The Impact Of Flexible Working Arrangements On Employee Productivity: The Mediating Role Of Work-Life Balance

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Abstract.

This study examines the impact of flexible work arrangements on productivity in start-up companies located in Bandung Techno Park, using work-life balance as a mediating variable. With a sample size of 168 start-up company members in Bandung Techno Park (BTP), this study uses a probability sampling technique. This study uses quantitative research techniques and structural equal modeling (SEM) based on partial least squares (PLS-SEM) for data analysis. Based on the results of the study, work-life balance and increased productivity are greatly enhanced by flexible work arrangements. The mediating variable of work-life balance acts as a mediator between productivity and flexible work schedules. The findings of this study can be a guide for business management who want to increase the productivity of start-up companies through work arrangement solutions that support work-life balance.

Keywords: *Flexible work arrangements; work life balance; productivity and startups.*

I. INTRODUCTION

Bandung Techno Park (BTP), established in 2010, is one of Indonesia's largest science and technology parks, primarily focused on Information and Communication Technology (ICT). BTP's vision is to become Indonesia's leading science and technology park by 2028, by promoting innovation and entrepreneurship that leverage technology, science, and arts to enhance economic growth. To achieve this, BTP operates through four key units Innovation and Business Incubation, Technology Solutions, Marketing, and Tenant & Support Services which serve as facilitators of various programs and services aimed at strengthening the entrepreneurial ecosystem. Indonesia ranks sixth globally and first in Southeast Asia in terms of the number of startups, with over 2,500 registered as of early 2024. Beyond quantity, the resilience and quality of Indonesian startups are increasingly recognized across Asia. These startups contribute approximately 4% to the nation's GDP and have proven instrumental in sustaining the economy during the COVID-19 pandemic. However, despite this growth, the startup ecosystem in Indonesia still faces challenges, notably the high rate of failure. Data from the Ministry of Communication and Information Technology (Kemenkominfo) in 2022 reveals that only 10% of startups under the 1000 Startup Movement survived, citing reasons such as limited funding, lack of product-market fit, and weak sustainability strategies.

BTP supports startups through programs like FJIP, WRAP, and UPWARD Incubation, which offer flexible work arrangements (60% hybrid, 30% offline, 10% online). Despite these options, challenges persist in maximizing co-working spaces and bootcamp attendance, crucial for focus and productivity. Unmanaged flexibility often leads to frequent after-hours communication, disrupting personal time and potentially harming work-life balance, as unmanaged flexibility can reduce productivity and negatively impact mental and physical health. To systematically assess startup development, BTP utilizes the Startup Readiness Level (SRL) framework, adapted from Steve Blank, for quarterly monitoring. While some startups thrive, others stagnate, highlighting the critical need for tailored mentoring and support to improve SRL and long-term success. This further underscore the importance of exploring how flexible work arrangements impact productivity, with work-life balance acting as a mediating factor, supported by prior research.The transformation of work patterns in response to dynamic labor market demands has given rise to the concept of flexible working arrangements.

This transformation is also driven by the rapid advancement of technology, particularly in the field of Human Resources (HR), where innovations such as blockchain [26] that have enabled more transparent data management, and real-time employee monitoring. While technology facilitates flexible work environments, the effectiveness is also shaped by organizational culture and the quality of human capital. A study found that organizational culture significantly influences intellectual capital, which in turn affects competitive advantage [27].Flexible working arrangements are defined as formal or informal organizational policies that allow employees to choose their own work schedule, location, and working hours based on their needs [9]. These policies aim to support adaptive work structures that enhance both organizational effectiveness and individual work-life balance. Dessler on [10] explains that flexible working arrangements can take various forms. This study adopts two overarching domains of flexible work arrangements—time flexibility and place flexibility—as supported by recent studies [11], [12], [13], [14], [15], [16], and [17]. In the context of flexible work, work-life balance emerges as a crucial concept. Ricardianto in [18] defines work-life balance as a professional arrangement that enables individuals to harmonize their work and personal lives. It is shaped by how professional and personal domains influence one another, impacting employee performance. Maintaining a healthy work-life balance enables individuals to be more effective and efficient, enhancing both personal well-being and organizational productivity.

This balance encompasses not only time management but also psychological well-being and satisfaction. A well-balanced life positively affects motivation and job satisfaction [29]. In line with this, previous research shows that both job satisfaction and organizational commitment are associated with a lower tendency to leave the organization [30]. Alongside flexibility and balance, productivity remains a core performance indicator in organizational studies. Productivity is commonly defined as the result of efficient resource use and successful goal attainment, combining both efficiency and effectiveness [19]. According to [20] even small, consistent improvements in daily performance can significantly influence long-term productivity outcomes. On an organizational scale, [21] emphasizes the importance of how effectively employees manage their time and execute key tasks. Productivity is not only about outcomes but also encompasses behaviors such as initiative, focus, and adaptability. [22] identifies several dimensions that contribute to productivity, including a conducive work environment, attention to employee feedback, workplace safety, and healthy employee-management relationships. [23] further highlights that effective goal achievement and operational efficiency are central to productivity. [24] adds that work discipline and motivation are also crucial. A more structured classification by [25] categorizes productivity into two core dimensions: effectiveness and efficiency. These dimensions provide a useful foundation for developing self-assessment tools that offer a holistic and qualitative approach to productivity measurement, extending beyond numerical indicators.

Therefore, this study aims to investigate the implementation of flexible work arrangements among startups at BTP and how they impact startup productivity, both directly and through the lens of work-life balance. The research questions guiding this study are:

a. How do flexible work arrangements affect employee productivity in startups at Bandung Techno Park (BTP)?
b. How do flexible work arrangements affect work-life balance in startups at Bandung Techno Park (BTP)?
c. How does work-life balance affect startup productivity at Bandung Techno Park (BTP)?
d. How does work-life balance mediate the relationship between flexible work arrangements and employee productivity in startups at Bandung Techno Park (BTP)?

II. METHODS

This study's research methodology takes a quantitative approach. According to Apuke (2017), by gathering numerical data and applying mathematical techniques, especially statistics, to analyze it, quantitative research explains a problem or phenomenon. Testing hypotheses, analyzing interactions, looking at cause-and-effect linkages, and making predictions are the goals of quantitative approaches. A non-experimental or associative research design is one type of quantitative approach that does not involve

manipulation of the independent variable [1]. This design includes various methods such as correlational studies that explore relationships between variables, descriptive studies that portray characteristics of a population or phenomenon, and survey studies that gather data from a population sample to generalize [1]. The population in this study consists of all employees of startups under the guidance of Bandung Techno Park (BTP), totaling 243 individuals, with the criterion that the startups have been operating for approximately one year. Indrawati [2] identifies a sample as a subset of the population chosen for a study's treatment, input, or observation. As a population representation, sampling is essential to guarantee the validity of study findings. Slovin's algorithm was used to calculate the study's sample size, which produced a minimum of 151 responders.

Probability sampling, more especially the basic random sample approach, is the sampling strategy employed. The technique of choosing sample members at random from a population without considering any preexisting strata is known as simple random sampling [3]. This technique was chosen because the population is considered homogeneous, meaning all members share relatively similar characteristics that are relevant to the research objectives. In this research, data was collected using a questionnaire. A questionnaire is a method that involves asking respondents a set of open or closed questions [4]. The study uses a quantitative analysis method through Structural Equation Modeling (SEM), specifically Partial Least Squares SEM (PLS-SEM). PLS-SEM is suitable for causal-predictive modeling and explaining variance in dependent variables [28]. The Measurement Model (Outer Model) and the Structural Model (Inner Model) are the two primary phases of the SEM technique. The Measurement Model evaluates the relationship between constructs (latent variables) and their indicators (manifest variables) using reliability and validity assessments such as factor loadings, convergent validity, indicator reliability, and discriminant validity. The Structural Model examines the proposed connections between latent variables, distinguishing between exogenous variables (independent) and endogenous variables (dependent). This two-step analysis ensures the model's measurement accuracy and the validity of causal relationships between variables.

III. RESULT AND DISCUSSION

After distributing and collecting questionnaires between February and March 2025, a total of 175 respondents participated. However, 7 responses were excluded as they did not meet the research criteria based on the screening questions. As a result, 168 valid responses were obtained and used for the subsequent analysis stages. To ensure accuracy, the instrument's validity is tested to confirm its reliability as a data collection tool. The analysis is conducted using PLS Software version 4 for Microsoft Windows, with discriminant validity evaluated through the Average Factor Loadings. This section evaluates the measurement model to determine the relationship between latent constructs and their indicators. The assessment includes validity and reliability tests.

Outer Model

The indicators for each construct, including flexible working arrangement, work life balance, and productivity are reflected in the external model. As a result, the arrows in the measurement model point from the construction to the indicators. The design of the outer model, created using SmartPLS software, is shown in Figure 1 below.

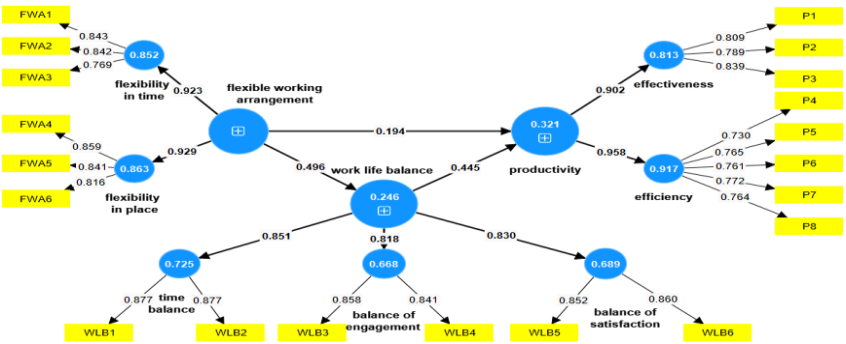

Fig 1. Outer Model (Stage 1 Test Results)

Source: Data processed using Smart PLS

Validity & Reliability Test

Validity is tested using convergent and discriminant validity. While reliability is assessed using Cronbach's Alpha and Composite Reliability. All indicators have met the rule of thumb convergent validity, which includes a loading factor above 0.7 according to [Fig. 1] and all construct dimensions have an Average Variance Extracted (AVE) value above 0.5.

Table 2. Average Variance Extracted (AVE)

Variables	AVE	Critical Value	Description
Flexible Working Arrangement (FWA)	0.857	0,5	Valid
Work Life Balance (WLB)	0.869	0,5	Valid
Productivity (P)	0.694	0,5	Valid

All indicators have met the rule of thumb for discriminant validity, as seen from the cross loading of each indicator, where all items measure better against their construct than against other constructs. The reliability rule of thumb has been met, with all construct dimensions having a Cronbach's alpha of more than 0.7 and a composite reliability of more than 0.7 as well. The Latent Variable Score (LVS) of each construct dimension corresponding to the number of samples was then reused in the model for stage 2. Figure 2 below shows the structural model for stage 2.

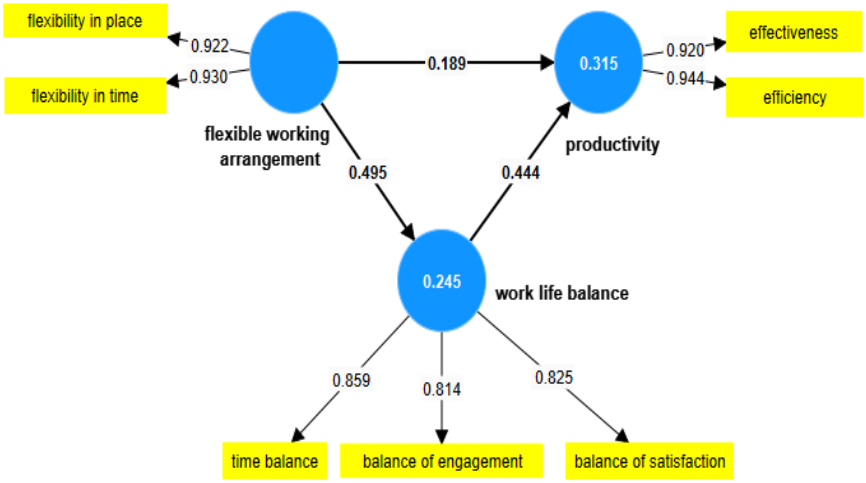

Fig 2. Outer Model (Stage 2 Test Results)

The value listed on the line connecting the indicator with the construct or latent variable is the loading factor value. In the outer model stage 2 analysis for reflective measurement items, the process is the same as in the outer model stage 1 analysis. The results are shown in Table 3 below. In terms of convergent validity, discriminant validity, and reliability, all meet the rules of thumb.

Table 3. Outer Model Stage 2 Test

	Indicator	*Loading Factor*	AVE	*Cronbach's Alpha*	*Composite Reliability*
Flexible Working Arrangement	Flexibility in time	0,922	0,857	0,834	0,923
	Flexibility in place	0,930			
Work Life Balance	Time balance	0,859	0,869	0,850	0,930
	Balance of engagement	0,814			
	Balance of satisfaction	0,825			
Productivity	Effectiveness	0,920	0,694	0,780	0,872
	Efficiency	0,944			

Source: Data processed using Smart PLS

It is possible to infer that all the indicators that make up the constructions are trustworthy based on the findings shown in Table 3. Put differently, Cronbach's alpha and Composite Reliability values greater than 0.7 (the critical value) show that all manifest variables have shown accuracy, consistency, and precision in measuring their respective constructs, indicating that each construct has a high level of reliability [3].

Structural Model Evaluation (*Inner Model*)

In the R-Square Rule of Thumb test to assess R-Square (R2), the dependent variable should be ≥ 0.10. Table 4 shows the results of the R-Square test.

Table 4. Coefficient of Determination (R^2)

Variables	R Square	R Square Adjusted
Work Life Balance	0,245	0,240
Productivity	0,315	0,307

Path coefficient estimates were calculated using the bootstrap procedure. This step also served as a hypothesis test. If positive and significant, the hypothesis was accepted. The calculation results are shown in Table 5 below.

Table 5. Path Coefficient

Hypothesis		Path Coefficient	T Statistics	P Values	Description
H1	FWA → P	0,189	1.521	0.128	Positive and not significant
H2	FWA → WLB	0,495	4.065	0.000	Positive and significant
H3	WLB → P	0,444	4.277	0.000	Positive and significant

The test results show that H2 and H3 are accepted. In line with the initial assumption that flexible working arrangements can affect productivity, and work life balance can affect productivity. The first hypothesis test confirms that H1 is rejected. The influence of flexible work arrangements on productivity is found to be not significant, as the α value is more than 5% (0.05).

Table 6. Mediation test

Hypothesis		Path Coefficient	T Statistics	P Values	Description
H4	FWA → WLB → P	0.220	2.843	0.004	Positive and significant

The impact of flexible work schedules on efficiency is successfully bridged by work-life balance, according to this report. It demonstrates that implementing flexible work arrangements can successfully enhance employee performance outcomes when it results in a better work-life balance.

Discussion

The interpretation of the analysis results can be explained from Hypotheses 1, 2, 3, and 4 as follows:

1. H1. Flexible Working Arrangements for Productivity

The results of hypothesis 1 were rejected, as flexible working arrangements were found to have a positive but statistically insignificant effect on productivity. This finding contrasts with the result of [5] who reported a significant positive relationship between work flexibility and productivity. This discrepancy may be attributed to differences in the dimension of flexible working arrangements. Supriatna et al [5], examined three dimensions; Time Flexibility, Timing Flexibility, and Place Flexibility, whereas this study only used two dimensions: Time Flexibility and Place Flexibility.

2. H2. Flexible Working Arrangements on Work Life Balance

Hypothesis 2's findings were confirmed, indicating that user experience is significantly improved by the digital divide. The hypothesis's adoption is consistent with the results of [6]. The study found that flexible working arrangements significantly influence all forms of work-life balance. Flexible working arrangements practices show that the more flexibility employees experience in managing their work hours and locations, the more balanced they feel between their professional and personal lives.

3. H3. Work Life Balance on Productivity

Hypothesis 3's findings were confirmed, indicating that work-life balance significantly boosts productivity. Earlier studies [8] stated that work-life balance significantly affects productivity and shows a consistent positive correlation with productivity. This suggests that the more balanced employees feel between work and personal life, the more likely they are to perform better.

4. H4. Work Life Balance as Mediation

The work-life balance has a role as a mediating variable, according to the results of Hypothesis 3. This is demonstrated by the indirect impact value, which shows a positive and significant correlation between work-life balance and productivity and flexible work arrangements. This validates earlier studies carried out by [7], research discovered that, as an intervening variable, flexible working arrangements affect positively work-life balance. These findings highlight that the positive impact of flexible work isn't just direct; it's also significantly mediated by how well employees can balance their professional and personal lives

IV. CONCLUSION

The research found that the most significant influence on flexible working arrangement variable comes from the dimension of time flexibility. For the work-life balance variable, the strongest influence lies in dimension time balance. Lastly, the productivity variable is most influenced by dimension efficiency. These findings highlight the critical role of autonomy and time management in supporting employee productivity within flexible work environments. Based on the results of the analysis and discussion presented in the previous chapters, this study draws several important conclusions. First, flexible working arrangements do not significantly influence productivity. This means that when flexible work is good, it cannot substantially enhance employee productivity.

Additionally, work-life balance is greatly impacted by flexible working arrangements; the better an employee manages flexibility, the better their work-life balance will be. Thus, productivity is strongly and favorably impacted by work-life balance. While a bad balance might result in decreased productivity, maintaining a healthy work-life balance can improve motivation, concentration, and general job performance. Finally, work-life balance can effectively mediate the relationship between productivity and flexible working options. Flexible work schedules have a significant effect on productivity because work-life balance serves as a mediator. These findings emphasize the importance of designing flexible work policies that not only provide autonomy but also actively support the well-being of employees to drive sustainable productivity in startup environments.

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