JOURNAL of APPLIED MANAGEMENT and BUSINESS

Journal of Applied Management and Business

The Influence of Flexible Working Arrangement on Employee Performance with Work Life Balance as a Mediation
Dhyah Harjanti, Ellen Harryman, Noerchoidah, Amanda Rizky Rossitika

The Influence of Locus of Control, Social Media, Financial Literacy on Gen-Z Online Investment Decisions
Lalita Christi Kumalasari, Edi Wijayanto, Nurul Hamida

E-Service Quality Factors and Customer Satisfaction in Shopee's E-Commerce Platform
Rachma Rizqina Mardhotillah, Berto Mulia Wibawa

Assessing the Economic Impact of the Pantawid Pamilyang Pilipino Program (4Ps) in the Philippines: A Systematic Review
Jayson Diaz

The Effect Of Workload, Work Motivation And Work Discipline On Civil Servant Performance During Remote Working Period
Nadyasyifa Annisa Syakur, Zackharia Rialmi

UNIVERSITAS Dinamika

JAMB
Journal of Applied Management and Business

4

Preface

Praise be to the presence of Tuhan Yang Maha Esa, because of His grace and grace, the Journal of Applied Management and Business (JAMB) can be published according to what was planned.

Journal of Applied Management and Business (JAMB) is a peer review journal published by Universitas Dinamika. This journal is published in July and December. Journal of Applied Management and Business (JAMB) is a learned journal in the management and marketing for a knowledge society, international and interdisciplinary in scope, JAMB keeps its readership well informed on all key aspects of business development, being an essential resource for policy makers and strategists across countries. Journal of Applied Management and Business (**JAMB**) is published in twice (Juli dan Desember) a year.

We would like to thank Dinamika University for its full support for the publication of the Journal of Applied Management and Business (**JAMB**). To the implementers of the community service program who have sent the results of community service and empowerment activities to the **JAMB** editor, and we would like to thank all parties, whether directly or indirectly involved.

Editor in Chief

Martinus Sony Erstiawan, S.E., MSA

Journal of Applied Management and Business (JAMB) is a peer review journal published by Universitas Dinamika. This journal is published in July and December. Journal of Applied Management and Business (JAMB) is a learned journal in the management and marketing for a knowledge society, international and interdisciplinary in scope, JAMB keeps its readership well informed on all key aspects of business development, being an essential resource for policy makers and strategists across countries.

Technical Handle:

●Atika Ilma Yani, A.Md dari Universitas Dinamika, Surabaya, Indonesia.

Publisher:

●Universitas Dinamika

Website:

● **http:**// e-journals.dinamika.ac.id/jamb

Email:

●jamb @dinamika.ac.id

Editor's Address:

●Raya Kedung Baruk No. 98 Surabaya

Tabel Of Content

Journal of Applied Management and Business
Vol. 6, No. 1, July. 2025

The Influence of Flexible Working Arrangement on Employee Performance with Work Life Balance as a Mediation

Dhyah Harjanti[1], Ellen Harryman[2], Noerchoidah[3*], Amanda Rizky Rossitika[4]

[1,2]Business Management Petra Christian University, Surabaya, Indonesia

[3]Faculty of Economics and Business, Universitas PGRI Adi Buana, Surabaya, Indonesia

[4]Information Systems Department, Sepuluh Nopember Institute of Technology, Surabaya, Indonesia

dhyah@petra.ac.id[1], d11200270@john.petra.ac.id[2], noerchoidah@unipasby.ac.id[3], amandarizkyr@gmail.com[4]

* Corresponding Author: noerchoidah@unipasby.ac.id

ARTICLE INFO

ABSTRACT

Flexible working arrangement (FWA) is increasingly being implemented to improve operational efficiency and employee welfare. Technological advances support the implementation of FWA, but challenges in human resource management remain. Work-life balance is a key factor that influences employee performance in a flexible work system. The study analyzed the relationship between flexible working arrangements, work-life balance, and employee performance to better understand the mechanisms underlying this relationship. This study used purposive sampling with 305 respondents. Data were gathered by means of Google Form and analyzed using the SEM-PLS method. Flexible work arrangements have a positive but insignificant direct impact on employee performance. However, FWA significantly has positive impact on work-life balance, which in turn improves employee performance and enacts as a mediator in the correlation. This study found that FWA improves employee performance through work-life balance as a mediator. The implications of the study encourage the effective implementation of FWA, with recommendations for further research on demographic factors and industry sectors.

Introduction

After Covid pandemic, the flexible working arrangement (FWA) concept has developed into a strategy increasingly being implemented by various companies to improve operational efficiency and employee welfare. FWA provides flexibility for employees in determining their work time and place, so it is considered a solution to various operational challenges, such as limited work facilities and changes in business patterns due to technological developments [1]. Rapid technological advancements also support the implementation of FWAs, allowing companies to manage their workforce more flexibly through various digital platforms and human resource management systems [2].

Although FWA offers many benefits, its implementation still faces challenges, especially in human resource management (HRM). Employees are expected to be able to organize work schedules independently, maintain productivity, and adjust to changes in the work environment without direct supervision [3]. Therefore, understanding the factors influencing employee performance in a flexible work system becomes very important for organizations to optimize their HR management strategies.

Among the primary factors affecting employee performance in flexible work systems is work-life balance. Prior research shows that work-life balance can improve job satisfaction, motivation, and employee productivity [4]. With flexibility in determining work schedules, employees have more control in adjusting work activities to personal needs, which can reduce stress levels and improve work quality [5]. However, not all studies discovered a positive relationship between FWA and employee performance. Some studies indicate that work flexibility can have adverse effects if not properly managed, for example by creating unstructured workloads or lowering work discipline [6].

The research gap in this study lies in the inconsistency of findings regarding the impact of FWA on employee performance, peculiarly through the mediating role of work-life balance. Some studies found that FWA directly increases productivity, while others show that the positive impact of FWA only occurs when the work-life balance is well maintained [7]; [8]. Therefore, this study was intended for analyzing the relationship between flexible working arrangements, work-life balance, and employee performance to improve comprehension on the mechanism underlying the relationship.

Based on the background, this research has the problem formulation of (1) whether FWA, work-life balance, and employee performance have a significant relationship, (2) whether FWA affects work-life balance, (3) whether work-life balance has an impact on employee performance, and (4) whether work-life balance acts as a mediator in the relationship between FWA and employee performance. Thus, this study seeks to reveal the intensity of flexible working system implementation that can improve employees' work-life balance and its impact on individual accomplishment in corporate environment.

Based on the background that has been explained, this research proposes several problem formulations, namely: (1) whether there is a significant relationship between flexible work arrangements, work-life balance, and employee performance, (2) whether flexible work arrangements affect work-life balance, (3) whether work-life balance affects employee performance, and (4) whether work-life balance serves as a mediating variable in the relationship between flexible work arrangements and employee performance. Thus, this study aims to analyze the extent to which implementing a flexible work system can improve employees' work-life balance and its impact on individual performance in a corporate environment.

Research Methods

This research utilizes quantitative research methods. It used primary data obtained from an online-based questionnaire. The questionnaire was presented in a Google Form and disseminated digitally using the Line, Instagram, and WhatsApp messaging applications. This study populations are employees who implement a flexible

work system regarding time and place and have worked for at least one year in the same company. The respondent was selected using purposive sampling method. The number of samples in this study was 312 respondents, and as many as 305 (97.76%) were eligible for data processing.

The data analysis method used in this research is Partial Least Square (PLS) based on Structural Equation Modelling (SEM), namely SmartPLS used for data analysis. In addition, this study analyses descriptive statistical analysis of mean analysis to determine the most dominant and prominent answers.
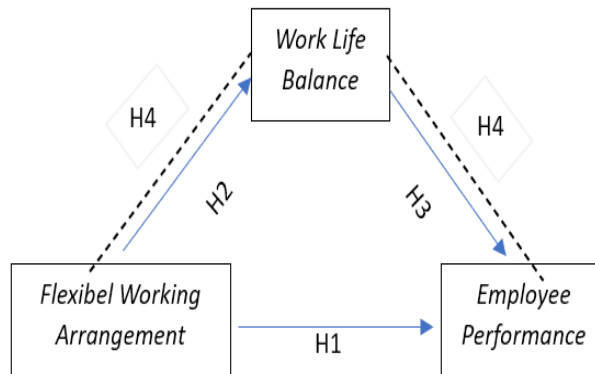
Figure 1. Figure Title

Result and Discussion
Respondents Profile

Respondents of this study are employees from various industrial fields in Indonesia. Based on the data of 305 respondents who are eligible for further processing, the respondents are predominantly in the age group of 21-40 years, totaling 259 people (84.92%), are married (63.93%), have an income level below Rp.10,000,000 per month (78.69%). The number of male respondents (58.36%) is quite balanced with female respondents (41.64%). The questionnaires were evenly distributed, as seen from the location of the domicile of respondents spread across 71 cities throughout Indonesia.

Outer Model
Validity and Reliability

The outer model serves to test the validity and reliability of the instrument. The validity is reflected in the Average Variance Extracted (AVE) value. According to Hair et al. [in 9], the value of convergent validity that is acceptable and considered valid in the SmartPLS system is if the value of factor loading is above 0.6 and the AVE value is above 0.5. In addition, the composite reliability and Cronbach's alpha values, each of which has a value above 0.7, determine the reliability of variables

Table 1 Validity and Reliability Test

Variabel	Cronbach's	Composite reliability (rho_a)	Composite reliability (rho_c)	Average Variance Extracted (AVE)
Flexible Working Arrangement	0.757	0.610	0.771	0.757
Employee Performance	0.583	0.765	0.860	0.583
Work Life Balance	0.756	0.765	0.837	0.756

Table 1 shows that the Cronbach's Alpha value for employee performance variable of 0.583, which is lower than other variables, but has a higher Composite Reliability (CR) value of 0.860. Conversely, the flexible working arrangement has a higher Cronbach's Alpha value of 0.757 but a lower CR value of 0.771. In addition, the work-life balance variable has a Cronbach's Alpha value of 0.756 and a CR value of 0.837.

Based on the test results, the entire variables have an AVE value above 0.5 so that they are declared valid. The flexible working arrangement variable has an AVE value of 0.757, the employee performance has an AVE value of 0.583, and the work-life balance has an AVE value of 0.756.

Inner Model

Inner model analysis is useful to assess and predict causal relationships between latent variables. The inner model submits two important test results, namely the coefficient of determination and p-value. This test is held by considering the R^2 or coefficient of determination, which describes the effect of each variable on other variables in the research framework.

Coefficient of Determination (R^2)

Table 2 Results of R-square Test

Variable	R-Square
Employee Performance	0.205
Work Life Balance	0.263

In the employee performance variable, it is known that the R^2 value is 0.205, which means that employee performance is influenced by FWA and work-life balance by 20.5%, while 79.5% is explained by other variables not included in this research. The work-life balance has an R^2 value of 0.263, this shows that work-life balance is affected by FWA by 26.3% while 73.7% can be influenced by other variables beyond this study.

Prediction Relevance (Q²)

Predictive relevance is a calculation method that evaluates that the inner model can prove the relevance of prediction accuracy well.

$Q^2 = 1 - (1-R^2 \text{ EP}) \times (1-R^2 \text{ WLB})$
$= 1 - (1-0.205) \times (1-0.263)$
$= 1 - (0.795) \times (0.737)$
$= 1 - 0.586$
$= 0.414$

Based on the above calculations, the Q² calculation is 0.414, so if it is above 0. It can be concluded that this study provides a predictive influence that is classified as weak. Another important test result is the hypothesis test results. Hypothesis testing or t-tests examine whether the hypothesis is accepted or not. The t-tests in this study use the bootstrapping method in the SmartPLS 4 application.

Table 3 The inner model evaluation

Direct Effect	Path Coefficient	T-Statistics	P Value	
FWA -> EP	0.066	0.907	0.364	Rejected
FWA -> WLB	0.513	7,430	0.000	Accepted
WLB -> EP	0.415	4,288	0.000	Accepted

Table 3 shows that flexible working arrangements affect employee performance positively but not statistically significant. This is due to the p-value of 0.364 > 0.05 and the resultant t-statistic value of 0.907 < 1.96. Thus, the first hypothesis in this study that 'FWA affect employee performance' is rejected.

The test results show that flexible working arrangements have a positive and significant effect on employee performance, with a path coefficient value of 0.513, a t statistic value of 7.430 >1.96, and p values of 0.000 < 0.05. Therefore, the second hypothesis: flexible working arrangements on work-life balance, is accepted.

The work-life balance has a positive and significant effect on employee performance with a path coefficient of 0.413, a t statistic of 4.288 (higher than 1.96), and a p-value of 0.000 (< 0.05). Therefore, the third hypothesis 'Work-Life Balance affects Employee Performance' is accepted.

Table 4 The indirect effect of Work Life Balance

Indirect Effect	Path Coefficient	T-Statistics	P Value	
FWA -> WLB -> EP	0.213	3,176	0.002	Accepted

The data in Table 4 supports the hypothesis that work-life balance plays an intervening role in the relationship between FWA and employee performance. As we can see from the path coefficient of 0.213, t statistic of 3.176 (> 1.96), and p-value of 0.002

(< 0.05). Hence, the hypothesis in this study that Work-Life Balance enacts as a mediator between FWA and Employee Performance' is accepted.

Discussion

Flexible Working Arrangement and Employee Performance

Flexible working arrangement positively influences employee performance. However, this effect is not statistically significant due to the p-value of 0.364 >0.05 and the resultant t-statistic value of 0.907 < 1.96. The first hypothesis, which states that 'flexible working arrangements affect employee performance, is rejected. Not all employees can work with focus when given freedom at work. Although flexible working arrangements can provide the expected flexibility, some employees may find it difficult to utilize them optimally.

Flexible Working Arrangement and Work Life Balance

The findings show that work-life balance is positively and significantly affected by flexible working arrangements. This is supported by the following numerical values: path coefficient of 0.513, t-statistic of 7.430 (more than 1.96), and p-value of 0.000 (higher than 0.05). Therefore, the 'influence of flexible work arrangements on work-life balance' (second hypothesis) is recognized. This study is in line with previous research [11], which proved that flexible work arrangements have a positive and significant effect on work-life balance. Work-life balance can be significantly improved by flexible work arrangements implementation.

Due to flexible work arrangements, employees can plan their schedules and locations according to their needs. As such, employees will feel less pressure and friction between their professional and personal lives when they have more leeway.

Work Life Balance and Employee Performance

Based on the findings, a healthy work-life balance significantly improves workplace productivity (path coefficient 4.15, t-statistic 4.288 >1.96 and p-value 0.000 <0.05). So, 'the effect of work-life balance on employee performance' (third hypothesis) is accepted. This finding is aligned with previous research [12] that there is a positive and significant influence between work-life balance and employee performance. Employees can maintain physical, mental, and emotional well-being when they have enough time to relax and do things they love outside of work. Workers who can achieve a healthy balance between their personal and professional lives will be happier and more satisfied. Happy and satisfied employees tend to be more productive and perform better at work.

Flexible Working Arrangement, Employee Performance and Work Life Balance

The test results suggest that FWA significantly improve employee performance through work-life balance as an intervening variable. The positive correlation between FWA and employee performance through work-life balance is shown by the t value = 3.176, p = 0.002, and path coefficient value = 0.213. Employee productivity increases along with healthy work-life balance improvements, which is why FWA are so popular. The role of work-life balance as intervening in the positive relationship between FWA

and employee performance is significantly proven in this study. The results are in line with the prior study [13] that work-life balance plays a mediating role in the relationship between FWA and employee performance.

Conclusion

The results of this research reveal that flexible working arrangements do not have a positive and significant impact on employee performance. FWA positively and significantly influence work-life balance. Work-life balance positively and significantly affect employee performance. Work-life balance has a positive and significant effect in intervening the effect of FWA on employee performance. Based on the conclusions obtained in this study, the authors recommend future researchers to enrich this research by classifying respondents based on employment sectors (such as creative and manufacturing industries and so on), and demographic factors (age, gender, status). The authors also suggest future research to add moderating variables such as job satisfaction, organizational commitment, or organizational culture to see if these factors can strengthen or weaken the relationship between FWA and employee performance to provide comprehensive results.

This research can provide managerial implications for effectively implementing FWA to reduce employee stress and improve their performance by ensuring that it is not just a formality but is implemented in various units. Employees must optimally employ work flexibility to balance their personal and work lives. In addition, future research is recommended to delve into the impact of FWA on productivity in a particular organization and consider other factors, such as discipline and motivation, that can affect employee performance.

References

[1] Aprida, O., Trinanda, R., Azis, F., & Fathurrochman, I. (2024). Analisis Peran Penting Sumber Daya Manusia dalam Kepemimpinan Organisasi Pendidikan Islam. AL-MANAR: Jurnal Komunikasi Dan Pendidikan Islam, 13(1), 153-169.

[2] Aprilita, A. (2024). Strategi Pengelolaan Sumber Daya Manusia pada Generasi Z Tantangan dan Peluang di Era Digital Untuk Meningkatkan Kematangan Karir. Advances In Social Humanities Research, 2(2), 221-235.

[3] Sulistiawati, E., Iskandar, A., & Kartakusumah, B. (2024). Pengaruh Penggunaan Aplikasi Kehadiran Mobile (K-Mob) dan Disiplin Pelaksanaan Skema Jam Kerja Terhadap Kinerja Aparatur Sipil Negara (ASN) Pada Bidang Sumber Daya Kesehatan Dinas Kesehatan Provinsi Jawa Barat. Eksekusi: Jurnal Ilmu Hukum Dan Administrasi Negara, 2(2), 425-438.

[4] Balerina, A., Daulai, B. I. S., Damayanti, N., & Malikhah, I. (2024). Analisis Kompensasi, Kepuasan Kerja dan Komitmen Organisasi Terhadap Kinerja Karyawan (studi kasus pada PT. Tirta Investama). Neraca: Jurnal Ekonomi, Manajemen Dan Akuntansi, 2(3), 115-122.

[5] Idrus, M. I. (2024). Dampak Work-Life Integration Terhadap Kesejahteraan Karyawan Dan Produktivitas Kerja: A Systematic Literature Riview. Journal of Economic, Business and Accounting (COSTING), 7(3), 6396-6405.

[6] Kattenbach, R., Demerouti, E., & Nachreiner, F. (2010). Flexible working times: Effects on employees' exhaustion, work-nonwork conflict and job performance. Career Development International, 15(3), 279–295. https://doi.org/10.1108/13620431011053749.

[7] Riđić, O., Avdibegović, A., & Bušatlić, S. (2016). Analysis Of Relationship Between Flexible Work Arrangements, Work Life Balance And Employees' Efficiency: Evidence From Bosnia And HERZEGOVINA'S (BiH) IT SECTOR. Journal of Economics and Business, 14(2), 44–55. http://hdl.handle.net/10419/193863.

[8] Bett, F., Sang, H., & Chepkwony, P. (2022). Flexible Work Arrangement and Employee Performance: An Evidence of Work-life Balance Practices. East African Journal of Business and Economics, 5(1), 80–89. https://doi.org/10.37284/eajbe.5.1.557.

[9] Sihombing, P. R., & Arsani, A. M. (2022). Aplikasi SmartPLS Untuk Statistisi Pemula (Issue March).

[10] Kurniawan, V. K. (2022). Determinan Work from Home dan Flexible work arrangements terhadap Employee Performance PT CTI. Jurnal Manajemen Bisnis Dan Kewirausahaan, 7(2), 421–430.

[11] Hada, R. I. P., Fanggidae, R. E., & Nursiani, N. P. (2020). Flexible Working Arrangement Dan Pengaruhnya Terhadap Work-Life Balance Pada Resellers Online Shop. Jurnal Ekobis: Ekonomi Bisnis & Manajemen, 10(2), 162–171.

[12] Witriaryani, A. S., Putri, A., Jonathan, D., & Khairal, T. M. (2022). Pengaruh Work-life Balance dan Flexible Working Arrangement terhadap Job Performance dengan Dimediasi oleh Employee Engagement. 5(2), 932–947.

[13] Gunawan, T. M. E., & Franksiska, R. (2020). Pengaruh Pengaturan Kerja yang Fleksibel Terhadap Kinerja Karyawan dengan Work life Balance sebagai Variabel Mediasi. 8(3).

The Influence of Locus of Control, Social Media, Financial Literacy on Gen-Z Online Investment Decisions

Lalita Christi Kumalasari[1*], Edi Wijayanto[2], Nurul Hamida[3]

[1, 2, 3] Accounting Department, Politeknik Negeri Semarang, Central Java, Indonesia

e-mail: lalitachristi@gmail.com[1], ediwijayanto@polines.ac.id[2], nurul.hamida@polines.ac.id[3]

*Corresponding Author: lalitachristi@gmail.com

ABSTRACT

This research aims to analyze the influence of locus of control and social media on online investment decisions with financial literacy as an intervening variable on gen z in the digital era. The design of this study is a causal applied quantitative. The data collection method uses a questionnaire that is distributed randomly and analyzed using SmartPLS 3 software. The sampling technique used is purposive sampling technique and the number of samples is 100 respondents who were students at Politeknik Negeri Semarang. The instrument trial was analyzed using the outer model test and the hypothesis test was analyzed using the inner model test. The results of this study indicate that locus of control, social media and financial literacy have a significant and positive influence on investment decisions. In addition, locus of control and social media influence investment decisions both directly and through financial literacy as an intervening variable.

Introduction

The era of the Indonesian economy has undergone significant transformation along with advances in technology and information. This development not only facilitates the resolution of various problems but also increases economic competition. With sophisticated technology, investment can now be done online via devices such as smartphones and laptops, making the investment process simpler and more accessible compared to the past which required the physical presence of both parties. The capital market, which includes stocks, mutual funds, and bonds, is one of the investment instruments that attracts the attention of many people, especially the younger generation who are increasingly active in investing [1].

The growth in the number of capital market investors in Indonesia shows a positive trend. According to a report from KSEI, the number of investors as of January 2024 reached 12.3 million, up from 7.4 million in 2021. The dominance of investors under the age of 30 reflects the enthusiasm of generation Z in investing. Data shows that 60% of total investors are individuals born between 1996 and 2010 [2]. However, challenges remain; a survey showed that 7.2% of this generation experienced losses when starting to invest, indicating that their understanding of investment still needs to be improved [3].

The results of the KataData Insight Center (KIC) and Zigi survey revealed that 7.2% of them experienced losses when starting to invest, which indicates that their understanding of investment is still not fully mature, resulting in worsening financial conditions and being one of the reasons why Generation Z does not fully understand investment [3]. In investment, locus of control influences the decisions a person makes. Having a locus of control can encourage them to be more active and responsible in managing investments. If Generation Z has a locus of control, they are better able to see early losses as opportunities to learn and improve their investment strategies, rather than as the end of everything.The results of research conducted by [4] that there is a significant impact between locus of control and investment decisions. However, this is different from the results of research conducted by [5] that there is no significant impact between locus of control and investment decisions.

In today's digital era, information from social media or the internet encourages Generation Z to participate in the increasingly accessible financial market, and can take advantage of current technological developments which are expected to expand their knowledge and reduce anxiety in making investment decisions, because the growth in the number of new investors is dominated by Generation Z, so the birth of Generation Z cannot be separated from technology. According to the We Are Social report, the number of internet users in Indonesia has reached 185.3 million people as of January 2024. This number is equivalent to 66.5% of the total population of Indonesia which is 278.7 million.This shows a change in the behavior of social media users in Indonesia. In the study by [6] shows that Social Media has a significant influence on decisions. However, in the study by [7] shows that social media has no influence on investment decisions.

Financial literacy is very important when making investment decisions. Individuals with a good level of financial knowledge tend to make wiser investment decisions and are able to maximize the potential returns of their investments while minimizing risks [8]. The results of a survey conducted by the Financial Services Authority (OJK) in October 2024, stated that 75.02% of the public had used financial products and services, but only 65.43% of the public understood financial products and services. There is a gap between the financial literacy index and the financial inclusion index of 9.59%. The national financial inclusion index is above the national financial literacy index. This indicates that 9.59% of Indonesians who have used financial products/services in the past year are still not financially literate. If people do not understand financial products and services, it will result in people using them incorrectly and have an impact on bad financial behavior.

Previous research results show a research gap for several variables that influence investment decisions. These variables include social media and locus of control. Therefore, researchers propose a hypothesis by presenting the financial literacy variable as a mediating variable. This is supported by research conducted by [9], that financial literacy is able to mediate the locus of control variable on financial management behavior. Then the research conducted by [10] that financial literacy is able to mediate social media variables on consumer behavior. However, it is different from the research [11] which states that financial literacy cannot mediate the influence of social media on impulse buying. A high level of financial literacy provides the knowledge and understanding needed to make more appropriate, rational investment decisions, and the

strength of internal control provides motivation and explanation when making financial decisions.

This study aims to fill this gap by examining how financial literacy can mediate the influence of locus of control and social media on investment decisions of generation Z in the digital era. The urgency of this study lies in the importance of improving the understanding of the younger generation regarding financial literacy to encourage wiser investment decision-making. Thus, the main objective of this study is to explore and analyze the influence of locus of control and social media on online investment decisions among generation Z by considering financial literacy as a mediating variable. This study is expected to contribute to the development of investment behavior theory and provide practical insights for stakeholders in designing financial education programs that are right on target for the younger generation.

Based on this background, this research has a problem formulation, namely (1) How does locus of control influence online investment decisions for generation z in the digital era? (2) How does social media influence online investment decisions for generation z in the digital era? (3) How does financial literacy influence online investment decisions for generation z in the digital era? (4) How does financial literacy influence mediating locus of control toward online investment decisions for generation z in the digital era? (5) How does financial literacy influence mediating social media toward online investment decisions for generation z in the digital era?

Research Methods

The research design used in this study is applied quantitative causal research. This study will examine whether locus of control and social media significantly influence investment decisions with financial literacy as an intervening variable among Generation Z in the digital era. Causality research is aimed at illustrating the cause-and-effect relationship between several situations described in the variables, and based on that, general conclusions will be drawn. The type of data used in this research is quantitative data in the form of numbers and data according to its source, which consists of primary data and secondary data. The main data in this research uses primary data collected by the researcher to answer the research questions/statements.

According to [12], the population is a generalization area consisting of objects or subjects with certain quantities and characteristics determined by the researcher to be studied and concluded, so it is concluded that the population in this study is all students of Politeknik Negeri Semarang. According to [12], a sample is a portion of the quantity and characteristics present in the population. The sampling technique in this study is Nonprobability Sampling with the Purposive Sampling technique. Nonprobability Sampling is a sampling method that does not provide an equal opportunity for each element or member of the population to be selected as a sample. Then, Purposive Sampling is a sample determination method based on certain considerations.

The determination of the sample in this study was carried out using the formula developed by Yamane or Slovin. This formula is used to sample from a known population [12]. The Yamane or Slovin formula is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

Formula 1. Slovin's formula

Description
n = Number of Samples required
N = Population Size
e = Sampling Error Rate = 10%

Based on this formula, the sample calculation in this study is:
$$n = \frac{8155}{1 + 8155(0,10)^2}$$
$n = 98,7 \ (rounded \ up \ to \ 100)$
$n = 100$

Therefore, this study used 100 samples from the total population of Politeknik Negeri Semarang students. Before the data is analyzed, a measurement model is first conducted with the validity and reliability testing of the instrument. Then According to [13], the Structural Model aims to identify the exogenous and endogenous variables in a study. These relationships will provide answers to the main objectives of the research, namely the testing of the hypotheses that have been designed in the study.

Measurement Model or Outer Model : (a) Convergent Validity Test. According to [13] Convergent validity is a measuring tool used to assess how much correlation there is between indicators and latent variables. In the analysis, the factor loading value that reaches or is greater than 0.6 is considered ideal. According to [13], The AVE value should reach 0.5 or more, which indicates that the construct is able to explain 50% or more of the variance of its indicators. (b) Discriminant Validity Test. Discriminant validity aims to assess whether a reflective indicator actually functions as a good measure for its construct [14]. The expected cross loading value is the cross loading value in each indicator against its construct has a value that is greater or higher than the value of other cross loadings. According to [15] discriminant validity test using HTMT is declared passed if all HTMT values (<0.9) so that discriminant validity is achieved.

Reliability Test. According (c) to [16], PLS-SEM in addition to conducting validity testing, reliability testing is also carried out. Reliability testing aims to measure the extent to which a measuring instrument can be relied on, which means that if the measurement is repeated, the results remain consistent. According to [13] composite reliability value and Cronbach's Alpha are measure used to assess the reliability of an indicator. It is expected that the composite reliability value will reach at least 0.7. (d) Collinearity Test. According to [15], Collinearity testing aims to identify how strong the relationship between constructs is. If a strong correlation is found, this indicates a problem in the model, known as collinearity. To analyze it, the Variance Inflation Factor (VIF) value is used. The VIF value is expected to be <5, because if it is >5 then there is a collinearity problem.

Structural Model or Inner Model. (a) R-Squared Value. According to [17], the R2 value is used to show how much variation in exogenous variables affects endogenous variables. According to [13] in the study, the assessment of R2 is divided into three, namely, R2≥ 0.19 means that the exogenous influence on the endogenous is weak, the

value R2≥ 0,33 meaning the exogenous influence on the endogenous is moderate or moderate, the value R2 ≥ 0.67 means the exogenous influence on the endogenous is strong. (b) Predictive Relevance Value. According to [13], the Q² predictive relevance value serves to validate the model in data analysis. Measurement is used when the endogenous latent variable has a reflective measurement model. The Q2 assessment is divided into two, namely, the Q2 value <0, meaning that the variables and data have not been able to predict the model well, the Q2 value> 0, meaning that the variables and data can predict the model well.

(c) Path Coefficient Test. Hypothesis testing can be observed through the Path Coefficient table which is used to evaluate the acceptance or rejection of a hypothesis. Hypothesis testing is carried out using the bootstrapping process. From the bootstrapping results, the TStatistic and P-Value values will be obtained. According to [18], Path coefficient that has a Tstatistic value ≥ 1.66 or has a P-value ≤ 0.05 is declared significant. In T-statistics, if the t-statistics value > 1.66 then it can be concluded that the hypothesis test is significant and if the T-statistics value < 1.66 then it can be concluded that the hypothesis test is not significant. In addition, in P-Values if the P-Values value < 0.05 then it can be concluded that the test is significant but if the P-Values value > 0.05 then it can be concluded that the test is not significant [19].

Result and Discussion

Result

Measurement Model (Outer Model)

First is Convergent Validity, the indicators of a construct in convergent validity must have a high correlation, this can mean that the indicators in each latent variable must have a high correlation with the latent variable, the general rule of convergent variables is that the factor loading value is > 0,6 and the AVE value is > 0.5. The following are the results of the Convergent validity test:

Table 1 Factor Loading

Variables	Indicator	Factor Loading	Rule of Thumb	Information
Locus Of Control (X1)	X11	0.671	>0.6	Valid
	X13	0.717	>0.6	Valid
	X14	0.703	>0.6	Valid
	X15	0.735	>0.6	Valid
Social Media (X2)	X21	0.611	>0.6	Valid
	X22	0.754	>0.6	Valid
	X23	0.789	>0.6	Valid
	X24	0.731	>0.6	Valid
	X25	0.754	>0.6	Valid
	X26	0.726	>0.6	Valid
Financial Literacy (Z)	Z1	0.754	>0.6	Valid
	Z3	0.773	>0.6	Valid
	Z4	0.768	>0.6	Valid
	Z5	0.750	>0.6	Valid
	Y1	0.704	>0.6	Valid

Variables	Indicator	Factor Loading	Rule of Thumb	Information
Investment Decision (Y)	Y2	0.826	>0.6	Valid
	Y3	0.755	>0.6	Valid
	Y4	0.854	>0.6	Valid
	Y5	0.739	>0.6	Valid

(Source: Author's primary data, 2024)

Based on the validity test results presented in table 1 above, the factor loading value > 0.6 means that all indicators in each latent variable are highly correlated to the latent variable so that they are declared valid. The results of convergent validity can also be seen from the AVE value for each latent variable indicator. The AVE results for each variable indicator are presented in table 4. Based on table 4, all statement indicators for each variable are declared valid because they have an AVE value > 0.5.

Table 2 Average Variance Extracted

Variables	AVE	Rule Of Thumb	Information
Investment Decision (Y)	0.604	>0.5	Valid
Financial Literacy (Z)	0.600	>0.5	Valid
Locus Of Control (X1)	0.530	>0.5	Valid
Social Media (X2)	0.532	>0.5	Valid

(Source: Author's primary data, 2024)

Second is Discriminant Validity, the indicators in each construct do not have a high correlation with other constructs. The discriminant validity test can be known through the Cross Loading and Heterotrait-Monotrait (HTMT) values.The general rule of discriminant variables is the cross loading value,if each indicator of each variable has a greater cross loading value on its construct than the cross loading on other variablesand HTMT value < 0.9. Then the calculation results cross loading it is known that the indicator value in 'each variable has a higher cross loading value for each latent variable compared to other latent variables, so it can be stated that the indicator has a low correlation with other latent variables, so the indicator above is declared valid. The results of the Heterorait Monotrait (HTMT) data processing in all construct values (<0.9), this indicates that each construct measures something different.

Third is Reliability, the purpose of conducting a reliability test is to determine the consistency of respondents' answers to a study. In this study, the reliability test was conducted by looking at the Cronbach's Alpha and Composite Reliability values. The following is a table of the results of the Cronbach's Alpha and Composite Reliability values for each variable. Then the calculation results the Composite Reliability and Cronbach's Alpha values in each variable have met the criteria, namely >0.7. This means that each variable used in this study has positive reliability.

Collinearity. Fourth is Collinearity, according to [15] collinearity testing aims to identify the strength of the relationship between constructs. If a strong correlation is found, it indicates a problem in the model, known as collinearity. Meanwhile, the results of the Variance Inflation Factor (VIF) shows that there is no multicollinearity problem,

as all indicators have a Variance Inflation Factor (VIF) value below 5. The low VIF values indicate that there is no excessively strong relationship between the independent variables, so the analysis the model can be considered stable and reliable.

Structural Model (Inner Model)

First is R-Squared Value, the Inner Model is assessed by looking at the R2 value on the dependent respondent construct. The R2 value can be used to measure how much influence the exogenous variable has on the endogenous variable. The greater the R2 value, the better the prediction of the research model. The results of the R2 coefficient test are presented in the following table:

Table 3 R-Square Results

Variables	R - Squared
Investment Decision (Y)	0.487
Financial Literacy (Z)	0.396

(Source: Author's primary data, 2024)

Based on the R-Squared value for the Investment Decision variable (Y) is 0.487. This shows that about 48.7% of the variation in investment decisions can be explained by the independent variables used in the model, while the variability of investment decisions that can be explained by the variability of the locus of control, social media and financial literacy variables in the R-square model is 48.7%, While the remaining 51.3% is explained by other variables or independent variables that are not in this study. Based on the Financial Literacy variable, the R-Squared value is 0.396. This means that about 39.6% of the variability in financial literacy can be explained by the model, with slight adjustments after taking into account the number of independent variables. The variability in financial literacy that can be explained by the locus of control and social media variables in the R-Square model of 39.6,While the remaining 60.4% is explained by other variables or independent variables that are not in this study.

Second is Predictive Relevance Value, the Q Square value or prediction accuracy aims to see how the model's ability or the extent to which the research model can predict well. This means that this research is based on events in the field, so researchers hope that the results of this study are in accordance with or similar to what happens in the field. From the results of blindfolding, the Predictive Relevance (Q2) value will be obtained, as follows

Table 4 Predictive Relevance Results (Q2)

Variables	Q2 (=1-SSE/SSO)
Investment Decision (Y)	0.278
Financial Literacy (Z)	0.224

(Source: Author's primary data, 2024)

Table 4 above shows that the Q-Square value in the investment decision variable has a value of 0.278, which is above 0. Then the Q-Square value in the financial literacy variable has a value of 0.224, which is above 0. Third is Path Coefficient, from the bootstrapping results the Tstatistic and P-Value values will be obtained. T-Statistics and

P-Value are used to determine whether there is a significant relationship between variables.

Table 5 Path Coefficients or Analysis of Direct and Indirect Influence Paths

	Originial Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-Statistics (|O/STDEV|)	P-Values
Direct Effect					
(Z) → (Y)	0,422	0,438	0,127	3,317	0,000
(X1) → (Y)	0,189	0,188	0,104	1,823	0,034
(X2) → (Y)	0,224	0,214	0,109	2,053	0,020
Indirect Effect					
(X1) → (Z) → (Y)	0,152	0,167	0,067	2,273	0,012
(X2) → (Z) → (Y)	0,161	0,167	0,061	2,636	0,004

(Source: Smart-PLS 3.2.9 Output, data processed by the author, 2024)

Discussion

The Influence of Locus of Control (X1) on Investment Decision (Y)

The hypothesis results from the statistical analysis in this study indicate that locus of control (X1) has a significant and positive influence, marked by a p-value of $0.034 < 0.05$ and an Original Sample value of 0.189. Additionally, the structural model or inner model testing through the R-Square test shows that locus of control (X1) has an influence of 48.7% on investment decisions, which is categorized as a moderate influence. This indicates that the hypothesis stating that locus of control affects investment decisions is accepted.

Locus of control influences online investment decisions among Gen Z, particularly among students at Politeknik Negeri Semarang, with several underlying indicators. First, ability reflects the students' belief that they possess the skills and knowledge necessary to manage investments effectively. This enhances their confidence in making investment decisions. Second, effort shows that students believe that the efforts they put into learning and understanding investments will directly impact the results they achieve. Third, working hard becomes another key indicator, where students who are committed to seriously preparing investment plans are more likely to achieve their financial goals. Finally, success controlled by the environment indicates that students are aware that external factors such as market conditions and government policies also affect their investment outcomes. This awareness encourages them to remain vigilant and adaptive to changes occurring in the investment environment. This shows that the hypothesis stating that locus of control has an influence on investment decisions is accepted. Several studies that support this statement are studies conducted by [20] And [9] which states that locus of control influences investment decisions.

The Influence of Social Media (X2) on Investment Decision (Y)

The results of the hypothesis from the statistical analysis in this study showed that social media (X2) has a significant influence marked by a p value of $0.020 < 0.05$. Then the results of this study indicate that there is a positive relationship between social media and investment decisions, namely the original sample 0.224. This means that investment

decisions increase if the social media variable increases. In addition, testing the structural model or inner model through the R-Square test found that social media (X2) has an influence of 48.7% on investment decisions, this value is categorized as a moderate or moderate influence.

Social media has a significant influence on online investment decisions among Gen Z, especially among students at Politeknik Negeri Semarang, with several underlying indicators. First, the ease of accessing information through social media platforms allows students to quickly find various sources of information related to investments. This increases their engagement in investment activities, as they can access market news, stock recommendations, and relevant analyses without barriers. Second, trust in information obtained from social media, including recommendations from influencers and public opinion, becomes an important factor in investment decision-making. Students who trust these sources of information tend to be more confident in making investments. Third, the quality of information presented on social media also plays a crucial role. Accurate and reliable information from platforms like Instagram or TikTok can shape a positive perception of investment opportunities. Students who receive high-quality information are more likely to make informed and strategic investment decisions. Several studies that support this, namely [21], [6] And [22] which states that social media can influence investment decisions. According to them, the greater the influence of information and content presented on social media, the higher the individual's intention to make investment decisions.

The Influence of Financial Literacy (Z) on Investment Decision (Y)

The results of the hypothesis from the statistical analysis in this study showed that financial literacy (Z) has a significant and positive influence marked by a p value of 0.000 <0.05 and an Original sample of 0.422. In addition, testing the structural model or inner model through the R-Square test found that the locus of control (X1) has an influence of 48.7% on investment decisions, this value is categorized as a moderate or moderate influence.

Financial literacy influences online investment decisions among Gen Z, particularly among students at Politeknik Negeri Semarang, with several underlying indicators. First, general knowledge about finance provides a strong foundation for students to understand basic financial concepts, such as budgeting, financial planning, and investment decision-making. Second, understanding savings and loans helps them manage financial resources effectively, making them more prepared to invest by considering the risks and benefits of each financial decision. Next, insurance serves as an indicator because students who understand the importance of financial protection tend to be more cautious in investing and are able to protect themselves from potential losses. Finally, investment as an indicator of financial literacy shows that students who have knowledge about various investment instruments can make more informed and strategic decisions. Based on the results of this research, it can be said that students of Semarang State Polytechnic have a good level of financial literacy, so with a good understanding of financial literacy, student investment decision-making can also be carried out well. This shows that the hypothesis stating that financial literacy has an influence on investment decisions is accepted. Several studies that support this

statement are studies conducted by [23] And [24] which states that financial literacy influences investment decisions.

The Influence of Locus of Control (X1) on Investment Decisions (Y) through Financial Literacy (Z) as an intervening variable

This allows them to actively use their control in making better investment decisions based on the knowledge they possess. Based on the hypothesis testing in this study, it was found that locus of control (X1) has a significant influence and a positive or direct relationship with investment decisions (Y) through financial literacy (Z) as an intervening variable, with a p-value of $0.012 < 0.05$ and an original sample value of 0.152. This indicates that the hypothesis stating that locus of control affects investment decisions with financial literacy as an intervening variable is accepted. Students who have a good internal locus of control tend to have high financial literacy. This is due to the belief that they have control over the financial decisions they make. Thus, the individual will be more capable of making wise financial decisions, which reflect their level of financial literacy. Good knowledge and understanding of financial management enable students to recognize the potential and benefits of investments, as well as to analyze investment opportunities more thoroughly. Support from the social environment also plays an important role in motivating students to make larger and more responsible investment decisions. Research that supports this statement is research conducted by [25] which states that locus of control influences financial management behavior with financial literacy as an intervening variable.

The Influence of Social Media (X2) on Investment Decisions (Y) through Financial Literacy (Z) as an intervening variable

Based on the hypothesis in this study, the results showed that social media (X2) has a significant influence and a unidirectional or positive relationship on investment decisions (Y) through financial literacy (Z) as an intervening variable with a p-value of $0.004 < 0.05$ and an original sample value of 0.161.

This research highlights the direct correlation between the increased use of social media and the improvement in financial literacy. Financial literacy, which facilitates individuals' understanding of financial fundamentals, financial trends, investment advice, and control over their investment decisions, is positively influenced by accurate and reliable information through social media, thereby sustainably and consistently fostering opportunities and interest in making investments. Conversely, the lack of financial literacy among Generation Z, combined with limited use of social media, can decrease their investment decisions. Therefore, social media plays an important role in enhancing the financial literacy of Generation Z and shaping their investment decisions. The research supporting this statement is the study conducted by [10], which states that social media influences consumer behavior with financial literacy as an intervening variable. With financial literacy as an intervening variable, students can be more critical in filtering information received from social media, understanding the risks and benefits of each investment decision.

Conclusion

Based on the results of research the influence of locus of control and social media on online investment decisions with financial literacy as an intervening, Locus of control (X1) has a significant and positive influence on investment decisions (Y), then Social Media (X2) has a significant influence and positive influence on investment decisions (Y), Financial literacy (Z) has a significant and positive influence on investment decisions (Y), The Financial Literacy variable is able to mediate the Locus of Control variable (X1) on investment decisions (Y), The Financial Literacy variable is able to mediate the Social Media variable (X2) positively on investment decisions (Y). In achieving optimal investment decisions, investors are advised to first understand the influence of locus of control and social media on investment decisions, because these two factors can influence investor behavior and attitudes in facing investment risks. This study shows that financial literacy plays a significant intervening variable, so investors need to improve their understanding of financial literacy in order to utilize information from social media more effectively. By conducting an in-depth analysis of the relationship between locus of control, social media, and financial literacy, investors can make more informed decisions and reduce potential risks that may arise due to market uncertainty.

This study has several limitations that should be noted. First, the sample size used may not be fully representative of the entire population; therefore, the generalization of the findings should be approached with caution. Second, the study's focus is limited to specific variables and does not consider other factors that could significantly influence investment decisions, such as prior investment experience, personal motivation, and the macroeconomic conditions at the time the research was conducted. Based on these limitations, the researcher suggests that future studies could expand their scope by differentiating respondents based on their level of financial literacy, as well as by increasing the sample size to obtain more representative results. Furthermore, it is important to investigate other factors that may influence investment decisions, such as those previously mentioned: investment experience, personal motivation, and economic conditions.

It is hoped that the findings of this study will have positive implications for the government and educational institutions, particularly in designing more effective educational programs on investment. These programs should focus not only on the technical aspects of investment but also on the fundamental development of financial literacy among students.

References

[1] J. Amenda, C. Corycha Putri, and L. Sihotang, "Analisis Portofolio Sebagai Dasar Pengambilan Keputusan Investasi Saham yang Terdaftar pada Bursa Efek Indonesia," *J. Soc. Res.*, vol. 1, no. 6, pp. 556–566, 2022, doi: 10.55324/josr.v1i6.112.

[2] S. Sidik, "Investor di BEI Tembus 7,75 Juta, Didominasi Milenial & Gen-Z," *CNBC Indonesia*, 2022. https://www.cnbcindonesia.com/market/20220125105039-17-310196/investor-di-bei-tembus-775-juta-didominasi-milenial-gen-z

[3] D. H. Jayani, "Survei KIC: 33,1% Keuangan Milenial dan Gen Z Memburuk, Ini Penyebabnya," 2022. https://databoks.katadata.co.id/datapublish/2022/01/14/survei-kic-331-keuangan-

milenial-dan-gen-z-memburuk-ini-penyebabnya

[4] A. Atikah and R. R. Kurniawan, "Pengaruh Literasi Keuangan, Locus of Control, dan Financial Self Efficacy Terhadap Perilaku Manajemen Keuangan," *JMB J. Manaj. dan Bisnis*, vol. 10, no. 2, pp. 284–297, 2021, doi: 10.31000/jmb.v10i2.5132.

[5] I. N. Agustin and F. Lysion, "Analisis Faktor-Faktor yang Mempengaruhi Pengambilan Keputusan Investasi Saham pada Investor Generasi Milenial di Kota Batam yang dengan Locus of Controlsebagai Variabel Moderasi," *Conf. Manag. Business, Innov. Educ. Soc. Sci.*, vol. 1, no. 1, pp. 1–18, 2021, [Online]. Available: https://journal.uib.ac.id/index.php/combines

[6] N. Sani and V. S. Paramita, "Pengaruh Pengalaman Investasi, Risk Tolerance, Dan Sosial Media Terhadap Keputusan Investasi Dengan Literasi Keuangan Sebagai Variabel Mederasi (Studi Pada Investor Generasi Z Jawa Barat)," *Equilib. J. Ilm. Ekon. Manaj. dan Akunt.*, vol. 13, no. 1, p. 134, 2024, doi: 10.35906/equili.v13i1.1886.

[7] A. Angraini and O. S. Riski, "Pengaruh Media Sosial Dan Self Efficacy Terhadap Keputusan Berinvestasi Di Pasar Modal Syariah Melalui Financial Technology," vol. 02, no. 01, pp. 817–824, 2024.

[8] E. R. Saputri and T. W. Erdi, "Perilaku keuangan, dan locus of control, memengaruhi keputusan investasi dengan literasi keuangan sebagai moderasi," *Fair Value J. Ilm. Akunt. dan Keuang.*, vol. 5, no. 12, p. 2023, 2023, [Online]. Available: https://journal.ikopin.ac.id/index.php/fairvalue

[9] Nadira Rizky Ridiananda and Lasmanah, "Pengaruh Locus of Control dan Experience Regret Terhadap Keputusan Investasi Mahasiswa Manajemen Angkatan 2018 Universitas Islam Bandung," *J. Ris. Manaj. dan Bisnis*, pp. 41–48, 2022, doi: 10.29313/jrmb.v2i2.1436.

[10] N. A. Asrun and A. Gunawan, "Pengaruh Gaya Hidup dan Media Sosial terhadap Perilaku Konsumtif Generasi Z di Kota Medan dengan Literasi Keuangan sebagai Media Intervening," *J. Manaj. Bisnis dan Keuang.*, vol. 5, no. 1, pp. 173–186, 2024, doi: 10.51805/jmbk.v5i1.205.

[11] A. Triwidisari, A. Nurkhin, and M. Muhsin, "The Relationships Between Instagram Social Media Usage, Hedonic Shopping Motives and Financial Literacy on Impulse Buying," *Din. Pendidik.*, vol. 12, no. 2, pp. 170–181, 2018, doi: 10.15294/dp.v12i2.13565.

[12] Sugiyono, *Metode Penelitian Kuantitatif Kualitatif*. 2019.

[13] S. Haryono, "Metode SEM Untuk Penelitian Manajemen AMOS LISREL PLS," *J. GEEJ*, vol. 7, no. 2, pp. 1–18, 2016, [Online]. Available: http://www.joi.isoss.net/PDFs/Vol-7-no-2-2021/03_J_ISOSS_7_2.pdf

[14] N. R. Furadantin, "Analisis Data Menggunakan Aplikasi SmartPLS v.3.2.7 2018," *Acad. (Accelerating world's Res.*, p. 2, 2018, [Online]. Available: https://scholar.google.com/scholar?q=related:2uQwPffimx4J:scholar.google.com/&scioq=analisis+data+menggunakan+smartPLS&hl=id&as_sdt=0,5

[15] J. F. Hair, J. J. Risher, M. Sarstedt, and C. M. Ringle, "When to use and how to report the results of PLS-SEM," *Eur. Bus. Rev.*, vol. 31, no. 1, pp. 2–24, 2019, doi: 10.1108/EBR-11-2018-0203.

[16] W. W. Putri and M. Hamidi, "Pengaruh Literasi Keuangan, Efikasi Keuangan, DanFaktor Demografi Terhadap Pengambilan KeputusanInvestasi (Studi Kasus

Pada Mahasiswa MagisterManajemen Fakultas Ekonomi Universitas AndalasPadang),” *J. Ilm. Mhs. Ekon. Manaj.*, vol. 4, no. 1, pp. 398–412, 2019.

[17] D. K. Musyaffi, A. M., Khairunnisa, H., & Respati, *Konsep dasar structural equation model-partial least square (sem-pls) menggunakan smartpls.* Tangerang Selatan: Pascal Books, 2022.

[18] S. Andika and P. Purnamasari, “(Studi Kasus Pada Pelanggan Kentucky Fried Chicken Di Kab . Bekasi) JIMEA | Jurnal Ilmiah MEA (Manajemen , Ekonomi , dan Akuntansi),” vol. 8, no. 2, pp. 1539–1552, 2024.

[19] J. F. Hair, G. T. Hult M., & Ringle, C. M., and M. Sarstedt, “A primer on partial least squares structural equation modeling (PLS-SEM),” *Sage*, p. 390, 2017.

[20] N. P. B. G. Prashanti and I. G. P. B. Astawa, “Pengaruh Pendapatan, Perilaku Keuangan dan Locus Of Control terhadap Pengambilan Keputusan Investasi pada Guru PNS SD di Kecamatan Buleleng,” *Vokasi J. Ris. Akunt.*, vol. 10, no. 01, pp. 1–10, 2022, doi: 10.23887/vjra.v10i01.55324.

[21] Muhammad Panji Wicaksono and N. L. Wafiroh, “Analisis Pengaruh Literasi Keuangan Dan Sosial Media Edukasi Saham Terhadap Keputusan Investasi (Studi Kasus Pada Mahasiswa Kota Malang),” *J. Sos. Ekon. Dan Hum.*, vol. 8, no. 2, pp. 200–206, 2022, doi: 10.29303/jseh.v8i2.57.

[22] K. N. Kumala and L. Venusita, “Persepsi Risiko dan Lingkungan Sosial terhadap Minat Investasi di Pasar Modal Dimoderasi dengan Media Sosial,” *J. Akunt. Unesa*, vol. 11, no. 3, p. 297, 2023, [Online]. Available: http://journal.unesa.ac.id/index.php/akunesa

[23] O. F. Triana and D. Yudiantoro, “Pengaruh Literasi Keuangan, Pengetahuan Investasi, dan Motivasi Terhadap Keputusan Berinvestasi Mahasiswa di Pasar Modal Syariah,” *SERAMBI J. Ekon. Manaj. dan Bisnis Islam*, vol. 4, no. 1, pp. 21–32, 2022, doi: 10.36407/serambi.v4i1.517.

[24] H. Muhammad and R. J. Faradisi, “Pengaruh Literasi Keuangan, Perilaku Manajemen Keuangan, Pendapatan, dan Religiusitas terhadap Pengambilan Keputusan Investasi (Studi pada Mahasiswa Perguruan Tinggi Islam di Ponorogo),” *BISNIS J. Bisnis dan Manaj. Islam*, vol. 11, no. 1, p. 123, 2023, doi: 10.21043/bisnis.v11i1.20326.

[25] L. A. Wardani and D. Fitrayati, “Pengaruh literasi keuangan dan sikap keuangan terhadap perilaku pengelolaan keuangan dengan locus of control sebagai variabel intervening,” *Fair Value J. Ilm. Akunt. dan Keuang.*, vol. 4, no. 12, pp. 5827–5836, 2022, doi: 10.32670/fairvalue.v4i12.1894.

E-Service Quality Factors and Customer Satisfaction in Shopee's E-Commerce Platform

Rachma Rizqina Mardhotillah[1*], Berto Mulia Wibawa[2]

[1]Department of Management, Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia

[2]Department of Business Management, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

e-mail: rachma.rizqina@unusa.ac.id[1], berto@mb.its.ac.id[2]

*Corresponding Author: rachma.rizqina@unusa.ac.id

ARTICLE INFO

ABSTRACT

The rapid growth of e-commerce has intensified competition among platforms in providing the best services to customers. Shopee, one of the largest e-commerce platforms in Southeast Asia, faces challenges in maintaining e-service quality that enhances customer satisfaction. This study aims to analyze the influence of security, reliability, and responsiveness on e-service quality, as well as its impact on customer satisfaction in Shopee's e-commerce platform. This research employs a quantitative approach with purposive random sampling, involving 150 Shopee users as respondents. The data collected were analyzed using structural equation modeling-partial least squares (SEM-PLS). The results indicate that security, reliability, and responsiveness have a positive and significant impact on e-service quality. Furthermore, e-service quality positively and significantly influences customer satisfaction. These findings suggest that transaction security, system reliability, and customer service responsiveness are key factors in building high-quality e-commerce services. Therefore, Shopee must continuously improve its security system, maintain platform stability, and enhance customer service responsiveness to increase customer satisfaction and loyalty.

Introduction

The development of digital technology has driven changes in various aspects of life, including the way people shop. E-commerce is one of the fastest-growing industries, allowing consumers to make online transactions easily and quickly. Shopee, as one of the largest e-commerce platforms in Southeast Asia, has become the top choice for many consumers in Indonesia. With various excellent features such as free shipping, flash sales, and a flexible payment system, Shopee has managed to attract the attention of millions of users.

However, along with the rapid growth of these platforms, the quality of electronic services (E-Service Quality) has become a crucial factor in maintaining customer loyalty and satisfaction [1]. In the digital ecosystem, service quality includes aspects of security, reliability, and responsiveness. Security is one of the important

aspects because customers need assurance that their data and transactions are well protected. Reliability refers to the platform's ability to provide stable services without technical glitches. Responsiveness relates to the speed and effectiveness of customer service in handling issues or queries from users.

Various previous studies have shown that the e-service quality has a direct effect on customer satisfaction. The dimensions of electronic service quality include efficiency, reliability, privacy, and responsiveness. If an e-commerce platform fails in this aspect, customers are likely to move to other, more adequate services [2]. Researchers have found that the security, reliability, and responsiveness of electronic services significantly influence customer satisfaction in the e-commerce sector [3]. The study also confirms that customer experience in using e-commerce platforms is influenced by trust in the security systems implemented as well as efficiency in handling transactions and customer service.

Although Shopee has provided various innovations to improve the user experience, there are still various problems that are often complained about by customers. Some of the main problems that are often found include: Security that is Still Vulnerable. Shopee often faces challenges related to user account security. Many cases involve account hacking, data theft, and fraud committed by irresponsible parties. According to a report from [4], several customers complained that their accounts were hacked despite using security features such as two-step verification. In addition, E-commerce platforms with weak security systems tend to lose customers because users perceive them as untrustworthy, which ultimately reduces their willingness to continue using the platform [5]. Furthermore, when users perceive a high level of trust in an e-commerce platform, it contributes positively to building customer loyalty and long-term engagement [6].

Another aspect that is still lacking is the inconsistent reliability of the system. Shopee sometimes experiences technical glitches that hinder the smooth running of transactions. Some users complained about difficulties in accessing the application, delays in updating the delivery status, and errors in the payment system. This leads to customer distrust of the platform's reliability in providing stable and uninterrupted services.

Not only that, the responsiveness of customer service is not optimal. Responsiveness in handling customer complaints and questions is one aspect that still needs improvement. Many users expressed dissatisfaction with Shopee's customer service which was considered slow in responding to complaints, especially in the case of refunds and returns. Many users feel that Shopee's customer service is still not able to handle problems quickly and effectively [7]. According to research explain e-commerce platforms that have poor customer service responsiveness are more likely to experience customer churn due to a lack of trust in problem-solving [8].

This sub-optimal quality of service can negatively impact the user experience and ultimately lower customer satisfaction levels. Therefore, it is important to examine the extent of the influence of security, reliability, and responsiveness on E-Service Quality and its impact on Shopee customer satisfaction.

This study aims to analyze the relationship between these three main factors and E-Service Quality, as well as examine how the quality of electronic services affects overall customer satisfaction. By understanding these factors, Shopee can develop a better strategy to improve service quality and maintain customer loyalty in an increasingly competitive e-commerce market.

Research Methods

This research is quantitative research that aims to understand the influence of security, reliability, and responsiveness on e-service quality and its impact on customer satisfaction in the use of Shopee e-commerce.

This study uses the purposive random sampling technique, which is a sampling method based on certain criteria that have been set. Respondents in this study are active users of the Shopee e-commerce application who have made transactions at least three times in the last six months. The sample selection was carried out randomly but still considered the relevant criteria to obtain representative data. The number of samples in this study is 150 users of the Shopee application.

The data obtained were analyzed using the Structural Equation Modeling - Partial Least Squares (SEM-PLS) method. This method was chosen because it can test the relationship between latent variables simultaneously and is suitable for research with complex models as well as medium-sized samples [16]. SEM-PLS is used to test the validity and reliability of research constructs, as well as to analyze the relationships between predetermined variables.

Measurement

Table 1 outlines the measurement indicators used for each variable in this study, which include security, reliability, responsiveness, e-service quality, and customer satisfaction.

Table 1 Measurement

Variable	Measurement
Security Source : [17]	• I feel confident sharing sensitive details (such as credit card information) when making online purchases. • Shopee has sufficient security measures in place. • Shopee keeps my personal information private and does not disclose it to third parties. • Shopee is transparent and trustworthy regarding its online transaction services.
Reliability Source: [17]	• Shopee keeps accurate records of my account transactions. • The order service is complete • Its online booking records are always accurate • The Shopee Apps do not freeze once I enter my transaction information.
Responsiveness Source: [17]	• It provides me with convenient options for returning items. • This site handles product returns well. • It tells me what to do if my transaction is not processed.
E-Service Quality Source: [18]	• Based on my previous e-commerce experience, I feel Shopee service quality is good. • Shopee quality is better than I expected.

Variable	Measurement
Satisfaction Source: [2]	• Physical evidence, such as the appearance of an e-commerce application or ease of navigation. • Consistency of service in meeting customer expectations. • Speed and accuracy in responding to customer needs. • Trust is given by the service to customers. • Care and attention are given to customers.

(Source: Adapted from Kaur et al., 2023; Singh, 2019; Parasuraman et al., 1988)

These indicators were adapted from previously validated instruments in relevant studies to ensure both reliability and construct validity : (a) The Security variable measures users' perceptions of how secure their personal and transactional data are on the Shopee platform. It includes items related to data confidentiality, transparency in transactions, and user trust in Shopee's protection mechanisms. (b) The Reliability variable reflects the extent to which Shopee delivers consistent and accurate services, such as system stability, accuracy of transaction records, and proper order fulfillment. (c) The Responsiveness variable evaluates the platform's ability to handle product returns, guide users during issues, and provide timely responses. (d) E-Service Quality is measured based on users' overall perceptions of service performance compared to their expectations. (e) The Customer Satisfaction variable captures user experiences regarding application design, consistency of service, responsiveness to customer needs, and the sense of care and attention received from the platform.

Result and Discussion
Result

The results of structural model testing using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. This model is designed to analyze the effect of three antecedent variables security, reliability, and responsiveness - on e-service quality, which is then tested for its effect on satisfaction. The numbers listed on the structural path (arrows between constructs) are t-statistic values generated through the bootstrapping procedure, which is used to test the significance of the relationship between latent variables.

The results of the structural model analysis (inner model) show that the three exogenous variables have a positive and statistically significant influence on E-Service Quality. Specifically, Reliability is the predictor with the strongest influence on E-Service Quality, as indicated by the t-statistic value of 5.580. Furthermore, Responsiveness also showed a significant influence (t-statistic = 2.956), followed by Security (t-statistic = 2.428). Furthermore, the model confirms that E-Service Quality has a very strong and significant positive influence on Satisfaction, with the t-statistic value reaching 13.351. Given that all t-statistic values far exceed the critical threshold (generally 1.96 for 5% significance), all hypotheses proposed in this model are accepted.

Overall, these findings provide strong empirical evidence that E-Service Quality plays a crucial mediating variable. To increase Satisfaction, service providers should prioritize improving E-Service Quality, with a primary focus on the Reliability aspect which is shown to be the strongest driver. The findings provide clear managerial

implications and theoretical contributions that strengthen the model of the relationship between service quality dimensions and satisfaction in an electronic context.
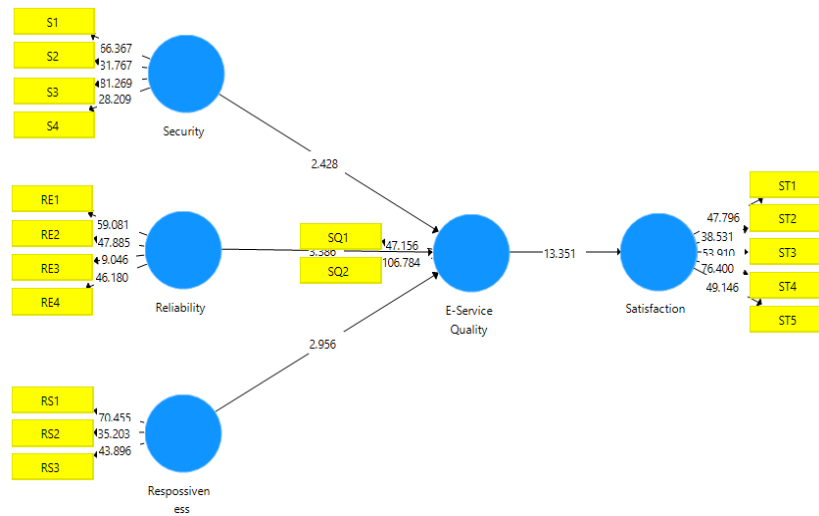
Figure 1 Result Data Analysis SmartPLS
(Source: Data analysis, 2025)

1. Convergent Validity

Convergent validity refers to how strongly multiple measures of the same concept relate to each other, indicating they capture the same underlying idea [19]. When a construct demonstrates high convergent validity, its indicators show strong inter-correlations. This is commonly evaluated through the Average Variance Extracted (AVE), where a value of 0.5 or above suggests that over half of the variance in the construct is accounted for by its indicators [20]. This assessment confirms that the items designed to measure a construct are closely aligned, reinforcing the construct's internal reliability.

Table 2 Convergent Validity

Variable	Indicator	Outer Loading
Security	S1	0.917
	S2	0.881
	S3	0.920
	S4	0.805
Reliability	RE1	0.895
	RE2	0.892
	RE3	0.642
	RE4	0.870
Responsiveness	RS1	0.920
	RS2	0.876
	RS3	0.895
E-Service quality	SQ1	0.922
	SQ2	0.937

Variable	Indicator	Outer Loading
Satisfaction	ST1	0.884
	ST2	0.847
	ST3	0.911
	ST4	0.928
	ST5	0.906

(Source: Data analysis, 2025)

2. Composite Reliability and Cronbach's Alpha

Composite reliability is a measure of internal consistency for latent constructs, which assesses the reliability of a set of indicators and their shared variance in measuring the same construct [19]. Unlike Cronbach's alpha, which assumes all indicators contribute equally to the construct, composite reliability considers the varying contributions of each item and is therefore often viewed as a more accurate measure of reliability in structural equation modeling. Composite reliability values above 0.7 are generally acceptable, indicating that the indicators consistently represent the construct [21]. And, Cronbach's alpha is a widely used reliability coefficient that measures the internal consistency of a set of items within a construct, assessing how well the items work together to measure a concept.

Table 3 Composite Reliability and Cronbach's Alpha

Variable	Cronbach's Alpha	Composite Reliability
E-Service Quality	0.843	0.927
Reliability	0.846	0.898
Respossiveness	0.879	0.925
Satisfaction	0.938	0.953
Security	0.904	0.933

(Source: Data analysis, 2025)

Higher Cronbach's alpha values, typically above 0.7, indicate greater internal consistency, meaning the items are closely related as a group. Although commonly used, Cronbach's alpha assumes equal reliability among items and can underestimate reliability when item contributions vary, making it less suitable than composite reliability in cases with unequal item contributions [22]

3. Average Variance Extracted (AVE)

AVE value should be greater than 0.50 to indicate good convergent validity. A higher AVE value implies that the construct explains more than 50% of the variance in its indicators, signifying strong validity. Conversely, if AVE is below 0.50, it suggests that the variance explained by measurement error exceeds that explained by the construct. Furthermore, AVE can also be used to test discriminant validity by comparing the square root of AVE with the correlations between constructs. If the square root of AVE is greater than the correlation between constructs, discriminant validity is considered to be achieved[21].

Table 4 Average Variance Extracted

Variable	Average Variance Extracted (AVE)
E-Service Quality	0.864
Reliability	0.691
Responsiveness	0.805
Satisfaction	0.802
Security	0.778

(Source: Data analysis, 2025)

4. Testing Hypothesis

The path coefficient is used to evaluate the strength and direction of the relationship between latent variables in the SEM-PLS model. The significance value for the path coefficient is < 0.05 :

Table 5 Hypothesis

Hypothesis	Original Sample (O)	Sample Mean (M)	T Statistics (|O/STDEV|)	P Values
E-Service Quality → Satisfaction	0.691	0.690	13.351	0.000
Reliability → E-Service Quality	0.305	0.313	3.386	0.001
Responsiveness → E-Service Quality	0.283	0.280	2.956	0.003
Security → E-Service Quality	0.181	0.178	2.428	0.016

(Source: Data analysis, 2025)

Discussion

The Effect of Security on E-Service Quality in Shopee E-Commerce

Security in e-commerce is the main factor that affects customer trust and satisfaction. Security includes the protection of personal data, encrypted transactions, and protection against cyberattacks [9]. Customers are more likely to use e-commerce platforms that offer high-security features, such as two-factor authentication and strong encryption systems. When customers feel secure in transacting, they are more likely to maintain loyalty to the platform [5], [9].

Security is one of the main factors in determining the quality of electronic services (e-service quality) on e-commerce platforms. In the context of Shopee, security includes the protection of users' data, the security of payment transactions, and protection from the risk of fraud and account hacking [23].

The results of this study explain that security has a significant positive influence on e-service quality with a p-value of 0.016 < 0.05. If the security aspect is guaranteed, then customer trust in e-commerce services will increase, which ultimately improves their perception of the overall quality of the service.

E-service quality includes various dimensions, one of which is security. They emphasized that security in online transactions affects users' perception of the credibility and reliability of an e-commerce platform [3]. In another study, found that security has a significant effect on user experience and customer satisfaction in e-commerce and shows that transaction security [5], [24]. If customers feel confident that their data is safe, they are more likely to continue using the service and recommend it to others

In the context of Shopee, various cases of account hacking and fraud show that improving security is still a challenge that must be overcome, several Shopee customers experienced account hacking despite implementing security measures such as two-step verification [4]. This shows that although security has a significant influence on e-service quality, suboptimal implementation can reduce customer perception of service quality. Therefore, Shopee needs to continue to develop its security system to improve the user experience.

Thus, it can be concluded that security has a positive and significant influence on e-service quality in Shopee e-commerce. Customers who feel secure in transacting will have a better perception of the quality of service, which ultimately increases their satisfaction and loyalty to the platform.

The Influence of Reliability on E-Service Quality in Shopee E-Commerce

Reliability refers to a platform's ability to deliver consistent services without technical disruptions. It encompasses key aspects such as system uptime, accurate product information, and consistent order processing. System instability in e-commerce, such as frequent errors or service interruptions, can result in customer dissatisfaction and may even drive users to switch to competing platforms [10].Moreover, customers who face delays in transaction processes or encounter errors in order status updates are more likely to report lower levels of satisfaction.

Reliability is one of the key dimensions of e-service quality that plays an important role in ensuring that e-commerce services run consistently, accurately, and free from interruptions [23]. The results of this study explain that reliability has a significant positive influence on e-service quality with a p-value of $0.001 < 0.05$

In the context of Shopee, reliability includes system stability, accuracy of product information, accuracy of transaction processes, and speed and accuracy of delivery of goods. When the services provided are reliable, customers will have a better perception of the quality of e-service services, which ultimately increases customer trust and loyalty to the platform.

Reliability in e-commerce refers to the ability of a platform to provide services accurately and on time. This study confirms that reliability has a significant impact on e-service quality because customers expect consistent service and minimal disruption in every transaction [2]. In addition, research shows that reliability is the main factor that affects customer perception of the quality of digital services [25]. They state that customers will be satisfied if an e-commerce system is reliable in every aspect, from payment processing to delivery accuracy. This is strengthened by the findings from Ladhari (2010), who found that the higher the level of reliability of a service, the more positive the customer's perception of the overall e-service quality.

In the context of Shopee, several challenges related to reliability still often arise, such as delays in order processing, errors in the payment system, and inconsistencies in product information provided by sellers. Therefore, improving the reliability aspect is needed to strengthen the overall quality of service. Thus, it can be concluded that reliability has a positive and significant influence on e-service quality in Shopee e-

commerce. Customers who feel the high reliability of the service will have more trust in the platform, which ultimately increases their satisfaction and loyalty.

The Effect of Responsiveness on E-Service Quality in Shopee E-Commerce

Responsiveness refers to an e-commerce platform's ability to address customer complaints, inquiries, and needs promptly and effectively. It plays a crucial role in shaping the overall quality of electronic services, as it reflects the platform's commitment to customer satisfaction [2]. Customers are more likely to feel satisfied when customer service teams respond quickly and offer adequate solutions to their problems [11].

Responsiveness is one of the main dimensions of e-service quality related to the speed and effectiveness of a platform in responding to customer questions, requests, and complaints [26]. In the context of Shopee's e-commerce, responsiveness includes the speed of customer service in handling complaints, the ability to provide effective solutions, and the availability of responsive support services through various channels such as live chat, email, and social media. The results of this study also explain that responsiveness and e-service quality have a significant positive influence with a p-value of $0.003 < 0.05$

Responsiveness in electronic services refers to how quickly and effectively a platform responds to customer needs. They emphasized that high responsiveness will increase customer perception of the overall quality of service [2]. And, responsiveness has a significant impact on e-service quality because customers expect a quick and appropriate solution when experiencing problems in online transactions. When the platform can provide quick and accurate responses, customers feel valued, which ultimately increases their trust in the service [27]. When customers get a quick and solution-oriented response, they tend to have a more positive experience, thus increasing their perception of the quality of the services provided.

In the context of Shopee, several challenges related to responsiveness are still often complained about by customers. A survey shows that many Shopee users are dissatisfied with customer service that is considered slow in handling problems, especially related to refunds and returns of goods [7]. This shows that although responsiveness has a significant influence on e-service quality, suboptimal implementation can reduce customer satisfaction. Furthermore, the company must minimize potential issues to create a positive shopping experience, as such experiences have a significant impact and play a decisive role in influencing customers' decisions to engage in repeat purchases [28]. Therefore, improving the customer service system, including the use of smarter chatbots and improving the response speed of the customer service team, can help improve the overall quality of Shopee's services.

Thus, it can be concluded that responsiveness has a positive and significant influence on e-service quality in Shopee e-commerce. Customers who feel like they are getting fast and responsive service will have a better perception of the platform, which ultimately increases their satisfaction and loyalty.

The Influence of E-Service Quality on Customer Satisfaction in Shopee E-Commerce

E-service quality is a crucial component of the customer experience on e-commerce platforms, encompassing key factors such as efficiency, reliability, privacy, and responsiveness [12]. Platforms that consistently deliver high-quality electronic services are more likely to retain customers over time [13]. In the case of Shopee, enhancing e-service quality can play a significant role in boosting user loyalty and minimizing churn rates.

The results of this study also explain that e-service quality has a significant influence on satisfaction with a p-value of $0.000 < 0.05$. E-service quality is an important factor in building a positive customer experience in online transactions. In Shopee e-commerce, e-service quality includes various aspects, such as security, reliability, responsiveness, ease of use, and system efficiency [29]. The higher the quality of services provided by the platform, the more likely customers are to feel satisfied and loyal to the service. E-service quality refers to the extent to which an e-commerce platform can meet customer expectations in online transactions. They assert that customers who experience a high-quality service experience will have a higher level of satisfaction compared to customers who experience problems in using the service .

Customer satisfaction in e-commerce is largely shaped by the overall experience users have while interacting with the platform [14]. Elements such as security, system reliability, and the responsiveness of customer service significantly influence how customers evaluate their experience [17]. When users feel that the platform is secure, dependable, and responsive to their needs, they are more likely to develop a sense of trust and satisfaction [15]. This satisfaction not only increases their likelihood of continuing to use the service but also encourages them to recommend the platform to others, strengthening brand loyalty and organic growth over time [30].

Thus, it can be concluded that e-service quality has a positive and significant influence on customer satisfaction in Shopee e-commerce. Customers who get a good service experience tend to be more satisfied, trust and have the potential to continue using the e-commerce service in the long run.

Conclusion

This study aims to analyze the influence of security, reliability, and responsiveness on e-service quality and their impact on customer satisfaction in the use of Shopee's e-commerce platform. Based on the analysis using the SEM-PLS method, several key findings emerged. First, security has a positive and significant effect on e-service quality, indicating that the higher the perceived security in transactions and data protection, the better users' perception of Shopee's electronic service quality. Second, reliability also positively and significantly affects e-service quality, with factors such as platform stability, accuracy of product information, and timely delivery contributing to the improvement of service quality. Third, responsiveness, reflected in prompt handling of complaints and user inquiries by customer service, plays a crucial role in enhancing users' experience on Shopee. Finally, higher perceived e-service quality significantly increases customer satisfaction, meaning that better service quality leads to greater satisfaction among Shopee's customers.

From these findings, it can be concluded that security, reliability, and responsiveness are essential factors in building high-quality electronic services, which ultimately contribute to increased customer satisfaction on Shopee. Therefore, Shopee must continue to enhance transaction security, maintain system reliability, and improve customer service responsiveness to sustain and grow customer satisfaction in the long term.

References

[1] R. Ashiq and A. Hussain, "Exploring the effects of e-service quality and e-trust on consumers' e-satisfaction and e-loyalty: insights from online shoppers in Pakistan," *Journal of Electronic Business & Digital Economics*, vol. 3, no. 2, pp. 117–141, Jun. 2024, doi: 10.1108/JEBDE-09-2023-0019.

[2] V. A. Z. and L. L. B. A. Parasuraman, "'Servqual: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality,'" *Journal of Retailing*, vol. 64, no. 1, pp. 12–37, 1988.

[3] X. J. Mamakou, P. Zaharias, and M. Milesi, "Measuring customer satisfaction in electronic commerce: the impact of e-service quality and user experience," *International Journal of Quality & Reliability Management*, vol. 41, no. 3, pp. 915–943, Feb. 2024, doi: 10.1108/IJQRM-07-2021-0215.

[4] Katadata, "Account Hacking Cases on Shopee Increase, What Are the Causes?" ," *Katadata*, 2022.

[5] J. Valencia, S. Alie, R. Wulandari, and S. Hamali, "Effect of Security, Privacy, and Customer Satisfaction on E-Commerce Consumer Trust," in *2024 International Conference on Informatics, Multimedia, Cyber and Information System (ICIMCIS)*, IEEE, Nov. 2024, pp. 429–434. doi: 10.1109/ICIMCIS63449.2024.10957101.

[6] M. V. Djulianto, A. Poerna Wardhanie, and C. Candraningrat, "The Role Of Perceived Usability, Satisfaction, And Customer Trust In Design And Developing User Loyalty Edutech Website," *Business and Finance Journal*, vol. 7, no. 2, pp. 183–194, Oct. 2022, doi: 10.33086/bfj.v7i2.3493.

[7] We Are Social, "E-Commerce Consumer Behavior in Indonesia," *We Are Social*, 2023.

[8] S. Kim, J. Kim, and S. Park, "The Effects of Perceived Value, Website Trust and Hotel Trust on Online Hotel Booking Intention," *Sustainability*, vol. 9, no. 12, p. 2262, Dec. 2017, doi: 10.3390/su9122262.

[9] M. A. Nangin, I. R. G. Barus, and S. Wahyoedi, "The Effects of Perceived Ease of Use, Security, and Promotion on Trust and Its Implications on Fintech Adoption," *Journal of Consumer Sciences*, vol. 5, no. 2, pp. 124–138, Aug. 2020, doi: 10.29244/jcs.5.2.124-138.

[10] O. Saoula *et al.*, "Building e-trust and e-retention in online shopping: the role of website design, reliability and perceived ease of use," *Spanish Journal of Marketing - ESIC*, vol. 27, no. 2, pp. 178–201, Aug. 2023, doi: 10.1108/SJME-07-2022-0159.

[11] M. Cao, Q. Zhang, and J. Seydel, "B2C e-commerce web site quality: an empirical examination," *Industrial Management & Data Systems*, vol. 105, no. 5, pp. 645–661, Jun. 2005, doi: 10.1108/02635570510600000.

[12] I. Ahmad, R. Akbar, and M. A. Javed, "Nexus between e-service quality and e-customer satisfaction through functional and hedonic values: case of online shopping in Pakistan," *Kybernetes*, vol. 54, no. 2, pp. 771–788, Jan. 2025, doi: 10.1108/K-06-2023-1146.

[13] A. Demir, L. Maroof, N. U. Sabbah Khan, and B. J. Ali, "The role of E-service quality in shaping online meeting platforms: a case study from higher education sector," *Journal of Applied Research in Higher Education*, vol. 13, no. 5, pp. 1436–1463, Dec. 2021, doi: 10.1108/JARHE-08-2020-0253.

[14] F. Chu and X. Zhang, "Satisfaction, trust and online purchase intention: A study of consumer perceptions," in *2016 International Conference on Logistics, Informatics and Service Sciences (LISS)*, IEEE, Jul. 2016, pp. 1–4. doi: 10.1109/LISS.2016.7854436.

[15] A. Abror, D. Patrisia, Y. Engriani, S. Evanita, Y. Yasri, and S. Dastgir, "Service quality, religiosity, customer satisfaction, customer engagement and Islamic bank's customer loyalty," *Journal of Islamic Marketing*, vol. 11, no. 6, pp. 1691–1705, Nov. 2019, doi: 10.1108/JIMA-03-2019-0044.

[16] J. F. Hair, *A Primer on Partial Least Squares Structural Equa- tion Modeling (PLS-SEM)*. Los Angeles: SAGE Publication, 2017.

[17] B. Kaur, J. Kaur, S. K. Pandey, and S. Joshi, "e-Service Quality: Development and Validation of the Scale," *Global Business Review*, vol. 24, no. 5, pp. 953–971, Oct. 2023, doi: 10.1177/0972150920920452.

[18] S. Singh, "Measuring E-Service Quality and Customer Satisfaction with Internet Banking in India," *Theoretical Economics Letters*, vol. 09, no. 02, pp. 308–326, 2019, doi: 10.4236/tel.2019.92023.

[19] C. Fornell and D. F. Larcker, "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research*, vol. 18, no. 1, pp. 39–50, Feb. 1981, doi: 10.1177/002224378101800104.

[20] J. F. Hair, J. J. Risher, M. Sarstedt, and C. M. Ringle, "When to use and how to report the results of PLS-SEM," *European Business Review*, vol. 31, no. 1, pp. 2–24, Jan. 2019, doi: 10.1108/EBR-11-2018-0203.

[21] J. F. Hair Jr, M. Sarstedt, L. Hopkins, and V. G. Kuppelwieser, "Partial least squares structural equation modeling (PLS-SEM)," *European Business Review*, vol. 26, no. 2, pp. 106–121, Mar. 2014, doi: 10.1108/EBR-10-2013-0128.

[22] J. F. Hair Jr, M. Sarstedt, L. Hopkins, and V. G. Kuppelwieser, "Partial least squares structural equation modeling (PLS-SEM)," *European Business Review*, vol. 26, no. 2, pp. 106–121, Mar. 2014, doi: 10.1108/EBR-10-2013-0128.

[23] M. A. Khan, S. S. Zubair, and M. Malik, "An assessment of e-service quality, e-satisfaction and e-loyalty," *South Asian Journal of Business Studies*, vol. 8, no. 3, pp. 283–302, Oct. 2019, doi: 10.1108/SAJBS-01-2019-0016.

[24] Gefen, Karahanna, and Straub, "Trust and TAM in Online Shopping: An Integrated Model," *MIS Quarterly*, vol. 27, no. 1, p. 51, 2003, doi: 10.2307/30036519.

[25] M. Fassnacht and I. Koese, "Quality of Electronic Services," *J Serv Res*, vol. 9, no. 1, pp. 19–37, Aug. 2006, doi: 10.1177/1094670506289531.

[26] L. Fang, Z. Lu, and L. Dong, "Differentiating service quality impact between the online and off-line context: an empirical investigation of a corporate travel

agency," *International Hospitality Review*, vol. 35, no. 1, pp. 3–18, Jun. 2021, doi: 10.1108/IHR-01-2020-0003.

[27] Y.-F. Kuo, C.-M. Wu, and W.-J. Deng, "The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention in mobile value-added services," *Comput Human Behav*, vol. 25, no. 4, pp. 887–896, Jul. 2009, doi: 10.1016/j.chb.2009.03.003.

[28] B. M. Wibawa, R. Octovianisa, R. A. Miyagi, and R. R. Mardhotilah, "Pengaruh Perilaku Komplain dan Kepuasan Penanganan Komplain Terhadap Minat Pembelian Konsumen di E-Commerce," *Jurnal Teknologi Informasi dan Terapan*, vol. 6, no. 2, pp. 41–49, Dec. 2019, doi: 10.25047/jtit.v6i2.107.

[29] N. J. Slack and G. Singh, "The effect of service quality on customer satisfaction and loyalty and the mediating role of customer satisfaction," *The TQM Journal*, vol. 32, no. 3, pp. 543–558, Feb. 2020, doi: 10.1108/TQM-07-2019-0187.

[30] S. Zygiaris, Z. Hameed, M. Ayidh Alsubaie, and S. Ur Rehman, "Service Quality and Customer Satisfaction in the Post Pandemic World: A Study of Saudi Auto Care Industry," *Front Psychol*, vol. 13, Mar. 2022, doi: 10.3389/fpsyg.2022.842141.

Assessing the Economic Impact of the Pantawid Pamilyang Pilipino Program (4Ps) in the Philippines: A Systematic Review

Jayson Diaz

[1]College of Criminology, Green Valley College Foundation Inc., Koronadal City, Philippines
e-mail: jdiaz@gvcfi.edu.ph
*Corresponding Author: jason.diaz@greenvalleyph.com

ARTICLE INFO

ABSTRACT

This systematic review examines the impact of the Pantawid Pamilyang Pilipino Program (4Ps) on poverty reduction, education, healthcare utilization, and economic stability in the Philippines. Following the preferred reporting items for systematic reviews and meta analyses (PRISMA) guidelines, this study synthesizes findings from peer reviewed articles, government reports, and policy papers. Results indicate that 4Ps has significantly improved school enrollment, healthcare access, and household consumption, contributing to overall human capital development. However, challenges persist, including program dependency, targeting inefficiencies, misallocation of grants, and gaps in healthcare service utilization. Comparative analysis highlights regional disparities, with rural beneficiaries benefiting more from education and health services, while urban households demonstrate better financial management. Thematic synthesis reveals that employment effects remain mixed, as male household members show increased labor participation, whereas female employment remains unchanged. Policy recommendations emphasize strengthening livelihood programs, improving grant monitoring, addressing targeting inefficiencies, and enhancing family development sessions (FDS) for long-term socio-economic impact. While 4Ps has contributed to poverty alleviation and social mobility, continued refinements in program implementation, inter-agency coordination, and financial sustainability are necessary to maximize its long-term impact. Future research should explore longitudinal assessments and alternative social protection mechanisms to improve the program's effectiveness.

Introduction

Social protection programs are vital instruments in the fight against poverty and in promoting inclusive economic development. Among these, Conditional Cash Transfer (CCT) programs have emerged as one of the most widely adopted strategies globally, providing financial aid to low-income families contingent on fulfilling specific health and education-related conditions [1]. While the benefits of CCTs at the household

or micro level—such as improved school attendance and health outcomes—have been widely documented, there remains a lack of consolidated understanding regarding their broader economic implications at the macro level, such as their effects on labor market dynamics, income distribution, and national productivity.

In the Philippines, the Pantawid Pamilyang Pilipino Program (4Ps), launched in 2008 by the Department of Social Welfare and Development (DSWD), represents the country's largest and most ambitious social safety net program [3]. As of 2023, it has reached over 4 million households, providing conditional cash grants that aim to break the intergenerational cycle of poverty by investing in human capital—specifically in health, education, and nutrition [4]. The program requires compliance with conditions such as regular school attendance for children and prenatal checkups for pregnant women.

Numerous studies have explored the micro-level impacts of 4Ps, consistently reporting positive outcomes in education access, child health, and short-term poverty reduction [6]. However, the macro-level economic effects of the program—such as changes in national income, employment patterns, productivity, and fiscal sustainability—are far less clear. While some studies suggest that cash transfers stimulate local economies through increased consumption and demand [7], others caution against potential adverse effects, such as dependency, reduced labor participation, and strain on public finances [17]. The inconsistencies and methodological differences in these studies create a fragmented evidence base. Amid these conflicting results, there is a compelling need for a systematic review that synthesizes existing empirical findings on the effectiveness of the Pantawid Pamilyang Pilipino Program (4Ps), particularly in relation to household welfare, implementation challenges, and policy implications. Utilizing the PRISMA guidelines ensures a structured, transparent, and replicable approach to identifying, selecting, and analyzing relevant studies across the national landscape.

This research generally aims to evaluate the impact and effectiveness of the Pantawid Pamilyang Pilipino Program (4Ps) based on a systematic review of existing literature using PRISMA guidelines. Specifically, it seeks to answer the following questions (1) How effective is the 4Ps program in improving household welfare, particularly in terms of poverty alleviation, educational outcomes, and health conditions among beneficiaries?; (2) What common implementation challenges and targeting issues are identified across various studies on the 4Ps program?; (3) What policy recommendations can be derived from the existing literature to improve the long-term sustainability and impact of the 4Ps program?

Research Methods

This study employed a systematic review methodology guided by the PRISMA framework to assess the economic impact of the Pantawid Pamilyang Pilipino Program (4Ps) in the Philippines. The review synthesized existing empirical studies, government reports, and academic research that examined how 4Ps influenced GDP growth, employment, income distribution, and household welfare. The following inclusion and exclusion criteria were used to filter relevant studies :

Table 1 Eligibility Criteria

Criteria	Inclusion	Exclusion
Study Type	Peer-reviewed journal articles, government reports, institutional studies	Opinion pieces, policy briefs without empirical data, non-systematic reviews
Focus Area	Economic indicators (poverty alleviation, labor market effects, income levels, household expenditure)	Studies on purely social, behavioral, or psychological effects
Publication Year	2008 onwards (aligned with 4Ps implementation)	Studies published before 2008
Language	English or Filipino	Non-English/non-Filipino publications without translations
Relevance	Direct assessment of 4Ps impact on economic development	Duplicates or irrelevant studies

(Source : Data Processing Researchers)

Search Strategy

A structured search was conducted across multiple academic databases and government repositories using Boolean search operators and controlled vocabulary (if applicable) to ensure comprehensive coverage.

Table 2 Databases and Sources

Database/Source	Reason for Inclusion
Google Scholar	Broad coverage of academic literature
IEEE Xplore	Technical studies on financial/electronic cash transfer systems
ScienceDirect	Research on economics, development, and social protection
World Bank Repository	Official reports and impact assessments on CCT programs
Philippine Institute for Development Studies (PIDS)	Policy research on 4Ps and poverty alleviation
DSWD Reports	Government evaluations of the 4Ps program
DOAJ (Directory of Open Access Journals)	Open-access peer-reviewed research on economics and social welfare
Philippine E-Journals	Localized research focusing on the Philippine economic and social landscape

(Source : Data Processing Researchers)

To refine the search and retrieve the most relevant studies, the following expanded keyword strategy was used:

Table 3 Searching Keywords

Primary Keywords	Alternative Terms and Variants
"Pantawid Pamilyang Pilipino Program"	"4Ps Program" OR "Philippines CCT" OR "Philippine Conditional Cash Transfer"
"Conditional Cash Transfer"	"CCT scheme" OR "targeted cash transfers" OR "government cash assistance"
"Economic impact"	"Macroeconomic effects" OR "fiscal impact" OR "income redistribution"
"Poverty reduction"	"Poverty alleviation" OR "anti-poverty programs" OR "social safety nets"
"Employment effects"	"Labor market participation" OR "unemployment reduction" OR "household labor supply"
"Household income"	"Consumption patterns" OR "financial well-being" OR "income security"
"Social protection policies"	"Welfare programs" OR "government subsidies" OR "poverty-targeted interventions"

(Source : Data Processing Researchers)

Boolean Search Combinations Used, To optimize retrieval, Boolean operators (AND, OR, NOT) were applied in search queries. Examples (a) ("Pantawid Pamilyang Pilipino Program" OR "4Ps") AND ("economic impact" OR "macroeconomic effects"); (b) ("Conditional Cash Transfer" OR "CCT") AND ("poverty alleviation" OR "household welfare"); (c) ("4Ps Philippines") AND ("income distribution" OR "social mobility") NOT ("behavioral effects"). These refinements help ensure better coverage of both quantitative and qualitative studies related to 4Ps and its economic effects.

Screening and Selection Process

The study selection followed PRISMA guidelines, with three screening stages:

Table 4 Screening stages

Screening Stage	Process Description
1.Title and Abstract Screening	Studies were assessed for relevance based on their titles and abstracts.
2. Full-Text Review	Articles that passed the first stage were reviewed in full to determine eligibility.
3. Quality Assessment	The final studies were evaluated using the Mixed Methods Appraisal Tool (MMAT) to ensure methodological rigor.

(Source : Data Processing Researchers)

All studies were assessed using the MMAT 2018 tool to gauge methodological quality. No specific cutoff score was applied; instead, all studies were retained regardless of score to provide a comprehensive synthesis. However, MMAT scores were

documented and considered when interpreting the strength and reliability of the evidence.

Data Extraction and Synthesis
A systematic evidence matrix was used to organize extracted data:

Table 5 Evidence matrix

Category	Details Extracted
Study Information	Author, year, publication source
Research Design	Quantitative, qualitative, mixed methods
Economic Indicators	GDP growth, employment, income levels, labor participation
Key Findings	Effects on poverty, fiscal sustainability, multiplier effects
Limitations	Study weaknesses and research gaps

(Source : Data Processing Researchers)

Findings were analyzed using narrative synthesis, comparing trends, consistencies, and contradictions across studies. Although meta-analysis techniques were considered to quantitatively assess the impact of 4Ps on economic indicators, they were not conducted due to significant heterogeneity in study designs, outcome measures, and reported data, which limited the comparability and pooling of results.

Risk of Bias and Limitations
Bias was assessed using standard evaluation tools:

Table 6 Bias Standard Evaluation Tool

Assessment Tool	Purpose
Cochrane Risk of Bias Tool	Evaluates bias in randomized control trials
ROBINS-I (Risk Of Bias In Non-randomized Studies of Interventions)	Assesses bias in observational studies

(Source : Data Processing Researchers)

Key limitations of this systematic review include:
a. Publication bias – Preference for studies with significant results.
b. Methodological differences – Variability in data collection and analysis across studies.
c. Contextual variations – Differences in regional implementation of 4Ps affecting comparability.

Ethical Considerations
Since this study is based entirely on secondary data, no ethical clearance was required. Proper citation and adherence to IEEE referencing guidelines were ensured to maintain academic integrity.

Result and Discussion

Identification of studies via databases and registers

Identification

Records identified from*:
Databases (n =320)

Records removed *before screening*:
Duplicate records removed (n = 65)
Records marked as ineligible by automation tools (n =25)
Records removed for other reasons (n = 15)

Screening

Records screened
(n = 215)

Records excluded**
(n = 105)

Reports sought for retrieval
(n =107)

Reports not retrieved
(n = 68)

Reports assessed for eligibility
(n = 39)

Reports excluded:
Insufficient data (n = 11)
Duplication (n = 7)
Irrelevant scope (n = 4)

Included

Studies included in review
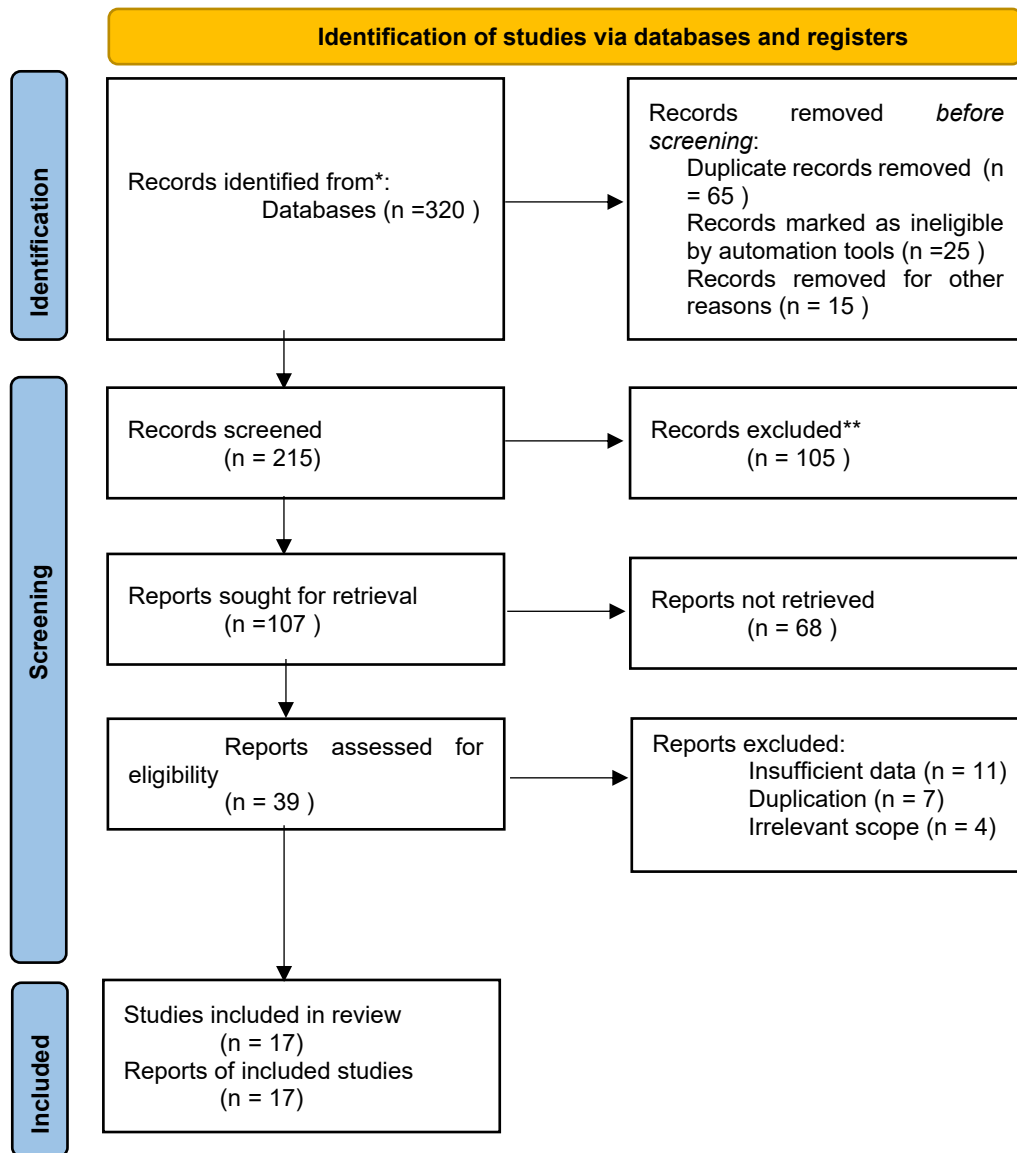(n = 17)
Reports of included studies
(n = 17)

Figure 1 PRISMA Flow Diagram
(Source : Data Processing Researchers)

The PRISMA flow diagram provides a structured approach to documenting the selection process for systematic reviews based on database and register searches. The identification phase records 320 studies retrieved from databases, with 105 being removed before screening due to duplication (65), ineligibility by automation (25), or other reasons (15). The screening process then evaluates 215 records, excluding 105. In the retrieval phase, 107 reports were sought, but 68 were not retrieved. The eligibility assessment phase reviewed 39 reports, excluding 22 due to insufficient data (11), duplication (7), or irrelevance (4). Ultimately, 17 studies were included in the systematic review. This transparent process ensures methodological rigor and minimizes bias in evidence synthesis.

Table 7 Research Characteristics Table (17 Included researches/studies)

	Author & Year	Study Design	Journal / Repository	DOI/URL	Key Findings	Citations
1	Frufonga (2015)	Program Evaluation (Input-Process-Output Model)	Asia Pacific Journal of Multidisciplinary Research	apjmr.com	Evaluated 4Ps in Iloilo, finding significant improvements in healthcare, nutrition, school enrollment, and attendance. Nearly eliminated dropouts, increased spending on essentials, and achieved high community engagement.	19
2	Flores et al. (2019)	Quantitative Descriptive Study	Journal of Public Administration and Governance	10.5296/JPAG.V9I2.14762	4Ps significantly influenced student attendance and academic performance. Supports Expectancy Theory and suggests program expansion, improved livelihood opportunities, and better cash grant efficiency.	16
3	Peñalba (2019)	Qualitative Study (Thematic Network Analysis)	Journal of Social Work Education and Practice	SSRN: 3567177	4Ps improves health outcomes but faces implementation challenges. Recommends strengthening Family Development Sessions and support mechanisms for implementers.	3
4	Quimson (2020)	Observational Study	Journal of Critical Reviews	10.31838/jcr.07.13.37	4Ps in Pangasinan was highly effective, benefiting low-income families. Key agencies (DSWD, DepEd, DOH, LGUs) played a significant role in improving education, health, food security, and social development.	1
5	Initiative, G. (2020)	Policy Analysis	World Bank Human Capital Project	10.1596/34211	4Ps is a strategic investment in human capital development, fostering long-term socioeconomic mobility. Emphasizes inter-agency coordination, political continuity, and evidence-based policymaking.	1
6	Lluz (2020)	Qualitative Case Study	International Journal of Research	10.29121/granthaalayah.v8.i8.2020.971	4Ps student dropouts mainly come from indigent families. Despite financial aid, poverty remains a significant barrier to education, as many students leave school to support their families.	2

7	Alinsunurin (2020)	Qualitative Narrative Analysis	Development in Practice	10.1080/09614524.2020.1839019	4Ps reshapes beliefs and behaviors of women beneficiaries through compliance mechanisms. Highlights both empowerment and dependency concerns within CCT programs.	5
8	Diaz (2021)	Quantitative Descriptive-Comparative	Sapienza: Int'l Journal of Interdisciplinary Studies	10.51798/sijis.v2i1.16	4Ps implementation (2008–2018) significantly increased the Philippines' HDI. Countries with CCT programs showed higher HDI than those without.	0
9	Boca, Pronzato & Sorrenti (2021)	Randomized Controlled Trial	European Economic Review	10.1016/J.EUROECOREV.2021.103755	Employment reduces poverty risk. Fathers in CCT programs with labor-market mentoring were 14% more likely to work than those in unconditional programs. No effects were observed for mothers.	8
10	Dadap-Cantal, Fischer, & Ramos (2021)	Documentary Analysis & Fieldwork	Critical Social Policy	10.1177/02610183211009891	4Ps struggles with targeting inefficiencies due to outdated registry data. Coverage declined from 19% (2014) to 17% (2020). Cash transfers fell below the food poverty line, raising concerns about long-term effectiveness.	5
11	De Los Reyes et al. (2022)	Case Study	American Journal of Interdisciplinary Research and Innovation (AJIRI)	10.54536/ajiri.v1i1.451	4Ps improved poverty reduction, social development, financial management, and livelihood empowerment among Ilokano beneficiaries.	8
12	Orbeta, Melad, & Araos (2023)	Impact Evaluation (Regression Discontinuity Design)	PIDS Research Paper Series	10.62986/rps2023.06	4Ps positively impacts education, health, and welfare. Identifies inconsistencies in maternal healthcare use and calls for improved monitoring, policy refinements, and re-evaluating cash grants.	4
13	De Jesus & Villanueva (2023)	Quantitative Satisfaction Survey	American Journal of Society and Law	10.54536/ajsl.v2i2.1535	4Ps beneficiaries were highly satisfied with education-related grants, but some misallocated funds to food. Recommends financial literacy training and livelihood programs for sustainability.	0

14	Obligad o (2024)	Mixed Methods (Triangulat ion Design)	International Journal of Public Policy and Administratio n Research	10.18488/74. v11i3.3933	4Ps has positively impacted socio-economic conditions but effectiveness varies across municipalities. Calls for implementation refinements to ensure uniform benefits.	0
15	Capulo ng & Cuevas (2024)	Propensity Score Matching (PSM)	Journal of Economics Research and Social Sciences	10.18196/jer ss.v8i1.2072 6	4Ps improved education in rural areas and food quality in urban areas. Decreased total and food expenditure in urban households, indicating better saving habits.	1
16	Mangot ara (2024)	Qualitative Study (FGDs & Surveys)	International Journal for Multidisciplin ary Research	10.36948/ijf mr.2024.v06 i03.21159	Evaluated 4Ps Family Development Sessions in Marawi City. Beneficiaries understood nutrition topics well but faced challenges in engagement, venue issues, and cultural resistance. Recommends fixed schedules and evaluations.	0
17	Ambon g & Gonzale s (2024)	Cross-Sectional Study (Mixed Methods)	Journal of Health Management	10.1177/097 2063423122 5014	4Ps families allocate most health expenditure to inpatient care. High out-of-pocket costs persist despite insurance coverage. Calls for improved customer service in healthcare facilities.	2

(Source : Data Processing Researchers)

Table 8 Thematic Synthesis of 4Ps Research Findings

Theme	Subtheme	Key Findings	Supporting Studies
1. Poverty Reduction Household Welfare	Impact on Living & Standards	4Ps increased household consumption, financial stability, and access to basic needs.	[11], [15], [18]
	Dependency Concerns	Some households remain dependent on cash grants, requiring livelihood support for long-term sustainability.	[16], [18]
2. Educational Impact	School Enrollment & Retention	4Ps improved school attendance and retention, especially in rural areas.	[12], [14]
	Dropout Issues	Despite financial aid, some students still drop out due to extreme poverty and family responsibilities.	[3]

Table 8 Thematic Synthesis of 4Ps Research Findings

Theme	Subtheme	Key Findings	Supporting Studies
3. Health & Nutrition Outcomes	Healthcare Utilization	Increased maternal checkups, child immunization, and hospital visits.	[5], [18]
	Financial Barriers	High out-of-pocket expenses for healthcare persist despite insurance coverage.	[22]
4. Economic & Employment Effects	Labor Market Participation	Fathers in CCT programs with labor-market mentoring were 14% more likely to work. No effects on mothers.	[13]
	Household Spending Patterns	Urban households allocated savings, while rural households spent more on education and food.	[14]
5. Challenges in Program Targeting & Implementation	Beneficiary Targeting	Issues with outdated registry data and inaccurate beneficiary selection.	[17], [18]
	Grant Misuse	Some beneficiaries misallocated grants meant for education to food expenses.	[20]
6. Social & Behavioral Changes	Women's Empowerment	Family Development Sessions (FDS) reshaped financial and social behaviors among women.	[19], [21]
	Cultural & Logistical Challenges	Some communities faced engagement issues due to cultural resistance and venue limitations.	[19]

(Source : Data Processing Researchers)

The Pantawid Pamilyang Pilipino Program (4Ps) has demonstrated significant positive impacts on poverty reduction, education, health, and economic stability. However, challenges remain, particularly in targeting, dependency, and financial sustainability.

1. Poverty Reduction & Household Welfare. 4Ps effectively improved household consumption and financial stability, but dependency concerns highlight the need for stronger livelihood support [15], [18].

2. Educational Impact. The program increased school enrollment and retention, particularly in rural areas, but dropout rates persist due to extreme poverty and family obligations [12], [16].

3. Health & Nutrition Outcomes. While healthcare utilization improved, high out-of-pocket expenses remain a barrier for many beneficiaries, indicating gaps in healthcare support [19], [22].

4. Economic & Employment Effects. The program enhanced employment rates among fathers but had no significant effect on mothers. Household spending patterns also varied, with urban families saving more while rural households allocated funds to food and education [13], [14].

5. Challenges in Program Targeting & Implementation – Outdated registry data and misallocation of grants continue to hinder program effectiveness, suggesting the need for improved monitoring systems [17], [20].

6. Social & Behavioral Changes. Family Development Sessions (FDS) positively influenced financial and social behaviors among women, yet cultural resistance and logistical barriers remain obstacles to full engagement [21], [19].

Overall, 4Ps has proven effective in key social and economic areas but requires policy refinements, stronger monitoring, and complementary livelihood programs to enhance long-term impact.

Table 9 Comparative Analysis of 4Ps Research Findings

Aspect	Findings in Favor of 4Ps Effectiveness	Findings Highlighting Challenges	Sources
Study Design	Experimental studies (RCTs, impact evaluations) confirm positive effects on education, poverty reduction, and health.	Qualitative case studies reveal dropout issues, financial struggles, and dependency concerns.	[13], [18], [16]
Geographic Variations	Rural areas benefited more in education and healthcare access due to program focus.	Urban households saved more, but spent less on food and education, raising concerns about long-term impact.	[14], [19]
Methodology Differences	Large-scale surveys and econometric models show statistical improvements in HDI and economic mobility.	Field studies and interviews highlight inefficiencies in grant allocation and outdated beneficiary data.	[10], [17]
Longitudinal Trends	Over time, 4Ps expanded coverage and contributed to social mobility.	Recent evaluations suggest targeting inefficiencies and grant misallocation remain unresolved.	[16], [20]
Program Implementation	Multi-agency coordination has improved education and health outcomes.	Cultural resistance and logistical barriers limit full participation in Family Development Sessions (FDS).	[21], [19]

(Source : Data Processing Researchers)

The findings from the comparative analysis indicate that study design significantly influences the reported outcomes of 4Ps. Quantitative research emphasizes the program's success in improving education, health, and poverty reduction, whereas qualitative studies reveal deeper challenges, such as financial struggles and long-term dependency among beneficiaries. Geographic differences also play a role, with rural recipients benefiting more from education and healthcare services, while urban households demonstrate better financial management but allocate less of their grants to education expenses. Over time, 4Ps has contributed to poverty alleviation and social mobility; however, issues related to ineffective targeting and long-term sustainability

persist despite continued implementation. Additionally, several barriers hinder the program's full effectiveness, including cultural resistance, outdated beneficiary registries, and logistical challenges that limit participation and the efficient distribution of grants.

Policy Implications & Recommendations

The findings of this systematic review present several critical policy implications that can enhance the effectiveness and long-term sustainability of the 4Ps program. First, improving beneficiary targeting mechanisms is essential to address persistent inefficiencies in the selection process. Outdated registry data and inaccurate identification of eligible households have led to inequitable distribution of cash grants, where some genuinely poor families remain excluded while others who no longer meet eligibility criteria continue receiving support [17]. Strengthening data validation systems, periodic reassessments, and cross-agency coordination can help ensure that financial aid reaches those who need it most [18].

Second, addressing program dependency is crucial to making 4Ps a catalyst for long-term poverty alleviation rather than a short-term relief mechanism. While cash grants have improved household consumption, many families still struggle with financial independence, particularly in rural areas where employment opportunities remain scarce [15]. The integration of livelihood training, entrepreneurship programs, and skills development initiatives can help beneficiaries transition from financial assistance to self-sufficiency [16]. Collaboration with local governments, private sectors, and NGOs can create employment linkages that empower families to generate stable incomes beyond the program [13].

Third, enhancing cash grant efficiency is necessary to maximize its impact. Current allocations are often insufficient to fully cover the educational and healthcare needs of beneficiaries, and inflation further erodes their value [18]. Periodic adjustments to grant amounts, indexed to inflation and cost-of-living variations across different regions, can ensure that financial support remains adequate. Additionally, implementing stricter monitoring mechanisms can prevent misallocation of funds, particularly in cases where grants meant for education are diverted to other household expenses [20]. Strengthening financial literacy programs for beneficiaries can also help them make better use of their assistance [21].

Fourth, addressing healthcare and education barriers is essential to improving compliance with program conditions. While the review found that 4Ps has increased school attendance and healthcare utilization, challenges such as high out-of-pocket medical costs, poor hospital services, and dropout rates due to financial struggles persist [19], [22]. Enhancing public healthcare infrastructure, expanding insurance coverage, and improving access to free or subsidized medical services can alleviate financial burdens on beneficiaries. In education, providing additional support for transportation, school supplies, and incentives for families in high-risk dropout areas can help sustain student enrollment and retention rates [16].

Finally, improving community engagement and program implementation can strengthen the long-term success of 4Ps. The Family Development Sessions (FDS) have

played a vital role in shaping financial behaviors and social empowerment, particularly among women. However, engagement levels remain inconsistent due to logistical challenges, cultural resistance, and lack of participation in some communities [19]. Increasing awareness campaigns, adapting session content to local contexts, securing proper venues, and incentivizing attendance can enhance program impact. Moreover, capacity-building for program implementers and local government units can improve the overall administration and delivery of 4Ps services [10]. In summary, while 4Ps has proven effective in reducing poverty and improving social outcomes, addressing targeting inefficiencies, dependency risks, financial sustainability, service accessibility, and community engagement is crucial for its continued success. A holistic, multi-sectoral approach that combines direct financial assistance with sustainable economic opportunities and stronger institutional support will help maximize its impact and ensure long-term poverty alleviation in the Philippines.

Conclusion

This systematic review underscores the pivotal role of the Pantawid Pamilyang Pilipino Program (4Ps) in mitigating poverty by enhancing educational attainment, improving healthcare access, and promoting economic participation among low-income beneficiaries, particularly in rural areas. The evidence confirms that 4Ps has significantly boosted household consumption, school enrollment, and healthcare utilization. Nonetheless, critical challenges persist, such as beneficiary dependency on cash grants, inefficient targeting mechanisms, high healthcare expenses, and occasional program misallocation. To address these issues, the most urgent policy priorities include refining targeting processes to ensure aid reaches the most vulnerable, adjusting cash grants to reflect inflationary trends, strengthening employment linkages to promote financial independence, and updating beneficiary registries for improved program accuracy. Additionally, reinforcing community engagement through Family Development Sessions (FDS) and enhancing education and health interventions are essential to reduce school dropouts and alleviate medical financial barriers.

The findings have important implications for theory development, suggesting that conditional cash transfer programs like 4Ps function optimally when combined with multi-sectoral support systems that address education, health, and livelihood holistically. Practically, a data-driven, coordinated approach involving institutional partnerships is crucial to maximize program effectiveness and sustainability. Future research should move beyond longitudinal assessments to employ mixed-methods designs that incorporate qualitative insights from beneficiaries and stakeholders, focus on subgroup analyses such as gender and geographic disparities, and evaluate the impact of emerging program modifications on socio-economic outcomes. Such comprehensive investigations will deepen understanding of 4Ps' mechanisms and guide continuous policy refinement.

Overall, while 4Ps has demonstrably contributed to social and economic development in the Philippines, sustained success requires prioritizing efficient resource allocation, improving program monitoring, and fostering beneficiary empowerment. Strengthening livelihood initiatives, institutional coordination, and evidence-based

47

policy frameworks will be key to ensuring that 4Ps continues to uplift vulnerable communities and achieve sustainable poverty alleviation.

References

[1] L. Prencipe, T. A. J. Houweling, F. J. van Lenthe, and T. Palermo, "Do Conditional Cash Transfers Improve Mental Health? Evidence From Tanzania's Governmental Social Protection Program," *J. Adolesc. Health*, vol. 69, no. 5, pp. 797–805, 2021. [Online]. Available: https://doi.org/10.1016/j.jadohealth.2021.04.033.

[2] A. H. Hadna and M. W. Askar, "The Impact of Conditional Cash Transfers on Low-Income Individuals in Indonesia," *Austrian J. South-East Asian Stud.*, vol. 15, no. 1, pp. 23–42, 2022. [Online]. Available: https://doi.org/10.14764/10.ASEAS-0067.

[3] E. J. A. Ponce, "The Policy Process of the Philippines' Conditional Cash Transfer Program: Analysis of the Pantawid Pamilyang Pilipino Program (4Ps)," *Int. J. Res. Innov. Soc. Sci.*, vol. 6, no. 7, pp. 203–209, 2022. [Online]. Available: https://doi.org/10.47772/ijriss.2022.6714.

[4] A. L. D. Cuizon and C. B. D. Cuizon, "Conditional Cash Transfer (CCT): 4Ps in the Lens of Philippine Decentralization," *Thammasat Rev.*, vol. 25, no. 1, pp. 202–223, 2022. [Online]. Available: https://doi.org/10.14456/tureview.2022.9.

[5] M. Bustos et al., "Examining the Association Between Household Enrollment in the Pantawid Pamilyang Pilipino Program (4Ps) and Wasting and Stunting Status Among Children Experiencing Poverty in the Philippines: A Cross-Sectional Study," *Asia-Pac. J. Public Health*, vol. 35, no. 6–7, pp. 420–428, 2023. [Online]. Available: https://doi.org/10.1177/10105395231189570.

[6] D. J. Herrera et al., "Mixed-method study on the association between inclusion to conditional cash transfer program and the multiple faces of malnutrition in children and adolescents aged 3 to 19 years: a school-based evidence from Caraga Region, the Philippines," *BMC Pediatr.*, vol. 23, no. 1, 2023. [Online]. Available: https://doi.org/10.1186/s12887-023-04438-8.

[7] C. Ramos et al., "Compliance, livelihood support, and challenges of the Pantawid Pamilyang Pilipino Program of the local government unit," *Technium Soc. Sci. J.*, vol. 54, pp. 263–275, 2024. [Online]. Available: https://doi.org/10.47577/tssj.v54i1.10609.

[8] W. Dodd et al., "Limits to Transformational Potential: Analysing Entitlement and Agency within a Conditional Cash Transfer Program in the Philippines," *Soc. Policy Soc.*, pp. 1–18, 2022. [Online]. Available: https://doi.org/10.1017/s1474746422000215.

[9] J. Obligado, "The role of conditional cash transfers in enhancing socio-economic well-being in Nueva Ecija, Philippines," *Int. J. Public Policy Admin. Res.*, 2024. doi: 10.18488/74.v11i3.3933.

[10] R. Diaz, "Effects of Pantawid Pamilyang Pilipino Program (4Ps) and other Conditional Cash Transfer (CCT) Programs of Low and Middle-Income Countries on Human Development," *Sapienza: Int. J. Interdiscip. Stud.*, vol. 2, pp. 2–11, 2021. doi: 10.1596/34211.

[11] B. De Los Reyes et al., "Rang-Ay Babaen ti 4Ps: Its Impact to Selected Ilokano Beneficiaries in Santiago, Ilocos Sur, Philippines," *Am. J. Interdiscip. Res. Innov.*, 2022. doi: 10.54536/ajiri.v1i1.451.

[12] M. Flores et al., "Pantawid Pamilyang Pilipino Program (4Ps): Its Effect on the Academic Performance of Student-Beneficiaries in Calaba National High School in the Philippines," *J. Public Admin. Gov.*, 2019. doi: 10.5296/JPAG.V9I2.14762.

[13] D. Boca et al., "Conditional cash transfer programs and household labor supply," *Eur. Econ. Rev.*, 2021. doi: 10.1016/J.EUROECOREV.2021.103755.

[14] C. Capulong and A. Cuevas, "The Effectiveness of Conditional Cash Transfer Program: A Case of Rural and Urban Beneficiaries in Philippines," *J. Econ. Res. Soc. Sci.*, 2024. doi: 10.18196/jerss.v8i1.20726.

[15] R. F. Frufonga, "The Pantawid Pamilyang Pilipino Program (4Ps) in Iloilo, Philippines: an evaluation," *Asia Pac. J. Multidiscip. Res.*, vol. 3, pp. 59–65, 2015.

[16] G. Initiative, "Boosting Human Capital in the Philippines through Conditional Cash Transfers," *World Bank Human Capital Project*, 2020. doi: 10.1596/34211.

[17] E. Dadap-Cantal et al., "Targeting versus social protection in cash transfers in the Philippines: Reassessing a celebrated case of social protection," *Crit. Soc. Policy*, vol. 41, pp. 364–384, 2021. doi: 10.1177/02610183211009891.

[18] A. Orbeta et al., "Reassessing the Impact of the Pantawid Pamilyang Pilipino Program: Results of the Third Wave Impact Evaluation," *Res. Pap. Ser.*, 2023. doi: 10.62986/rps2023.06.

[19] N. Mangotara, "Exploring the Effectiveness of Pantawid Pamilyang Filipino Program (4Ps) Family Development Sessions: Understanding, Challenges, and Impact on Exiting Household Beneficiaries in Marawi City," *Int. J. Multidiscip. Res.*, 2024. doi: 10.36948/ijfmr.2024.v06i03.21159.

[20] F. De Jesus and W. Villanueva, "Satisfaction Level of the Beneficiaries of Pantawid Pamilyang Pilipino Program (4Ps)," *Am. J. Soc. Law*, 2023. doi: 10.54536/ajsl.v2i2.1535.

[21] M. Alinsunurin, "Governmentality and gendered realities: experiences from the Philippines' cash transfer programme," *Dev. Pract.*, vol. 31, pp. 334–343, 2020. doi: 10.1080/09614524.2020.1839019.

[22] R. Ambong and A. Gonzales, "Health Expenditure and Utilisation of Poor Families in a Low-Income Community under the Philippine Conditional Cash Transfer Program," *J. Health Manag.*, vol. 26, pp. 116–123, 2024. doi: 10.1177/09720634231225014.

The Effect Of Workload, Work Motivation And Work Discipline On Civil Servant Performance During Remote Working Period

Nadyasyifa Annisa Syakur[1], Zackharia Rialmi[2]*

[1,2] Faculty of Economic and Business, Universitas Pembangunan Nasional Veteran Jakarta – Indonesia

e-mail: na.syakur@upnvj.ac.id[1], zac_rialmi@upnvj.ac.id[2]

*Corresponding Author: zac_rialmi@upnvj.ac.id

ARTICLE INFO

ABSTRACT

This research is a quantitative research, the purpose of this research is to know the influence of workload, motivation and work discipline on employee performance in the field of utilization division of center for data and information at ministry of education and culture Republic of Indonesia, during the implementation of Remote working. This study used a sample of 65 employees using saturated sample techniques. Data analysis techniques used in this study is partial least square (PLS). Test results obtained in this study first, workload positively and significantly affect the performance of employees in the field of utilization division of center for data and information at ministry of education and culture during remote working. Second, motivation positively and significantly affect the performance of employees in the field of utilization division of center for data and information.

Introduction

Human resources represent a pivotal asset for any organization, fundamentally influencing its capacity to achieve strategic objectives and sustain competitive advantage. To maximize organizational effectiveness, continuous evaluation and enhancement of employee performance are imperative. This process not only involves monitoring individual contributions but also necessitates the ongoing adaptation of work systems to align with evolving environmental and contextual demands. Such dynamic reassessment fosters a work environment conducive to both employee well-being and organizational development [1].

The Ministry of Education and Culture of Indonesia enacted a remote working program policy based on the Secretary General's Circular No. 36603/A.A5/OT/2020, effective from March 16, 2020, until further notice. This directive aimed to mitigate covid 19 virus transmission while maintaining operational continuity. The rapid transition to remote work, although facilitated by advancements in information and communication technology, introduced new challenges that affect employee performance and well-being.

Within the Ministry, the Information Technology and Information Center, responsible for the management, design, and utilization of ICT (Information Communication Technology) systems supporting educational and cultural functions, experienced observable declines in employee performance during the remote working period, as evidenced by comparative analyses of work output between remote and office-based arrangements. Based on an interview with the Coordinator of the Utilization Division at the Center for Data and Information Technology, Ministry of Education and Culture, the implementation of the remote working system has brought various challenges experienced by employees, particularly in the Utilization of Information and Communication Technology (ICT) sector. Several issues contributing to increased workload during remote working include: (1) Differences in employees' knowledge and skills in using technology that supports remote work implementation. (2) Blurred working hours—normally 8 hours per day—have become irregular due to the flexible nature of working from home, allowing work to extend beyond standard hours. (3) Remote working, perceived as more flexible, often results in task accumulation and overlapping schedules for virtual meetings or video conferences. These challenges have become significant obstacles in the implementation of remote working for employees in the ICT Utilization Division at the Center for Data and Information Technology. As tasks must be completed remotely on a daily basis, employees frequently experience schedule clashes between task execution and virtual meetings, which may lead to a decline in their overall performance.

Despite an expanding literature on remote work's impact on employee performance, a critical gap persists regarding the combined influence of workload, motivation, and work discipline on civil servants' performance in public sector organizations during compulsory remote working conditions. previous research often isolates these variables or focuses on private sector contexts, lacking integrated analysis within government institutions confronting sudden operational shifts caused by the pandemic [2]. This study addresses this deficiency by empirically investigating these factors within the Ministry of Education and Culture, thereby contributing novel insights into adaptive human resource strategies vital for sustaining employee performance amid crisis-driven remote work environments. Such findings enrich the literature by elucidating the complex interplay between workload management, motivational dynamics, and disciplinary practices under unprecedented working conditions, thereby filling an important gap in public sector HR management scholarship.

The observed decline in employee performance during remote working is purportedly attributable to several interrelated challenges, including increased workload demands, diminished work motivation, and reduced levels of discipline [3]. These factors collectively contribute to a significant deterioration in employee productivity and effectiveness. The urgency of this study stems from the unprecedented rapid implementation of remote work policies in response to the covid 19 pandemic, which caught many public sector organizations unprepared to effectively manage their workforce under remote working conditions. The Ministry of Education and Culture of

Indonesia presents a critical case study due to its pivotal role in overseeing education and cultural programs nationwide.
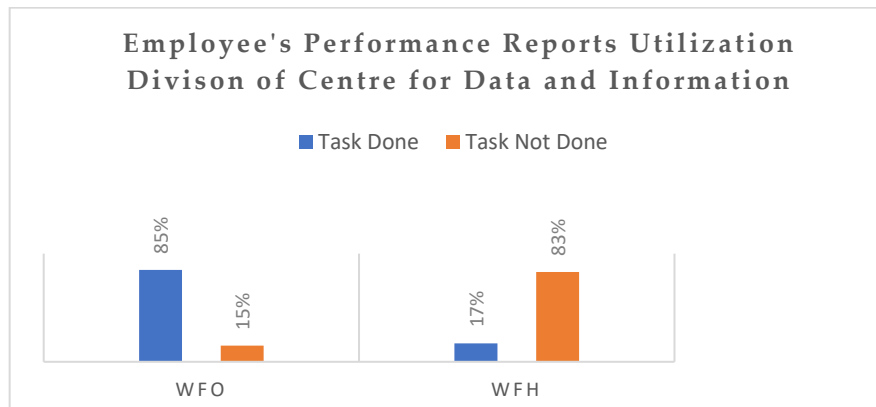

Figure 1. Employee Performance

(Source: Division of Utilization, Center for Daya and Information of the Ministry of Education, Culture, Research and Technology Republic of Indonesia, Data processed)

The decline in employee performance during this period poses substantial risks to the continuity and quality of public service delivery affecting millions of citizens. Despite these high stakes, there remains a conspicuous lack of empirical research and actionable guidance on managing workload, motivation, and discipline to sustain or enhance employee performance in such disrupted work environments. Bridging this knowledge gap is essential for developing agile and effective human resource management strategies that can uphold operational continuity, efficiency, and resilience within government institutions during ongoing and future crises.

This research addresses this critical gap by examining how workload [3], motivation [4], and discipline [5] collectively impact civil servant performance during the remote working period imposed by the covid-19 pandemic, focusing on the Ministry of Education and Culture, Indonesia. Unlike prior research that examines these variables separately or outside crisis contexts, this study adopts an integrated approach within a public sector environment facing operational disruption. The findings aim to contribute to the state of the art by elucidating adaptive strategies that can support employee effectiveness in remote settings, offering valuable insights for human resource management policies tailored to emergency and transitional scenarios in government agencies. Organizations and companies fundamentally depend on human resources to carry out their operational activities. Human resources can be understood both from macro and micro perspectives, where they represent the essential factor driving organizational success [6].

More than just a functional element, human resources are increasingly viewed as a critical source of competitive advantage, enabling organizations to achieve greater efficiency and effectiveness in their business processes. Consequently, human resources are recognized not merely as expendable inputs but as valuable capital assets for institutions and companies. The management of human resources aims to support decision-making processes related to HR policies to ensure the organization has

personnel who exhibit high motivation and performance, thereby fulfilling their work obligations effectively. Additionally, human resource management facilitates the implementation of policies and procedures that align with organizational goals, and it plays a crucial role in organizational development, particularly in aspects that pertain to managing and optimizing human capital [7].

According to [8] performance is an achievement or result achieved from a task or activity that comes from the company. Performance can also be said to achieve goals for the capabilities possessed by the company by empowering human resources in it effectively and efficiently through critical thinking and creativity [9]. Performance is the main influence for the company. According to [10] that performance is the result of work that has been achieved by an employee which can be in the form of goods or services that are used as calculations or assessments of employees in a company that can reflect the employee's knowledge. So if the quantity and quality of employee work is higher, it means that the performance is also getting higher.

Factors that can affect employee performance is strongly influenced by internal and external factors [11]. In addition, factors that can influence employee performance are individual factors and work situation factors. Individual factors can be in the form of interests, attitudes and types of needs and others. The differences that occur in individual factors will affect the performance of an employee which can be referred to as the characteristics of each individual employee.

According to [12], workload is the ability of the human body when receiving a given job, the workload received must be adjusted and balanced with the physical and psychological abilities of a worker who will do the job. [13] explain that workload is a difference between the ability and capacity of the workforce by carrying out the work obligations given. It was stated by [1] that the workload charged to workers in the company has three conditions including the standard workload, the workload is too high, and the workload is too low. Those of three conditions that occurs from time to time will have an impact on the physical and mental health of workers. Changes in the level of workload, whether it is an increase or decrease in workload conditions will have a negative impact on the performance of workers [14] .

[15] The measurement of workload serves to provide insights into the level of effectiveness and efficiency within an organization by assessing the quantity of tasks that must be completed within a predetermined timeframe [10]. This assessment can be examined through three primary dimensions. The first dimension is the physical aspect, which evaluates workload based on the human body's capacity and the physical demands required by the job [15]. The second dimension involves the mental or psychological aspect, encompassing the cognitive effort and psychological considerations involved in performing work tasks. Finally, the temporal aspect pertains to the allocation and management of working time necessary to complete assigned tasks, emphasizing the importance of time utilization in achieving work objectives [16].

Motivation fundamentally derives from the term "motive," which refers to the encouragement, cause, or reason prompting an individual to engage in a particular behavior. According to [17], motivation is defined as a condition that stimulates or becomes the driving force for a person to perform certain activities consciously and

intentionally. It can also be described as a mechanism that provides energy to an individual, directing this energy persistently towards the achievement of specific goals. Furthermore, [18] explains that employee work motivation constitutes a driving force that encourages workers or organizational members to willingly apply their expertise, skills, and available time to fulfill their responsibilities in alignment with the company's objectives [19]. The primary goals of motivation encompass enhancing employees' morale and job satisfaction, increasing productivity, maintaining consistent performance levels, and improving employee discipline within the organizational setting [17].

Discipline, derived from the term itself, refers to the rules and regulations that must be obeyed or followed within an organization. According to [20], discipline is defined as a set of rules and work orders that employees are required to adhere to. Further, [21]describes discipline as compliance with company regulations, serving as a method to address performance issues within the workplace. Good discipline is often regarded as a reflection of an employee's sense of responsibility toward their duties. It significantly influences employee performance, indicating that higher levels of discipline correlate with better performance outcomes. Discipline is therefore considered a fundamental factor in achieving organizational goals and is essential for maintaining order and productivity. Employees are expected to consistently uphold discipline to support organizational standards, which, as noted by [16], involves management activities aimed at implementing these standards effectively. Moreover, discipline plays a crucial role in maximizing efficiency by preventing the waste of time and energy. It also helps in safeguarding assets by preventing damage and loss caused by negligence. Additionally, discipline is instrumental in addressing errors and oversights resulting from inattention or inability and in avoiding delays, thereby supporting overall organizational effectiveness [7].

Discipline comes from the word Discipline which is defined as rules that must be obeyed or followed. According to discipline can be defined as a rule and work order that must be followed. According to [21], discipline is a compliance with the regulations that have been set by the company. Discipline is also a method used in dealing with performance problems within the company. Good discipline can be said to be a reflection of a worker's sense of responsibility towards his work. Work discipline can affect employee performance, which means if a worker's discipline is high, his performance is also high. Work discipline is one of the main factors in achieving goals. Work discipline is very important for employees, employees are expected to always maintain their discipline within the company. according to [22] discipline can be said as a management activity to be able to implement organizational standards [23].

Research Methodology

This study employs a quantitative research approach to empirically examine the influence of workload, motivation, and work discipline on employee performance during the remote working period at the Ministry of Education and Culture, Indonesia. A quantitative method is appropriate as it allows for systematic measurement and analysis of variables through numerical data, enabling objective testing of hypothesized relationships within the study framework.

The population of this research comprises all civil servants working in the Utilization Division of the Data and Information Center at the Ministry, totaling 65 employees. Given the relatively small size of the population and to ensure comprehensive coverage, a saturated sampling technique was employed, meaning that all members of the population were included as respondents. This approach eliminates sampling bias and enhances the representativeness and validity of the findings.

Primary data were collected using a structured questionnaire designed based on validated instruments adapted from prior relevant studies. The questionnaire consists of multiple sections, each corresponding to the main variables: workload, work motivation, work discipline, and employee performance. Measurement scales were primarily based on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), enabling respondents to express the degree of agreement with each statement. The workload measurement focused on physical, mental, and temporal demands as per established frameworks, while motivation items captured intrinsic and extrinsic motivational factors. Work discipline was measured by assessing adherence to organizational rules, time management, and self-regulation. Employee performance indicators encompassed quality, quantity, timeliness, and efficiency of task completion.

Prior to full-scale data collection, a pilot test was conducted with a small subset of employees to evaluate the reliability and validity of the questionnaire. Reliability was assessed using Cronbach's alpha coefficients, with all constructs achieving values exceeding the commonly accepted threshold of 0.7, indicating internal consistency. Validity was examined through content validity by expert review and construct validity through exploratory factor analysis, confirming that questionnaire items appropriately represent their intended constructs.

Data collection took place over a period of several weeks, with questionnaires distributed physically and electronically to accommodate remote working conditions. Confidentiality and anonymity were assured to encourage candid responses, and follow-up reminders were issued to maximize response rates.

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS version 3.0 software. PLS-SEM was selected due to its suitability for small to medium sample sizes, its ability to model complex relationships between latent variables, and its robustness to non-normal data distributions. The analytical procedure comprised two stages: measurement model evaluation and structural model testing.

In the measurement model assessment, the focus was on evaluating reliability and validity of the constructs. Composite reliability (CR) and Cronbach's alpha values were reviewed to assess internal consistency reliability. Convergent validity was confirmed through Average Variance Extracted (AVE) values, with a benchmark of at least 0.5. Discriminant validity was verified using the Fornell-Larcker criterion and cross-loadings analysis to ensure constructs were distinct from one another.

The structural model testing involved examining the hypothesized relationships between workload, motivation, work discipline, and employee performance. Path coefficients (β), t-statistics, and p-values derived from bootstrapping procedures with 5,000 resamples were used to test the significance of direct effects. The coefficient of

determination (R²) was analyzed to determine the explanatory power of the independent variables on employee performance. Additionally, effect size (f²) and predictive relevance (Q²) metrics were computed to provide further insight into the model's robustness.

This methodological design ensures a rigorous and comprehensive analysis that addresses the research questions and meets the demands of academic rigor stipulated by the reviewing bodies. By integrating robust data collection techniques with advanced multivariate analysis, the study aims to produce reliable and valid conclusions that contribute meaningful insights into human resource management under remote working conditions in the public sector.

Result and Discussion

Result

Descriptive Analysis

This study uses descriptive analysis with the aim of being able to provide an overview or description related to the data collected, by assessing based on the values of the mean (average), min, max and Standard Deviation. The minimum value or min value means that the value is the lowest value of each variable, while the maximum value or max value is the highest value of each variable in this study. Then, the meaning of the mean value is the average value of all the variables in this study and the standard deviation value is the variation or distribution of data that can show the high or low variation of the data.

Inferential Analysis

Convergent validity can be measured by looking at reflective indicators, namely indicators that are considered valid if they have a correlation above 0.7. But based on what was stated by Ghozali that if the value or loading scale is in the number 0.5-0.6, it is said to be sufficient or still acceptable, which means it is still valid [24]
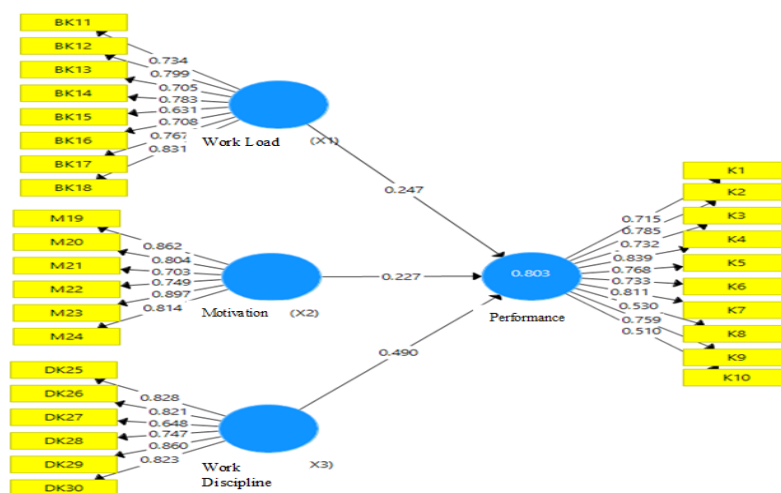

Figure 2 Inferential Analysis
(Source: SmartPLS 3.0 . Output Results)

Validity test

The discriminant validity test in this study was conducted to measure the accuracy and accuracy of the variables contained in this study. The output results from SmartPLS 3.0 are the Fornell Lacker Criterium value and the AVE value derived from each statement instrument in indicators related to Performance, Workload, Motivation and Work Discipline.

Table 1 Fornell Lacker Criterium

	Workload (X1)	Dicipline (X3)	Performance (Y)	Motivation (X2)
Workload (X1)	0,747			
Dicipline (X3)	0,870	0,791		
Performance (Y)	0,825	0,873	0,726	
Motivation (X2)	0,671	0,742	0,756	0,807

(Source: SmartPLS 3.0 . Output Results)

In accordance with the table above that the discriminant validity test can be seen through the Fornell-Lacker Criterium table which consists of Performance (Y) which has a value of 0.726, Workload (X1) has a value of 0.747, Motivation (X2) has a value of 0.807, and Work Discipline (X3) has a value of 0.791.

Reliability Test

The next testing step in this research is the reliability test, where the reliability test is carried out to measure how far the reliability of the research is. This reliability test can be obtained from the output of SmartPLS 3.0, namely the composite reliability (CR) value in each construct, which is as follows:

Table 2 Composite Reliability (CR)

	Composite Reliability
Workload (X1)	0.909
Motivation (X2)	0.918
Dicipline (X3)	0.909
Performance (Y)	0.916

(Source: SmartPLS 3.0 . Output Results)

There is a composite reliability value for all constructs, which has a value > 0.7 which means that all constructs in the estimated model meet the criteria in accordance with the explanation from [25]. The composite reliability value is in the Workload and Work Discipline construct, which is 0.909, and the highest composite reliability value is in the Motivation construct, which is 0.918. Then for the Performance variable that is equal to 0.916. Based on this, it can be concluded that all variables in this study are reliable to each construct, namely Performance, Workload, Motivation, and Work Discipline. Then, in calculating the reliability test in addition to using Composite Reliability, you can also use the Cronbach Alpha value, as follows:

Coefficient of Determination Test (R²)
The R-Square values obtained from the SmartPLS 3.0 output are as follows:

Tabel 3 R-Square

	R Square	R Square Adjusted
Performance (Y)	0.803	0.793

(Source: SmartPLS 3.0 . Output Results)

The table above shows that the influence of workload, motivation and work discipline that contributes to performance is 0.803 or 80.3% while the remaining 19.7% is influenced by other variables which are not included in this study.

Hypothesis testing

This T statistical test is used to determine the effect of Workload (X1), Motivation (X2), and Work Discipline (X3) on Performance (Y). the results obtained from testing the data for the T statistical test (T test) are as follows:

Table 4 T Statistical Test

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
Workload (X1) ->Performance (Y)	0,247	2,246	0,025
Motivation (X2) -> Performance (Y)	0,490	4,027	0,000
Dicipline (X3) -> Performance (Y)	0,227	2,645	0,008

(Source: SmartPLS 3.0 . Output Results)

The T table value used in this study is 1.669 which is obtained from the formula df = N – 1 or df = 65 – 1 = 64, with a degree of confidence or level of truth that is 95% or alpha of 0.05. The table above shows that the test results on the Workload variable on Performance have a positive relationship, it can be seen from the correlation value or the original sample of 0.247. Then, the table above shows that the test results on the Motivation variable on Performance have a positive relationship, it can be seen from the correlation value or the original sample of 0.490. The table above shows that the test results on the Work Discipline variable on Performance have a positive relationship, it can be seen from the correlation value or the original sample of 0.227.

Discussion

This study examined the effects of workload, motivation, and work discipline on employee performance during the remote working period at the Ministry of Education and Culture. The first hypothesis, proposing a positive relationship between workload and employee performance, was supported by the data ($\beta = 0.247$; $p = 0.025$). This finding suggests that a well-managed workload encourages employees to maintain productivity even under remote working conditions. It aligns with the Job Demands-Resources (JD-R) theory, which argues that appropriate job demands, when balanced with sufficient

resources, can stimulate engagement and improve performance. However, excessive workload without adequate support may negatively impact performance, underscoring the need for careful workload management. This result is consistent with previous research conducted by [26], which also found that workload has an influence on employee performance, supporting the hypothesis proposed in this study.

The second hypothesis posited that motivation positively influences employee performance, and this was confirmed as the strongest predictor in the model ($\beta = 0.490$; $p < 0.001$). This result reinforces Herzberg's two-factor theory, which distinguishes motivators such as achievement, recognition, and growth opportunities as key drivers of job satisfaction and performance. The sustained motivation of employees working remotely indicates that intrinsic and extrinsic motivators remain critical in encouraging commitment and effective work behaviors despite reduced physical supervision. This result is in line with the proposed hypothesis and is consistent with previous research conducted by [10], which found that work motivation has a significant and positive influence on employee performance.

The third hypothesis, which anticipated a positive effect of work discipline on performance, was also supported ($\beta = 0.227$; $p = 0.008$). This confirms that discipline—manifested through adherence to organizational rules, self-regulation, and effective time management—is vital for maintaining productivity during remote work. This finding complements prior research emphasizing discipline as a behavioral mechanism essential for performance continuity, especially in contexts where direct managerial oversight is limited. This result aligns with the proposed hypothesis and is consistent with the previous study conducted by [4], which found that work discipline has a significant and positive influence on employee performance.

From a theoretical standpoint, this study contributes to the literature by integrating these three critical factors—workload, motivation, and discipline—into a comprehensive framework that explains employee performance in a crisis-driven remote working environment. It extends existing theories by applying them within a public sector context during an unprecedented global disruption, thereby filling an important empirical gap. The study highlights how these variables interact synergistically to influence performance under conditions distinct from traditional office settings.

Practically, the findings provide valuable guidance for human resource management in public organizations facing remote work challenges. Policymakers and HR practitioners are advised to monitor and balance employee workload carefully, implement motivation-enhancing programs tailored to remote contexts, and establish clear disciplinary policies that promote self-regulation and accountability. These strategies can mitigate risks of performance decline, enhance employee engagement, and support organizational resilience in times of crisis or transition. Overall, this research informs more adaptive and effective HR practices that ensure sustained service delivery and operational effectiveness in public institutions confronting evolving work environments.

Conclusion

This study concludes that workload, motivation, and work discipline significantly and positively influence employee performance during the Work From Home (WFH) period at the Ministry of Education and Culture. The findings highlight the importance of balancing workload, fostering strong motivation, and maintaining discipline to sustain productivity and service quality in remote working environments. These insights contribute to the advancement of human resource management theories in public sector contexts, particularly under crisis-driven work arrangements.

However, this study has several limitations. First, the research was conducted within a single government division with a relatively small sample size, which may limit the generalizability of the findings to other public sector organizations or private sector contexts. Second, the cross-sectional design of the study restricts the ability to infer causal relationships or capture changes in employee behavior over time. Third, the study focused on self-reported measures, which may be subject to response bias.

Future research is recommended to address these limitations by expanding the scope to include multiple government agencies or comparative studies across sectors. Longitudinal studies could provide deeper insights into how workload, motivation, and discipline evolve and impact performance during extended periods of remote work. Additionally, incorporating objective performance data and qualitative methods could enrich understanding of the underlying mechanisms influencing employee performance in remote or hybrid work settings.

References

[1] S. Mujanah and S. N. Aini, "Transformational Leadership, Kondisi Kerja Dan Budaya Organisasi Pengaruhnya Terhadap Kinerja Karyawan," *Bus. Financ. J.*, vol. 5, no. 2, pp. 155–164, 2020.

[2] D. Giauque, K. Renard, F. Cornu, and Y. Emery, "Engagement, exhaustion, and perceived performance of public employees before and during the COVID-19 crisis," *Public Pers. Manage.*, vol. 51, no. 3, pp. 263–290, 2022.

[3] N. Andriani, H. Sunaryo, and M. R. Basalamah, "Pengaruh Beban Kerja, Motivasi Kerja, Dan Disiplin Kerja Terhadap Kinerja (Studi kasus Pada Dinas Lingkungan Hidup Kota Malang)," *E-JRM Elektron. J. Ris. Manaj.*, vol. 9, no. 11, 2020.

[4] R. P. Sari, "Pengaruh Disiplin dan Pengawasan Kerja Terhadap Kinerja Karyawan," *Ecodunamika*, vol. 1, no. 1, 2018.

[5] R. Ahmad *et al.*, "The impact of workload on job performance among doctors in Malaysian public hospitals. A case study," *Int. J. Bus. Soc.*, vol. 20, no. 3, pp. 1276–1293, 2019.

[6] B. Bukit, T. Malusa, and A. Rahmat, *Pengembangan Sumber Daya Manusia. Teori, Dimensi Pengukuran,*. 2017.

[7] E. Sutrisno, "Manajemen Sumber Daya Manusia Edisi 1 Cetakan keempat," *Jakarta Prenada Media Gr.*, 2012.

[8] B. Bukit, T. Malusa, and A. Rahmat, "Pengembangan Sumber Daya Manusia. Teori, Dimensi Pengukuran,. file," *C/Users/Smile/Downloads/manajemen sumber daya Mns.*

(PDFDrive. com). pdf, 2017.

[9] S. Mujanah, I. Ardiana, R. Nugroho, C. Candraningrat, A. Fianto, and D. Arif, "Critical thinking and creativity of MSMEs in improving business performance during the covid-19 pandemic," *Uncertain Supply Chain Manag.*, vol. 10, no. 1, pp. 19–28, 2022.

[10] A. Fauzi, *Manajemen kinerja*. Airlangga university press, 2020.

[11] I. Meithiana, "Kepuasan kerja dan kinerja karyawan tinjauan dari dimensi iklim organisasi, kreativitas individu, dan karakteristik pekerjaan." Indomedia Pustaka, 2017.

[12] A. R. Vanchapo and M. MKes, *Beban kerja dan stres kerja*. Penerbit Qiara Media, 2020.

[13] V. Rivai and E. Jauvani, "Fungsi Manajemen Sumber Daya Untuk Perusahaan: Dari Perusahaan ke Praktik, Edisi ke–1," *Jakarta Rajawali Pers*, 2011.

[14] R. Irawati and D. A. Carollina, "Analisis Pengaruh Beban Kerja Terhadap Kinerja Karyawan Operator Pada Pt Giken Precision Indonesia," *Inovbiz J. Inov. Bisnis*, vol. 5, no. 1, p. 51, 2017, doi: 10.35314/inovbiz.v5i1.171.

[15] E. Mahawati *et al.*, "Analisis Beban Kerja dan produktivitas kerja." Yayasan Kita Menulis, 2021.

[16] M. K. Irzal, *Dasar-dasar kesehatan dan keselamatan kerja: Edisi 1*. Kencana, 2016.

[17] M. S. . Hasibuan, *Manajemen Sumber Daya Manusia (Edisi Revisi)*. Jakarta: Bumi Aksara, 2019.

[18] S. P. Siagian, *Manajemen sumber daya manusia*. Bumi Aksara, 2017.

[19] D. Ma'rifah, "Implementasi Work From Home: Kajian Tentang Dampak Positif, Dampak Negatif Dan Produktivitas Pegawai," *Civ. Serv.*, vol. 14, no. 2, pp. 53–64, 2020.

[20] M. Sindu, E. R. Cahyadi, and M. K. Widjajakusuma, "Panduan Lengkap Supervisi Diperkaya Perspektif Syariah," *PT Elex Media Komputindo*, 2006.

[21] L. P. Sinambela, *Manajemen Sumber Daya Manusia*, Pertama. Jakarta: PT Bumi Aksara, 2016.

[22] T. H. Handoko, *Manajemen Personalia & Sumberdaya Manusia*. Yogyakarta: BPFE-YOGYAKARTA, 2020.

[23] Z. Rialmi, "Pengaruh Kedisiplinan Terhadap Kinerja Karyawan Pada PT. Bhakti Karya Distribusi Indonesia," *JENIUS (Jurnal Ilm. Manaj. Sumber Daya Manusia)*, vol. 3, no. 3, pp. 286–293, 2020.

[24] I. Ghozali, *Structural Equation Modeling Dengan Metode Alternatif Partial Least Square (PLS)*. Semarang: Badan Penerbit Universitas Diponegoro, 2021.

[25] I. Ghozali, *Partial Least Squares: Konsep, Teknik, dan Aplikasi Menggunakan Program SmartPLS 3.0*, vol. 7. 2014.

[26] R. N. Pradipta and S. Suhermin, "Pengaruh lingkungan kerja, kepuasan kerja dan disiplin kerja terhadap kinerja pegawai," *J. Ilmu dan Ris. Manaj.*, vol. 9, no. 7, 2020.