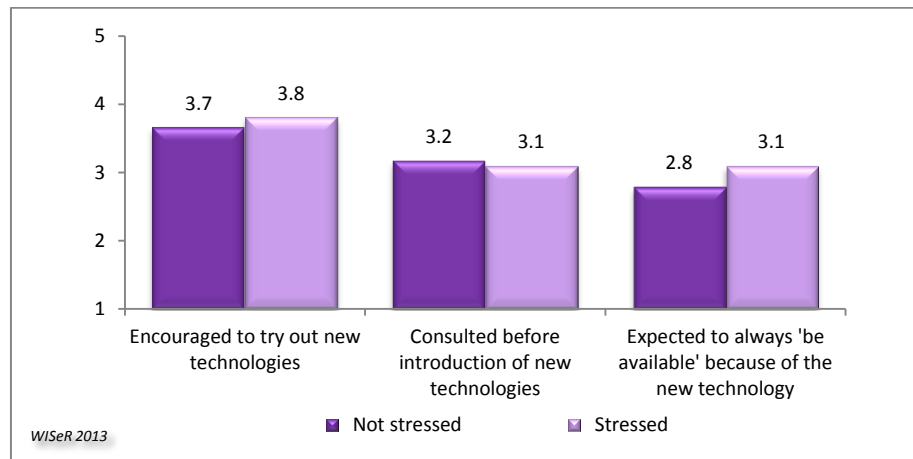
Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 35: IMPLEMENTATION OF TECHNOLOGY BY GENERATION



Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 36: IMPLEMENTATION OF TECHNOLOGY BY TECHNOLOGY RELATED HEALTH STATUS



Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

4.3 ATTITUDES TO THE WORKPLACE

4.3.1 JOB CONTENT

Overall, staff were relatively positive about their job content and relationships with co-workers. More than 80% of employees reported feeling *supported by colleagues¹⁹ and supervisors²⁰* in addition to having *reasonable control over how they manage their work²¹*. There was less agreement about feeling *satisfied with their job*, close to three-quarters (71.8%) agreed with this statement to some extent, while only 12.6% reported dissatisfaction (15.5% neither agreed nor disagreed; see Figure 37). Job stress was reported by around half (47.6%; 27.2% neither agreed nor disagreed and 25.2% disagreed to some extent).

No significant differences were found in views according to organisational role (Figure 39), generation (Figure 40) or technology-related health status (Figure 41).

Four employees (nearly all female, half not technologically stressed and half from Generation Y) responded negatively to all five statements about job content.

4.3.2 JOB MOBILITY

This section comprised six items. The majority of staff reported being satisfied with the degree of interaction and mobility in their jobs (Figure 38). For example, more than three-quarters of staff *agreed or strongly agreed* that:

- they were *happy with the level of face-to-face interaction with co-workers* (86.4%)²²
- they *have sufficient opportunity to get up from my desk and move about* (76.7%)²³
- *There is an appropriate balance between electronic and face-to-face communication* (75.7%)²⁴

In contrast, there was less agreement that the *organisation arranges activities to promote my physical health* (49.5% agreed with this statement to some extent, 14.6%

¹⁹ 9.7% neither agreed nor disagreed and 4.9% disagreed to some extent.

²⁰ 8.7% neither agreed nor disagreed and 7.8% disagreed to some extent.

²¹ 7.8% neither agreed nor disagreed and 10.7% disagreed to some extent.

²² 3.9% neither agreed nor disagreed and 7.8% disagreed to some extent.

²³ 6.8% neither agreed nor disagreed and 16.5% disagreed to some extent.

²⁴ 6.8% neither agreed nor disagreed and 15.5% disagreed to some extent.

neither agreed nor disagreed and 34.4% disagreed to some extent) and related to this, that they *make good use of health promotion activities provided by my organisation* (38.8% agreed to some extent, 31.3% neither agreed nor disagreed and 21.4% disagreed to some extent). Just over a third of staff (35.9%) reported they *often feel physically cramped from sitting too long at the computer*²⁵ and agreement with this statement was significantly more likely in those experiencing technology-related stress or illness (Figure 41). There were no significant differences in response between management and other staff (Figure 39) or between generations (Figure 40).

A female Baby Boomer who did not suffer from technology related ill-health responded negatively to all questions around job mobility.

FIGURE 37: ATTITUDES AROUND JOB CONTENT

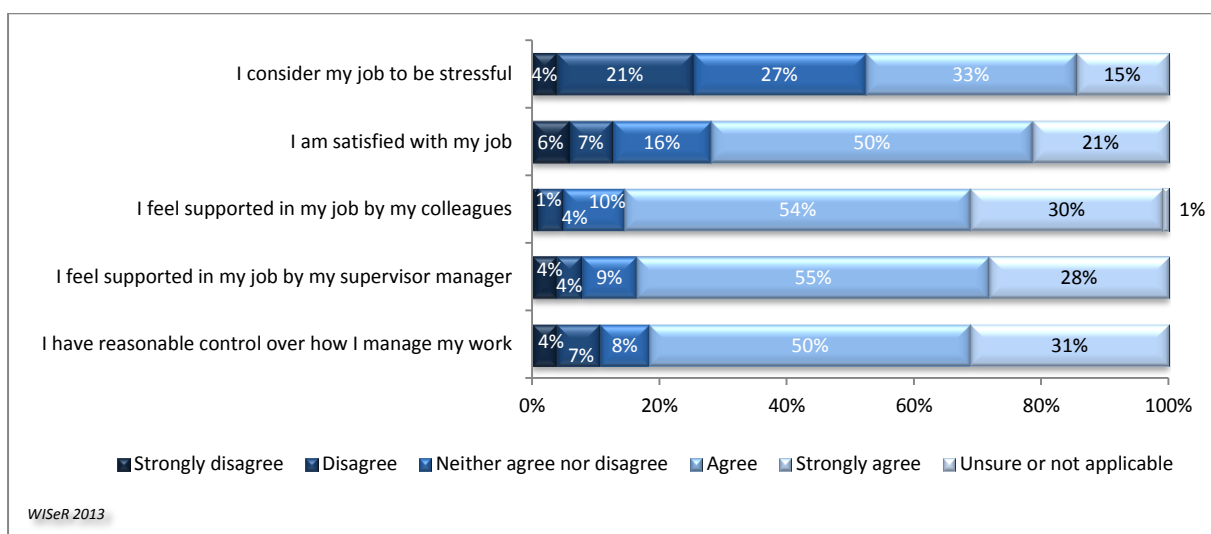
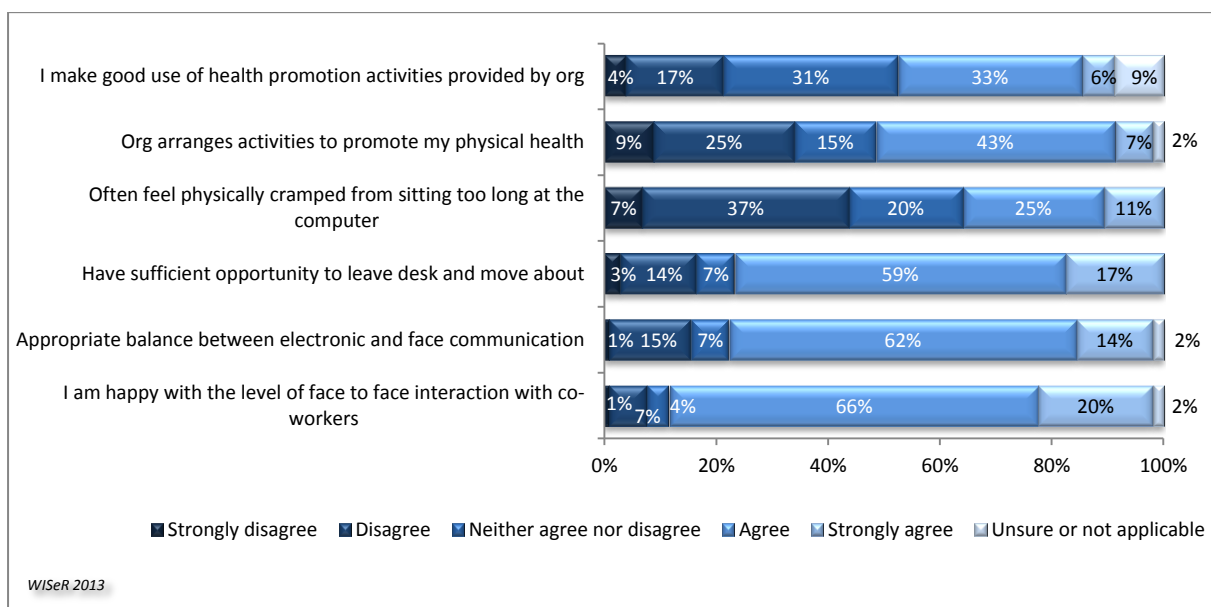
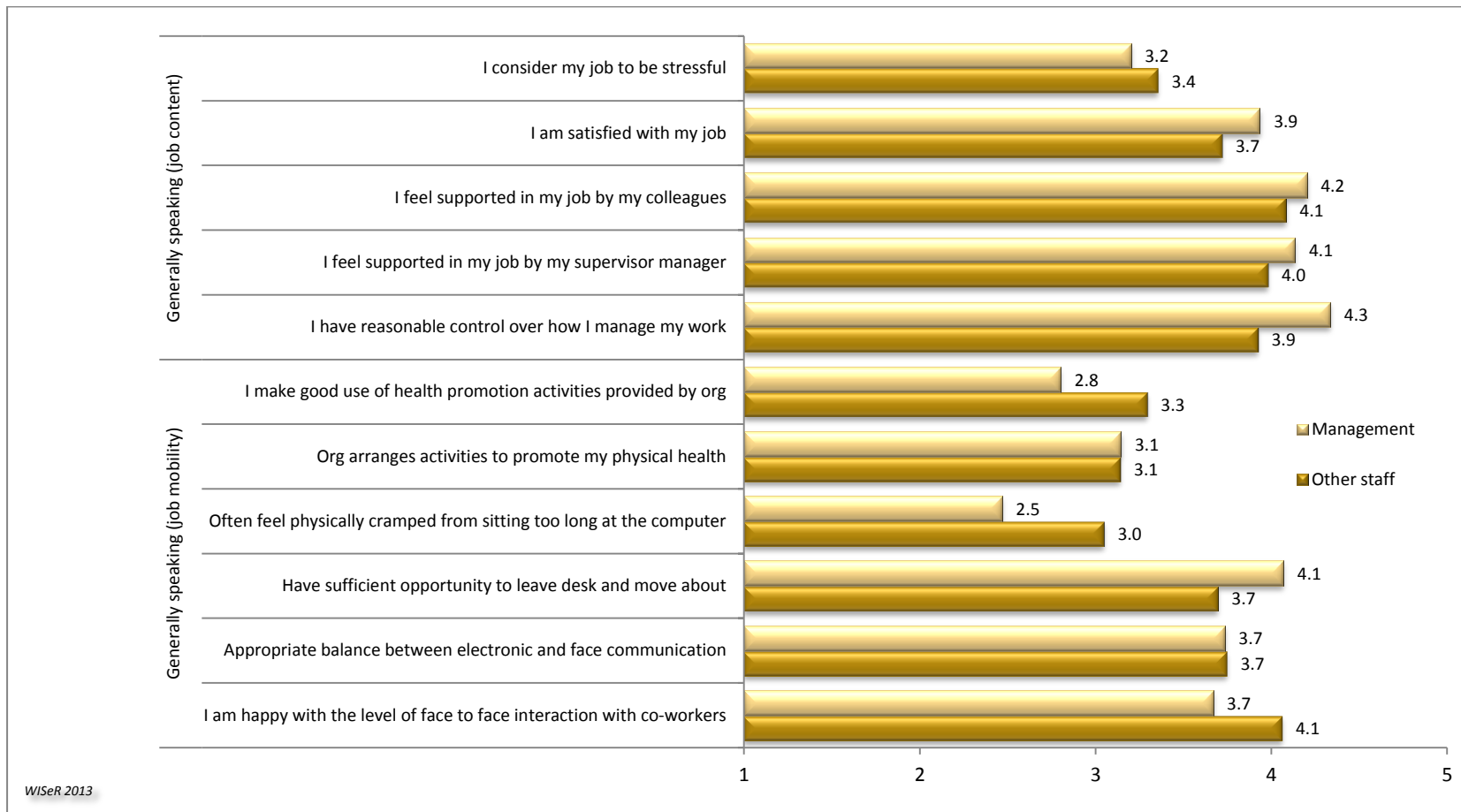


FIGURE 38: ATTITUDES AROUND JOB MOBILITY



²⁵ 20.4% neither agreed nor disagreed and 43.7% disagreed with this statement.

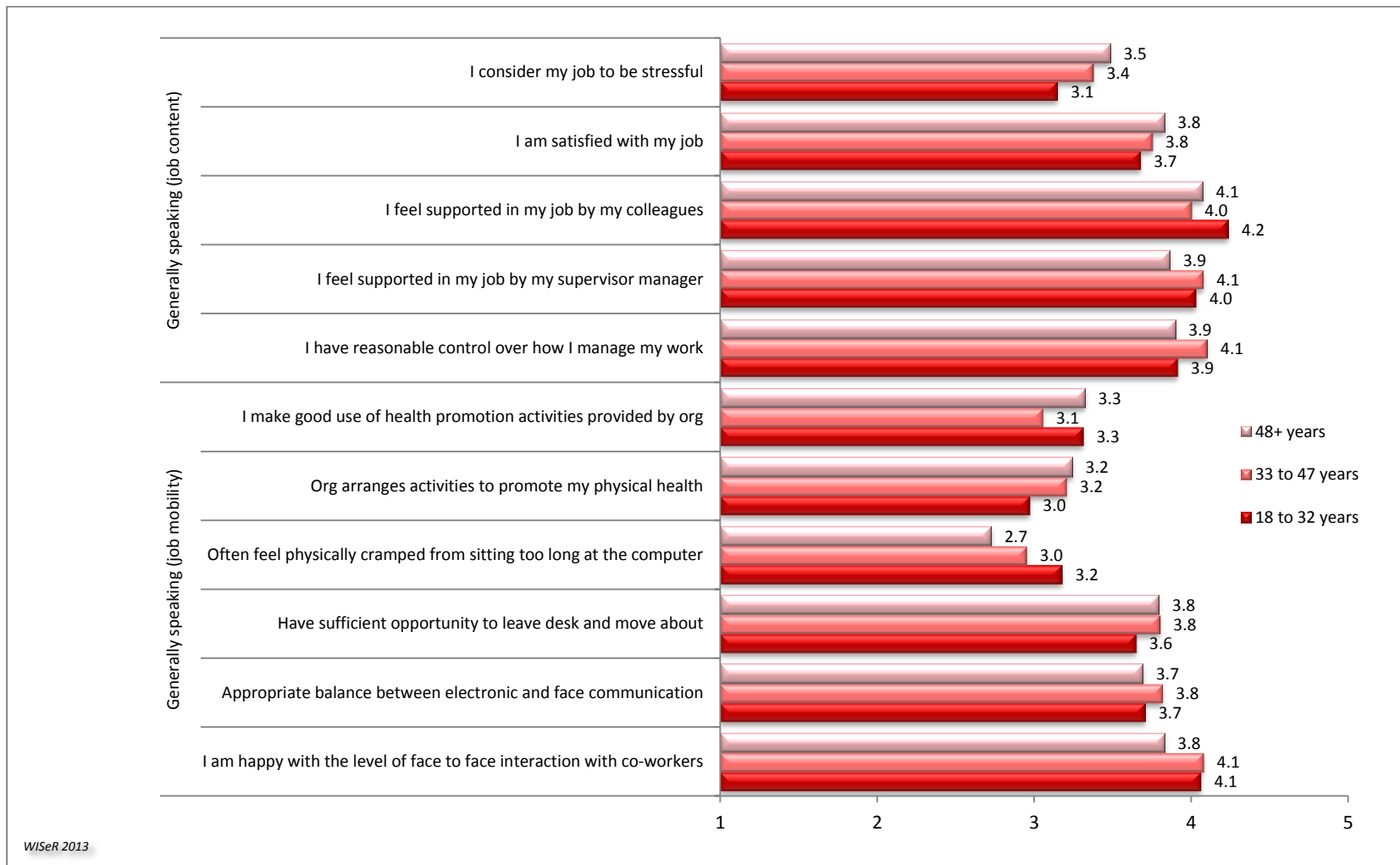
FIGURE 39: ATTITUDES AROUND JOB CONTENT AND MOBILITY BY ORGANISATION ROLE



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Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

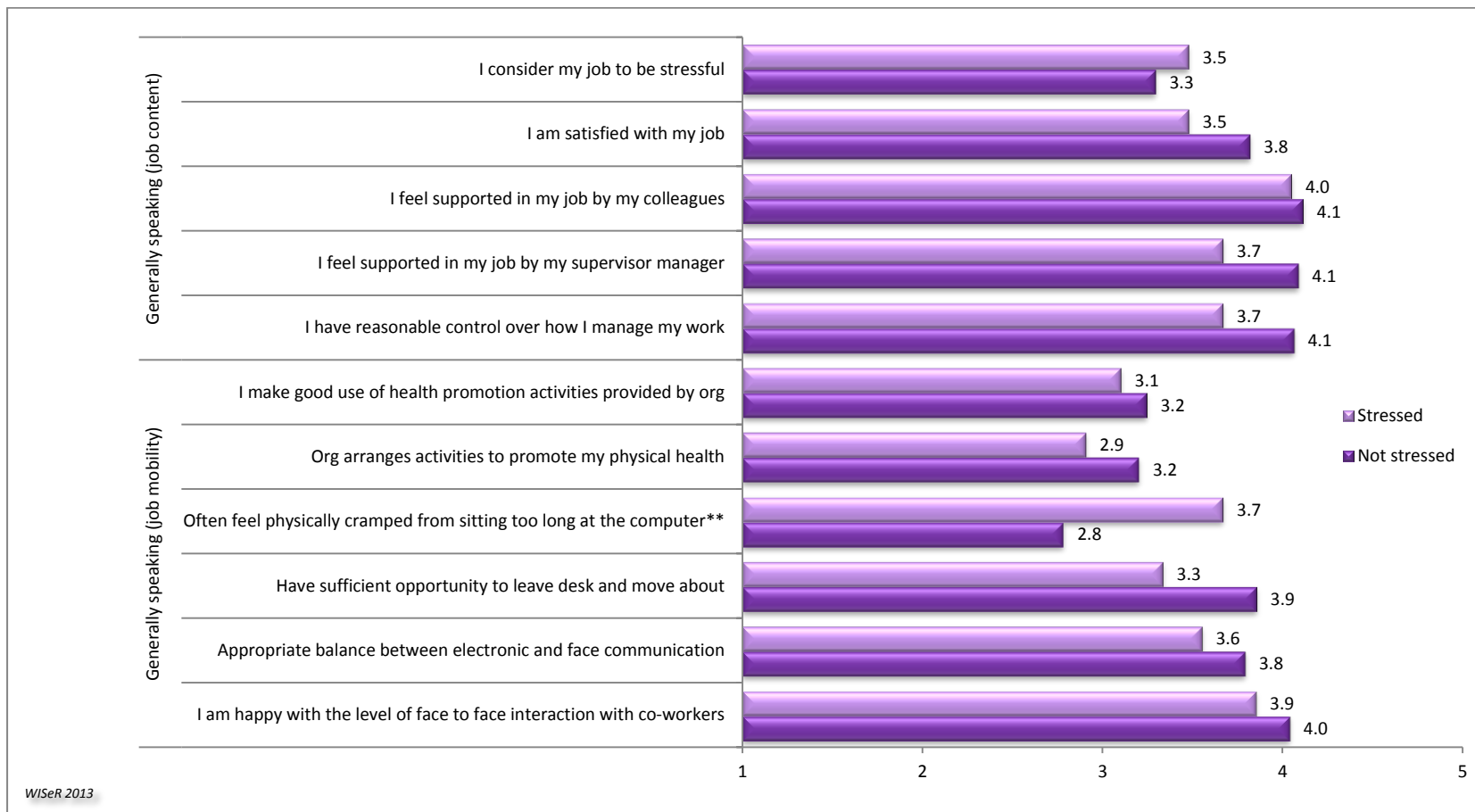
FIGURE 40: ATTITUDES AROUND JOB CONTENT AND MOBILITY BY GENERATION



WISer 2013

Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 41: ATTITUDES AROUND JOB CONTENT AND MOBILITY BY TECHNOLOGY RELATED HEALTH STATUS



WISer 2013

Note, ** denotes a highly statistically significant difference; 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

4.3.3 WORKING IN PERSONAL TIME

Three-quarters of employees reported engaging in some work activities in their personal time although for most this was rare or occasional. As shown in Figure 42, when individuals did engage in work activities outside of work hours, this usually involved *checking work emails* (7.8% reported doing this very frequently) and *accessing work files* (4.9% reported very frequently). Employees were least likely to *receive or send texts about work* (1.0% reported doing this very frequently). A technologically stressed Generation X female reported engaging in all four work activities *very frequently*.

As for employees' acceptance of being contacted in their personal time for work purposes, 7.8% strongly agreed that they *do not mind*, increasing to 10.7% where it was for *something important* (see Figure 46). Almost a third of employees indicated some agreement that *they accept working in their personal time as part of their role*. However this figure drops to about a quarter of staff who agreed or strongly agreed that they *did not mind working in their personal time*. Accordingly, approximately 7% of participants perceived that some out of hours work was part of their role but that they were not completely comfortable with that arrangement.

The frequency of engaging in work outside of work hours and the acceptability of this was largely a function of organisational role. Management staff were significantly more likely to work in their personal time for three of the four items listed (Figure 43) and were more likely to consider it appropriate, especially if it was something important (Figure 47).

The only other significant difference from a group perspective was Generation Xs reporting *receiving or sending texts about work* significantly more often than Generation Ys (Figure 44). However, this result is likely to be a function of organisation role whereby Generation Xs are more likely to be managers than Generation Ys (also see Section 4.2.3).

FIGURE 42: WORKING IN YOUR PERSONAL TIME

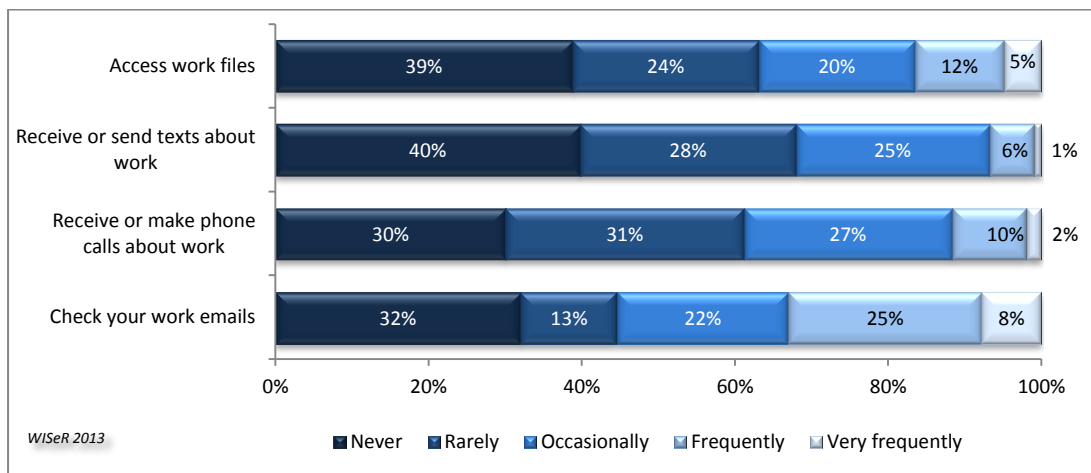
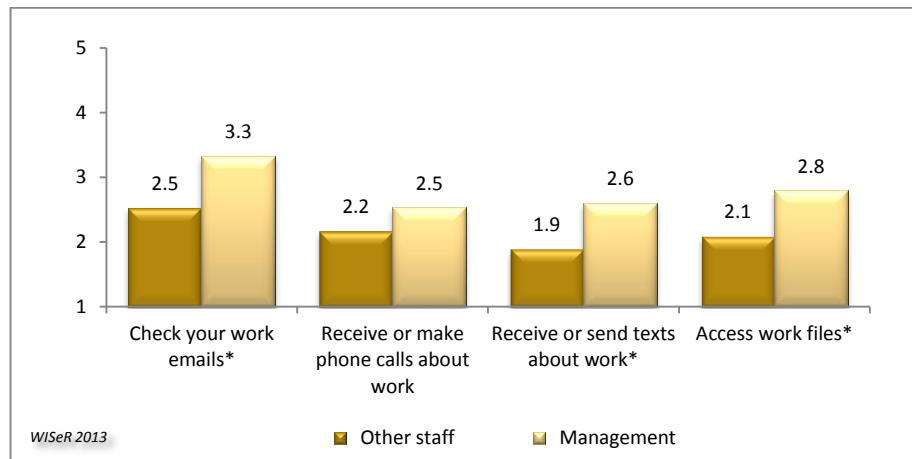
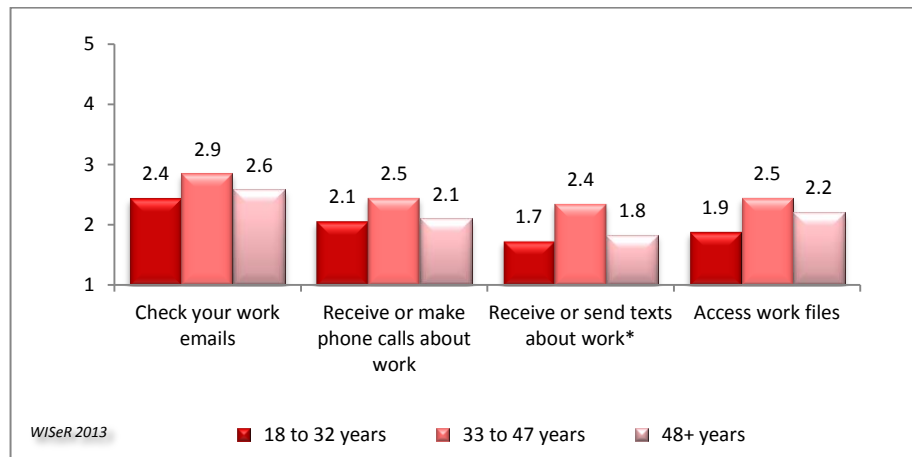


FIGURE 43: WORKING IN YOUR PERSONAL TIME BY ORGANISATIONAL ROLE



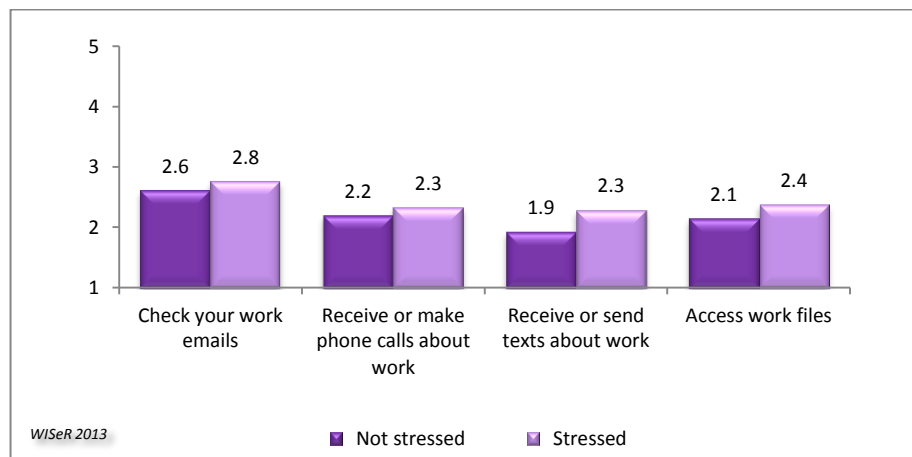
Note, * denotes a statistically significant difference and 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 44: WORKING IN YOUR PERSONAL TIME BY GENERATION



Note, * denotes a statistically significant difference and 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 45: WORKING IN YOUR PERSONAL TIME BY TECHNOLOGY RELATED HEALTH STATUS



Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 46: ATTITUDE ABOUT WORKING IN YOUR PERSONAL TIME

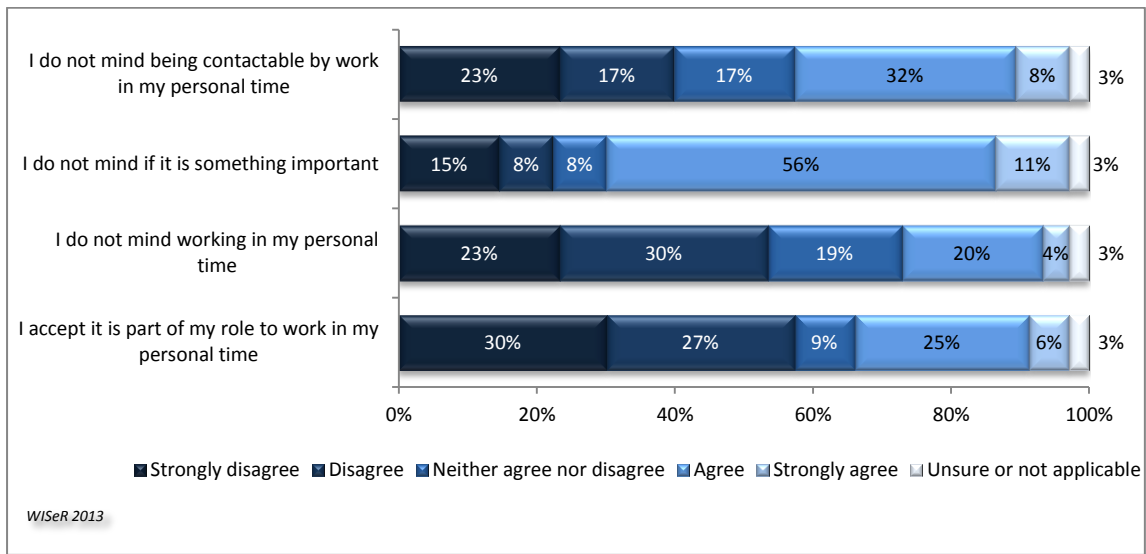
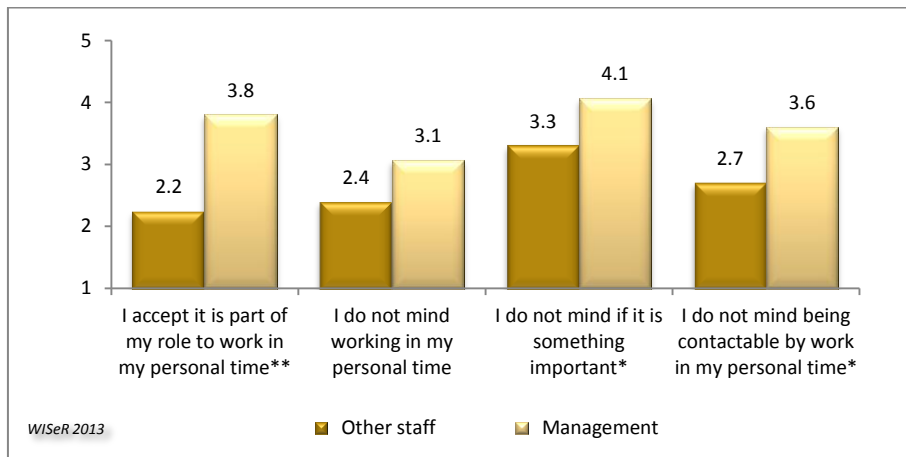
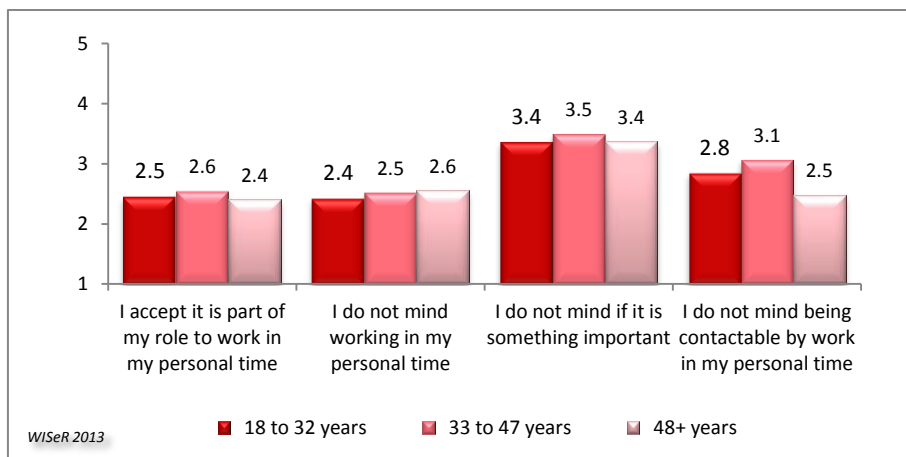


FIGURE 47: ATTITUDE ABOUT WORKING IN YOUR PERSONAL TIME BY ORGANISATIONAL ROLE

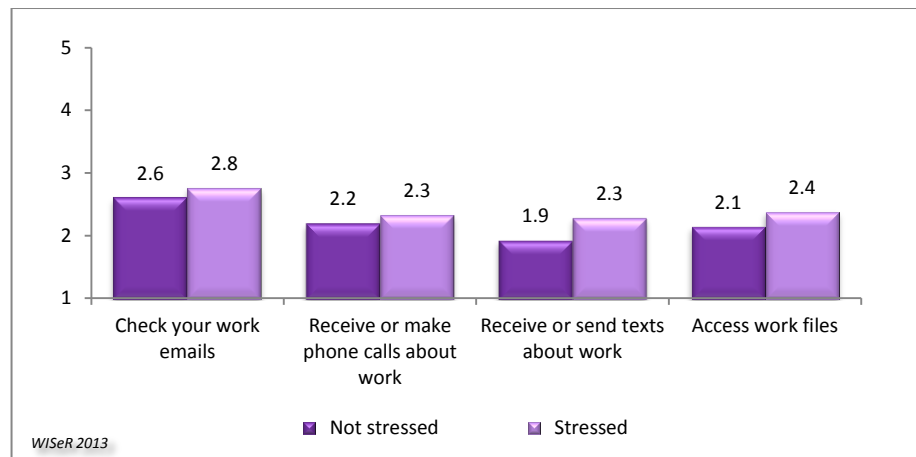


Note, ** denotes a highly statistically significant difference and * a statistically significant difference. 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 48: ATTITUDE ABOUT WORKING IN YOUR PERSONAL TIME BY GENERATION



Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

FIGURE 49: ATTITUDE ABOUT WORKING IN YOUR PERSONAL TIME BY TECHNOLOGY RELATED HEALTH STATUS

Note, 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree and 5= Strongly agree.

4.3.4 STAFF PERSONALITY TRAITS

In general, staff were most likely to describe themselves as someone who:

- *is considerate and kind to almost everyone* (91.3% agreed with this statement to some extent);
- *does a thorough job* (92.2% agreed with this to some extent); and
- *is generally trusting* (87.4% agree with this to some extent; also see Figure 50).

In contrast, staff were least likely to identify as being someone who:

- *tends to be lazy* (15.5% agreed with this statement to some extent);
- *gets nervous easily* (19.4% agreed with this to some extent); and
- *tends to find fault with others* (24.3% agreed with this to some extent).

There were only a few significant results for the group comparisons. That is, Managers were statistically less likely to report having *an active imagination* and being *considerate and kind to almost everyone* (Figure 51) compared to other staff; Generation Ys were significantly more likely to *find fault with others* compared to both Generation X and Baby Boomers (Figure 52); and those who experience technology-related stress and illness were significantly more likely to *find fault with others* than their non-stressed colleagues (Figure 53).

FIGURE 50: PERSONALITY TRAITS

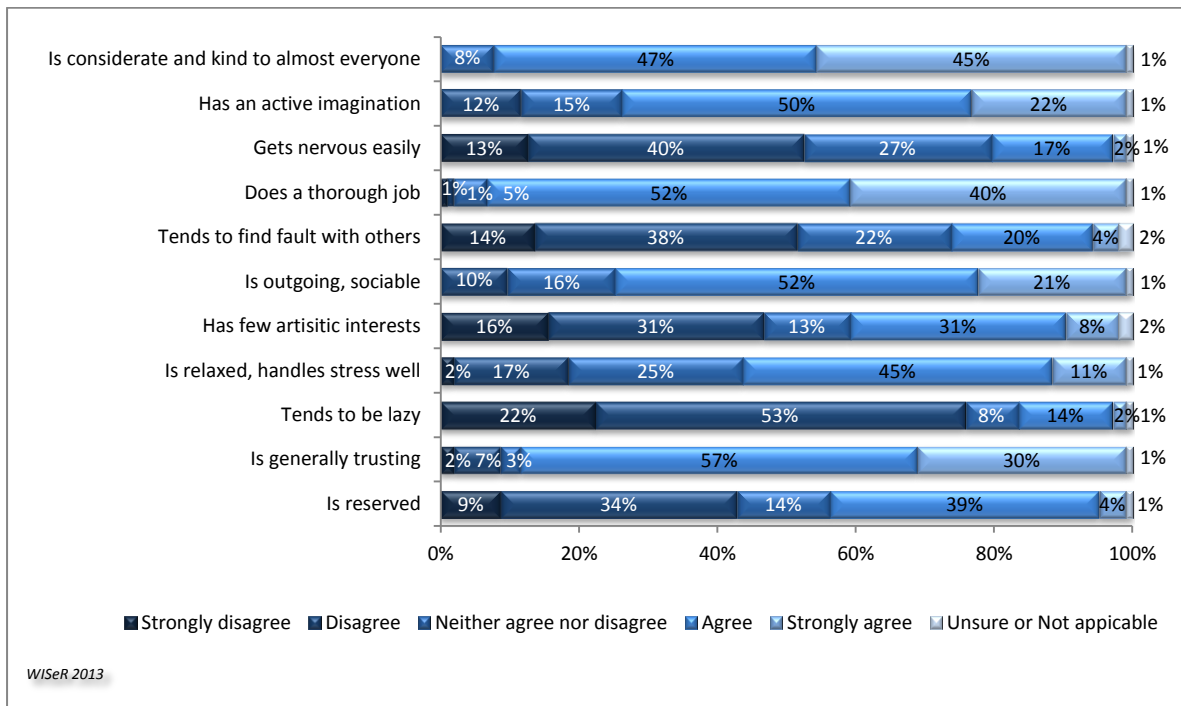
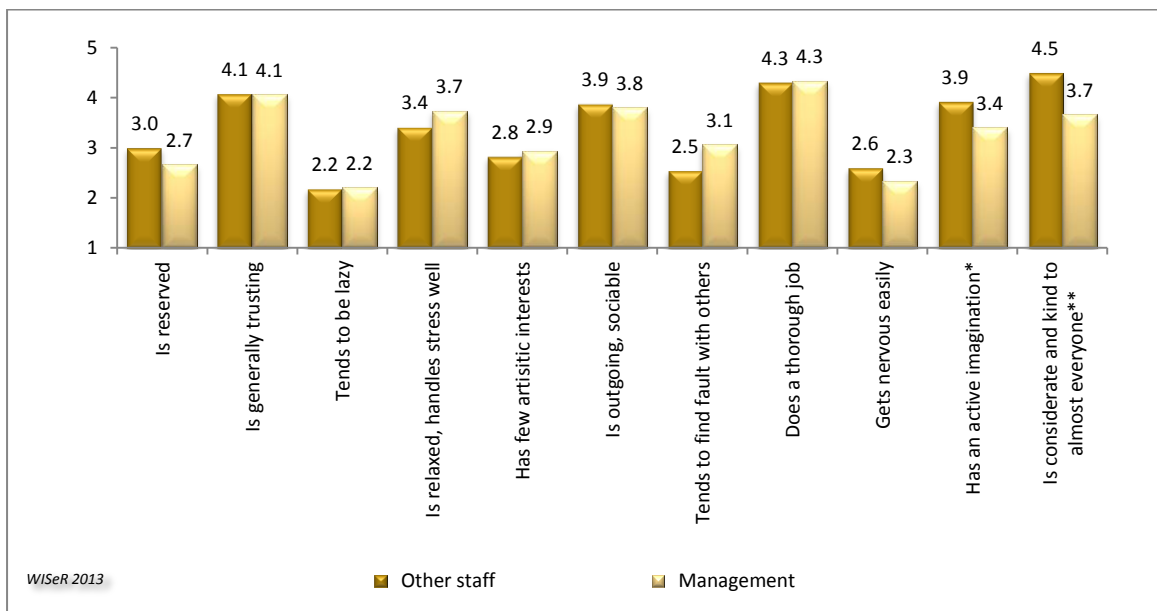
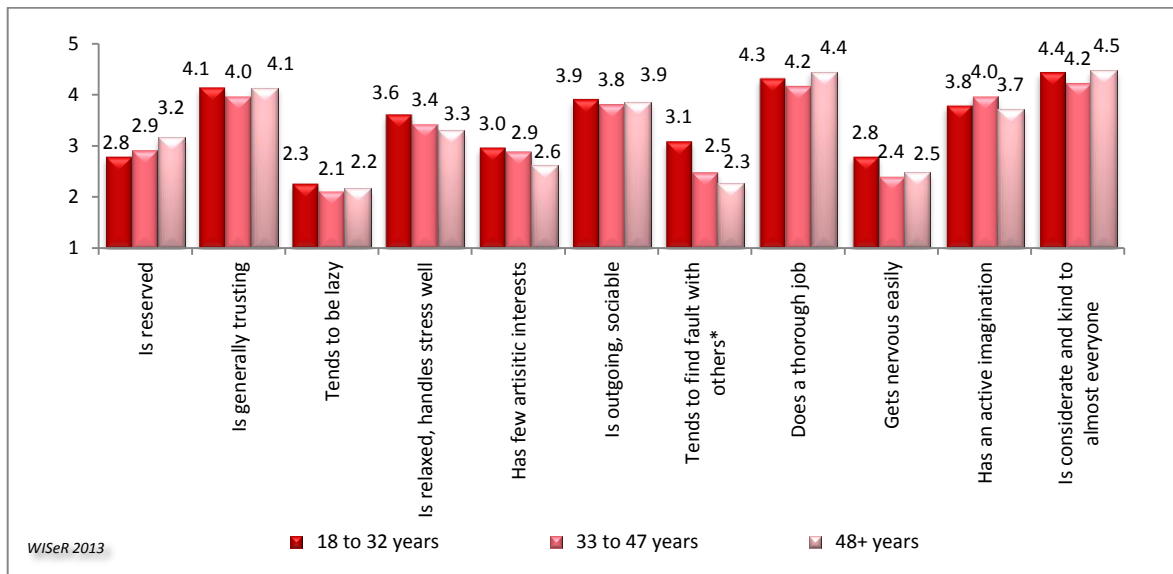


FIGURE 51: PERSONALITY TRAITS BY ORGANISATIONAL ROLE



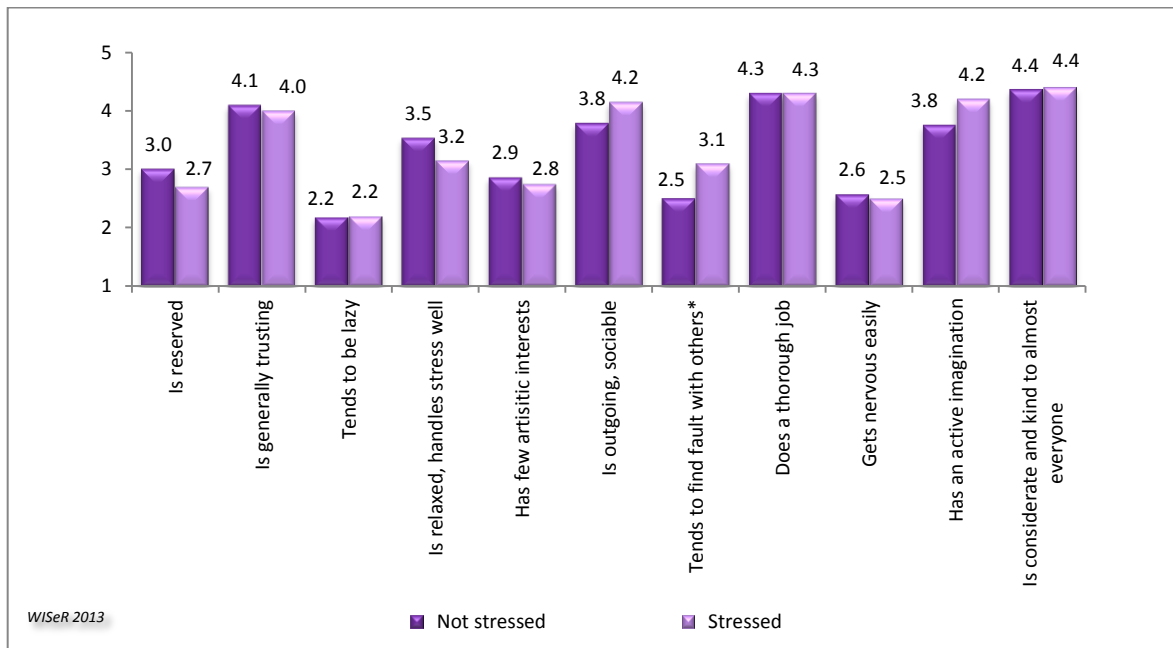
Note, ** denotes a highly statistically significant difference and * a statistically significant difference. 1= Strongly disagree, 2= Disagree, 3= Neither agree or disagree, 4= Agree and 5=Strongly agree.

FIGURE 52: PERSONALITY TRAITS BY GENERATION



Note, * a statistically significant difference. 1= Strongly disagree, 2= Disagree, 3= Neither agree or disagree, 4= Agree and 5=Strongly agree.

FIGURE 53: PERSONALITY TRAITS BY TECHNOLOGY RELATED HEALTH STATUS



Note, * denotes a statistically significant difference. 1= Strongly disagree, 2= Disagree, 3= Neither agree or disagree, 4= Agree and 5=Strongly agree.

5 DISCUSSION

This report presents the experiences and attitudes of employees of a finance organisation regarding Information Communication Technologies (ICTs) in the workplace. ICTs include computers and computer technologies (for example, personal computers, laptops, hand-held organisers, the Kindle and the iPad); mobile phones; the Internet and the Intranet; email; video conferencing; and new mediums

for social exchange (like Skype, Second Life, You Tube, Twitter, MySpace and Facebook). Interest in this area has been driven by the transformation of people's lives as ICTs have increasingly integrated across a broad spectrum of human activity and experience. The present interest has been on the implications for new organisational work practices and what these mean for worker health, safety and well-being.

The finance industry was targeted for the present study as the literature showed that this sector was an early business leader in recognising the potential for, and investing in, new ICTs (Productivity Commission, 2004). The participating organisation demonstrated many of the characteristics of ICT engagement identified in the literature for finance organisations more broadly, in terms of pursuing increasingly sophisticated ICT platforms and applications to deliver improved efficiencies and innovation in product development and delivery (Australian Bureau of Statistics, 2011; Werthamer & Raymond, 1997). In this context, management identified some concerns about 'bringing staff along on the journey'. Although it was perceived that staff working for the organisation were generally well advanced in their technological capabilities (with some variability across roles), there was concern about how some employees might adapt to the pace and extent of unfolding technological developments. In light of this, management was interested in better understanding the interaction between ICT use in a dynamic and evolving environment, and stress and adaptation processes among staff.

The purpose of the study was to better understand the role and impact of ICTs in the workplace of the participating finance organisation. This involved developing an Australian work and technology index to measure employees' level of engagement with ICTs in the workplace, and the extent to which ICT use conferred benefits and/or harm by way of physical and mental stress to employees.

5.1 STAFF USE OF AND ATTITUDES TO ICTs IN THE WORKPLACE

Survey findings showed that computers, email and the internet were all used very frequently by staff whereas tablets were uncommon. Despite low usage of some specific types of technology, confidence about using all the technologies listed was fairly high. Furthermore, even though usage was generally much greater for management staff, other staff showed comparable confidence in all areas of technology use, except for teleconferencing. These findings concur with the broader awareness that the finance sector is technologically engaged and likely to attract employees with a reasonable ICT aptitude (Australian Bureau of Statistics, 2011; Productivity Commission, 2004). Early consultation with organisational management and staff identified that this was a likely scenario and this was supported by the survey findings.

Staff members involved in the consultation process had what they thought was a reasonable grasp of required technological applications, but felt they could extract more value out of their work if they were able to develop their skills further. This was borne out in the survey findings, where most (85%) staff either agreed or strongly agreed that they know enough to perform their work satisfactorily, however just over half (57%) felt they could work more efficiently if they had a deeper understanding of the systems/programs they use. Nearly all (95%) agreed to some extent that it is important to actively build their skills in relevant information systems and programs. These findings point to a body of staff that is generally engaged with ICTs, and is willing to learn and develop knowledge and skills to maximise their productivity and efficiency.

Consultation findings helped place these survey results into context. On the whole, staff members expressed a positive approach to ICTs in the workplace, recognising benefits in terms of streamlined, time saving processes and enhanced

communication lines. However they also recognised potential risks in terms of increasingly complex roles, managing information overload, and balancing speed and measured response in the transmission of information. Technological tethering was considered by those consulted as a more pronounced issue for management level employees.

Feedback from some staff who work from home²⁶ acknowledged the flexibility that technology provides – if offers “*more flexibility in how I structure my day and more freedom to move around/stretch*”. However, frustrations over problems with access to information and reliability of equipment and software were also apparent, such as “*...getting things fixed by IT or when I have a problem is very frustrating. Once everything is working, then a drive or something else disappears off my PC...*”.

Overall, workplace technology was viewed as largely beneficial and not overly invasive on personal time. However important differences were observed between management and other positions, between generational cohorts and whether a staff member is considered ‘technologically stressed’²⁷ or not.

5.2 THE ROLE OF THE WORKPLACE IN SUPPORTING POSITIVE ICT USE

General attitudes to ICT use in the workplace, including associated benefits and risks, are likely to depend on the organisational culture and how supported people feel within the work environment. Day, et al., (2010: 332) highlight the importance of control in this sphere in the following way:

The extent to which employees feel that they have control over how and when they use ICT to assist with the completion of their work will impact their view of ICT as a demand or a resource. Individuals who do not have control over their access, and use of, ICT may experience increased stress. Conversely, individuals who have control over ICT will have greater flexibility in their work and more opportunities for work-life balance.

Overall, the majority of participants in the present study felt supported by colleagues and supervisors, and considered they had reasonable control over how they manage their work. However, there was less consensus about feeling satisfied with their job (just under three quarters agreed or strongly agreed that this was the case), however nearly half considered their job in general to be stressful. Overall, staff appeared to be relatively positive about their job content and relationships with co-workers. This is a strong basis for building positive and productive ICT use.

However, there were a few staff members who expressed²⁸ frustration at the organisation’s pressure to achieve key performance indicators, many of which staff believe are irrelevant and do not capture the real work environment or processes. Individuals commented:

....We are overworked plain and simply and our managers - though they say they manage the workflow - they don't manage it at all...they are always in meetings.

²⁶ Respondents were invited to provide additional comments about the impact of new information and communication technologies on their work. A small number of employees (14 of the 103) provided further information and three indicated that they work from home.

²⁷ Technology-related health status has been formed from the question *time taken off work due to technology-related stress or illness*. Twenty-one individuals either left work early or took a day or more off work on at least two or more occasions. They are considered to be ‘repeat sufferers’ and as such their health is more heavily impacted by technology use than others. Technology-related health status is labelled as ‘stressed’ or ‘not stressed’ in this report.

²⁸ Respondents were invited to provide additional comments about *the impact of new information and communication technologies on their work*. A small number of employees (14 of the 103) provided further information.

The number of applications used at any one time and the multiple tasks that can generate from one call with constant pressure to take calls makes for a very exhausting day. I have started to wonder if it can really be good for you to have over 60 conversations with 60 different people a day with varying degrees of pleasant to downright unpleasant...I need complete and utter silence for at least an hour at the end of my shift. The organisation is extremely statistics driven and we have KPI's that have to be met, unfortunately statistics do not paint the whole picture, often personal time is the only time you can finish tasks without being constantly interrupted by phone calls.

This feedback provides an opportunity for the organisation to consult with staff about the use and implementation of key performance indicators (KPIs) and to workshop why they are relevant and to perhaps develop KPIs that staff are more receptive to.

At the same time, there was variability in how staff viewed the implementation of technology within the organisation. For example, just over 60% of respondents considered that the organisation encouraged staff to try out new technologies whereas there was less agreement for being consulted before the introduction of new technologies with just under half of employees agreeing to some extent. This suggests that while employees consider that they have considerable control over how they manage their work, this does not necessarily extend to control over their ICT environment, particularly in relation to the introduction of new ICTs. This is important to consider given research showing that employees involved in the implementation of new technologies and who are properly trained experience less stress, strain and dissatisfaction (Korunka and Vitouch (1999) cited in: Day, et al., 2010).

The introduction of new ICTs featured in comments provided by several staff members both in terms of practical supports that could be put in place to cope – such as information and technology (IT) training sessions which should be followed-up with monthly homework to allow practice and retention of new skills – and the ongoing challenge that it creates with technology that is advancing so rapidly. For example a Generation X female stated:

I have grown up with the basic technology skills. The challenge I have is exceeding this and being a leader in exploring new technology solutions to undertake my work activities. This is a challenge as it is new to me and the organisation, hence there can be little information or support.

Several employees provided more philosophical responses to how new technologies are received and their impact on the present and the future. One person considered that responsiveness to new technologies was largely determined by generational cohort where 'older generations' typically do not embrace new technologies. This sentiment was captured in feedback from another colleague, a Baby Boomer, who simply stated that new information and communication technologies are "a pain".

As far as future advancements in technology are concerned there was an expression of caution to use technology in a considered fashion and to not let speed overpower quality, for example:

I worry in the long term for the future of work and the way technology now designs what we do and the product we deliver rather than the employees and customers having the influence they should... We need to both use technology to our advantage and be wary of its negative influence as well. For example...because I can get answers quickly I often don't take the care I used to. On the other hand, maybe the "just in time" approach is good - sometimes we used to do work for the sake of it. It's a difficult balance.

One respondent expected major technological developments over the next several decades but provided a warning as to the ability of older generations to keep up:

The generation who is not of working age yet, but are being immersed in the new technologies from as young as 2 mths old, will completely change the world at an ever increasing pace in the next 20 to 40 years. Work as we know it today will generally not exist; it will be as different as the agrarian age was compared to the industrial revolution. It will be extremely difficult for anyone born pre 2000 to have the adaptability to keep up with the pace of change.

5.3 HEALTH IMPACTS OF ICT

For the most part, employees did not associate use of ICTs with adverse health impacts. However, 10% of staff reported they had been affected to a *great extent* and more than a third of staff were *somewhat* affected by eye strain and fatigue associated with ICT use. Just over a third of staff reported they often feel physically cramped from sitting too long at the computer, with 17% claiming not to have sufficient opportunity to leave the desk and move around.

These findings suggest potential for developing health promotion strategies to mitigate these particular adverse effects, although careful thought needs to be given to how to engage staff at this level. Mixed views were expressed about whether the organisation provided health promotion activities, with around a half believing this to be the case and fewer again availing themselves of the opportunities offered. This suggests many either do not know, or are not interested in the messages and opportunities being offered by the organisation.

A recent report from Safe Work Australia (2011) suggested that although mental stress was only the fifth most prevalent cause of serious injury or disease, it was associated with the longest time off work and was the most expensive category. Analysis of WorkCover SA data has identified the finance sector as one of several industries with high stress claim levels, for both women and men (2010). In addition, working in the finance industry involves higher ICT use (Australian Bureau of Statistics, 2009).

The present study examined whether ICT-related stress was a contributing factor to employees taking sick leave. Findings showed that technology-related stress or illness tended not to lead to time off work for most staff experiencing these health impacts. Where staff reported leaving work due to technology-related stress or illness this tended to be only once (e.g. around a quarter of employees reporting ICT-related symptoms left work early once in the last 12 months) and the frequency of taking time off decreased as the duration of the time off increased (i.e. 2.0% of symptom sufferers took more than a week off on multiple occasions).

5.4 INNOVATIVE ACTIVITY AND FACILITATION OF WORK

In addition to focusing on potential sources of ICT-related stress, the study focused on employees' perceptions of the strengths and benefits afforded to them by ICTs. On average, there was strong agreement from all staff that technology helps many facets of work, in particular for improving the quality of work and work efficiency, and keeping connected to the workplace. Technology was also endorsed by staff for assisting in balancing work and life commitments (80% agreed or strongly agreed) and staying connected with important commitments outside work (84% agreed or strongly agreed).

For example, one respondent noted the benefits of Microsoft Office Communicator 2007, complimenting the ease of using this tool and how it facilitated communication and collaboration with colleagues in other locations/states. Another staff member

initially expressed concern about technology impeding productivity but also emphasised that negative impacts can be improved by modifying the technology to suit the user's needs (e.g. eliminate or reduce the frequency of alerts flashing on screen). Of course, the user must remember that much technology is 'adjustable' in this way or can indeed be 'turned off'.

The literature has also identified a number of positive changes fostered by ICTs in workplace culture such as enhanced global communication; increased workplace flexibility and innovative activity (Florida, 2003a, 2003b). In the current study just under two-thirds of employees agreed that technology helps them come up with new ideas relating to their job.

Previous research has showed that around three-quarters of employees agreed that technologies made it easier to do their job well and 13% felt that technologies made their work more complicated (The Work Foundation, 2009). In the current study, over 90% agreed that technology improves the quality of their work and that it helps them work more efficiently. However, close to 10% felt that new technologies are making work harder (not easier). These results suggest a generally more favourable approach to ICTs in the participating finance organisation, compared with the approximately 1200 respondents from businesses employing more than 500 people who were surveyed for the Work Foundation study. At the same time, these results signal that almost one in ten employees of the finance organisation indicated that technologies were making their working life harder. In conjunction with this, well over a third of staff believed that the information systems required for their work are quite complex to navigate, noting that heightened complexity in job roles can be a factor in workplace stress if not managed properly (Tarafdar, et al., 2007).

These findings indicate a generally positive engagement with ICTs in the finance organisation, offset by a small but important sub-set of staff who may potentially stand to benefit from improved support around ICT use.

5.5 TECHNO-STRESS

'Techno-stress' is a term used to describe a range of negative psychological effects associated with ICTs (Tarafdar, et al., 2007; Tarafdar, et al., 2010). Specific stressors associated with techno-stress are called *techno-stress creators*, and these are organised into the five main categories of techno-overload, techno-invasion, techno-complexity, techno-insecurity, and techno-uncertainty. The present study examined how employees of the participating finance organisation rated themselves against a selection of 'techno-stress' items across these five categories, in addition to some other items identified as pertinent by the organisation.

Techno-overload

Techno-overload involves employees being pushed by ICTs to work faster and longer, working to tighter schedules, and feeling overwhelmed by their workload. One of the key issues associated with techno-overload is employees feeling inundated with information from a variety of channels, needing to work faster to process the volume of information, leading to what are known as 'information fatigue' and 'data smog'. Previous research has identified information overload, communication overload and system feature overload as main factors contributing to technology based productivity losses (Karr-Wisniewski & Lu, 2010). It is also noted that prolonged exposure to ICT-driven multi-tasking can lead to exhaustion and burn-out among employees (Harris & Harris, 2012; Tarafdar, et al., 2007).

In relation to *techno-overload constructs*, many respondents in the present study agreed or strongly agreed that due to technology they were expected to perform multiple tasks at the same time. Around three quarters felt they had to be more accountable to the organisation, had frequent interruptions to their work flow, and

two thirds felt they had to work much faster. Fewer considered that technology led to expectations for them to work in their personal time and to do more work than they could handle.

These findings suggest that employees tend to rate quite highly for 'techno-stress creators', particularly ICT-related multi-tasking, working faster, and frequent interruptions to work flow. A heightened sense of accountability to the organisation can work both positively by keeping people focused on organisational priorities, and negatively where employees believe they are being closely monitored with potential negative repercussions (Day, et al., 2010). Recognising that these features of work are ostensibly important to the overall productivity and efficiency of the organisation, what is required are strategies to mitigate potentially harmful, stress-related affects. For example, Harris and Harris (2012) found that technology related overload had a main effect on strain-based work-to-family conflict, however this was moderated by co-worker technology support, especially informal, peer-to-peer support.

Techno-invasion

Techno-invasion is also characterised as 'chronic connectivity', whereby mobile and wireless computing devices mean that users feel they are continually tethered to technology, are constantly under supervision or "on call", that their space has been invaded, and that their workday extends into all other areas of their life (Tarafdar, et al., 2007).

Research has shown that work connectivity behaviour after hours has been found to be significantly related to the distribution of wireless enabled devices by organisations and organisational norms about connectivity (Richardson & Benbunan-Fich, 2011). The issue of chronic connectivity was not found to be endemic within the participating finance organisation, with just over a quarter of respondents believing that they are expected to always be available because of the new technology and slightly less agreeing that new technologies 'invaded' their personal time. At the same time, it is noteworthy that around a quarter of respondents did identify with the experience of chronic connectivity, suggesting the need to investigate and address this further for this subset of people within the organisation.

A further set of questions sought to clarify the extent to which ICT's extended work into employees' personal time by asking how often they accessed work emails, responded to texts and calls, and accessed work files out of working hours. Around 20% of employees reported never engaging in any work activities in their personal time. When individuals did engage in work activities outside of work hours, this was most commonly done by checking work emails and accessing work files. Fewer respondents reported communicating about work via messaging or phone calls in their personal time. These findings indicate that while a fair proportion of staff are remaining connected to work in their personal time, this does not appear to be an extensive or intensive practice for most staff.

That most respondents in the present study did not exhibit chronic connectivity is likely due to most staff using work-related computers, email, and internet-based ICTs, whereas work-related mobile phones were not standard for employees (more likely for management). The lower sense of expectation about always being available via ICTs also points to a 'counter-connectivity' organisational norm for most employees in the participating organisation.

To place these practices into the context of staff attitudes, respondents were asked if they minded different aspects of ICT related 'techno-invasion'. Around 40% of employees did not mind being contactable by work in their personal time, rising to 67% if it was about something important. This signals a reasonable receptiveness to maintaining contact with work matters outside of work hours. However there was lower tolerance for actually working in personal time. Almost a third of employees indicated some agreement that *they accept working in their personal time as part of their role*. However this figure drops to about a quarter of staff who agreed or strongly agreed that they *do not mind working in their personal time*. This suggests that approximately 7% of participants perceived some out of hours work was part of their role but that they were not completely comfortable with that arrangement.

To counterbalance the notion of 'chronic connectivity', technology was strongly endorsed on another level by staff for helping to *balance work and life commitments* and *staying connected with important commitments outside work*. This would suggest that in developing a sustainable approach to ICT engagement in the workplace, it is important to acknowledge the 'give and take' of technology rather than focusing exclusively on problematic aspects.

Techno-complexity

The literature shows that people often find the variety of applications, functions and technical jargon intimidating, and are confused about how to manage the complexity of various ICT devices and platforms – particularly given the rapid pace of change in this field. This can produce stress-related feelings of fear, anxiety, frustration and dissatisfaction with technologies (Tarafdar, et al., 2007). System feature overload occurs when the given technology is too complex for a given task, particularly when added features 'crowd out' the useability of particular technology.

A very small proportion of respondents found it too *difficult to understand and use new technologies*, indicated they *needed a long time to understand and use new technologies*, and felt they *did not know enough about this technology to handle their job satisfactorily*. From a whole of organisation perspective, these figures suggest that most staff are managing technological complexity quite well, however there is a small proportion who are struggling.

A more pronounced issue in this category of techno-stress related to the experience of IT-specific problems, with around 40% agreeing or strongly agreeing that they *are often frustrated by problems with IT*. Research has shown that issues with IT can be mitigated by organisational support structures, including organisational-based technical support and training (Day, et al., 2010). The present study found that nearly three-quarters of employees were able to source adequate IT support within the organisation if needed and slightly more than half of staff agreed that the training provided by their organisation helped them adapt to new technologies. This suggests a considerable proportion of staff (nearly half) who do not consider they are receiving relevant training, which could point to potential action for consideration by the organisation.

Techno-insecurity

Techno-insecurity occurs when employees feel their job security is threatened by others with stronger, more up-to-date ICT knowledge and skills, or are worried that their position will become redundant due to technological advancements (O'Driscoll, Brough, Timms, & Sawang, 2010; Tarafdar, et al., 2007). This was of particular interest in the finance sector given the sophisticated nature and pace of technological change in the securities and commercial banking industries (Frame & White, 2009; Vickery & Wunsch-Vincent, 2005; Werthamer & Raymond, 1997).

Present study findings showed that just over a quarter of staff reported feeling pressured to constantly update their skills to maintain their job, and around 15% felt that new technologies threatened their job security, and felt threatened by co-workers with better technology skills. Close to one in five respondents had heard of technology being used to bully people in their workplace.

A considerable number of respondents (around 40) agreed with at least one statement about technology increasing work insecurity and ten staff strongly agreed with at least one statement, signalling that this may be an issue worthy of attention. All generations were relatively evenly represented in this cohort of staff members, suggesting that techno-insecurity is no greater an issue for older workers than for workers in general. Those who reported techno-insecurity indicators were predominantly female and in non-management positions. Notably however, these respondents did not report corresponding technology-related stress or illness. This could signal that while there is a perception of factors contributing to techno-insecurity, the impact of these is potentially mediated by other factors such as feeling supported by colleagues and management.

Non-management employees were significantly more likely to report feeling disconnected from the workplace and that new technologies threaten their job security. As far as feeling threatened by co-workers with better technology skills, 'stressed' staff members were significantly more likely than others to agree with this statement in addition to them being more likely to have heard of technology being used to bully people in my workplace.

Techno-uncertainty

The constant cycle of technological change and/or upgrades often means that employees have to learn and relearn new applications, with acquired knowledge becoming obsolete in very short periods. Even where employees are enthusiastic about embracing technology, research has shown that the constant change embodied in techno-uncertainty can lead to resistance, frustration and stress (Tarafdar, et al., 2007).

Three quarters of respondents agreed that technologies are constantly changing within their finance organisation, however only 11% expressed concern about having to constantly adapt to new technologies. Adaptation uncertainty may have been mitigated for some by support structures within the organisation. Three quarters of respondents agreed or strongly agreed that they were able to source adequate IT support within the organisation, and 57% of respondents felt supported by ICT-related training provided by the organisation (noting that 21% disagreed with this while the remainder were ambivalent). There was also a strong awareness of clear guidelines about personal use of internet and social media at work, with most respondents agreeing this was in place. There is important scope in this context to develop key change management approaches within the organisation, a process which was reported in the consultations to be embraced and underway within the organisation.

The de-personalisation of communication (loss of face to face contact)

A further ICT-related risk identified in this study involved the de-personalisation of communication, or loss of face to face contact, as a result of burgeoning ICT use. This refers to the increased propensity to use emails and messaging to communicate on work matters rather than talking directly to co-workers. A corollary to this is limited opportunities to get up from the desk and physically approach people to discuss work matters, contributing to the desk-bound nature of office work. When asked about these matters, the majority of respondents agreed that they were happy with the level of face-to-face interaction with co-workers, that there was an appropriate balance between electronic and face-to-face communication, and that they had

sufficient opportunity to get up from their desk and move about. In other words, de-personalisation effects of ICTs were not found to be present in the study findings.

GROUP DIFFERENCES

While there was an overall pattern of positive ICT engagement and limited stress and illness associated with ICT use, analysis by sub-group identified distinct patterns around some aspects of technology.

Organisational Role

Non-management employees were significantly more likely to report feeling disconnected from the workplace and that new technologies threatened their job security. Frequency of engaging in work outside of work hours and the acceptability of this is also largely a function of organisational role. Management employees were significantly more likely to work in their personal time and were more likely to consider it appropriate, especially if it is something important.

Age Group

Baby boomers were significantly less confident in their use of computers, mobile phones and tablets. This was particularly the case for tablets with older employees reporting only some or no confidence in using them. There was a significant difference between age groups in regard to technology helping to improve the quality of work – Generation Ys agreed with this statement significantly more than Baby Boomers (albeit there was still overall agreement with this statement).

Regarding feeling threatened by co-workers with better technology skills, Baby Boomers were significantly more likely than Generation Xs to agree with this statement. Highlighting differences in exposure to technology, Baby Boomers were significantly more likely to report '*I often find it too difficult to understand and use new technology*' compared to both Generation Xs and Ys. This difference also held for Baby Boomers reporting needing a long time to understand and use new technologies compared to Generation Y. These findings suggest considerable potential for developing age-referenced ICT support strategies.

Interestingly, Generation X staff were significantly more likely to agree that the organisation arranges activities to promote health compared to Generation Y staff. This may signal a lesser awareness of and/or receptiveness to work-based health promotion activities on the part of younger staff members.

Technology-related health status

'Stressed' individuals tended to feel the weight of expectation more than others; they were significantly more likely to agree that because of technology they were expected to do more work than they could handle. 'Stressed' staff were also significantly more likely to have heard of technology being used to bully people in my workplace, and to feel threatened by co-workers with better technology skills. Just over a third of staff reported they often feel physically cramped from sitting too long at the computer, with this response significantly more likely in those experiencing technology-related stress or illness.

Developing strategies to address these 'symptoms' is important in order to maintain employee health and productivity as well as job satisfaction and retention.

6 CONCLUSION

The study found that in general, employees of the participating finance organisation were confident and competent in their use of work-related ICTs, and viewed ICTs as

conferring important benefits to their work practices and ability to stay connected to commitments outside the work sphere. Employees were also generally satisfied with their jobs and felt supported by colleagues and management.

At the same time, a substantial proportion of employees identified that ICTs were contributing to increasing complexity in the nature of their work, the experience of information overload, and to risks associated with rapid communications and transmission of information. Management staff demonstrated higher risk of technological tethering and ICT-enabled work invasion of personal time. While not vastly different to the general staff population, older employees were shown to have somewhat lower confidence in their grasp ICTs, more difficulty keeping up with the pace of technological change, and greater perceived threat to their job security on the basis of ICT competency. In keeping with these results, around half of respondents considered their job to be stressful.

For the majority of employees, the experience of technostress as indicated by the index used in this study has not translated to negative health impacts. However, it could be argued that with one in ten staff reporting they have been affected to a great extent and more than a third of staff affected somewhat by their engagement with ICTs, there are clear grounds for improvement. Moreover, with approximately one quarter to a third of staff showing signs of 'technostress', an argument exists for sustained monitoring, and the implementation of support strategies or mechanisms to assist these individuals to prevent ill-health and staff turnover.

According to staff, the organisation has been largely successful at providing clear guidelines around using the internet or social media for personal purposes at work but could do more to promote the physical and psychological health of employees whilst at work. Mapping a way forward should involve a strategy to measure, monitor, intervene and support employees to mitigate technology-related stress and achieve a larger return on technology investments. The Australian Workplace and Technology Index (AWaTI) tool is well positioned to address the first part of this equation, supported by a package of resources and support mechanisms developed in consultation with the participating organisation. The online resource package developed as part of the present study presents an example of how this can be achieved in relation to the experience and expressed needs of the participating finance organisation.

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