Optimizing the Combination of Fulfilling Employee and Servant Needsleadership to Improve Employee Retention Through Personnel Information System Data Analytics as Moderation (Empirical Study at Semarang Medium Tax Office)

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Abstract. This study aims to analyze the influence of Employee need's Fulfillments and Servant Leadership on Employee Retention, both directly and moderately through HRIS Data Analytics. The population used in this study were all employees working at the Semarang Madya Tax Service Office (KPP) totaling 118 employees. The sampling technique used was total sampling with the criteria being all employees including the head officer, so that the number of research samples was also 118 respondents. The data used were primary data, obtained through questionnaires. Data analysis for discussion purposes will be processed and presented using descriptive statistics, while for hypothesis testing, the data analysis used was Partial Least Square (PLS). The results of the hypothesis test analysis showed that Employee need's Fulfillments and Servant Leadership partially had a positive and significant effect on Employee Retention. The next result was obtained if Employee need's Fulfillments can mediate Servant Leadership had a positive and significant effect on employee retention. The results of the moderation test showed that HRIS Data Analytics could not moderate the influence of Employee need's Fulfillments and Servant Leadership on employee retention.

Keywords: Employee; Leadership; Satisfaction.

1. Introduction

In today's dynamic and complex global era, organizations are required to focus not only on operational efficiency but also on strategic, data-driven human resource management. Human resources are the most important asset in an organization because they are the source that guides the organization, maintains and develops it amidst the various demands of society and the times (Recky, Widyawati & Nazaruddin, 2023). One of the biggest challenges in HR management is retaining competent and high-potential employees in the long term. In running any organization, whether business or non-business, the key to success is the presence of Human Resources (HR). No matter how large a company is, it will not survive long

without poor HR who cannot manage existing resources. Researchers argue that while many studies discuss employee performance, employee retention efforts must come first before any expectations of improved employee performance. This is because the absence of employees not only decreases employee performance but also eliminates performance entirely. Therefore, employee retention is crucial for every company, especially those that want to remain competitive with similar businesses.

The ability of an organization, whether a business or non-business organization, to retain employees to continue working for the company is often referred to as employee retention. Employee retention is also closely related to the intention to stay, but employee retention is more of an organizational effort while intention to stay is the employee's personal desire to remain in the organization. The opposite is employee turnover intention or the employee's desire to leave the job. Mita (2014) defines employee retention as "a technique adopted by businesses to maintain an effective workforce and at the same time meet operational requirements." Bidisha (2013) describes it as "a process in which employees are encouraged to remain in the organization for a maximum period or until the project is completed." Meanwhile, according to Workforce Planning for Wisconsin State Government (2015) in Bodjrenou et al. (2016), employee retention is "a systematic effort to create and foster an environment that encourages employees to remain working by having policies and practices that meet their various needs."

Employee retention is closely related to fulfilling employee needs. According to Anwar (2002), needs are a gap or conflict experienced between a reality and the drive within oneself. If a consumer's needs are not met, he will show disappointed behavior. Conversely, if his needs are met, the consumer will show happy behavior as a manifestation. According to Vinna (2016) conventionally, "needs are everything that humans require to prosper their lives. Needs reflect feelings of dissatisfaction or lack within humans that want to be satisfied. Needs arise due to the scarcity of goods and services." Vinna also explains that Imam Ghazali defines "Needs (hajat) as a human's desire to obtain something necessary in order to maintain his survival and carry out his function, namely carrying out his duties as a servant of Allah SWT by worshiping optimally."

Employee retention can be linked to leadership styles, one of which is Servant Leadership. Servant leadership is a type of moral-based leadership that emerges with the aim of promoting integrity and prioritizing the support and development of subordinates (Liden et al., 2015). Servant leadership is a holistic approach in which leaders act with morality, show great concern for company stakeholders (Shirin, 2015) and engage employees in various dimensions, such as emotional, relational, and ethical, to unleash their full potential and empower them to grow into what they are capable of becoming (Eva et al, 2019). Robert K. Greenleaf (1970), who introduced this term in his essay entitled "the servant as leader," said: He argues that true leadership is synonymous with service, and the servant leader's highest priority is serving others, namely employees, customers, and the community. (https://www.greenleaf.org/what-is-servant-leadership/)

Therefore, to ensure long-term employee retention, HR planning is necessary, one of which is encouraging the development of an accurate and precise employee information system for the company so that any employee issues can be addressed effectively. The term Personnel Information System (HIS), also known as Human Resources Information System (HRIS), is widely known among employees in both the private and public sectors. Beyond just technology, it requires a process called Data Analysis. Abdullah (2021) explains that Data Analysis is a branch of data science that involves extracting information from data to gain better understanding. Investopedia (2024) defines data analytics as the science of analyzing raw data to draw conclusions using specific techniques, processes, and algorithms. Data analytics is a combination of information technology, statistics, and business sciences. Bauer et al. (2021) in (Anies, 2023) define HR Analytics as the process of collecting, analyzing, interpreting, and reporting employee-related data to improve decision-making, achieve strategic goals, and maintain a competitive advantage. According to Marler, JH, & Boudreau (2017) HR Analytics is defined as the use of data, statistical methods, and modeling to support better HR decisions.

Existing literature on the influence of employee needs fulfillment and servant leadership on employee retention shows inconsistent results. Some studies indicate that employee needs fulfillment has a positive and significant effect on employee retention (Azzahra et. Al, 2024, Ari et. Al, 2024), while other studies have found that employee needs fulfillment has no significant effect on employee retention. (Alden, 2024).Likewise, previous research related to Servant-Leadership on employee retention also showed inconsistent results, where several studies showed that servant leadership had an effect on employee retention (Liden et al. (2008) in Eva et al. (2019) Muzakki, M., & Herryanto, A. (2023), Saputra, AR, & Andriani, C. (2024), Anggoro, C., Sudarti, K., & Nurcholis, L. (2023) Irmayati, N., Rosnani, T., Daud, I., & Fauzan, R. (2023). However, other studies found that Servant leadership had no direct effect on employee retention (Huning et al. (2020), Zhang et al. (2022). Several studies showed that HRIS data analysis had a positive effect on employee retention (Snigdha, (2025), Abdelhay, (2025).

Apart from the research gap,There are examples of gaps that demonstrate the significant impact of human resources. For example, a recent case in Indonesia, in April 2025, involved a textile company that closed due to a strike. The absence of employees, particularly production workers, led to delays in deliveries and cancellations of orders from customers, as the company was deemed to have failed to honor sales contracts. This prompted management to lay off thousands of striking employees. This demonstrates the importance of maintaining human resources to prevent employee turnover.

In addition, there is a phenomenon that underlies this research.This phenomenon is observed in the institution where the researcher works, namely the Semarang Medium Tax Office (KPP Madya Semarang), an agency under the Directorate General of Taxes. This office employs 118 employees, consisting of executive staff, structural officials, functional officials, and a Head of the Semarang Medium Tax Office equivalent to echelon III. As a form of responsibility in

achieving the annual Employee Performance Targets (SKP), the Head of the Semarang Medium Tax Office, as the head of the Organizational Performance Value (NKO) drafting team, analyzed the annual work achievements of Semarang Medium Tax Office employees. For example, in 2021, several work indicators had reached the 100% target, but in 2022, they actually decreased to less than 100%. Some of these work points include competent human resources, which decreased to 85%, effective education and services, which decreased to 86.20%, optimal financial management, which decreased to 94%, high-performance organizations, which decreased to 97%, and effective law enforcement, which decreased to 98%. These results indicate a decline in performance.

2. Research Methods

According to Sugiyono (2019), quantitative survey research is a research method that aims to collect data from a large number of respondents using instruments such as questionnaires or structured interviews. The data obtained is then analyzed statistically to test hypotheses or describe specific phenomena to obtain more specific information. This research falls under the category of quantitative survey research. Based on the research objectives that have been set, the type of this research is explanatory research, explained as a type of research that aims to test the causal relationship between variables to explain why or how a phenomenon occurs (Sekaran & Bougie: 2016). The purpose of explanatory research is to test hypotheses and test the influence of independent variables on dependent variables, namely the influence of employee needs and servant leadership on employee retention moderated by SIK data analysis variables at KPP Madya Semarang.

3. Results and Discussion

The research results began with data collection through a questionnaire covering several key variables: Employee Needs Fulfillment, Servant Leadership, Employee Information System Data Analysis, and Employee Retention. The collected data came from questionnaire responses automatically received by the researcher through the Google Forms and Microsoft Office Forms respondent databases. Both response data were combined and tabulated using a spreadsheet application (Ms. Excel) and then saved in file format.Comma Separated Value (*.csv) so that it can be further analyzed using the SmartPLS software version.

The next stage is presenting the research results, beginning with a descriptive analysis aimed at describing the characteristics of the respondents and providing a description of the research variables, presented in a frequency distribution table. Data analysis then continues to test the relationship between the variables.Fulfillment of Employee Needs and Servant Leadership, Employee Information System Data Analysis, and Employee Retention

Respondent characteristics are a crucial part of this research, as they provide information about the individual profiles of the subjects. This study involved 118 employees working at the Semarang Medium Tax Service Office (KPP), located in Semarang City, Central Java Province. Respondent demographic data was obtained through a questionnaire and covered

four main aspects: gender, age range, completed educational level, and length of service. The following is a complete breakdown of the respondents' demographic characteristics.

Table Descriptive Analysis of Respondents

Characteristics	Information	Frequency	Percentage
Gender	Man	88	74.57
	Woman	30	25.43
	Total	**118**	**100**
Age	< 25 years	2	1.69
	26 – 35 years old	31	26.27
	36 – 45 years old	50	42.37
	46 – 55 years old	31	26.27
	> 56 years	4	3.39
	Total	**118**	**100**
Education	High School/D1	3	2.54
	D3	23	19.49
	S1	54	45.76
	S2	38	32.20
	Total	**118**	**100**
Length of working	5-10 years	25	21.19
	11-15 years	25	21.19
	16-20 years	22	18.64
	> 20 years	46	38.98
	Total	**118**	**100**

Source: Processed primary data, 2025.

Table shows that of the 118 employees at the Semarang Medium Tax Office (KPP Madya), the majority of respondents were male, representing 88 people (74.57%), while female respondents accounted for 30 people (25.43%). This indicates that the employees at the Semarang Medium Tax Office (KPP Madya) are predominantly male. This dominance may indicate a higher proportion of jobs held by men, which may be related to the characteristics of the jobs at the KPP.

The 36–45 age group dominated the respondents with 50 people or 42.37%. In second place with the same number, namely 31 people or 26.27% of both the 26–35 and 46–55 age groups. Meanwhile, the age group <25 years was the smallest, only 2 people or 1.69% or half of the number of the age group >55 years, namely 4 people. The high proportion of respondents in the 36–45 age range indicates that the majority of employees are in their productive age with mature work experience, so they can support optimal organizational performance.

The majority of respondents had a bachelor's degree (S1), with a frequency of 54 people (45.76%), while the lowest educational level was a Diploma 1, with 3 people (2.54%). The high number of employees with bachelor's degrees reflects the academically competent

workforce of the Semarang Medium Tax Office (KPP Madya Semarang). This demonstrates their contribution to analytical and technical skills in carrying out tasks at the KPP.

The majority of respondents had more than 20 years of service, with a total of 46 people (38.98%), while only 25 people (21.19%) had less than 10 years of service. The high proportion of employees with more than 20 years of service indicates that employees at the Semarang Medium Tax Office have considerable work experience, which can contribute to organizational performance.

Descriptive variable analysis was used to understand responses to Employee Needs Fulfillment, Servant Leadership, Employee Information System Data Analysis, and Employee Retention. To describe respondents' answers descriptively, the index value can be calculated using the following formula:

$$\text{Index Value} = \frac{(F1 \times 1) + (F2 \times 2) + (F3 \times 3) + (F4 \times 4) + (F5 \times 5)}{5}$$

Where:

F1: frequency of respondents who chose answer 1.

F2: frequency of respondents who chose answer 2.

F3: frequency of respondents who chose answer 3.

F4: frequency of respondents who chose answer 4.

F5: frequency of respondents who chose answer 5.

Respondents' answers do not start from the number 0, but from 1 to 5, the resulting index number is (1 x 118): 5 = 23.6, to (5 x 118): 5 = 118, with a value range of 118 − 23.6 = 94.4. The criteria used are three boxes (Three-box Method), the range of 94.4 divided by 3, obtaining a range of 31.47 which is used as the basis for interpreting the respondent's response index value, as follows:

23.60 – 55.07 = Low

55.08 – 86.53 = Medium

86.54 – 118.00 = High

The results of the inferential analysis were carried out using statistical testing, including various evaluations such as validity testing and instrument reliability testing, analysis of the research model, path coefficient, hypothesis testing, and analysis of the role of moderation/mediation, which will be described as follows:

The outer model results obtained from data processing using Smart Partial Least Square (SMART-PLS) are as follows:

Figure Initial Structural Model Results
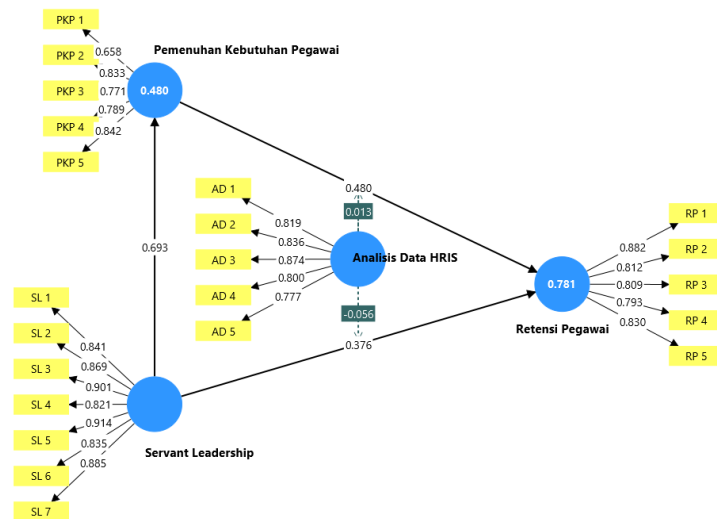
According to previous studies, convergent validity can be fulfilled when:

1) Each variable has an AVE value above 0.5

2) The loading value for each item also has a value of more than 0.5

3) The AVE of each question item is greater than 0.5

The detailed convergent validity results are presented through the Outer Loading value in the SMART-PLS application as in table 4.6 below.

Table Outer loading results in the Convergent Validity Test

Variables	Indicator/ Item	Outer Loading	Results (>0.5)	AVE Variable	AVE Indicator	Results (>0.5)
Fulfillment of Employee Needs	PK1	0.658	Valid		0.433	Invalid
	PK2	0.833	Valid		0.694	Valid
	PK3	0.771	Valid	0.610	0.594	Valid
	PK4	0.789	Valid	(valid)	0.623	Valid
	PK5	0.842	Valid		0.709	Valid
Servant Leadership	SL1	0.841	Valid		0.707	Valid
	SL2	0.869	Valid		0.755	Valid
	SL3	0.901	Valid	0.752	0.812	Valid
	SL4	0.821	Valid	(valid)	0.674	Valid
	SL5	0.914	Valid		0.835	Valid
	SL6	0.835	Valid		0.697	Valid
	SL7	0.885	Valid		0.783	Valid
HRIS Data Analytics	AD1	0.819	Valid		0.671	Valid
	AD2	0.836	Valid	0.675	0.699	Valid
	AD3	0.874	Valid	(valid)	0.764	Valid

Variables	Indicator	Outer	Result	AVE	Indicator	Result
	AD4	0.800	Valid		0.640	Valid
	AD5	0.777	Valid		0.604	Valid
Employee Retention	RP1	0.882	Valid		0.778	Valid
	RP2	0.812	Valid	0.681	0.659	Valid
	RP3	0.809	Valid	(valid)	0.654	Valid
	RP4	0.793	Valid		0.629	Valid
	RP5	0.830	Valid		0.689	Valid

Source: Smart PLS output, processed primary data, 2025

Based on the results of the convergent validity test above, it shows that almost all items in the indicators on the variables used in this study, namely Fulfillment of Employee Needs, Servant Leadership, HRIS Data Analytics, and Employee Retention, each have an outer loading value ≥ 0.5 except for Indicator/item PK1 so that PK1 is removed. PK1 is an indicator of Fulfillment of Basic Needs. This indicator may not be relevant because the agency is considered to definitely fulfill the basic needs of its employees. Basic Needs in this case are regular income received by employees in this case Civil Servants.

After the researcher removed the PK1 indicator, the outer model results obtained from data processing using Smart Partial Least Square (SMART-PLS) were as shown in Figure below:

Figure Results of Outer Structural Model After Changes
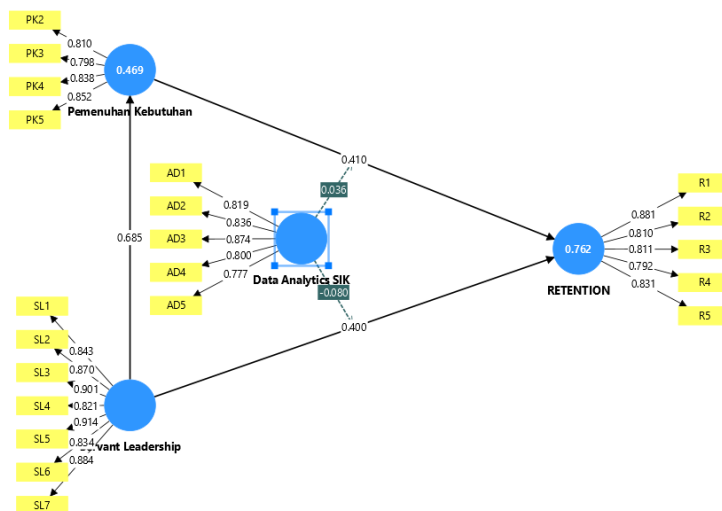
So that the Outer loading of the Employee Needs Fulfillment Variable changes to the following:

Table Outer loading results of employee needs fulfillment variables

Variables	Indicator/	Outer	Result	AVE Variable	AVE Indicator	Result

	Item	Loading	(>0.5)			(>0.5)
Fulfillment of Employee Needs	PK2	0.810	Valid		0.656	Valid
	PK3	0.798	Valid	0.680	0.637	Valid
	PK4	0.838	Valid	(valid)	0.702	Valid
	PK5	0.852	Valid		0.726	Valid

The basis for decision-making in hypothesis testing is based on the t-statistics value. If the t-statistics value is ≥ 1.96 with a P-value of <0.05, then it can be interpreted as positive, accepted, and significant. And if the t-statistics value is <1.96 with a P-value of >0.05, then it can be interpreted as rejected and insignificant.

Table Specific direct effect result

HYPOTHESIS	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H1. Fulfillment of Needs→Retention	0.410	0.402	0.085	4,848	0,000	H1 is proven
H2. Servant Leadership→Retention	0.400	0.409	0.097	4,103	0,000	H2 is proven
H3. Servant Leadership→Fulfillment of Needs	0.685	0.689	0.047	14,598	0,000	H3 is proven
Data Analytics SIK→Retention	0.174	0.174	0.081	2,140	0.032	The influence of SIK Data Analysis is not significant
H4. Data Analytics SIK x Fulfillment of Needs→Retention	0.036	0.017	0.074	0.483	0.629	H4 is not proven
H5. Data Analytics SIK x Servant Leadership→Retention	-0.080	-0.060	0.088	0.911	0.363	H5 is not proven

Source: Smart PLS output, processed primary data, 2025

H1: Fulfillment of Employee Needs Influences Employee Retention

H2: Servant leadership has a positive impact on employee retention.

H3: Servant leadership has a positive influence on fulfilling employee needs.

H4: Analysis of Personnel Information System Data as a moderating variable can strengthen the relationship between Fulfillment of Employee Needs and employee retention,

H5: Analysis of Personnel Information System Data as a moderating variable can strengthen the relationship between Servant Leadership and employee retention.

Based on the output results above, it shows that the Influence of Fulfillment of Employee Needs on Employee Retention obtained P Values ≤ 0.05 (0.000) and t statistics > 1.96 (4.848), so H0 is rejected, which means it has an effect. The coefficient value (Original Sample column) is positive, meaning the effect is positive. So the hypothesis that Fulfillment of Employee Needs has an effect on Employee Retention (H1) is proven.

The effect of Servant Leadership on Employee Retention has a P value ≤ 0.05 (0.000) and t statistics > 1.96 (4.103), so H0 is rejected, meaning it has an effect. The coefficient value (Original Sample column) is positive, meaning the effect is positive. So the hypothesis that Servant Leadership has an effect on Employee Retention (H2) is proven.

The influence of Servant Leadership on the Fulfillment of Employee Needs has a P Value ≤ 0.05 (0.000) and t statistics > 1.96 (14.598), so H0 is rejected which means it has an effect. The coefficient value (Original Sample column) is positive meaning the influence is positive, so the hypothesis of Servant Leadership on the Fulfillment of Employee Needs (H3) is proven.

The influence of HRIS data analytics in moderating the fulfillment of employee needs on employee retention has a P value > 0.05 (0.629) and t statistics < 1.96 (0.483), so H0 is accepted which means it has no effect. The coefficient value (Original Sample column) is positive meaning the effect is positive. So the hypothesis that Servant Leadership has an effect on employee retention (H4) is not proven.

The effect of SIK Data Analysis in moderating Servant Leadership on Employee Retention has a P Value > 0.05 (0.363) and t statistics < 1.96 (0.911), so Ho is accepted which means it has no effect. The coefficient value (Original Sample column) is negative meaning the effect is negative, so the hypothesis of SIK Data Analytics having an effect on Employee Retention (H5) is not proven.

1) Mediation Test

Indirect effects is the indirect effect of an exogenous construct or latent variable on an endogenous latent variable through an endogenous intermediary variable. In this study, the indirect effect will be conducted to determine the effect of the Servant Leadership variable on employee retention through Employee Needs Fulfillment. This test uses the values in the specific indirect effects table from the bootstrap process. As previously reported, the SIK Data Analysis did not prove to have a moderating effect, so it did not appear in the bootstrap test.

Based on The results of the indirect effect test show that Fulfillment of Employee Needs significantly mediates the effect of Servant Leadership on Employee Retention, with a t-statistic value > 1.96 (4.601) and a p-value <0.05 (0.000).

Discussion:

Research Results Show Fulfillment of Employee Needs has a positive and significant influence on Employee Retention, this strengthens the hypothesis that if the Fulfillment of Employee Needs is higher, then Employee Retention will also increase. This is in line with previous research (Azzahra et. Al, 2024, Ari et. Al, 2024). which states that the fulfillment of employee needs has a positive and significant effect on employee retention. Thus, the fulfillment of employee needs, including the needs for security, social, appreciation, and self-actualization, will increase employee retention. The fulfillment of physiological (basic) needs is not valid as an indicator of the fulfillment of needs so it is dropped, respondents may have considered basic needs as something that is automatically fulfilled, so they do not see it as part of the work experience that affects retention. From the indicator loading value, the study shows that KPP Madya Semarang employees are very satisfied in fulfilling basic needs, but the need for security is classified as the least compared to the fulfillment of other needs, so there is still room for improvement, especially in providing security needs such as clarity of career paths, job threats, and insurance protection or employee association benefits.

Servant leadership has a positive and significant impact on employee retention. The findings of this study support the hypothesis that high levels of servant leadership will increase employee retention. This is in line with previous research, namely servant leadership has an effect on employee retention (Liden et al. (2008) in Eva et al. (2019) Muzakki, M., & Herryanto, A. (2023), Saputra, AR, & Andriani, C. (2024), Anggoro, C., Sudarti, K., & Nurcholis, L. (2023) Irmayati, N., Rosnani, T., Daud, I., & Fauzan, R. (2023) Thus, Servant Leadership with the character of a Leader who Listens, Empathy, Develops subordinates, Serves subordinates, Empowers employees, Leadership based on values and Commitment to organizational growth will increase employee retention. Employees of KPP Madya Semarang feel the highest satisfaction in the indicator of commitment to organizational growth, but the indicator of service to subordinates is among the lowest compared to others. In this case, such as the attention of leaders to the personal and family conditions of subordinates in various forms still needs to be improved.

The results of the study indicate that Servant Leadership has the strongest influence, both on: Fulfillment of Employee Needs (very large effect), and directly on Retention (nearly large effect). Fulfillment of Employee Needs also has a significant influence on Retention, with an effect approaching large. Fulfillment of Needs also has a significant mediating role for Servant Leadership in influencing Retention.

Based on the research results, SIK Data Analytics only has a small direct influence on employee retention, and is not proven or ineffective as a moderating variable in the tested relationship. Employees of KPP Madya Semarang strongly agree with the Decision-Making Support

indicator such as HRIS/SIKKA Information if maximized can be used for the right decision-making. Employees feel that the SIK Predictive & Strategic Ability indicator is the lowest compared to other indicators, namely the ability to predict the possibility of employees leaving. still needs to be improved in order to improve the overall analysis results.

Research shows that employees decide to stay in their jobs because of one of the reasons. Employees at the Semarang Medium Tax Office (KPP Madya) feel that their working relationships, including interpersonal comfort, both between colleagues and superiors/subordinates, are very good. Career development, while good, scored the lowest compared to the others. This suggests that attention to employee career development, including clarity of career paths, availability of job quotas, and ease of passing competency exams, still needs to be improved to improve overall employee retention.

In short, it can be said that increasing HR retention is more effective through improving Servant Leadership (both directly and indirectly) and fulfilling employee needs, rather than relying on SIK Data Analytics.

4. Conclusion

Based on the research results in the previous chapter, it shows that to increase employee retention, fulfilling employee needs and Servant Leadership are important variables in increasing employee retention at the Semarang Medium Tax Office (KPP Madya). The following conclusions can be drawn from the research results: Fulfillment of Employee Needs has a positive and significant impact on Employee Retention. Servant Leadership has a positive and significant influence on Employee Retention. Servant Leadership is also known to have a positive and significant influence on the Employee Needs Fulfillment variable, or it can be said that Employee Needs Fulfillment is able to mediate Servant Leadership on Employee Retention. Therefore, it can be concluded that the Employee Needs Fulfillment Model that mediates the influence of Servant Leadership on Employee Retention is proven to be positive and significant. This condition indicates that Servant Leadership, if followed up with Employee Needs Fulfillment, will be able to increase Employee Retention. The moderating effect of HRIS Data Analytics on Fulfillment of Needs in influencing Employee Retention Fulfillment of Employee Needs is almost non-existent.

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