

## When will employees accept remote working? The impact of gender and internet skills



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### ABSTRACT

The unprecedented COVID–19 pandemic required millions of people across the world to become remote workers. However, little is known about how to achieve effective remote working for organizations. This study investigates the types of employees that are more suited to accepting remote working by considering two determinants: gender and internet skills. Based on an official data set from China, this study reveals that females are more likely to accept remote working, as are those employees with advanced internet skills. This study further investigates the impacts of perceived benefits on employees' acceptance of remote working. It appears that the preference of females for remote working is attributed to avoiding face-to-face interaction rather than free time planning. This study is among the first to reveal how skill matching matters in order to be successful remote workers. Meanwhile, this study indicates that it is gender-specific psychological differences rather than the division of labor in families that motivate females to accept remote working, an important observation which has been neglected so far. The findings are helpful for employers and employees in the post-pandemic era.

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### Introduction

The World Health Organization declared the COVID-19 outbreak a global pandemic on March 11, 2020. After that, the world soon realized that this pandemic not only represented a health emergency but also a human, economic, and social crisis (Bertello et al., 2021). In many firms and organizations, the effects of the pandemic are leading to a strong push for digitization (Kraus et al., 2020). The prevalence of remote working, as an innovative technology-enabled working model, has thus increased considerably (Oksanen et al., 2021; Schäfer et al., 2023). Statistics show that over one-third of the U.S. labor force switched to remote work between February and May 2020 (Brynjolfsson, 2020). By the end of 2021, there were still 26.7% of U.S. employees working remotely, a clear increase compared to only 6%

of the total labor force prior to the pandemic.<sup>1</sup> Numerous scholars have thus tried to investigate the effect of remote working (e.g., Song & Gao, 2020; Giménez-Nadal, 2019; Brynjolfsson, 2020) but have not reached a consensus. For instance, some scholars believe that remote working provides a more flexible schedule, better work-life balance, and reduces travel time (Timbal & Mustabsat, 2016). Others, however, maintain that staying at home makes it difficult to separate work and family life, which may impose the pressure of endlessly working (Danielak, 2019) and the feeling of being alienated (Baytcom, 2015; Ipsen et al., 2021). Therefore, remote working brings about both advantages and disadvantages to employees (Taser et al., 2022; Ingusci et al., 2022).

Although there has been a plethora of studies concerning the impact of remote working on individuals, there are still several sizable research gaps. First, very few studies have tried to assess the mediating role of internet skills. According to DiMaggio and Hargittai (2001, p. 10), internet skills refer to “the capacity to respond pragmatically and intuitively to challenges and opportunities in a manner

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<sup>1</sup> Data source: <https://www.zippia.com/advice/remote-work-statistics/>

that exploits the internet's potential and avoids frustration". Therefore, if the negative feeling of remote working is attributed to technostress and anxiety caused by the use of ICT technology (Taser et al., 2022), we would expect that individuals with advanced internet skills would be more optimistic about remote working. Another noteworthy problem is the gender-specific psychological differences associated with remote working. Generally, males are more experienced with ICT technologies and are more likely to have taken training courses associated with computer use and have advanced knowledge concerning digital skills (Schumacher & Morahan-Martin, 2001; Bain & Rice, 2006; Rupiotta & Beckmann, 2018). Empirical evidence also suggests that technostress is significantly associated with females rather than males (Torre et al., 2020). Therefore, preference for or resistance to remote working may be due to psychological factors rather than merely to work-life balance (de-Vos et al., 2018; Pennington & Stanford, 2020; Gottlieb, 2021).

In light of the discussion above, the aim of our study is to gain new insights into preferences for remote working by investigating the role of internet skills and psychological factors. In this study, ordered logistic regression and nominal logistic regression are used; these are the common statistical tools for analyzing opinion polls. Our contribution to the literature can be summarized as follows: first, skill mismatches are the key determinants of workers' job satisfaction (Xiong et al., 2017). However, remote employees with limited digital skills may experience more challenges, and teleworking may not be suitable for them. Many studies have proposed that remote working will become more prevalent after COVID-19 (e.g., Hern, 2020). Scholars and practitioners so far have overstated the advantages associated with remote working. It is necessary to consider the fit between flexible work arrangements and different individuals (Wang et al., 2021). Second, this study expands the literature by empirically analyzing remote working acceptance in the non-Western context. Free time planning is one of the primary advantages of remote working in most Western studies. However, in China, there is a blurred line between work and non-work life domains (Tang et al., 2020). A report covering 12,471 Chinese families shows that over 42% of employees worked overtime in 2017. This rate is 59% for low-income workers.<sup>2</sup> Therefore, we posit that psychological factors may influence employees' attitudes toward remote working, a point that has not been thoroughly studied.

Overall, this study can provide practical guidance on how to deal with the fit between flexible work arrangements, especially in a non-Western context. The rest of this study is structured as follows: Section two reviews the literature on remote working, gender differences and internet skills. Section three explains the model setup, data source and variables. Empirical results are presented in Section four, and Section five provides the conclusions.

## Literature review

### *Divergent findings of remote working*

Owing to the impact of the COVID-19 pandemic, remote working has been adopted by many organizations (Morikawa, 2021). A strand of literature highlights the positive effect of remote working. When staying in the workplace, employees must conform to various rules and experience face-to-face supervision. As a result, the reduced autonomy is generally negatively related to job satisfaction. On the contrary, when doing remote working, individuals have more flexible time planning, more autonomy, lower stress, limited interference by colleagues, and reduced commuting travel costs (see a summary by Nakrošienė et al., 2018). Hence, remote working is associated with higher levels of intrinsic motivation, which improves job performance. Based on survey data collected after the pandemic, a large number of studies confirmed that remote

working reduces the negative impact of the pandemic, increases the productivity of employees and may continue to be prevalent even when the pandemic is over (Kohont & Chen, 2022; Aruldoss et al., 2022). Although remote working has a great many benefits, it has also created some challenges such as a blurring of the boundaries between work and non-work (Stadin et al., 2021). It creates negative outcomes such as anxiety, isolation and health-related problems which may reduce job satisfaction (Taser et al., 2022). In fact, working onsite causes additional threats to human lives during the pandemic. People have to adapt to the flexible working arrangements as there are no alternatives. Therefore, we cannot simply claim that remote working is better or worse than working onsite and is not equally cost-effective for everyone.

### *Internet skills and remote working*

For remote workers, a large proportion of their work may rely on online and digital tools which makes internet skills crucial in remote working. According to Grošelj et al., 2021, internet skills are an important part of digital inclusion, and those who are proficient in using the internet for diverse purposes are more likely to achieve a privileged societal position (Livingstone & Helsper, 2010). It is important to note that internet skills are not the same as computer skills, as they require more complex abilities to communicate, search, and create content online (Hargittai et al., 2018; Park et al., 2019). As a result, some people may feel psychological distrust, anxiety, and pressure when they suddenly have to use network technology, whilst others who have sufficient internet skills can calmly complete various tasks away from the office. The difference in internet skills is referred to as the "digital gap" (Litt, 2013).

Previous studies have categorized internet skills into four distinct but complementary categories (Deursen & van Dijk, 2016). Firstly, operational skills refer to the fundamental ability to use the internet, such as browsing and searching for content online. Secondly, formal skills refer to the ability to prevent individuals from getting lost and disoriented when surfing online. Digital distraction has been identified as one of the major negative effects caused by the internet (e.g., At Levik & Bjarn, 2021). Thirdly, information skills refer to the ability to assess and select information online, so as to avoid digital overload (Mota & Cilento, 2020). Fourthly, strategic skills refer to the ability to achieve professional goals with the help of the internet. Studies have shown that individuals with advanced internet skills have higher computer self-efficacy, which refers to their belief in their ability to use digital resources efficiently. Such confidence can significantly mitigate the negative feelings associated with technostress (Torre et al., 2020). In summary, internet skills help employees to locate online opportunities and perform necessary actions to utilize them (Deursen & van Dijk, 2016). Taking all these factors into consideration, we propose that:

**H1.** Individuals with better internet skills are more likely to accept remote working.

Previous studies have found that social demographic factors are closely related to online behaviors. For instance, Deursen et al. (2021) found that people with limited digital knowledge and skills tend to use the internet for leisure and entertainment only and are not able to reap enough benefits from its use. Deursen (2010) showed that young adults exhibit more variety in internet use when compared to elders, and they tend to use the internet for information purposes. Additionally, men have better internet-related knowledge and are more self-confident than women about their ability to adapt to new technologies (Wei & Zhang, 2008). The gender digital divide is also significant in China, with rural females being most excluded as they have the lowest capital endowment, according to Du and Yang (2020) who used a large data set. Furthermore, female students from multi-child families were found to be most disadvantaged in online educational activities and social media use (Pawluczuk et al., 2021; Arroyo, 2020). In summary, using computers and other digital tools is generally considered as a male activity, and even though males may

<sup>2</sup> <http://www.chinadaily.com.cn/a/201812/12/WS5c1070d2a310eff30329088a.html>

not have sufficient internet skills, they tend to be less worried about engaging in remote working. Taking all these factors into consideration, we propose that:

**H2.** The positive relationship between internet skills and remote working will be more significant for females.

### *Psychological attributes of accepting remote working*

One of the most evident advantages of remote working is the increase in employees' autonomy in scheduling and organizing their work. Some early studies maintained that remote working is mainly a preference for women as it gives them a unique chance to balance work and family lives (Lim & Teo, 2000). For example, remote working potentially increases career opportunities for women, as they can return to work earlier from maternity leave (Bélanger, 1999). Since women tend to perceive remote working as helpful in balancing working and family life, they are more likely than men to accept it (Sullivan & Lewis, 2001). However, some other scholars have maintained that the benefit of remote working for women to balance work and family life had not materialized. Being with children at home means that working life tends to be disturbed (Crosbie & Moore, 2004). Women have to transfer the time saved by remote working to housework and childcare (Noonan & Glass, 2012). Therefore, in many cases, working from home (a typical example of remote working) increases rather than reduces the burden for women (Crosbie & Moore, 2004; Yucel & Chung, 2023). To sum up, remote working does not always bring about a work-life balance for female employees. There may be some other factors that motivate female employees to accept it.

Substantial evidence suggests that males and females have significant mental and psychological differences, which may constitute another reason for women to accept remote working. First, women have sometimes been found to be more risk-averse than men and prefer higher information environments (Croson & Gneezy, 2009). Such differences may lead females to be more willing to interact with people they already know (Friebel et al., 2021). Remote working thus creates higher levels of psychological safety for women. Second, females tend to display greater fear and anxiety than males across their lifespan (Poulton et al., 2001). For example, girls tend to show excessive fear of social events, people in authority, criticism, and talking to strangers, as compared with boys (Ranta et al., 2007). Remote working reduces face-to-face interaction, provides certain anonymity, and enables asynchronous communication (see a summary by Prizant-Passal et al., 2016), all of which minimize the likelihood of making undesirable impressions on others. Moreover, both laboratory and field studies confirm that males are more eager to compete, and their performance is more positively associated with competition (Niederle & Vesterlund, 2011). When working onsite, employees work side by side and observe each other's activity. Peer effects thus arise, which inevitably create a competitive environment (Georganas et al., 2015). Therefore, it is not surprising that females feel more comfortable when engaging in remote working. They don't have to communicate with strangers frequently, there is no need to worry about excessive working competition and the disturbance of strangers. Taking all these into consideration, we propose that:

**H3a.** Women are more likely than men to accept remote working.

**H3b.** Women accept remote working to avoid unnecessary face-to-face interaction.

## **Research design**

### *Data set*

This study employs the data set from the Chinese General Social Survey (CGSS). It was launched jointly by Renmin University (Beijing) and Hong Kong University of Science and Technology in 2003. Target

respondents for CGSS are adults older than eighteen in both urban and rural households. The distribution of sampling units is designed as follows: (1) a total of 125 primary sampling units are selected for the national sample; (2) four secondary sampling units are selected in each primary sampling unit; (3) each secondary sampling unit covers two third-level sampling units; (4) ten households are selected in each third-level unit. It is renewed continuously every two years. The CGSS has become one of the most popular data sets in the study of household well-being in China. Some important studies based on CGSS have been published in high-quality journals, such as *China Economic Review*, *Social Indicator Research* and *Chinese Sociological Review*. (e.g., Wang & Cheng, 2017).

We adopted the CGSS data set in 2017; it included several critical items on internet use and 12,000 observations in total. It should be noted that survey items in each wave of the survey are not absolutely identical. Hence, we are not able to combine data from different waves. Compared with other data sets, the CGSS contains a larger sample size that self-administered surveys cannot cover. Moreover, it also contains more accurate information that enables us to extend our research findings to a larger population. We understand that using the pre-pandemic data has certain limitations. However, historical data allows us to reveal people's attitudes toward remote working under normal conditions. Specifically, when discussing the pros and cons of remote working in the pre-pandemic era, people tend to compare it with the option of working onsite. However, working onsite is no longer a viable scenario during the pandemic, since it poses additional health risks to employees. Therefore, employees have to choose between "working from home" and "working under threat". Hence, we cannot claim that remote working is necessarily superior to onsite working. The comparison between these two work modes is more meaningful when there are no interfering factors (in this case, health risk).

Previous studies on remote working largely centered on the Western world, and little is known about how employees in the East view remote working. China has unique social characteristics that are different from those in the Western world. Therefore, there is an urgent need for academic research on remote working which pays more attention to China and other Eastern countries. China's culture and society significantly influence employees' work and life. For instance, influenced by the philosophy of Confucius, providing financial support is the major method of fulfilling family responsibilities for Chinese people (Zhao et al., 2019). In addition, employees may bring along their networks from the workplace into their family lives, and vice versa. Hence, there is a blurred line between work and non-work life domains in China (Tang et al., 2020). A recent survey of over 3000 samples revealed that a large proportion of Chinese employees had an unpleasant experience regarding remote working. Specifically, 65% of respondents reported that their work hours have been extended due to remote working; 45% of respondents reported that working from home decreases their job performance; 40% of respondents have reported an increased working pressure.<sup>3</sup>

### *Model set and variables*

To reveal the interplay among gender, internet skills, and remote working, our study relied on two different regression methods. We first identified the determinants of people's acceptance toward remote working — "Will you accept remote working instead of onsite working in future?" The answers were assessed on a 3-point scale — "No=1", "Not sure=2", "Yes=3". The ordered logit model was used. One of the most important features of the ordered logit model is that the dependent variables are measured on an ordinal scale. It is possibly the most popular model for analyzing ordinal data (See, for instance, Xiong et al., 2019; Khiari & ben Rejeb, 2015). Treating the

<sup>3</sup> Link to the report: <https://baijiahao.baidu.com/s?id=1733501661605995008&wfr=spider&for=pc>

data as continuous variables may cause serious distortion of the findings. The probability of observing outcome  $i$  corresponds to the probability that the estimated linear function, plus random error, is within the range of the cut-points estimated for the outcome:

$$\Pr(\text{outcome}_j = i) = \Pr(k_{i-1} < \beta_1 x_{1j} + \beta_2 x_{2j} + \dots + \beta_k x_{kj} + \mu_j \leq k_i)$$

is assumed to be logistically distributed in ordered logit. .... refer to the coefficient of each variable.  $k$  refers to the number of possible outcomes. In this case,  $i$  is equal to 3.

In the next stage, we are interested in finding out what are the major advantages of remote working compared with onsite working. The answer includes: (1) improved working efficiency; (2) free time planning; (3) avoiding unnecessary face-to-face interaction with colleagues; and (4) no significant advantages for remote working. We use the nominal logit model, which is specified as follows:

$$\Pr(y = 1) = \frac{e^{X\beta^{(1)}}}{e^{X\beta^{(1)}} + e^{X\beta^{(2)}} + e^{X\beta^{(3)}} + e^{X\beta^{(4)}}}$$

$$\Pr(y = 2) = \frac{e^{X\beta^{(2)}}}{e^{X\beta^{(1)}} + e^{X\beta^{(2)}} + e^{X\beta^{(3)}} + e^{X\beta^{(4)}}}$$

$$\Pr(y = 3) = \frac{e^{X\beta^{(3)}}}{e^{X\beta^{(1)}} + e^{X\beta^{(2)}} + e^{X\beta^{(3)}} + e^{X\beta^{(4)}}}$$

$$\Pr(y = 4) = \frac{e^{X\beta^{(4)}}}{e^{X\beta^{(1)}} + e^{X\beta^{(2)}} + e^{X\beta^{(3)}} + e^{X\beta^{(4)}}$$

The outcomes 1, 2, 3, 4 are recorded in  $y$ , and  $X$  refers to explanatory variables. The value of  $y$  is unordered - it is a nominal response with four categories which do not have a natural order. For instance, we cannot claim that the outcome of "improve working efficiency" is larger or smaller than the outcome of "free time planning". Hence, ordered logit models used in the previous section cannot deal with the unordered categorical property of  $y$  in this case.

As aforementioned, *internet skills* is a multi-dimensional concept. We selected eight items to measure internet skills based on the previous literature (See Table 1 for details). In order to reduce the dimensionality of internet skills, we adopt Principal Component Analysis (PCA) to convert eight items into one variable. One of the major advantages of PCA is reducing the dimensionality of data, while keeping as much variation as possible. Although internet skills can be divided into four categories (e.g., [Deursen & van Dijk, 2016](#)), our study does not attempt to distinguish different types of skills. Remote working requires the adoption of various technical applications such as online meetings, communication and team collaboration platforms. It is hard to predict which specific internet skills will be more prevalent. However, those with advanced skills should be able to use digital technologies well to adapt to remote working.

**Table 1**  
Principal component analysis (PCA) for internet skills.

Item	Mean	S.D	Max/Min
I know how to open a web browser	4.38	0.75	5/1
I know how to download and use APPs in my smart phone	4.22	0.69	5/1
I can control the time spent online	3.85	0.57	5/1
Internet of things will not impact my real life in a negative way	4.01	0.58	5/1
I know how to verify important information from online media	3.67	0.61	5/1
I know how to secure online payment safety	3.81	0.77	5/1
I know where and how to express my ideas online	3.42	0.68	5/1
I know how to defend my personal rights online	3.26	0.81	5/1
Comprehensive score based on (PCA)	0.1412	0.48	-2.12/2.69

Note: The table shows descriptive statistics on each item and the final score based on PCA.

**Table 2**  
Descriptive statistics.

Variables	Explanation	Statistics	
Acceptance of remote working	No	27.24%	
	Yes	38.21%	
Benefit of remote working	Not sure	34.55%	
	More efficiency	17.45%	
	Free time planning	28.38%	
Male	Avoid unnecessary interaction	17.26%	
	No advantages	36.91%	
	Male respondents=1	51.75%	
	Age of respondents	Max(72), Min(16) M(38.22), SD (11.44)	
Educational Attainment	With college degree=1	15.55%	
	Income level	8.34%	
	Lowest level	35.54%	
	Middle level	38.57%	
	Upper level	17.38%	
Hukou	Highest level	0.17%	
	with urban Hukou=1	45.66%	
	People Live with	How many people do you live with	Max(10), Min(0) M (2.95), SD (3.39)
	Children	How many children do you have	Max(7), Min(0) M (1.25), SD (0.48)
Contacts at work	None=1	31.55%	
	1 to 5 people=2	37.28%	
	6-10 people=3	18.72%	
	over 10 people=4	12.44%	
Social network	Frequently socialize with others	33.17%	
	Sometimes socialize with others	53.07%	
	Seldom socialize with others	13.76%	
Self-rated Health	Poor	5.13%	
	Fair	10.96%	
	Good	24.35%	
	Very Good	36.25%	
	Excellent	23.31%	

Therefore, we synthesized only one comprehensive index to describe internet skills.

Our study also includes several control variables that are associated with remote working, such as age, educational attainment, income level, and self-rated health. These can be seen as the covariants that help predict the outcome variable. For instance, those with lower levels of education are less likely to accept and utilize new technology (e.g., [van Boekel et al., 2017](#)). Support from family members or friends is also a strong predictor for internet use ([Mariusz & Yih-Kuen, 2017](#)). Based on a telephone survey of 980 respondents, [Choi and Dinitto \(2013\)](#) found that 34% of the under-60 group currently use the internet. The ratio dropped to 17% for the over-60 group. Job characteristics have also been incorporated as control variables. In the CGSS 2017, respondents were asked how many people they have to collaborate with in the workplace. If individuals are required to interact frequently with others, they may be less willing to accept remote working. To this end, factors like *Hukou*,<sup>4</sup> social networks, and self-rated health are also controlled to deal with heterogeneity.

Table 2 presents the descriptive statistics for dependent variables, independent variables, and control variables. 34.55% of respondents believed that their work can be carried out by remote working. A little more than 38% of respondents held a neutral point of view. Regarding the benefit of remote working, over 28% of respondents

<sup>4</sup> *Hukou* is an official document issued by the Chinese government, certifying that the holder is a legal resident of a particular area.

chose free time planning. Around 17% of respondents considered increased efficiency as the major benefit of remote working, and another 17% of respondents considered avoiding unnecessary interaction as the major benefit. 36.71% of respondents see no major difference between remote working and face-to-face work. Scores on internet skills are computed based on PCA, and a higher value indicates higher levels of skills. Fewer than 16% of respondents have a college degree. According to the latest population census (2021) in China, there are 15,467 people with a college degree in every 100,000 of the population. This suggests that the data set we use is a representative sample. Moreover, about one-third of respondents do not need to contact anyone during their work. Around 55% of respondents have contact with 1–10 people in the workplace. Regarding self-rated health, our data reveals that nearly 60% of respondents are in very good or excellent condition.

**Empirical analysis**

*Determinants of accepting remote working*

Table 3 investigates the determinants of acceptance of remote working. Different control variables are incorporated in Model 1, Model 2, and Model 3. As suggested in columns 1, 2, and 3, *Male* shows a negative sign, with the odds ratio of 0.791–0.793. This implies that if all samples were male, the probability of accepting remote working would decrease by around 20%, which is consistent with previous studies (Arntz et al., 2020). Note that in Models 2 and 3, more control variables are added, and the significance of *Male* remains constant. This suggests that our results are robust. The odds ratio of internet skills is around 1.08, suggesting that the probability of accepting remote working tends to increase by 8% if the score of internet skills increases by 1 unit.

According to Table 3, several control variables also exhibit a significant sign. *Age* seems to be negatively related to remote working. The younger generation holds a more positive attitude towards the prevalence of remote working. Except for the digital age divide mentioned above, a recent study also reveals that the younger group had the highest evaluation of job fun (Hong et al., 2018). A college degree and higher income levels are positively related to accepting remote working. One possible explanation is that those with a higher educational level and higher income levels are less likely to be involved in manual work. Previous scholars are concerned that the widespread remote working may reinforce income inequality (Irlacher & Koch, 2020). Our results thus confirm the viability of such concerns, given that educated and higher-income individuals tend to benefit more from remote working. The results show that the *number of children* is unable to predict the acceptance of remote working, which is inconsistent with Western literature. As aforementioned, many

grandparents bear the primary responsibility for looking after children at home in China (Xiong et al., 2022). Hence, it is reasonable to find that the number of children is unrelated to the decision regarding remote working in China. Finally, *social networks* are significant in predicting remote working acceptance, while *self-rated health* exhibits an insignificant sign.

*Reason for accepting remote working*

Table 4 shows the estimations of perceived benefits of people’s acceptance of remote working. Note that there are four possibilities (that is, increased efficiency, free time planning, avoiding unnecessary face-to-face interaction, and no significant advantages). The final possibility — no significant advantage (Outcome 4) — is used as the reference outcome, and the results should be interpreted in a different way.

For instance, *male* exhibits a negative sign in ‘Outcome 3’, and is significant at the 5% level. Recall that all male observations are recorded as 1 in our data set. The negative coefficient thus suggests that when choosing between “avoid unnecessary interaction” and “no significant advantages of remote working”, males are more likely to opt for the latter statement. Alternatively, we can say that females are more likely to opt for the former statement. However, the negative sign does not necessarily mean that females tend to put “Outcome 3” in the first place. It is merely the comparison between “Outcome 3” and “Outcome 4”. We cannot claim that when it comes to the benefit of remote working, “Outcome 3” ranks at the top. Gender is insignificant in column 1, suggesting that gender is not a critical factor in predicting respondents’ choice between “Outcome 1” and “Outcome 4”. Compared with the previous section, the significance level has reduced from 1% to 5%.

Internet skills are significant in predicting “Outcome 1”, “Outcome 2”, and “Outcome 3”. Those with advanced internet skills are more likely to believe that remote working is associated with free time planning and working efficiency improvement. Among all the control variables, *Age*, *Education* attainments, and *Hukou* are significant across all three models. Well-educated and rich urban residents hold a more positive view of remote working compared with others. *Social network* is significant in predicting “Outcome 2” and “Outcome 3” but not “Outcome 1”. According to Robison et al. (2002), establishing interpersonal networks requires constant maintenance and investment. Remote working thus enables individuals to arrange their social activities and maximize their benefits.

*Gender difference, internet skills and remote working*

Finally, we present Table 5 to explore whether the effect of internet skills is contingent on gender. The results suggest that those with advanced internet skills are more likely to accept remote working regardless of whether they are male or female respondents. However, regressions on male samples reported a relatively lower odds ratio, suggesting that the effect of internet skills is more profound for females. This is in line with our hypothesis. The interaction effect between gender and internet skills is shown in Fig. 1. The horizontal axis refers to the levels of internet skills ranging from one to five. The vertical axis refers to their probability of accepting remote working. We can see two separated upward-sloping lines. Female results are located above male results, suggesting that females are generally more likely to accept remote working. The gap between the two lines is widening with the increase of internet skills. This implies that internet skills exert a stronger effect on female subjects. Regarding male subjects, the probability of accepting remote working increases by around 10% (from 40% to 50% as shown in Fig. 1) when internet skills increase from level 1 to level 5. For female subjects, the probability of accepting remote working increases by around 20% (from 50% to 70% as shown in Fig. 1) when internet skills increase from level 1 to level 5.

**Table 3**  
Ordered logit models for the acceptance of remote working.

Variables	Model 1	Model 2	Model 3
Male	0.793(0.000)	0.791(0.000)	0.792(0.000)
Internet Skills	1.081(0.000)	1.079(0.000)	1.079(0.000)
Age	0.974(0.000)	0.974(0.000)	0.975(0.000)
Educational Attainment	1.528(0.001)	1.493(0.000)	1.493(0.000)
Income Level	1.236(0.000)	1.231(0.000)	1.232(0.000)
Contacts at work	1.059(0.112)	1.044(0.120)	1.054(0.117)
People Live with Children	0.991(0.302)	0.992(0.421)	0.991(0.110)
<i>Hukou</i>		1.033(0.144)	1.104(0.073)
Social network		1.065(0.411)	1.066(0.412)
Self-rated Health			1.206(0.012)
Number of Obs.	4091	4091	4091
LR X <sup>2</sup>	545.90	548.38	546.42

Note: odds ratios are reported. P values are in parentheses. Model 1, Model 2 and Model 3 are conducted with different sets of control variables.

**Table 4**  
Nominal logit model for benefits of remote working.

	Increased efficiency (Outcome 1)	Free time planning (Outcome 2)	Avoid unnecessary interaction (Outcome 3)
Male	0.892(0.253)	0.867(0.092)	0.819(0.032)
Internet Skills	1.389(0.000)	1.303(0.000)	1.207(0.034)
Age	1.011(0.014)	1.018(0.000)	1.022(0.000)
Educational Attainment	2.358(0.000)	1.744(0.000)	1.868(0.000)
Income Level	1.082(0.255)	1.261(0.000)	1.192(0.009)
Contacts at work	0.955(0.370)	1.040(0.367)	1.052(0.304)
Social network	1.072(0.505)	1.273(0.000)	1.222(0.024)
Self-rated Health	1.147(0.005)	1.055(0.202)	1.072(0.156)
Hukou	1.431(0.002)	1.546(0.000)	1.271(0.034)
Number of Obs.	4091	4091	4091
LR X <sup>2</sup>	806.14	806.14	806.14

Note: Relative risk ratios are reported. P values are in parentheses. The outcome 4 "No advantages" is used as a reference category in this model. The coefficient reported refers to the probability of the occurrence of Outcome 1, 2, 3 when compared with Outcome 4.

**Table 5**  
Sub-sample analysis by gender.

Variables	Male samples	Female Samples
Internet Skills	1.120(0.014)	1.297(0.000)
Age	1.019(0.000)	1.015(0.000)
Educational Attainment	1.327(0.001)	1.532(0.006)
Income level	1.223(0.002)	1.229(0.001)
Contacts at work	1.131(0.012)	1.003(0.949)
People Live with Children	0.928(0.030)	0.994(0.889)
Hukou	1.018(0.258)	0.987(0.301)
Social network	1.356(0.005)	1.065(0.203)
Self-rated Health	1.130(0.011)	1.176(0.075)
Number of Obs.	0.979(0.653)	1.001(0.989)
LR X <sup>2</sup>	2117	1974
	211.18	257.77

Note: odds ratios are reported. P values are in parentheses.

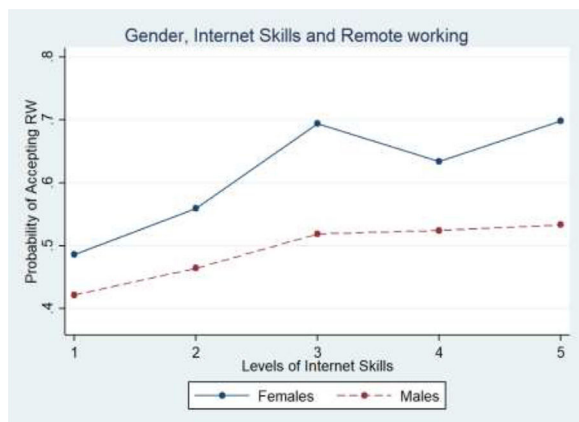


Fig. 1. Plot of interaction effect.

## Discussion and conclusion

### Summary of findings

Previous studies have highlighted that a flexible working pattern can help balance work and family life, particularly for women (Hynes, 2005). However, remote working also requires individuals to use special software or Apps to communicate and interact with colleagues. Additionally, they are less likely to receive assistance from others and may have to search for answers online. Thus, internet skills are critical for enabling employees to successfully accept remote working. Therefore, this paper attempts to illustrate the gender difference in remote working, with a focus on internet skills.

The results based on the data set from China provided supporting evidence for our hypotheses. Firstly, enhancing internet skills is

positively associated with the acceptance of remote working (H1). Our finding extends this line of research by highlighting that internet skills may be a critical yet overlooked determinant of remote working acceptance. Studies have already revealed that people with fewer internet skills were less likely to engage in digital communication during the COVID-19 pandemic, which may result in a new form of the digital divide (Nguyen et al., 2021). Our results also revealed that the positive effect of internet skills is more profound for females (H2). More importantly, females do not value free time planning more than males. Instead, they consider "avoiding face-to-face interaction" as the primary benefit of remote working (H3). These findings are partly consistent with the evidence offered by Arntz et al. (2020; 2022), suggesting that gender differences exist in remote working. However, this study offers a new perspective by considering psychological factors. A recurring finding from the stream of research on gender differences shows that females prefer a safe environment, tend to create smaller social networks, and are relatively risk averse (Friebel et al., 2021). Therefore, psychological factors may be vital in understanding gender differences in remote working acceptance.

### Theoretical and practical implications

Our study provides two important theoretical implications. First, it expands the literature on remote working and human resource management by investigating the impacts of job skills on the mode of working. Although existing literature highlights the possible downsides of remote working (Timbal & Mustabsat, 2016; Danielak, 2019), little attention has been paid to the issue of skills matching. Job skills have a great impact on job satisfaction (Vieira, 2005), and onsite working and remote working may require different skills. Our study points out that internet skills explain why some employees prefer remote working while others do not. To be better engaged in remote working, employees should be disciplined and stay focused when using the internet. Flexible work arrangements will be more effective for individuals with greater abilities to avoid distraction (Wang et al., 2021). In sum, our study extends the current literature by identifying internet skills as an important precondition for successful remote working. By doing so, we respond to existing calls for further research on the digital divide in the post-pandemic era (Nguyen et al., 2021).

Second, this study challenges traditional views (e.g., Hynes, 2005) by revealing that free time planning may not be a primary reason for females to accept remote working. It is also an oversimplification to connect females' preferences for remote working to overall gender development (e.g., Kurowska, 2018). There is ample evidence that men and women may be fundamentally different in many personality traits (e.g., Huszczo & Endres, 2017), and these psychological and cognitive differences may significantly affect people's preferences in working styles. While prior research has highlighted that remote

working is not a feasible option for certain workers (Gifford, 2022), the reasons behind this have been relatively under-explored. To fill this gap, our study reveals how different individuals view the benefits (i.e., improved working efficiency, free time planning, and avoiding unnecessary face-to-face interaction) associated with remote working. By doing so, our study contributes to a clearer and more comprehensive understanding of the applicability of remote working. In sum, the effect of psychological and mental traits is worth considering and could be a fruitful avenue for the burgeoning studies of remote working.

Several practical implications can also be derived from this study. Firstly, many employees had little or no experience working remotely before the COVID-19 pandemic. This means they might have difficulties dealing with the necessary technologies, managing distractions, and staying organized at home. Therefore, it is necessary for the HR department to train employees in basic tools and skills to succeed in a remote environment. Specifically, firms may need to establish a special department responsible for solving technical problems faced by remote employees. It is important to allow employees to learn from IT experts about the technology and gain more knowledge. This can be done by arranging tutorial programs beforehand. For instance, Fujitsu implemented one-to-one skills training for all employees to better adapt to remote working starting in July 2020. The company also conducted additional wellbeing checks to offer compassionate support to address mental and psychological issues caused by the new working style.

Second, employers are advised to consider employees' personal characteristics when promoting remote working. Considering personality for example, some employees may opt for remote working to avoid face-to-face interaction. However, those with extravert personalities may have negative experiences regarding remote working. For instance, several companies canceled remote working arrangements since they found that not all employees were mentally prepared for it. Specifically, it is necessary to figure out whether employees are independent workers or team players. Are they used to being around people? Do they have sufficient communication skills? These questions can be applied as criteria to distinguish effective and ineffective remote workers. As suggested by Schäfer (et al., 2023), remote working is too diverse to consider as unitary. It is also important to consider more specific dimensions of flexible work arrangement (e.g., geographical flexibility, technological tools, independent work). This would help us understand better the influence of remote working at individual levels

#### Limitations and future research

This study has some limitations which deserve further investigation in the future. Firstly, internet skills were assessed using a self-rated survey, which may contain biases as some individuals may overestimate or underestimate their abilities in using the internet. Additionally, the concept of internet skills was proposed more than 10 years ago. Future studies may consider developing a new scale that encompasses the various skills necessary to perform remote work. Secondly, we did not account for personalities or job characteristics that can be controlled for to manage individual heterogeneity. For example, prior research indicates that individuals with higher scores on extraversion experienced more stress during lockdown (Langvik et al., 2021). Furthermore, to identify the factors that contribute to employees' acceptance of remote work, future studies should explore the multiple facets of the home-work conflict in different cultural contexts. Thirdly, our study was based on data from China. While providing a focused understanding of behavioral characteristics to avoid the confounding effect of national culture, future research should replicate our study in multiple other countries to enhance its generalizability. For instance, Japan and Korea are among the few developed countries in East Asia where traditional gender

roles and male favoritism still persist despite women enjoying more freedom and better healthcare. Thus, investigating how to promote women's equality through remote work in these countries warrants further exploration.

#### Data availability

Data available on request due to privacy/ethical restrictions.

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