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Remote work as a new normal? The technology-organization-environment (TOE) context

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ABSTRACT

The COVID-19 pandemic has established remote work as the new normal. However, the factors that influence the effectiveness of remote work are unexplored. Moreover, the relationships between remote work and job performance and emotional exhaustion are under-investigated. This study addresses these gaps by investigating the factors that influence the effectiveness and outcomes of remote work. The technology-organisation-environment (TOE) framework and the theory of planned behaviour (TPB) are used as a theoretical lens to examine the internal and external factors that affect remote work and work-life balance. An online cross-sectional survey of knowledge workers engaged in remote work in Hong Kong indicates that both external (technological competence, government support) and internal (work flexibility, attitude, perceived behavioural control) factors are significant predictors of successful remote work. Furthermore, remote work is positively associated with job performance but has no association with emotional exhaustion. These findings suggest that to ensure a successful transition to the new normal, governments and organisations should provide technical support to employees engaged in remote work. The theoretical and practical implications of the findings are discussed.

1. Introduction

The COVID-19 pandemic has accelerated pre-existing work trends, and most companies have now adopted work-from-home or remote work practices. About 20–25% of the workforces in advanced economies could work remotely without a loss of productivity [1]. Remote work is becoming the new normal, and this trend will continue beyond the pandemic [2]. Remote work is defined as work that employees complete at home using information and communication technologies to aid flexible working practices [3,4]. Since the beginning of the COVID-19 pandemic, the Hong Kong Special Administrative Region, China (HKSAR) government has encouraged businesses to allow their employees to work remotely and has begun to regulate remote work. Hong Kong civil servants demonstrated the effectiveness of online work during the peak of the COVID-19 outbreaks [5]. The HKSAR government has noted that the unpredictability of COVID-19 has made assessing the risk to citizens complicated and that remote work is one of the most direct methods for reducing the spread of viruses [6]. To optimise productivity in remote work settings, high quality technology, a comfortable work environment and organisational support are necessary. This study uses

the technology-organisation-environment (TOE) framework [7] to examine the factors that can make remote work more successful, such as support from governments and organisations and the technological competence of employees [8]. Work flexibility is a determining factor in job satisfaction and performance [32]. Perceived behavioural control and employees' attitudes towards remote work may also influence employees' concentration, job performance and emotional exhaustion [9]. To examine employees' attitudes towards and ability to engage in remote work, this study establishes links between attitude, perceived behavioural control and remote work using the theory of planned behaviour (TPB) [10]. The TPB has been used to understand remote and office work because of its ability to contextualise nomological relationships [11–13]. By integrating the TOE framework and TPB, this study examines how external (i.e., technological competence, government support) and internal (i.e., work flexibility, attitude, perceived behavioural control) factors influence the job performance and emotional exhaustion of remote work employees.

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2. Contextual and theoretical background

2.1. The TOE framework and remote work

The TOE framework is an organisational-level theory that identifies the critical technological, organisational and environmental influences on organisations' decisions [7,8,14]. Applying the TOE framework to the new remote work context can help firms to systematically implement the remote work arrangements that ensure successful adoption. Remote work arrangements that achieve an optimal balance between the three dimensions will benefit both companies and employees [15]. The TOE framework has been used to study applications of information technology [16]. Recent studies have used the TOE framework to examine both remote and office work, as it provides a theoretical foundation for the analysis of organisational and environmental barriers and enablers [17–19].

2.1.1. The environment: government support

Hong Kong society and various organisations are gradually becoming aware of the need to adapt to changes in modes of work [20]. The interactions between different external environments and different organisations are shaping new models for regulating work. Remote work in particular is a priority for the HKSAR government [21]. Government support is essential to ensure its effective implementation in businesses, as such support affects both employees' job performance and the employment rate [22]. Currently, the HKSAR government is actively setting up measures to support remote work as part of its effort to reduce the uncertainty caused by the COVID-19 pandemic. The government has crucial leadership and intervention roles in the diffusion of innovations. When government support for remote work is high, it is more likely that businesses will adopt remote work practices [23]. Therefore, the HKSAR government can promote the consistent implementation of remote work.

2.1.2. Technology: technological competence

Technological competence within an organisation and its information technology (IT) infrastructure influence managements' decisions to implement remote work as part of the firms' daily operations [24]. Organisations need a substantial IT infrastructure to implement remote work because an IT infrastructure and its team-sharing tools are needed to quickly create connectivity in a top-down approach. Both internal and external connections can be increased through the use of high quality digitalisation and communication technology [25]. This helps organisations establish information-sharing platforms suitable for remote work.

Organisations should use government support and comprehensive technological infrastructures to ensure that their employees are comfortable with remote work [3,26]. Employees must also develop their technical competence. Under this new normal, mature IT systems can increase the efficiency of technological investments, leading to better business performance and ensuring that businesses are on the right track [8].

2.1.3. Organisation: organisational support

The support of senior management is crucial for overcoming the challenges and adapting to this new work mode. As the government is encouraging organisations to implement remote work options, management should consider making remote work part of regular pandemic prevention practices [27,28].

Management may encourage employees to adopt remote work to reduce unnecessary contacts with others and thus reduce the spread of disease [29]. Companies can promote remote work arrangements by providing their employees with the resources they need to conduct remote work effectively. The level of organisational support is reflected in an organisation's readiness to respond to pandemic-related financial and physical health challenges [30]. Senior management must help employees to manage public health issues [31]. In line with the TOE

framework, we propose the following hypotheses.

H1. Government support is positively related to technological competence.

H2. Government support is positively related to organisational support.

2.2. Work flexibility of remote work

Work flexibility strongly influences employees' attitude towards work, job satisfaction and performance [32]. Empirical studies of logistics have found that optimising workplace flexibility increases job satisfaction and employee performance [33,34]. The work flexibility created by remote work arrangements during the COVID-19 pandemic enhanced work-life balance and reduced barriers between work and private life [35].

Ideally, remote work arrangements should be provided as an option for employees. Flexible work options that give employees the choice of working at home or going to the usual workplace can be a strategy for responding to changing epidemic conditions [36]. In addition, allowing employees to stipulate their work hours, workdays and days off improves the work-life balance of employees working from home. Therefore, work flexibility may be an important factor in remote work arrangements and behaviours [37].

2.3. TPB for the new normal

TPB models consider three important predictors of behavioural intention: perceived behavioural control, subjective norm and attitude towards the behaviour [9]. These are the best predictors of behaviour changes, including changes related to public health issues such as social distancing and remote work [38].

2.3.1. Perceived behavioural control

As the COVID-19 pandemic in Hong Kong is an unprecedented event, most organisations and employees were initially unsure about the seriousness of the virus and followed each other's behaviour [39]. Remote work was not welcomed during the initial outbreak, as it was an unfamiliar behaviour that lacked government support or knowledge based on experience. Over time, employees have become more familiar with remote work arrangements [2]. Successful arrangements depend on employees having the resources, knowledge and ability to achieve work targets while working remotely [40]. In this context, perceived behavioural control is having the option to adopt remote work. Thus, perceived behavioural control is related to an individual's abilities and their adaptability to remote work arrangements. Studies have suggested that a set of factors beyond IT are linked to remote work, such as perceived behavioural control, self-efficacy and a wider range of competencies [13,30,41,42]. To maintain a high level of concentration at work, employees must believe that they can complete their work tasks effectively while working remotely.

Based on these theoretical arguments and empirical insights, we put forward the following hypotheses.

H3. Technological competence is positively related to perceived behavioural control.

H4. Organisational support is positively related to perceived behavioural control.

H5. Work flexibility is positively related to perceived behavioural control.

H6. Perceived behavioural control is positively related to the concentration required for remote work.

2.3.2. Attitude towards remote work

Individuals' attitudes affect their behaviour. In this study, we

examined how motivation and external support (government support and organisational support) change work-related behaviour patterns [43]. A recent survey of 1102 respondents in Indonesia empirically demonstrated the effects of attitudes on virus transmission [38]. In that survey, 59% of the respondents expressed relatively positive attitudes towards remote work as a strategy to prevent outbreaks. In general, employees believe that remote work is a good idea and that it positively affects their performance [44]. Employees consider remote work a way to protect colleagues' physical and psychological well-being [45]. Accordingly, we propose the following hypothesis.

H7. Attitudes towards remote work are positively related to the concentration required for remote work.

2.4. Concentration required for remote work

Remote work contributes to public health during a pandemic and improves work-life balance, job performance and job satisfaction [46]. To maintain a sustainable work-life balance during this 'remote work era', several phenomena require more research attention. Employees must be able to concentrate on their job tasks even when there are disturbances at home. To stay focused on work, employees should avoid talking about work issues with their family members and should expect a higher workload when working remotely than when working at the office [47].

2.4.1. Remote work and emotional exhaustion

Remote work has been explored in many papers, most of which have focused on senior management support, employee satisfaction and job performance [48–50]. However, the link between remote work and emotional exhaustion is underexplored and remains unclear. Daily setbacks caused by remote work may rapidly drain telework resources and create a high level of emotional exhaustion and next-day work withdrawal behaviour [51]. Remote work leads to greater emotional exhaustion because it deprives employees of social support [52].

However, more and more organisations are using remote work. Some organisations encourage their employees' affective commitment by making the employees feel they are part of the workplace family even when they are working online and in isolation [53]. For example, some organisations reduce emotional exhaustion by promoting regular online social events for employees and providing regular mental health courses based on the employees' needs [54,55] Chadee et al., 2021). Some home activities may also help improve employees' emotional balance. For example, crafting can reduce emotional exhaustion [56]. Employees who do not feel emotionally drained or fed up at the end of a workday at home will not delay next-day job tasks and will not experience burnout. The relationship between remote work and emotional exhaustion is still unclear. We propose the following hypothesis.

H8. The concentration required for remote work is related to emotional exhaustion.

2.4.2. Effect of remote work on job performance

Remote work gives employees flexibility. A personalised work environment at home boosts job performance [33]. Therefore, employees can improve their job performance by creating a comfortable work environment that supports their peace of mind. Remote work also eliminates the time spent commuting to the office, leaving more time to work on assigned job tasks. The new modes of work create feelings of freedom that increase employee satisfaction and enhance work motivation [57]. It is argued that the job satisfaction and comfortable work environment associated with remote work can positively influence employee performance [58].

To fulfil the responsibilities specified in their job descriptions and accurately complete their assigned duties, employees engaged in remote work must structure their time. Work-life balance requires employees to plan their work days, even under uncertainty [59]. When a living area

becomes a workplace, it can be difficult for people to clearly differentiate work time and free time, and this may be exacerbated by socio-demographic variables such as the need for child care [60]. However, once remote work is fully accepted as the new normal, the associated time management could maximise employees' productivity and lead to better job performance [50]. Based on this discussion, we propose the following hypothesis.

H9. The concentration required for remote work is positively related to job performance.

3. Methodology

Building on the literature review, we developed a research model (Fig. 1) to examine the effects of remote work on work-life balance. Data were collected using Google Forms and a snowball sampling method. Specifically, a self-administrated electronic questionnaire was distributed to 238 working people in Hong Kong. The respondents were asked whether they had experienced remote work in the last 3 months. Remote work was defined at the beginning of the survey. Individuals who had not experienced remote work were excluded. Demographic information, including age, gender and monthly income were collected. All of the data were kept confidential. Of the 238 respondents who completed the online questionnaire, 132 (55.4%) were female and 106 (44.6%) were male. As there are multiple independent variables and one dependent variable, structural equation modelling (SEM) was used to analyse the direct and indirect effects in the model.

3.1. Measurement instruments

We used the TPB in the TOE context to identify the factors that influence people's concentration and performance. The factors drawn from the TOE were technological competence, government support and organisational support, and the factors drawn from the TPB were attitude towards remote work and perceived behavioural control. The measurement items for technological competence, government support, organisational support, work flexibility, attitudes towards remote work, perceived behavioural control, concentration required for remote work, emotional exhaustion and job performance were adapted from previous studies [61–69]. A 7-point Likert scale provides relatively high validity and reliability for measurement items (1 = *strongly disagree* to 7 = *strongly agree*) [70].

4. Data analysis and findings

We used partial least squares structural equation modelling (PLS-SEM) in SmartPLS 3.0 to examine the hypothesised interactions between the TPB factors and the concentration required for remote work [71]. PLS-SEM is broadly used in social sciences research as it allows bootstrap resampling in tests of the stability of estimates and interaction effects and normality is not a prerequisite [72]. PLS-SEM uses model estimations to measure and confirm the relationships between the indicators and constructs (measurement models) [72].

4.1. Measurement model

All of the latent variables in the measurement model were measured using non-parametric quality criteria, as shown in Table 1 [74,75]. The construct validity and reliability of the measurement model were evaluated by assessing the factor loadings and composite reliabilities of each measurement item [73]. Specifically, we used confirmatory factor analysis with the following criteria.

- (1) Factor loadings should be larger than 0.7 and statistically significant (p -value < 0.05).
- (2) Composite reliability should be greater than 0.7.

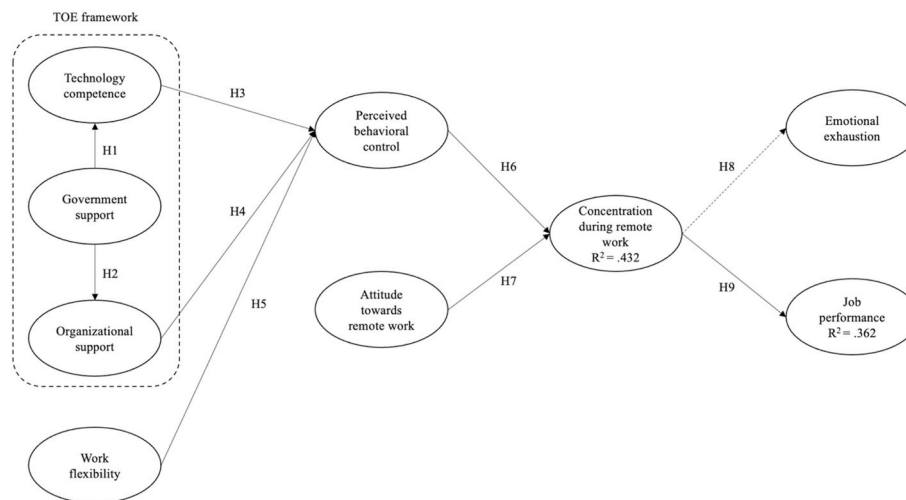


Fig. 1. Conceptual framework.

- (3) The average variance extracted (AVE) scores of each construct should be larger than the recommended 0.5 threshold.

Discriminant validity was assessed using Fornell-Larcker's criterion [75]. This criterion is met if the square root of the AVE of each construct is larger than the correlation coefficient between the constructs. All of the criteria for internal consistency, convergent validity (Table 1) and discriminant validity (Table 2) were met, demonstrating that the measurement model was reliable and valid. Next, we assessed the structural model.

4.2. Structural model

The statistical significance of the hypothesised model was evaluated using a bootstrapping sample method with 5000 resamples [73]. The R^2 values of all of the dependent variables were greater than the threshold value of 0.2, suggesting the model had strong predictive power (R^2 of the concentration required for remote work = 0.432 and R^2 of job performance = 0.362). The hypothesised model explained 43.2% of the variance in the concentration required for remote work and 36.2% of the variance in enhancing job performance.

After evaluating the key criteria in the structural model, we tested H1 to H9 using PLS-SEM path analyses. The results are summarised in Table 3. They confirmed that the concentration required for remote work was positively associated with attitude ($\beta = 0.42, p < 0.001$) and perceived behavioural control ($\beta = 0.17, p < 0.005$), supporting H6 and H7. Moreover, government support was positively related to technological competence ($\beta = 0.21, p < 0.005$) and organisational support ($\beta = 0.19, p < 0.005$). Perceived behavioural control was positively associated with technological competence ($\beta = 0.28, p < 0.005$), organisational support ($\beta = 0.38, p < 0.001$) and work flexibility ($\beta = 0.12, p < 0.05$). Concentration required for remote work had a significant positive relationship with job performance ($\beta = 0.55, p < 0.001$). Therefore, H1, H2, H3, H4, H5 and H9 were supported. However, the concentration required for remote work did not have a significant relationship with emotional exhaustion ($\beta = -0.12, p > 0.05$); thus, H8 was not supported.

4.3. Control variables

Gender diversity and age diversity support job performance [76]. It is stated that because different industries support remote work practices to varying degrees, the effect of remote work on job performance varies by industry [77]. Therefore, we controlled for gender (1 = male; 2 = female), age (1 = < 25 years old; 2 = 26–35 years, old; 3 = 36–45 years

old; 4 = 46–55 years old; 5 = > 56 years old) and industry type (1 = financial services; 2 = trading and logistics; 3 = education, 4 = hospitality/tourism; 5 = manufacturing; 6 = others) in the research model. We found that these control variables had insignificant effects on job performance, affirming the robustness of the model.

5. Discussion

In this study, we integrated the TOE framework and TPB to examine the factors that influence remote work practices. The results provided evidence to support our hypotheses. First, our results revealed that government support is positively related to technological competence and organisational support (H1, H2). These findings are consistent with the findings [21,22]. Governments should provide remote work guidelines and technological support to help employees who are working remotely. The government could prioritise remote work as part of its strategy for managing the COVID-19 pandemic. In the longer term, government support in the form of schemes and policies are vital for the recovery of the HKSAR economy, as remote work could reduce the unemployment rate and boost employees' job performance. Moreover, consistent with the literature [3,24], the results of this study demonstrated that technological support significantly affects employees' ability to adopt remote work (H3). Employees need high technological competence and a strong information infrastructure to meet their employers' expectations. The results also showed that organisational support is positively related to employees' ability to adopt remote work (H4). With government support, senior management can encourage employees to adopt remote work practices. Rebooting normal business functions requires employees to feel comfortable and able to work remotely. Our findings are consistent with previous literature that support from upper management is crucial for overcoming the challenges of this new work mode [28].

Second, our test of H5 demonstrated the relationship between work flexibility and perceived behavioural control. This suggests that organisations can enhance work flexibility by responding to employees' demands for support for remote work. Work flexibility increases employees' concentration levels during remote work, as it allows employees to manage the time they allot to work and to family life. This also increases family satisfaction. Furthermore, we found that perceived behavioural control and attitude towards remote work are significant predictors of whether remote work enhances job performance (H6, H7) [29,30]. The attitudes and ability of employees are the most important factors in how they manage work tasks in the remote work context [5]. If an individual has an appropriate attitude and the required abilities, he or she tends to stay focused on his or her job tasks when working

Table 1
The research instrument and measurement model.

Scale & items	Loadings	Composite reliability	AVE
Attitude towards Remote Work		0.973	0.899
During COVID-19's outbreak, remote work is a good idea.	0.939		
During COVID-19's outbreak, remote work would be positive.	0.971		
During COVID-19's outbreak, remote work would be beneficial.	0.964		
During COVID-19's outbreak, I like the idea of remote work for the sake of employees' well-being.	0.918		
Emotional Exhaustion		0.937	0.834
During COVID-19's outbreak, I feel emotionally drained from my work.	0.821		
During COVID-19's outbreak, I feel burned out from my work.	0.960		
Government Support		0.941	0.843
During COVID-19's outbreak, the government endorses remote work arrangement in Hong Kong	0.897		
During COVID-19's outbreak, the Hong Kong government is active in setting up any measures	0.935		
During COVID-19's outbreak, the Hong Kong government promotes the implementation of remote work arrangement	0.922		
Job Performance		0.906	0.661
During COVID-19's outbreak, I fulfill responsibilities specified in my job descriptions	0.837		
During COVID-19's outbreak, I adequately complete assigned duties	0.845		
During COVID-19's outbreak, I meet formal performance requirements of the job	0.885		
During COVID-19's outbreak, my performance exceeds formal requirements of the job	0.784		
Organizational Support		0.908	0.767
During COVID-19's outbreak, top management encourages employees to remote work	0.874		
During COVID-19's outbreak, our company provides resources for employees to remote work	0.905		
During COVID-19's outbreak, top management can help employees dealing with hygiene issues	0.847		
Perceived Behavioural Control		0.937	0.833
During COVID-19's outbreak, I will be able to adopt remote work arrangement	0.926		
During COVID-19's outbreak, adopting remote work arrangement is entirely within my control	0.904		
During COVID-19's outbreak, I have the resources, knowledge, and ability to adopt remote work arrangement	0.907		
Technological Competence		0.956	0.878
During COVID-19's outbreak, the information technology infrastructure of my company is able to support remote work arrangement.	0.931		
During COVID-19's outbreak, my company is dedicated to ensuring that employees are familiar with remote work arrangement	0.944		
During COVID-19's outbreak, the employees of my company contain a high level of knowledge about remote work arrangement	0.936		
Concentration Required for Remote Work		0.816	0.621
	0.912		

Table 1 (continued)

Scale & items	Loadings	Composite reliability	AVE
During COVID-19's outbreak, it is easy to concentrate on my job tasks when I work at home			
During COVID-19's outbreak, I tend to avoid talking about work issues with my family	0.803		
During COVID-19's outbreak, I tend to stay focused when working from home	0.932		
Work Flexibility		0.904	0.702
During COVID-19's outbreak, I have considerable choice in determining whether I work at home instead of at my usual workplace	0.863		
During COVID-19's outbreak, I have considerable choice in determining the number of hours I work each workday or workweek	0.855		
During COVID-19's outbreak, I have considerable choice in determining when I take a few days off	0.829		
During COVID-19's outbreak, I have considerable choice in determining when I begin and end each workday or workweek	0.805		

remotely.

Third, a significant finding of this study is that remote work does not create emotional exhaustion (H8). This may be due to stronger bonding with family members because of more opportunities to share work pressure or to more emotional support from work organisations and colleagues. Employees do not experience emotional exhaustion when working remotely if they share an affective commitment to their organisation, which can generate a sense of belonging even when working alone at home [31]. This attitude supports the employees' mental health and helps them manage uncertainty. Organisations should conduct regular well-being training for employees who are working remotely such as mindfulness training, which can reduce emotional exhaustion [78], reduce self-control depletion and improve relational energy. Overall, our findings suggest that remote work has no significant effect on employees' emotional exhaustion.

Fourth, remote work is positively related to job performance (H9). A comfortable work environment provides employees with peace of mind. Furthermore, when employees do not need to spend time travelling to work, they have more time to execute job tasks [57]. Remote work in a suitable environment generates a feeling of flexibility and enhances employees' motivation to complete job tasks, thus achieving organisational goals. In addition, remote work can improve job performance if it improves employees' time management, helping them to be consistently productive and to achieve better work-life balance [59]. Organisations could encourage effective remote work practices by providing high quality digitalisation and communication technology. This will eliminate employees' emotional exhaustion and maximise their job performance and productivity.

5.1. Theoretical implications

The results of this study indicate that integrating the TOE framework and the TPB can improve our understanding of how remote work practices affect employees' job performance. This study expands the theoretical literature on this topic. First, this study uses the TPB framework, specifically attitude and perceived behavioural control, to examine the effectiveness of remote work practices during the COVID-19 pandemic. The pandemic has made remote work the new normal for employees; however, the relationship between remote work and emotional exhaustion is still unclear. This study extends the theoretical framework of TPB by examining the effectiveness of remote work and

Table 2
Discriminant validity: correlation and square roots of the AVE.

Construct	Attitude	Concentration during remote work	Emotional exhaustion	Government Support	Job performance	Organization support	Perceived behavioural control	Technology competence	Work flexibility
Attitude	0.948								
Concentration during remote work	0.496	0.788							
Emotional exhaustion	-0.045	-0.129	0.913						
Government support	0.037	0.050	-0.147	0.918					
Job performance	0.414	0.545	-0.125	0.046	0.814				
Organizational support	0.223	0.206	-0.139	0.185	0.183	0.875			
Perceived behavioural control	0.451	0.369	-0.151	0.119	0.304	0.643	0.913		
Technology competence	0.231	0.295	-0.175	0.213	0.314	0.789	0.625	0.937	
Work flexibility	0.126	0.376	-0.317	0.055	0.147	0.311	0.320	0.340	0.845

Note: Diagonal elements reveal the square roots of the AVE. Bold means that the square roots of the AVE of each construct is greater than the construct's highest correlation with any other construct. Off-diagonal elements are the correlation coefficients between the constructs.

Table 3
Summary of PLS-SEM path analysis.

Path	Hypothesis	β	t-value	p-value	Supported?
Governmental support -> Technology competence	H1	0.21	3.143	0.002**	Yes
Government support -> Organizational support	H2	0.19	2.564	0.010**	Yes
Technology competence -> Perceived behavioural control	H3	0.28	2.918	0.004**	Yes
Organizational support -> Perceived behavioural control	H4	0.38	4.290	0.000***	Yes
Work flexibility -> Perceived behavioural control	H5	0.12	2.000	0.046*	Yes
Perceived behavioural control -> concentration required for remote work	H6	0.17	2.057	0.040*	Yes
Attitude towards remote work -> concentration required for remote work	H7	0.42	5.704	0.000***	Yes
Concentration required for remote work -> Emotional exhaustion	H8	-0.12	0.690	0.490	No
Concentration required for remote work -> Job performance	H9	0.55	9.989	0.000***	Yes

*p < 0.05; **p < 0.01; ***p < 0.001

the relationships between remote work, emotional exhaustion and job performance.

Second, this study advances the understanding of remote work. It extends the literature by examining several dimensions that affect employees' attitudes towards and ability to engage in remote work. The results can be used to optimise remote work productivity. Using the TOE framework, this study assessed how organisations, technologies and environments influence remote work. Our results suggest that all three dimensions can enhance employees' willingness to adopt remote work practices.

Third, this study provides a new perspective on the effects of employees' psychological attributes on the adoption of remote work. Studies in the applied psychology literature have shown that remote work arrangements lead to greater opportunities for emotional exhaustion because remote work reduces employees' social support [51, 52]. However, this study finds that remote work has no significant effect on emotional exhaustion. Technological support for remote work is like a "magic bullet" for ending emotional problems [55]. Low levels of emotional exhaustion are typically associated with perceived organisational support [79]. Employees with more positive attitudes and relations with their families are less likely to experience burnout because of work-family conflict. Thus, TOE-derived tools are important resources for helping employees to adopt remote work.

5.2. Practical implications

This study has important practical implications for various stakeholders including governments, organisations and employees. First, TOE tools are important resources for enhancing employees' willingness to adopt remote work practices. Government support is necessary to promote remote work, especially during the current pandemic. The government could prioritise remote work policies as a way to cope with the pandemic. The government plays a leading role in the diffusion of innovation throughout the community [21]. In addition, organisations, including government departments, should improve their technological competence, which would help their employees to recognise the benefits of remote work. For example, when Hong Kong's civil servants adopted remote work during the pandemic, government departments provided them with high quality equipment and services such as mobile devices, new computers, notebooks and updated software. This upgraded the communication, network and database capacities of government departments, both internally and cross-departmentally, and made it possible for their employees to work effectively while working remotely.

Technological support from their organisations allows employees to perform their duties in flexible workplaces, including their homes, with the support of comprehensive technological systems that help them to execute daily job tasks [80]. Furthermore, management support is crucial to overcoming the challenges of remote working practices [28].

Small to medium size enterprises (SMEs) with limited resources cannot easily implement remote work as they may not be able to offer sufficient technological support [81]. Government funding (e.g., the Distance Business Programme with HK\$1900 billion in funding) could provide SMEs with online business support systems or technology-related enhancements [82]. Since April 2020, the Commerce and Economic Development Bureau has encouraged SMEs to improve their innovativeness in the post-pandemic period. To support this goal, it is giving HK\$55 million in subsidies to the development of 5G technologies. Remote work is becoming normal in the marketplace, and governmental, organisational and technological supports are needed to optimise employee productivity.

6. Conclusions and limitations

Remote work has increased during the COVID-19 pandemic, establishing a new normal that reflects the current reality of work life. This study uses the TPB and TOE framework to examine the factors affecting remote work practices and job performance. This study contributes to the understanding of remote work. It identifies factors, including government support, organisational support and technological competence, that enhance employees' attitudes towards and ability to perform remote work. TPB suggests that attitude and perceived behavioural control are important predictors of individual behaviour. By applying TPB, this study shows that employees' attitudes and abilities are positively related to successful remote work in the digital age. Furthermore, our findings demonstrate that remote work is positively related to job performance and has no significant relationship with emotional exhaustion. Clearly, remote work is a long-term and effective strategy for improving employees' job performance. Therefore, to prepare for this new work environment, governments and organisations should provide support to the employees, including technical support.

This study has some limitations. The sample consists of working people in Hong Kong; future studies could be conducted in other Asian countries, such as Singapore, Japan and Taiwan, to test the generalisability of the results. Moreover, the study used a cross-sectional design. Given the continuous changes caused by the pandemic, a longitudinal analysis is needed to understand ongoing trends in remote work. This study found no relationship between emotional exhaustion and remote work. However, future research could further explore the emotional effects of remote work by examining other psychological attributes, such as mental stress or loneliness.

Author statement

Peggy M. L. Ng: Supervision, Conceptualization, Methodology, Software, Writing – original draft. **Kam Kong Lit:** Investigation, Visualization, Validation, Writing- Reviewing and Editing, Project administration. **Cherry T. Y. Cheung:** Resources, Methodology, Formal analysis, Writing – review & editing.

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Declaration of competing interest

None.

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