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Factors affecting Smart Working: Evidence from Australia

Factors affecting Smart Working: Evidence from Australia

Abstract

Purpose: This paper analyses data from the New South Wales Government's Pilot Program of establishing Smart Work Hubs (SWHs) for enabling teleworking in two busy commuter corridors. The paper analyses the relationships between various firm, job and personal factors and the perceived value, attitudes and expected usage by users of the SWHs.

Design/methodology/approach: Employing a cross-sectional survey design, the characteristics, values and attitudes of 117 SWH users were analysed using Partial Least Squares (PLS) method of structural equation modelling (SEM). SEM-PLS approach is considered appropriate especially in prediction-based studies and to estimate an endogenous target construct.

Key findings: Results revealed four factors that significantly influenced the perception of family benefits (age, income, hub commute distance, work commute distance) and two factors that significantly influenced the perception of work benefits (age, income). While younger users with higher income, longer work commute and shorter hub commute all perceived greater family-related value in using the SWH, findings suggested that firm, job and personal factors were not as effective in explaining variation in the work-related value dimension.

Research limitations/implications: The small sample size limits statistical inferences and generalizations to be drawn. Further, this paper also discusses how the low and uneven uptake of teleworking at a SWH raises several managerial and policy implications needing attention.

Originality/Value: To the best of our knowledge, this is the first empirical study analysing the expected values, attitudes and usage intentions of teleworkers in a SWH context. This study adds to the emerging body of human resource management studies on an *outward-looking* approach. The novel context will provide a useful base for subsequent studies.

Keywords: Teleworking, Smart Work Hubs, attitudes, perceived value, intention to use

Paper type: Research Paper

Introduction

The concept of telecommuting (or teleworking) has been around for nearly four decades (Nilles, 1975) as an alternate approach to working, wherein, employees do not travel to their usual workplace, rather they use information and communication technologies to perform their normal work tasks from a location other than their workplace (APSC, 2013; [Gajendran and Harrison, 2007](#); [Lafferty, 2000](#)). Since the time the term 'teleworking' was coined (Nilles,

1975), teleworking has taken numerous forms, though in most cases, it meant working from home or another technology-and-tools-equipped location ([Bagley, Mannerling, and Mokhtarian, 1994](#)). The global trend suggests that teleworking is growing and will continue to grow to become a significant aspect of the workplace deployment of employees in the coming decade (Citrix, 2012; Shiever, 2012).

It is expected that up to 1.5 million teleworking opportunities will be created in Australia by 2020 (CBRDAE, 2012). In terms of the Australian economy, telework also has the potential to contribute to one of the biggest structural changes to occur to the labour market (CBRDAE, 2012), however, there is little evidence of its widespread adoption. Estimates suggest that only around 6% of Australian employees have a telework arrangement with their employer (CBRDAE, 2012), indicating that Australia is behind in the incidence of teleworking when compared to other developed nations, such as America (10%), the United Kingdom (12.5%) and Japan (15.2%) ([Moore et al., 2011](#)). In New South Wales (NSW), Corpuz (2011) analysed the 2009 Sydney Household Travel Survey data and found that 7.3% of respondents engaged in telework. Accordingly, there are justifiable concerns that Australia is falling significantly behind the world in adopting telework (Alizadeh, 2013) and needs to formally embrace this form of workplace design to unlock its full latent benefits (Braue, 2012). This concern is reinforced by recent research that suggests telework is a concept that is associated with low levels of awareness and moderate levels of scepticism from employers and employees (CBRDAE, 2012).

From an empirical perspective, most research on teleworking adopts an *inward-looking* approach in the design and implementation for achieving work-life balance and other benefits through the use of information and communication technologies to connect employees with their co-workers and work systems ([Bailey and Kurkland, 2002](#); [Baruch, 2001](#); [Feldman and Gainey, 1997](#)). Telework and work-life balance practices often have a

performative orientation, employing a business-case approach to justify such strategic human resource management (HRM) policy choices (Beauregard and Henry, 2009). There is a small but emerging body of research in HRM that considers the importance of adopting an *outward-looking* approach (Bing *et al.*, 2003; Malik and Rowley, 2015; Rouna *et al.*, 2003; Ulrich, 2015), which incorporates the needs of not just an organisation's shareholders but also a wider set of stakeholders, such as its customers, clients, government and policy makers. The program of research reported in this paper provides a novel and fertile research context to engage in this latter discourse of an *outward-looking* approach, especially as most of the studies on impact of work-life balance and wellness programs have been examined in 'internal', 'organisational' and 'home' setting contexts.

Telework has been available to organisations for many years. Whilst there is no universal agreement as to its definition (Alizadeh, 2013), it can be broadly described as working away from the office or normal place of work and might involve working from home or working at a satellite office managed by the employer, or in more recent times, working from a 'telework smart work hub' where other 'teleworkers' meet to do their business. There are numerous variants of teleworking, which often focus on examining various relationships between the workspace and multiple locations used by a worker such as telecommuting, working at a client site, neighbourhood working, mobile working, home working, co-working, social working and so on (Batt and Valcour, 2001; Hislop and Axtell, 2009; Sullivan, 2003). In this paper, we study the novel context of a Smart Work Hub (SWH), as an alternate workspace location (or 'third space') that affords its users geographical and temporal flexibility. In popular policy and business discourses, the term "smart" is topically used to describe the use of advanced communication and information technologies (ICT) and new knowledge to achieve better outcomes through collaborative and creative problem-solving. It is in the above context, we broadly conceptualize smart work as a means of achieving better

stakeholder outcomes through new ICT, collaborative, creative and iterative processes of exploration and exploitation of existing and new knowledge. To the best of our knowledge, research on experiences of workers and users of a SWH is non-existent or, at best, very limited. SWHs offer a number of potential benefits for users, including: employees have the feeling of ‘going to work’ instead of being at home with home-based distractions or sharing space with other family members, experiencing work-based social interaction in an OHS-approved workspace, employees may be able to work closer to services they need, such as childcare, and employers may become employers of choice through their flexible work practices (RDA, 2013). SWHs also offer a number of potential benefits for suburban and regional centres in being able to: bring jobs closer to people, bring people closer to jobs (even digitally), reduce the economic divide between global/capital cities and both suburban and regional centres through stimulating economic output, and stimulate improved networks and transport links (Buksh and Mouat, 2015). Thus, SWHs can help facilitate regional digital growth by fostering economic growth and development through activities that build digital capability, support community objectives and enhance regional sustainability (Knight, 2015). SWHs may also realise other benefits, including reduced traffic congestion, lessened environmental impact and reduced overhead costs for organisations at expensive CBD locations (which are discussed later).

To explore the potential for SWHs, the New South Wales Government initiated a Pilot Program (the Pilot) of establishing SWHs for enabling teleworking in two busy commuter corridors of metropolitan Sydney. Five SWHs have been established in the Western Sydney and Central Coast regions of NSW in the Pilot. These regions typify large commuter corridors of travel, wherein a vast number of workers (approximately 250,000) commute significant distances to and from these regions into the Sydney metropolis. Recent demand-focused work suggests there should be viable target populations to support teleworking and SWHs in Sydney

and other capital cities in Australia (RDA, 2013; Wilmont et al., 2014). However, barring a few descriptive studies of working from a SWH centre, hub or co-working space (Shevchenko and Shevchenko, 2005; Vitola and Baltina, 2013), there exists very little empirical understanding of the perceived value, attitudes and expected usage of people using SWHs. As well as exploring the users' expected value of and attitude towards SWHs and the firm, job and personal factors that influence the expected usage of SWHs. This paper contributes by informing future NSW Government policy towards telework initiatives and how a wider set of stakeholders (e.g. businesses, users, investors and communities) may benefit from such initiatives.

Given the paucity of studies on smart working, this paper begins by providing a review of teleworking literature and its variants. The paper reviews the benefits, drawbacks, drivers and barriers of telework at the individual, organisational and societal levels. Next, a review of relevant literature on perceived value, attitudes and intentions for our SWH context. The paper then discusses the methodology and sample, and presents the analysis of the survey data of 117 SWH users. This is followed by findings and discussion. Finally, the paper concludes by highlighting implications for theory and practice of regarding the use of SWHs as a telework option.

Literature review

Amongst a wide range of flexible work practices, teleworking has emerged as a widely adopted practice at workplaces (Haddon and Brynin, 2005). Whilst there exists a voluminous literature on a range of flexible work practices (FWPs), flexible work designs (Claartje and Zoonen, 2015) that offer numerous benefits and challenges to its users, teleworking as a subset of FWPs is gaining prominence in today's workforce as it offers, amongst several benefits, temporal and geographical flexibility to employees to improve their work-life balance

outcomes (Haddon and Brynin, 2005; [Leslie, Tae-Youn, Si Anh, Flaherty, and Manchester, 2012](#)). Further, FWP's are often included in creating employee value propositions for attracting and retaining talent ([Blair-Loy and Wharton, 2002](#)). FWP's are one of several factors in the minds of workers who consider reasoned action before exercising their employment decisions in relation to the choices they have ([Kelly and Moen, 2007](#)). Although the scope of FWP's is too broad, this paper focuses on Smart Working, a novel and emerging variant of teleworking. The literature on teleworking is multidisciplinary and identifies numerous benefits and limitations associated with this practice. The following section reviews the literature on teleworking and the challenges inherent in its conceptualisation and implementation.

Benefits, pitfalls, drivers and barriers of teleworking

Telework makes good business sense. There are consistent research findings that support the notion that, if teleworking is implemented well, it will contribute to all three of the triple bottom line criteria of organisational success (financial, social and environmental). However, the literature on teleworking identifies both benefits and pitfalls perceived by those who access this FWP (e.g. Baruch, 2000; Neirotti, Paolucci and Raguseo, 2013). Raguseo, Paolucci, and Neirotti (2015) noted several context-specific tensions that firms have to grapple with in managing the adoption of mobile forms of work. Raguseo et al. (2015) classify such tensions into three groups: business process, HRM and strategic and argue that these tensions vary with the choices an organisation exercises based on its contextual needs. Depending on the orientation of an organisation towards its people-management approaches, for example, internal (make) and external (buy), the nature and extent of its impact on the above three groups of tensions associated with adoption of mobile work will vary. Individuals can benefit from telework by achieving better work-life balance, morale, productivity ([Apgar, 1998](#); [Brownson, 2004](#); [Gajendran and Harrison, 2007](#)), increased levels of job satisfaction and

reduced levels of job-related stress ([Baltes, Briggs, Huff, Wright, and Neimian, 1999](#); [Gajendran and Harrison, 2007](#)). Further, individual professionals might also value the locational independence afforded by teleworking, especially if they travel extensively from small regional areas into large, urban city centres ([Ungar, 2003](#)).

Based on these benefits to the individual, it is not surprising that teleworking has been successfully used by many organisations as a deliberate strategy to retain and engage staff who may be otherwise lost to competing organisations, for example, older workers not wishing to retire completely and newer generations that expect flexible working (Morgan, 2004). A recent meta-analysis of telework research found a small but positive relationship between telework and a range of organisational outcomes, including productivity, retention, organisational commitment and improved performance within the organisations (Marin and MacDonnell, 2012). At the organisational level, teleworking can also reduce real-estate costs and absenteeism ([Apgar, 1998](#); [Gajendran and Harrison, 2007](#)) and increase productivity ([DOC, 2014](#)). Further, teleworking may have a positive spill-over effect on remedying some of the regional skill shortages and unemployment issues (RDA, 2013) and help revitalise growth prospects in regional areas ([Victoria, 2014](#)). In terms of the wider community- and societal-benefit realisation, an increased incidence of teleworking can reduce traffic congestion in thickly populated urban city centres, thus reducing the per-capita carbon footprint ([DOC, 2014](#)).

The research on teleworking is not free from its detractors, and scholars have critiqued several aspects of the literature, including the research methods employed, sampling techniques and unconvincing theories that support the positive claims made ([Belanger and Collins, 1998](#)). On a more critical note, and quite surprisingly, the often associated negative consequences of teleworking, such as social separation, inability to connect effectively with the employing organisation, potential career disadvantages and work-to-family conflict, are

often underplayed by researchers ([Baruch and Nicholson, 1997](#); [Taskin, 2010](#)). Our review of the literature suggests that there are a variety of attitudes, beliefs and perceptions about telework held by managers and workers that can either act to trigger or inhibit the adoption of a telework program (e.g. Lewis, 2013; Scholefield and Peel, 2009). The literature also identifies other factors that can affect the prospects of success of a telework initiative. These factors include leadership style, personalities of those involved, organisational structure and policy, role clarity for managers and workers, communication arrangements and worker support and training (e.g. Dahlstrom, 2013; Overbey, 2013).

The above review suggests that, whilst there are numerous inward-looking and organisational perspectives highlighting the benefits and challenges presented by teleworking, there is limited understanding of how organisations and employees respond to opportunities presented by external influences. By adopting an outward-looking approach in a novel research context of teleworking at SWHs ([Shevchenko and Shevchenko, 2005](#); [Vitola and Baltina, 2013](#); Wilmot et al., 2014), this study seeks to answer the following research questions:

RQ1. What are the key firm, job and personal factors that affect SWH users' perceived value, attitudes and intentions towards teleworking?

RQ2. What is the relationship between various firm, job and personal factors and SWH users' perceived value, attitudes and intentions towards teleworking?

Theoretical Framework

Drawing on research in the HRM and marketing literatures, the paper proposes a theoretical framework that posits the effect of SWH users' perceived value on attitudes, which then influences usage intentions for SWH usage (see Figure 1). Additionally, the theoretical framework suggests that this system of relationships is also affected by firm, job and personal

factors. The support for our theoretical framework is drawn from the perceived-value literature and attitudes-intentions-behaviour literature.

Insert Figure 1 about here

Perceived Value of the SWH

Perceived value is an area that has received growing scholarly attention (Mencarelli and Rivière, 2015; Prebensen, Woo, Chen and Uysal, 2013), however, little empirical work in this area exists in relation to the SWH context. Historically, all value is deemed to be created and perceived by customers, who turn the subjective proposal of value offered by an organisation into actual value (Pires, Dean and Rehman, 2015). The contextual, phenomenologically determined nature of value (Vargo and Lusch, 2008), means that perceived value is personal and idiosyncratic in nature for the individual consumer (Heskett *et al*, 1994; Zeithaml, 1988), thus differing between one person and the next (Holbrook, 2005). Therefore, understanding the value consumers (expect to) receive needs to take into account their context and lifeworld (Ellway and Dean, 2016; Pires et al., 2015; Tynan, McKechnie and Hartley, 2014), such as using a SWH. For the purpose of this study, this paper is concerned with the SWH user's perceived value they anticipate receiving from their use of the SWH.

Value is most frequently described in terms of the costs (or sacrifices) versus benefits for an individual (Grönroos, 2011), i.e. a utilitarian perspective. Besides utilitarian value, consumers can also receive value from the purchasing and consumption of a service, i.e. a hedonic perspective (Babin, Darden and Griffin, 1994; Holbrook, 2005; Pine and Gilmore, 1998; Ponsonby and Boyle, 2004; Schmitt, 1999), which is the expected use of the SWH in this context. In the SWH context, value is created and can be experienced before, during

production and consumption (and post-consumption) of the SWH purchase experience (Ponsonby and Boyle, 2004; Sánchez, Callarisa, Rodríguez and Moliner, 2006). Of interest for this study are the multiple dimensions of perceived value customers expect to receive before purchase in the SWH context (Woodruff, 1997).

The conceptual development of perceived value has evolved from a traditional, unidimensional and utilitarian view of perceived value to a multidimensional view (Sánchez-Fernández and Ángeles Iniesta-Bonillo, 2007). There is emerging agreement amongst scholars that consumers derive a variety of benefits, such as social and emotional, from a product in addition to (utilitarian) monetary benefits (Bradley and Sparks, 2012; Smith and Colgate, 2007; Sparks, Butcher and Bradley, 2008; Tynan, McKechnie and Hartley, 2014). In short, the value construct is too complex to be considered as unidimensional and solely utilitarian-based, where it loses conceptual richness (Carlson, Rosenberger and Rahman, 2015). Thus, a single-item scale, such as ‘value for money’, does not address the whole concept of perceived value (Gallarza and Gil-Saura 2006; Prebensen *et al.*, 2013), due to the many ways in which the many types of value can be derived (Sparks, Bradley and Jennings, 2011).

Accordingly, we adopt the perspective that value as a construct is multidimensional and is directly related to the perceived benefit or advantage one derives from a use situation that motivates future behaviour (Carlson *et al.*, 2015; Sánchez *et al.*, 2006; Sweeney and Soutar, 2001), and conceptualise it as the value a consumer anticipates receiving from using the SWH in the context of this study. For the SWH context, the value from the service acts as a contribution to the consumer’s wellbeing from the consumer’s perspective (Ellway and Dean, 2016). In this vein, value not only accrues from the core service provided by the SWH, but also includes interactions with other employees (including those from the user’s employing firm) and other users of the SWH, as well as interactions with non-work individuals (e.g. family). Therefore, this paper views perceived SWH value as a multidimensional

construct with two dimensions: family value and work value. Family value represents the expected hedonic aspects that capture the emotional and social wellbeing of SWH users as well as their ability to improve the quality of their life through work-life and family balance and reducing stress. Work value represents the utilitarian aspects of value, specifically focusing on the expected benefits related to the individual's flexibility, productivity and job satisfaction at work.

Attitudes

Attitudes are a generalised evaluation or feeling of favourableness towards an object in question (Fishbein and Ajzen, 1972). In short, attitudes represent a summary evaluation of an object (Ajzen, 2001), such as a SWH, with the concept of evaluation being a unifying theme in attitudes research (Judge and Kammeyer-Mueller, 2012). Attitudes are an important influence on intentions, which in turn guide behaviours (Ajzen, 1991; Ajzen and Driver, 1992; [Ajzen and Fishbein, 1980](#); [Ajzen and Fishbein, 1977](#); [Fishbein and Ajzen, 1975](#)). Therefore, if a positive attitude is formed towards a SWH, then an employee individual is more likely to form the intention to use a SWH (Baruch and Yuan, 2000; Kossek *et al.*, 2006; Milkovich and Newman, 1999).

Intentions

Intentions are assumed to capture the motivational factors that influence a behaviour. They are indications of how hard an individual is willing to try and how much of an effort the individual is planning to exert in order to perform the behaviour (Ajzen, 1991). There is an emerging body of research that suggests that perceived and actual employer support in most discrete choice studies, such as adopting flexible work practices (including telework), have a positive impact on employee attitudes and behaviours (Allen, 2001; Kossek *et al.*, 2006;

Lambert, 2000). A number of studies have argued that the utility of an alternate choice is normally assumed to be a function of the characteristics of the decision-maker (socio-economic factors) as well as the characteristics of the alternative (benefits) (Baruch and Yuen, 2000). To this end, this paper analyses firm, job and personal factors that have an impact on perceived value, attitudes and usage intentions of the users of SWHs.

Firm, Job and Personal Factors

Firm and Job Factors

Extant research suggests that the relationship that firm and job factors have on value, attitudes and intentions is equivocal. For example, Sarbu (2015) found that firm size was negatively related to telework adoption, whereas Illegems and S'Jegers (2000) found a positive relationship between firm size and telework adoption. Moreover, Haddon and Brynin (2005) and Haddad, Lyons and Chatterjee (2009) found a positive association between income and telework adoption. Baruch and Yuen (2000) also found that hours worked had a positive impact on telework usage. An employee's work commute and hub commute are job characteristics that can be considered to represent forms of sacrifice, with perceived value having been identified as being negatively influenced by sacrifice (Baker et al., 2002; Gupta & Kim, 2010; Monroe, 1990; Sweeney, Soutar and Johnson, 1997, 1999). Drawing on attitudinal theory, the availability of requisite opportunities (e.g. policy) and resources (e.g., who pays, firm size) can jointly influence attitudes along with intentions (Ajzen, 1985, 1991, 2001; Batt and Valcour, 2001). In other words, these factors could be seen as types of perceived behavioural controls (i.e. potential constraining influences) that affect the individual's intention to perform a given behaviour (i.e. use the SWH).

Personal factors

Similarly, personal factors, such as gender and age, have been noted as key explanatory factors affecting users' intention to adopt teleworking. However, the results of these factors are not consistent across different contexts, indicating the need for further studies. For example, Teo and Lim (1998) found that men perceived greater benefits of teleworking than women. Conversely, Sarbu (2015) found that women were more likely to have a higher intensity (i.e. frequency) of teleworking than men. Similarly, Valmohammadi (2012) found support for an increased adoption of telework by women relative to men in an Iranian context, which also calls into question the influence of other personal factors such as culture as, for example, Iranian men do not prefer stay at home and telework for cultural reasons.

Methodology

A cross-sectional, self-administered, web-based survey approach was employed in this study. After receiving ethics approval, new SWH users were contacted by their respective SWHs by e-mail and asked to complete the survey. Users were also reminded to complete the survey by the SWH host if they had not already done so.

The survey began by informing respondents of the purpose of the survey, that participation was voluntary and that the survey would help inform NSW policy regarding the outcomes of the Pilot program. The topics covered by the survey included: personal demographics, employment demographics, journey-to-work information, expected benefits, attitude towards the SWH and expected SWH usage. The survey took around 8-10 minutes to complete. Data was collected and analysed from 117 SWH users who completed the survey at the time they began using the SWH in order to explore the theoretical relationships of interest, rather than seek to be representative of the broader SWH population (Calder *et al.*, 1981).

Measures

Measures were drawn from the literature and developed to satisfy the requirements of the larger SWH Pilot Program. Drawing on the values literature (e.g. Carlson, Rosenberger and Rahman, 2015; Sánchez *et al.*, 2006; Woodruff, 1997), perceived SWH value was conceptualised as multidimensional in nature with two dimensions that tapped the perceived value respondents expected to receive from using the SWH: work value (four items) and family value (nine items). This scale used 7-point Likert items (1=strongly disagree to 7 = strongly agree). Attitude towards the SWH was measured using a 7-point semantic-differential item (1 = negative to 7 = positive). Behavioural intentions was measured with a 7-point scale tapping the expected frequency of usage of the SWH (1 = once a month or less frequently, 7 = five or more times week). Other firm, job and personal measures included gender, age, gross annual income, weekly hours worked, education level completed, firm size (number of employees), nature of firm (e.g. private or state enterprise), who would be paying the user's SWH cost and if a formal or informal policy covering flexible work was in place at the respondent's organisation. Three items measured work commute—home-work distance (kilometers), time (minutes) and weekly cost (dollars)—and two items tapped SWH commute—home-SWH distance (kilometers) and time (minutes).

Insert table 1 about here

Sample

SWH users in NSW were the sample population, with the sample frame being all users of the five SWHs participating in the NSW Government's SWH Pilot Program. The convenience sample of 117 respondents included in this analysis came from four of the five SWHs involved

in the Pilot Program. Data from the fifth SWH was not included in this study due to its delayed start in the Pilot Program.

The average respondent was male (70%), 40 years of age, a member of Generation X (61%) and university educated (62% at Bachelor/Masters level). Job-wise, the average respondent had a professional position (80%), worked for someone else (60%), was employed full time (88%), working 31-40 hours/week (median) and earned an average of \$AUD 65,000 - \$77,999 per year. Firm-wise, the average respondent worked for a private enterprise (80%) that had 20-199 employees and paid the cost of using the SWH themselves (76%). Respondents stated that, on average, the difference in distance between travel to work and travel to the SWH was a saving of about 35 kilometers each way. This amounted to, on average, a savings of 84.5 minutes per day.

Results

Two-stage, Sequential, Latent-Variable-Score Approach

Structural equation modelling (SEM) using Partial Least Squares (PLS) using SmartPLS v3 (Ringle, Wende and Becker, 2015) was used to analyse the data. PLS-SEM was deemed a suitable technique for this research as it works efficiently with a much wider range of sample sizes and model complexity (Hair, Ringle et al., 2011; Hair, Ringle et al., 2013) and is ideal for studies with smaller sample sizes (Hair et al., 2014). PLS-SEM is appropriate for prediction-based research (Fornell and Bookstein, 1982), such as predicting the influence of attitude towards the SWH on expected SWH usage. PLS-SEM aims to estimate an endogenous target construct (e.g. attitude towards the SWH) in the model and maximise its explained value (Hair, Ringle and Sarstedt, 2011, 2012). PLS-SEM is less sensitive to violations of assumptions of normal distributions (Hair, Ringle et al., 2012), which was a feature of the sample data. PLS-SEM is also suitable for models featuring reflective- and formative-constructed models (Hair et al., 2014), as in this study.

Perceived SWH value was modelled as a hierarchical, multidimensional construct. Following Diamantopoulos, Riefler and Roth (2008) and Jarvis, MacKenzie and Podsakoff (2003), perceived SWH value was specified as a Type II higher-order, reflective-formative construct, as the two dimensions are distinct in nature and are not interchangeable. Therefore, it is conceivable that the way respondents respond on one dimension (e.g. work value) might not be the same as for another dimension (e.g. family value). This approach is supported conceptually and empirically by the perceived-value literature (Carlson *et al.*, 2015; Sheth *et al.*, 1991). The repeated-indicator approach (Becker, Klein and Wetzels, 2012) was used for modelling the perceived value HOC, which involves the indicators of the first-order reflective constructs being repeated to measure the second-order construct. The HOC indicators were set to mode B as recommended by Becker, Klein and Wetzels (2012).

Following prior research (Sarstedt, Ringle, Raithel and Gudergan, 2014), the formative mode of measurement for the perceived value construct was empirically tested by running a confirmatory tetrad analysis (CTA-PLS) (Gudergan *et al.*, 2008). The results supported the formative measurement-model configuration for perceived SWH value, offering additional empirical justification for the *a priori* specification of this construct.

Due to the reflective-formative specification of perceived SWH value, the two-stage, sequential, latent-variable-score (LVS) method (Becker, Klein and Wetzels, 2012; Hair *et al.*, 2014; Wetzels, Odekerken-Schroder and van Oppen, 2009) was used in estimating the model and to determine the influence of the exogenous variables on the endogenous higher-order construct (HOC). This approach was required because model-misspecification issues can arise in models that link antecedent constructs to a formatively measured endogenous construct only by direct construct-level paths (Temme, Diamantopoulos and Pfegfeidel, 2014), as the formative nature of the measurement means that the variation in the HOC is perfectly explained by the lower-order constructs (Becker, Klein and Wetzels, 2012). In other words, if

the formative measurement model for the HOC has been correctly specified, no direct influence of an antecedent construct on the formative endogenous construct will emerge, resulting in a total effect of zero. Therefore, this (mis)specification will considerably underestimate an antecedent construct's impact on the formative construct and invariably lead to wrong conclusions (Temme, Diamantopoulos and Pfegfeidel, 2014).

Accordingly, Becker, Klein and Wetzels's (2012) two-stage, sequential LVS procedure as implemented by Hernaus and Mikulić (2014) was followed. This involved estimating the outer model (i.e. measurement model) for all first-order constructs in the first stage with all influences on them (i.e. age, gender, income, hours worked, work commute and hub commute), but with no higher-order construct present. In the second stage, the resulting latent-variable scores for the lower-order value constructs were then used as manifest formative indicators for the higher-order value construct to correctly estimate the inner model (i.e. structural model) and the exogenous construct influences on our higher-order, perceived-value construct.

Assessment of the measurement model

The t -values were calculated with the bootstrapping procedure of 5000 samples following the recommended SmartPLS defaults (Hair et al., 2014). Convergent reliability was established through assessing the AVE (all .70 or higher) and the composite reliability (all .90 or higher) and Cronbach's alpha (all .90 or higher) for the first-order constructs. As reported in Table 2, the reflective items of all constructs had component loadings > 0.70 and were highly significant ($p < .001$). Discriminant validity was established according to the Fornell-Larcker criterion, examining cross-loadings and by using the more conservative heterotrait-monotrait ratio (HTMT). For the Fornell-Larcker criterion, the square root of the AVE was greater than the correlations with other constructs, and the items loaded more strongly on the relevant construct. Table 3 presents the construct-correlations matrix. For the HTMT, the largest value

(.528) was comfortably below the more conservative .85 threshold (Henseler, Ringle and Sarstedt, 2015). This suggests that discriminant validity has been established. Finally, all variance inflation factor (VIF) values were less than 2.0, suggesting that collinearity was not an issue (Hair *et al.*, 2014).

Insert Tables 2 and 3 about here

Assessment of the structural model

In PLS, the explanatory power of the final (second-stage) model is represented by the R^2 values for the endogenous constructs in the model. Some scholars suggest that the recommended R^2 benchmark and AVA (average variance accounted for) should exceed 0.10 (cf. Falk & Miller, 1992; Chin, 1998), whilst a value of 0.20 is considered high for consumer-behaviour studies (Vock *et al.*, 2013). The predictor variables in the model explain twenty per cent or more of the variation in the outcome variables of perceived value of the SWH ($R^2 = .25$), attitude towards the SWH ($R^2 = .21$), and expected SWH usage ($R^2 = .20$), with the AVA = .22. Therefore, the model exceeds the recommended benchmark in terms of its explanatory power.

In terms of the relationships amongst the core constructs, as presented in Figure 2 and reported in Table 4 (see below), work commute had a moderately strong, positive and significant influence on the perceived value of the SWH ($\beta = .315$, $p = .004$), whilst hub commute had a moderately strong, negative and significant influence on the perceived value of the SWH ($\beta = -.213$, $p = .03$). Perceived SWH value had a moderately strong, positive and significant influence on the attitude towards the SWH ($\beta = .347$, $p = .014$). Attitude towards

the SWH had a moderate, positive and marginally significant influence on expected SWH usage ($\beta = .121, p = .068$).

Insert Table 4 about here

Personal Factors. Age had a significant, positive influence on attitude towards the SWH ($\beta = .25, p = .01$), but not on perceived SWH value or expected usage ($p > .10$). Similarly, gender had a significant, negative influence on attitude towards the SWH ($\beta = -.22, p = .002$), but a non-significant effect on perceived SWH value and expected usage ($p > .10$).

Job Factors. Income had a significant, positive influence on perceived SWH value ($\beta = .17, p = .032$), a marginal effect on expected usage ($\beta = .15, p = .058$) and no effect on attitude towards the SWH ($p > .10$). Both work commute ($\beta = .32, p = .004$) and hub commute ($\beta = -.21, p = .03$) had a significant relationship with perceived SWH value, whilst hours worked had no relationship with any construct ($p > .10$).

Firm Factors. Firm size had a significant, negative influence on expected SWH usage ($\beta = -.30, p = .001$). Formal policy had a significant, positive influence ($\beta = .20, p = .022$), whilst who pays had a marginally significant influence ($\beta = .12, p = .058$).

Further analysis: Value dimensions

To further understand the influence of the personal and job factors on the underlying dimensions of the perceived value of the SWH, we return to the stage-one results. In this analysis, the two perceived SWH value dimensions—work value and family value—

functioned as endogenous (dependent) variables and the six personal and job factors were exogenous (independent) variables. As reported in Table 5, four significant influences ($p < .10$) for family value (age, income, hub commute, work commute) and two for work value (age, income) were identified. Younger, higher income earners, longer work commuters and shorter hub commuters all expected to receive perceived greater family value in using the SWH, accounting for a meaningful 24 per cent of the variation in family value. In contrast, the low R^2 for work value suggests that these personal and job factors were not that effective at explaining variation in this component of the higher-order value construct, which may be due to greater difficulty in ascertaining the potential work-related improvements as opposed to family-related improvements that may eventuate from using the SWH at the start.

Insert Table 5 and Figure 2 about here

Discussion

Situating the findings from this novel research context within the literature on teleworking is important for future research that ensues in this area. Overall, the study confirms and adds to the earlier findings (Allen, 2001; Baruch and Yuen, 2000; Kossek *et al.*, 2006; Lambert, 2000) on the relationship between various firm, job and personal factors on perceived value, attitudes and telework adoption (i.e. expected usage) in our SWH context. In line with prior research, the study found that firm size was negatively related to expected SWH usage (e.g. Sarbu, 2015). Contrary to earlier findings by Baruch and Yuen (2000), the results did not suggest any statistically significant relationship between the number of hours worked and telework

adoption; however, the study confirmed an earlier and well-established relationship that high-income earners are most likely to adopt telework and, in this case, SWH adoption. Critically, the absence of any statistically significant relationship, may in part be attributed to the novel SWH context and possibly the small sample size.

The presence of an HRM policy (both formal and informal in the context of this study), provided the much needed opportunity to embrace the usage of teleworking at a SWH. This finding supports and extends the literature to the SWH context, where earlier studies have found formal policy approaches to have a positive impact on telework adoption rates (Batt and Valcour, 2001; Milkovich and Newman, 1999). Quite understandably, financial support for the cost of using the SWH for teleworking was positively associated with expected SWH usage, which adds to previous findings (Batt and Valcour, 2001; Milkovich and Newman, 1999). Similarly, as expected, the travel distance to work and to hub was positively and negatively correlated, respectively, with the expected value that SWH users derived. In other words, those with longer work commutes and shorter SWH commutes were expecting to receive greater value from their SWH use, especially with respect to the expected family benefits flowing from SWH use.

The finding of anticipated value perceptions being a strong driver of attitudes towards the SWH extends the perceived-value literature to the idiosyncratic nature of the SWH context. In looking at the influence on the underlying dimensions of perceived value, the findings also suggest that firm, job and personal factors are more effective in explaining value perceptions related to expected family benefits rather than job benefits, though this may be due to a lack of experience or understanding of how using a SWH might benefit them in terms of their job. The workplace environment is complex, and it may require a period of time in using the SWH to better evaluate the perceived value its use will bring for that dimension.

Next, the findings also extend the attitude literature and the link to intentions (e.g. Azjen, 2001; Azjen and Driver, 1992), confirming the positive influence that attitude towards a SWH has on expected usage of the SWH. In addition, the smaller magnitude of this direct influence also highlights the role that other contextual factors can play, whereby the availability of requisite opportunities and resources (e.g. policy and who pays, respectively) jointly influence attitudes along with intentions (Azjen, 1985, 1991, 2001; Batt and Valcour, 2001). In sum, these findings suggest that the theorised influence of perceived behavioural controls (i.e. potential constraining influences) is applicable to the SWH context.

In terms of personal factors of age and gender, the study confirms some of the earlier studies on telework adoption. The findings indicate that the adoption and usage intentions of younger (Generation Y users) was negatively associated with expected value, attitudes and expected usage. The study also found that whilst there was no difference in usage, women were more likely to have a positive attitude towards teleworking at a SWH than men, whilst men tended to perceive a far greater family value accruing from SWH use than women.

Conclusion

Overall, our findings suggest that SWH users have positive attitudes towards SWHs, experience the effects of behavioural controls and, relative to work-related value, are expecting to receive more value from their use of SWHs in their family lives. However, as with all research, this study has limitations that should be noted. The overall sample size and its cross-sectional nature are limitations of the study. It is believed that the sample does not interfere with satisfying the theory-development objective of this research (Calder *et al.*, 1981), although the convenience-sampling approach may limit the generalisability of the findings to the broader population of SWH users. The sample size could have affected the statistical power of the study, in terms of smaller-magnitude relationships in the model

achieving significance. Therefore, future research should seek to use a larger sample of SWH users, as well as look across time to establish whether the size and direction of the relationships change over a longer period of time. Another limitation of the study is the novelty of the experience of working at a SWH; as such, there are no similar studies on SWHs to compare these findings with other than relying upon teleworking experiences more broadly. Finally, whilst this study has evaluated the influence of perceived value on attitude towards a SWH and its joint influence with a number of behavioural-control factors on expected SWH usage, other factors could potentially play a role and should be considered in future research in this area.

Based on the findings and analysis, several theoretical, managerial and policy implications arise. In terms of implications for theory, the perceived value that influenced attitudes and behaviours consisted of two main groups: family value and work value. Our study is the first study that investigates the concept of SWH as a product. All products have value propositions that should appeal to the target consumer, which should at the same time provide better perceived value than competing alternatives, such as traditional working, teleworking and working from home. In this light, our study establishes that SWH does offer significant value to the users that consists of family and work values. Given that a SWH context offers services to a diverse set of users, the model can be tested in future to explore how different contextual factors may impact the strength and direction of the relationships in the perceived value-attitudes-intentions chain such as from teleworking at home versus teleworking at SWH.

The findings are also relevant for large and small-to-medium enterprises who may have to incur significantly high or low transaction costs, respectively, to allow employees in accessing SWH options. However, such costs can be easily overcome by establishing trust-based relationships with managers (Raguseo et al., 2015). Future research could explore,

through the perceived values-attitude-intentions lens, how a SWH context can provide opportunities for exploration of new knowledge creation and exploitation of existing routines.

The study provides a starting point for informing the policy discussion regarding SWHs by offering a preliminary understanding of the relationships between various firm, job and personal factors and the users' perceived value of, attitudes, behavioural controls and expected usage of SWHs. Yet, despite telework being in existence for almost four decades, it is still concerning that the proliferation of telework adoption is not as widespread as it should be based on organisational, work and individual benefits. Thus, at a managerial level, human resource managers should consider how they can redesign, support and repackage the concept of teleworking via a SWH to employees, especially for the largest (and growing) workforce group of Generation Y employees. If employers and policy makers want to realise the potential of this innovative work practice, they will have to proactively support and undertake internal marketing of this practice, such as through the reduction (or removal) of behavioural controls. For example, policy makers at all levels in Australia could take the lead and instigate opportunities for using SWHs by putting in place the requisite enabling policies for public-sector organisations and then tracking the (expected) employee and organisational benefits. For example, the US Federal government passed the *Telework Enhancement Act 2010*, which was then followed by increasing numbers of employees who elected to telework since 2011 (United States Office of Personnel Management, 2013). Initiatives such as this can act to both reduce the risk for private-sector organisations and promote the practice to the private sector.

The current research points to unequal uptake of this workplace design innovation, as it still appears that telework at a SWH is mostly adopted by people with higher incomes. This raises issues of inequitable access that may ultimately contribute to high levels of perceived inequity and, this may consequently have an adverse impact on job satisfaction and high rates of personal grievances. The study highlights the importance of age and gender on attitudes

towards SWH. Younger employees and women had a positive attitudes towards a SWH than older employees and men. Similarly, the perceived value by users of SWHs is highest for those who have to travel long distances to work. Further, if the SWH is located nearer to their home, the perceived value will be high. This would suggest that SWHs should be strategic in their location.

Inadequate support of and uneven access to SWHs may also result in employees not exercising their discretionary effort and delivering high levels of performance. Further, as the location of the SWH can affect the perceived value that users may derive from SWH use, government policy makers and investors seeking to establish SWHs must keep in mind the importance of locating SWHs close to residential areas that have high concentrations of commuters that travel longer distances to work. Finally, future research is needed to understand barriers to SWH adoption and usage, such as lack of widespread access to flexible-work arrangements to employees, and if the development of more formalised policies for allowing employees flexibility and work-life balance will facilitate increased SWH usage.

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Figure 1: Simple Conceptual Model

Table 1: Operationalisation of study constructs

Construct	Operationalisation
Perceived value of a SWH	The perceived benefit or advantage a consumer anticipates receiving from using the SWH in the context of this study, is multidimensional in nature and comprises two dimensions: family value and work value. (Carlson <i>et al.</i> , 2015; Sánchez <i>et al.</i> , 2006; Sweeney and Soutar, 2001)
Family value	Family value represents the expected hedonic aspects that capture the emotional and social well-being of SWH users as well as their ability to improve the quality of their life through work-life and family balance and reducing stress. Work value (Carlson <i>et al.</i> , 2015; Sánchez <i>et al.</i> , 2006; Sweeney and Soutar, 2001)
Work value	The utilitarian aspects of value, specifically focusing on the expected benefits related to the individual's flexibility, productivity and job satisfaction at work (Carlson <i>et al.</i> , 2015; Sánchez <i>et al.</i> , 2006; Sweeney and Soutar, 2001)
Attitude towards the SWH	A summary evaluation or feeling of favourableness towards the SWH that represents represent a summary evaluation of an object (Ajzen, 2001; Fishbein and Ajzen, 1972)
Behavioural intentions to use the SWH	How hard someone is willing to try and how much of an effort they are planning to exert in order to use the SWH (Ajzen, 1991)
Personal factors	Characteristics of the individual, such as gender and age
Job factors	Characteristics of one's job, such as hours worked, worked commute and SWH commute
Firm factors	Characteristics of the firm, such as firm size and having a flexible-work policy

Table 2: Items and loadings

<i>Using the XYZ Smart Work Hub will ...</i>	Mean	SD	Loading
<i>Perceived Value - Work value</i>	CR = .91, Cronbach's α = .87, AVE = .716		
... allow me to develop new professional / business connections	5.03	1.68	.862
... increase my level of job satisfaction	5.91	1.26	.843
... allow me to develop new professional / business skills and capabilities	4.74	1.63	.877
... allow me to be more productive when working than I normally would be	5.94	1.41	.802
<i>Perceived SWH Value - Family value</i>	CR = .95, Cronbach's α = .94, AVE = .70		
... give me more flexibility in my life	6.0	1.43	.902
... give me the opportunity to exercise more / be healthier	5.62	1.52	.719
... help avoid the hassle of commuting to and from office	5.77	1.98	.877
... improve the quality of my work-life balance	6.12	1.31	.874
... improve my family-work balance	6.09	1.45	.915
... reduce the amount of work-related stress in my life	5.64	1.37	.723
... save me money on commuting to work	5.29	2.05	.756
... give me more time to spend with my family	5.91	1.62	.872
...improve my overall quality of life	5.94	1.44	.862
<i>Work commute</i>	CR = .90, Cronbach's α = .82, AVE = .75		
How far do you travel from home to work?	48.74	44.39	.913
How long does it usually take you to get to work?	63.71	44.96	.913
How much is spent each week commuting to work for your main job?	5.3	2.12	.765
<i>SWH commute</i>	CR = .91, Cronbach's α = .80, AVE = .83		
How far do you travel from home to get to the Smart Work Hub?	15.41	12.59	.874
How long does it usually take you from home to get to the Smart Work Hub?	21.15	17.12	.943
Overall, when you think about the XYZ Smart Work Hub as a whole and how you feel about it, is your attitude towards the XYZ Smart Work Hub: negative/positive	6.6	0.75	-
How often do you think you will use the Smart Work Hub?	3.85	1.67	-
Age	40.4	9.79	-
Income	9.32	2.27	-
Employment hours/week	6.5	1.01	-
Firm size	3.1	1.63	-

Note: AVE = average variance explained; CR = composite reliability; all items significant at $p < .001$; loadings for single-item variables are not reported, as they are equal to 1.

Table 4: Conceptual Model Results

Path	β Coefficient	Significance
Work Commute → Perceived Value	.32	.004
Hub Commute → Perceived Value	-.21	.03
Perceived Value → Attitude Towards SWH	.35	.014
Attitude Towards SWH → Expected Usage	.12	.068
Firm Size → Expected Usage	-.302	.001
In/formal Flexibility Policy → Expected Usage	.20	.022
Who Pays → Expected Usage	.12	.053
Age → Perceived Value	-.11	.129
Age → Attitude Towards SWH	.25	.01
Age → Expected Usage	-.14	.105
Gender → Perceived Value	.11	.19
Gender → Attitude Towards SWH	-.22	.002
Gender → Expected Usage	-.04	.33
Income → Perceived Value	.17	.03
Income → Attitude Towards SWH	.03	.40
Income → Expected Usage	.15	.058
Hours worked → Perceived Value	-.09	.19
Hours worked → Attitude Towards SWH	-.05	.30
Hours worked → Expected Usage	.01	.45

Table 5: Personal and job influences on perceived-value dimensions

	Family Value	Work Value
Gender	.105	-.061
Age	-.109 [±]	-.114
Income	.171*	.016
Hours Worked	-.092	.005
Hub Commute	-.213*	-.107
Work Commute	.310***	.031
R ²	.24	.03

Note: $n = 117$; β Coefficients reported; $\pm = p < .10$, $* = p < .05$, $** = p < .01$, $*** = p < .001$ (one-tailed test)

Table 3: Construct correlation matrix

	Age	Attitude Towards SWH	Expected Usage	Firm Size	Gender	Hours Worked	Hub Commute	Income	In/for mal Flexibili ty Policy	Perceiv ed Value	Who Pays	Work Comm ute
Age	1											
Attitude Towards SWH	-0.262	1										
Expected Usage	-0.199	0.211	1									
Firm Size	0.081	-0.115	-0.27	1								
Gender	-0.03	-0.143	-0.06	0.183	1							
Hours Worked	-0.062	-0.088	0.092	-0.15	0.308	1						
Hub Commute	0.017	-0.139	-0.014	-0.038	-0.176	-0.175	1					
Income	0.088	0.033	0.103	0.141	0.247	0.247	-0.294	1				
In/formal Flexibility Policy	-0.041	0.011	0.18	0.136	0.078	0.139	-0.084	0.062	1			
Perceived Value	-0.081	0.323	0.073	0.353	0.222	0.023	-0.273	0.277	0.135	1		
Who Pays	-0.085	0.054	0.112	0.161	-0.027	-0.102	0.035	0.019	0.08	0.083	1	
Work Commute	0.037	0.123	-0.158	0.478	0.184	-0.011	-0.012	0.147	0.042	0.361	0.187	1

Figure 2: Conceptual Model: Key values

Note. Second stage of Becker et al. (2012) approach reported. $^{\pm} p \leq .10$, $* p \leq .05$, $** p \leq .01$, $*** p \leq .001$

Note. Value: **2 dimensions** – 2-stage Becker et al 2012 approach – **Stage 2** using Latent Variable Scores (formative) for the HOC.