

Telecommuting and Employee Productivity: Mediating Role of Work-Family Conflict and Autonomy [†]

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Abstract: A flexible work arrangement known as telecommuting enables employees to work remotely from their homes or other locations. Telecommuting work arrangements demonstrate that work is no longer a place but rather what you do, and this new working model is expected to persist and become more popular. Even with inevitable quibbles, their similarities outweigh their differences and provide more benefits to both firms and employees. Despite its significance, the implementation of telecommuting has caused some firms to question how effective their employees are at work. Here, the researchers use two mediating variables to identify the association and interactions of autonomy and work-family conflict with employee productivity. This study used a quantitative research design, convenience sampling technique, and sample size of 155, and data were analyzed with Smart PLS. The key inside this paper is indicated that autonomy mediates and has a crucial influence on employee productivity. The telecommuters were to have more control over their schedules, making it easier to balance work and personal obligations and possibly reducing stress and improving work-life balance, which contributes to better performance.

Keywords: telecommuting; work-family conflict; autonomy; employee productivity

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1. Introduction

The telecommuting work arrangement was first applied way back in the 1970s by [1]. Ref. [2] define telecommuting as working from anywhere that employees feel comfortable working using tools and devices such as smartphones, tablets, desktop computers, and notebooks while online remotely with their workplaces, organizations, clients, and others. As authors, Ref. [3] noted that telecommuting is another operational mode that requires technology. Telecommuting is a flexible work arrangement that permits work to be done remotely, from an employee's home or other location, thereby benefiting both parties; employees and organizations [4]. Despite some arguable variances, their similarities outweigh their differences. They all refer to outside-the-office work that uses ICT to connect. Telecommuting, telework, and remote work are now synonymous.

Telecommuting reduces traffic and parking concerns, especially in major cities. A recent study found that companies that enable telecommuting have higher productivity, a better work atmosphere, more accessible access to talent pools, and lower absenteeism, attrition, and costs [5]. Teleworking improves well-being, work-life balance, performance, motivation, satisfaction, and autonomy and reduces stress and work-family conflict [6]. However, too many telework hours might impair employee productivity and stress levels. In addition, the pandemic that devastated global health systems and the potential for future illnesses may motivate teleworkers [7]. This new phenomenon opens new possibilities for further experimentation and, eventually, the implementation of telecommuting. The organization's concerns in health and safety, supply chain, labor force, cash flow, business

demand, marketing, and public health are reshaping the world's sustainable future. Sustainability, according to [8], sustainability achieves economic balance and responsibility. Telecommuting provides a workaround for the organization to operate for its sustainability and development despite lockdowns and movement control orders, according to [7].

According to previous research, the introduction of telecommuting has provided some insight into employees' productivity levels. Although previous studies strongly suggested that when employees telecommute or work remotely, it contributes to many other benefits besides increasing employee productivity, there is some gap the researchers wanted to discover in this study. For instance, authors [9] in their study, found that employees that work in a virtual office concept or telecommuting are those who can choose where and when to execute their work, significantly emulate a higher level of job satisfaction, and contribute to higher employee productivity. This finding was discovered earlier by [10]. They added that besides contributing to higher employee productivity, job satisfaction also translates to benefits for the employer with lower employee turnover. The employees have a higher organizational commitment and a lower or weaker possibility of resigning and leaving the organization.

There are numerous reasons for implementing telecommuting, including reducing the time spent traveling to and from work, coping with rising travel costs, reducing the risk of hazards and diseases, implementing a business continuity strategy, and assisting employees with work-life balance in the workplace. These factors have been supported in the studies done by [11] and emphasize that employees can fulfill the demands of work-life balance with flexible work scheduling. Another study by [12], found that one could achieve a work-life balance when fully involved, engaged, and committed to work, social, and family demands. There is no conclusive definition for it. The work-life balance depends on an employee's capacity to meet work and life's multiple demands and responsibilities. With telecommuting, there is the opportunity to work hours flexibly and fulfill the work-life balance.

However, today's employees are more concerned about the conflicting demands of work and family duties. Telecommuting with a flexible work schedule is likely to be viewed as a desirable perk that can assist in achieving a healthier work-life balance. Even though telecommuting is a modern notion, and some organizations are experimenting with it, it is not acceptable for the outlined reasons discussed above. Employers and organizations have acknowledged the significant flexibility in working environments where employees have a sense of autonomy and perform at their best.

2. Literature Review and Hypothesis Development

2.1. Telecommuting and Employee Productivity

In [13] stated that employees' ability to meet or exceed agreed-upon job tasks with the provided tools, technologies, and procedures is employee productivity. In this context, telecommuting is a procedure to achieve employee productivity. Authors [14] found that the call center employees in a large Chinese travel agency were randomly selected to work from home most days and only came to the office to attend training. The authors stated that after nine months of telecommuted increased, their productivity by 13% compared to their colleagues who worked from the office. Staff retention improved by half among telecommuters.

They believe call center employees' jobs are particularly well-suited for telecommuting as they do not involve collaboration or face-to-face time [14]. Another study done by [15] stated that managers in 73% of the Dutch teleworking organizations said that telecommuting boosted their productivity, and 60% of the Dutch managers said that higher work motivation was too due to credit for their increased production. Using a natural experiment with a public sector organization in the United Kingdom [16], discovered that productivity is higher when teammates are in the same room and that the effect is more substantial for urgent and complex work. Teleworking, they argue, is unsuited for tasks that necessitate face-to-face communication. According to [17], based on an experimental

approach, telecommuting has a good impact on the productivity of creative work but a negative impact on the productivity of boring tasks.

Telecommuting has increased employee productivity and performance [18], since employees can choose how and when to complete tasks, improving and increasing productivity. The authors concluded that telecommuting impacts employees, families, and organizations better. Hence, it benefits employees to improve how they do the work, contributing to best organizations practices. Telecommuting arrangements in working from anywhere (WFA) could be even better for productivity than working from home, depending on the type of work. According to [19], work-from-home arrangements presuppose that employees reside close enough to the office to commute a few days a week or as needed. They asserted that work-from-anywhere agreements enable employees to work remotely and physically away from their firm's offices.

The authors' research in [20] reveals the impact of job stability as the most significant and critical element of perceived teleworking productivity. Employees perceived that telecommuting does not jeopardize their job performance, and employers acknowledged the fact. Hence, the hypothesized:

H1. *Telecommuting will have a significant influence on employee productivity.*

2.2. *The Mediating Effect of Work-Family Conflict (WFC)*

Flexible work schedules are one of the characteristics of telecommuting, as employees can adjust their time between completing their work and attending to family demands, respectively. In their study paper, Telecommuting's Differential Impact on Work-family Conflict [21], surveyed 454 respondents who telecommute and work in the office. The authors focused on the impact of working from home or telecommuting on work-to-family conflict (WFC) and family-to-work conflict (FWC). The WFC defines working while interfering with family responsibilities, while FWC is the interfering of a family with work duties.

Other authors [22], have examined the temporal nature of telecommuting and its impact on work overload, exhaustion, and work-family conflict. After studying 600 Certified Practising Accountants (CPA) Australia participants, the researcher found that telecommuting during office hours improved coping with work overload, reduced after-office hours work, and decreased work-family conflict. Work-family conflict is the failure to reconcile work and responsibility roles with family [23]. It happens when work and family responsibilities are incompatible. According to [24], it is causing incompatible pressures from work and family roles.

In the year 2020, Ref. [25] concluded that work-family conflict happens due to the interference of one role: work/family or family/work; and complying with expectations. It's identified as weakening employee responsibility's different roles (work and family). According to [26], from the findings of the study, telecommuting after work hours is related to both work-family conflicts, i.e., work interference with family (WIF) and family interference with work (FIW). They stated that telecommuting from home after work hours significantly benefited employees through cost savings.

As stated earlier, flexible work schedules are a component of telecommuting, favoring employees in managing their personal needs. Thus, employees assume that organizations support them in managing and coping with work-family demands [27]. They were known as the signaling theory: flexible work schedules contribute to employees' positive perceptions and increase their job satisfaction and commitment, leading to increased productivity. In researcher study [28], used signal theory to explain how this results in increased job satisfaction and commitment among employees and increased productivity. According to [29], the availability of flexible work schedules may increase employees' feelings of control over work-family issues and benefit their ability to cope with work-family conflict. The studies regarding work-family conflict do not support a causal relationship. WFC makes work hours a significant aspect; as a result, telecommuting is proposed and mediated by WFC. Hence, the hypothesized:

H2. *Work-Family Conflict (WFC) will mediate the relationship between telecommuting and employee productivity.*

2.3. The Mediating Effect of Autonomy

Employee satisfaction is strongly correlated with a sense of control over one's work environment, and this study found that telecommuters reported higher levels of autonomy in their jobs. Employees stay with the company without motivation to leave, de-stress, improved work-family balance, and higher employee productivity ratings by their reporting manager and supervisor [30]. According to [18], telecommuting allows employees to carry out their job obligations outside of the workplace, uncontrolled by their supervisor. Telecommuting gives individuals autonomy and the capacity to manage the allocated work. They could schedule their work according to their preferences without jeopardizing its completion. Ref. [31], on the other hand, found that the level of autonomy could depend on the telecommuting job, the processes and procedures in place, the equipment used, and the type of work done at home or elsewhere [6].

In the 1970s, authors [32] defined autonomy as the degree to which employees have control and discretion over how they carry out their tasks, consistent with self-determination theory (SDT). This macro theory identifies the origins and consequences of human agentic action [33]. This SDT explains the interaction between need satisfaction and intrinsic motivation and the management of extrinsic motivation. More precisely, autonomy is defined [34] as the degree to which an individual considers his or her acts as the outcome of his or her own free choice, independent of external influence in a particular context. Thus, employees become intrinsically driven when they believe their decisions and actions are independent.

A meta-analysis by [30] involving 12,883 employees found that telecommuting is beneficial for psychological autonomy and work-family conflict. Additionally, Ref. [35] found an association between telecommuting and higher job performance evaluations from managers. These studies supported [36]. They explored how telecommuting design influences the work environments and outcomes through its effects on their social system, autonomy and self-management opportunities and needs, and role limitations [36]. Most recent studies suggest that autonomy as an intangible element, besides salary and pay, will be a motivating factor in increasing and changes in productivity [37]. The authors concluded that perceived autonomy, rather than total autonomy, influenced work determination and quality and that organizations must use appropriate interference to achieve higher productivity levels. They also noted that telecommuting employees had increased autonomy and that autonomy influenced their behaviors.

Understanding autonomy is significantly more vital with the increase in telecommuting. Thus, the following hypothesis was made:

H3. *Autonomy will mediate the relationship between telecommuting and employee productivity.*

3. Materials and Methods

3.1. Sample and Data Collection

To test the hypotheses, the researchers used online self-administered questionnaires to collect the data. Our procedure for delivering the questionnaire was based on [38]. The questionnaire was validated by an industry expert and two representatives from UiTM academicians.

A total of 175 were distributed to the headquarter of the private organization in the Klang Valley through Google form that integrated with WhatsApp and corporate email. A total of 155 responses were gathered and analyzed during the collection period. Therefore, the total response rate for collected questionnaires is 89%. Table 1 demonstrates the demographic information of the respondents. The sample consisted of 56.8% females and 43.2% males. In most of the sample, 53.5% identified themselves as married, 43.9% as single, and 2.6% as single parents. About 11.0% of the respondents were newly employed with the organization, with the working years less than a year, followed by 19.4% between

1–2 years, 16.1% between 3–4 years, 19.4% between 5–10 years, and highest 34.2% having been with the organizations for more than 10 years. Most respondents were permanent employees with 81.9% and contract positions reported 18.1%. The participants varied in organizational position within the organization, with 20.0% as non-executive, 53.5% as executive, 5.8% assistant manager, 14.2% manager, 3.9% senior manager, 0.6% general manager and 1.9% director level.

Table 1. Respondent Profile.

Profile	Frequency	Percent (%)
Gender		
Female	88	56.8
Male	67	43.2
Marital Status		
Single	68	43.9
Married	83	53.5
Single Parent	4	2.6
Working Years		
Less than a year	17	11.0
1–2 years	30	19.4
3–4 years	25	16.1
5–10 years	30	19.4
More than 10 years	53	34.2
Employment Status		
Permanent	127	81.9
Contract	28	18.1
Current Position		
Non-executive	31	20.0
Executive	83	53.5
Assistant Manager	9	5.8
Manager	22	14.2
Senior Manager	6	3.9
General Manager	1	0.6
Director	3	1.9

3.2. Measures

Telecommuting was measured using four items, “I could adopt telecommuting arrangement”, “I have demonstrated interest in telecommuting”, “Implementing telecommuting brings a positive impact on my organization”, and “I agree that my organization has a proper design and planning in implementing telecommuting”. The items were measured from 1 (strongly disagree) to 5 (strongly agree).

Work-Family Conflict (WFC) construct was assessed through a five-item scale using five items, “The demands of telecommuting interfere with my home/family life”, “The amount of time telecommuting takes up makes it difficult to fulfill home/family responsibilities”, “Things that I want to do at home do not get done because of the telecommuting demands”, “The telecommuting produces strain that makes it difficult to switch off and enjoy home/family life”, and “Due to the telecommuting related, I often make changes to my plans for home/family”.

Autonomy was measured using five items, “When I am telecommuting, my manager allows me to make my own decisions about how to schedule my work, to make decisions on approaches use to complete my work, to plan how I execute my work, to make my own decision at many of the time” and “offers me a significant chance for freedom in how I do and complete the work”.

Employee productivity construct was measured and assessed through a five-item scale [39], “My manager evaluated me as an effective employee”, “consistently satisfied with my work output”, “agreed that I work at a very steady pace”, “I am a highly productive employee”, and “believe that I am competent worker”.

3.3. Normality

According to [40], skewness measures the normal distribution’s symmetry, or more precisely, its lack of balance. Kurtosis is a measure of a distribution’s peaked ness. If the skewness or kurtosis of the distribution results in a z value in the range of 1.96 for a small sample size (n 50), the distribution is approximately normal. However, it has been found that the sample distribution is normal for medium-sized samples (50 n 300), resulting in an absolute z value of 3.29. Table 2 indicates the normality of skewness and kurtosis for the independent, dependent, and mediating variables is listed below.

Table 2. Descriptive Statistics.

Constructs	Skewness Statistic	Kurtosis Statistic
TELE12	−1.123	1.485
TELE13	−1.114	1.161
TELE14	−0.813	0.542
TELE15	−0.608	−0.335
WFC16	−0.470	−0.695
WFC17	−0.405	−0.789
WFC18	−0.149	−1.027
WFC19	−0.374	−0.792
WFC20	−0.492	−0.696
AUTO21	−0.948	0.464
AUTO22	−1.085	1.270
AUTO23	−0.729	0.332
AUTO24	−1.042	1.060
AUTO25	−1.071	0.904
EP31	−0.697	0.586
EP32	−0.625	0.257
EP33	−0.413	−0.510
EP34	−0.478	0.130
EP35	−0.646	0.629

TELE = Telecommuting, WFC = Work-family Conflict, AUTO = Autonomy, EP = Employee. Productivity

3.4. Reliability

Cronbach Alpha was done to analyze the reliability of the data, and that seemed to be similar to the literature. Table 3 demonstrates the scale used for measuring the constructs of Telecommuting, Work-family conflict, Autonomy, and Employee productivity, was taken from the research. Cronbach’s Alpha coefficient of the studied variables was more significant than 0.7; hence it can be concluded that the data is reliable.

Table 3. Reliability of the study.

Variables	Cronbach’s Alpha for Pilot Study (n = 30)	Cronbach’s Alpha for Actual Study (n = 155)
Telecommuting	0.857	0.862
Work-family conflict	0.869	0.926
Autonomy	0.985	0.960
Employee Productivity	0.957	0.945

3.5. Data Analysis

The data were analyzed by employing statistical software to assess the psychometrics of the measurement model and estimate the parameters of the structural model. The validity and reliability of the measurement model are evaluated by assessing the internal consistency reliability, indicator reliability, convergent validity, and discriminant validity.

3.6. Measurement Model

Internal consistency reliability (CR) is higher than 0.7 for all constructs. Outer loadings for all indicators that have been used in this study were above the recommended stringent threshold loading value of more than 07 except for TELE 0.630 however the AVE for it was more than 0.5. Convergent validity for all AVE values is more than 0.5

Fornell and Larcker’s square root of each construct’s AVE should have a greater value than the correlations with other latent constructs and the cross-loadings criterion which each indicator load high on its own constructs, and this indicates discriminant validity is achieved. The HTMT values should be below a strict criterion of 0.85 for this paper, the value of HTMT was all lover than the stricter criterion mentioned which concluded that the respondents understood that all constructs are distinct.

3.7. Structural Model

The coefficient of determination (R^2) value should be equal to or greater than 0.1 and this result indicated that R^2 for employee productivity is at 0.358 and R^2 adjusted is 0.340, hence, the predictive capability is established.

4. The Findings

Table 4 indicates the hypothesis testing for this paper. The hypothesis (H1) revealed no significant positive relationship between telecommuting and employee productivity. As for the hypothesis-specific indirect effects (H2 and H3), using the Smart PLS 3, run the bootstrapping consistently. The researcher can access specific indirect effects, which is relatively convenient as this paper involves multiple mediating variables. The H2 is not significant, which means that the influence of IV and DV is not passing thru the mediator. Only H3 is significant and accepted, meaning autonomy mediated the IV on DV. Hence, the employees who perform telecommuting have more autonomy in their work, making them more productive. Autonomy impacted the determination and quality of work done, achieving a higher employee productivity level.

Table 4. Hypothesis Testing Direct and Specific Indirect Effects.

Path	Effects	β	t	p	Confidence Intervals
H1 (Telecommuting- > Employee Productivity)	Total Indirect	0.364	5.090	0.855	(−0.185, 0.151)
H2 (Telecommuting- > Work-family Conflict- > Employee Productivity)	Specific Indirect Effect	0.020	0.595	0.552	(−0.044, 0.094)
H3 (Telecommuting- > Autonomy- > Employee Productivity)	Specific Indirect Effect	0.254	4.926	0.000	(0.165, 0.362)

5. Discussion and Recommendation

The current study looked at how telecommuting affects employee productivity, as well as how it affects work-family conflict and autonomy. According to the studies, telecommuting does not considerably boost employee productivity. This scenario is said to be due to a typical blunder made by employers that force employees to work during set hours rather than allowing them to work when it is most convenient for them when telecommuting. To achieve employee productivity, employers or organizations must integrate the flexibility aspect [6] when introducing or supporting telecommuting for their employees [18]. Employees had more flexibility over their time and more options because of flexible work arrangements [41]. Distraction is, in fact, another critical issue that arises because of telecommuting. According to this study, employees telecommute face 51% of the time. The claim was supported based on the previous study by [42], which indicated that distractions negatively influence telecommuters’ productivity.

The location, whether at home or elsewhere, determines the productivity-enhancing effectiveness of telecommuting [19]. When an organization implements telecommuting,

the critical points to consider are the location and the employee's family size. If the employees need to share space with other family members in a tiny house with a large family, they will not have adequate placement or workstation. Without a designated workstation, it is difficult for the employee to draw a line between household and business responsibilities [43].

Aside from distraction and internet bandwidth, according to this report, one of the most significant obstacles for employees working from home is a lack of a designated workspace (39%) and a lack of infrastructure for video conferencing (32%). Organizations need to invest in or give one-off payments to their employees to purchase the furniture and equipment for their home offices to give them a better telework experience. Ref. [44] discovered that this study confirmed that work-family conflict increases when telecommuting. Work-family conflict exacerbates when a failure to set clear lines and boundaries between work and personal life results in work interfering with home life and vice versa [44]. Working women, married or single parents with children under 18, and the elderly, who wear numerous hats at home: worker, wife, mother, and daughter [45], should pay special attention to this factor. Women make up 56.8% of those who responded to the survey.

Employers could develop practical instructions for employees to set boundaries and examine their expectations of telecommuters to address the problem [10,30]. Having a day-care arrangement for youngsters or the elderly and not attempting to multitask while working, which could lead to work-family conflict, is one example of such a barrier [6,46]. Employers should also provide guidelines, proper equipment, and training to assist employees in dealing with the challenges of telecommuting [43]. These might help to reduce work-family friction.

Autonomy has a favorable association with employee productivity, according to our research. Employees who telecommute do so to have more control over how they execute their job. In essence, telecommuting is supposed to give people more control over their schedules, making it easier to balance work and personal obligations, reducing stress, and improving work-life balance.

Employees who telecommute did not connected to a centralized office have more autonomy and flexibility in organizing their work and personal commitments, which benefits work performance and productivity. Employees have freedom in how and when they complete their work without physical monitoring. They might also alter their work schedules, take time off, and attend to personal affairs without jeopardizing their yearly leave or job quality [47].

6. Conclusions

The study's main goal was to investigate how telecommuting impacts employees' productivity levels. The findings signify that employees' productivity level increases when employees telecommute, mediated by the autonomy variable. The employees who telecommute have greater control and autonomy, which leads them to become more content with their work. Every employee has different productive times; therefore, telecommuting will allow employees to take advantage of their most productive time by performing their work the time. Overall, we believe this research has significantly contributed to assisting the organization and perhaps help others to decide whether to permanently implement telecommuting mode of work and invest in its enhancement.

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