Full paper

International Journal of Real Estate Studies

INTREST

Effectiveness of the Program *Perumahan Penjawat Awam Malaysia* in Supporting Public Servant Homeownership

Mohd Azhar Ab Wahid[1,2]*, Zafirah Al Sadat Zyed[2], Mohd Izwan Nuzaihan Jamil[1], Matherine Richard Sandak[1], Nor Natasha Abd. Rashid[1]

[1]*Unit Perumahan Penjawat Awam Malaysia, Jabatan Perdana Menteri, Wilayah Persekutuan Putrajaya, Malaysia*
[2]*Department of Real Estate, Faculty of Built Environment, Universiti Malaya, Kuala Lumpur, Malaysia*

*Corresponding author's email: azsan19@gmail.com

Article history: Received: *18 August 2025* Received in revised form: *25 December 2025*
Accepted: *22 November 2024* Published online: *31 December 2025*
DOI: https://doi.org/ 10.11113/intrest.v19n2.457

Abstract

Despite stable employment, many Malaysian public servants face homeownership challenges due to widening affordability gaps and fragmented housing assistance. Evaluating government housing interventions from the beneficiary perspective is essential to improving policy outcomes and resource allocation. This paper presents a comprehensive assessment of the Program *Program Perumahan Penjawat Awam Malaysia* (PPAM) and its effectiveness in addressing homeownership challenges faced by public servants in Malaysia. Using a quantitative cross-sectional design, data were collected from 398 public servants through a structured questionnaire employing a 4-point Likert scale, helping minimize neutral response bias. Simple random sampling was used to ensure representativeness across respondents. The study examined four main program dimensions: awareness, implementation, accessibility, and features. These were analysed to determine how they influence program effectiveness perceptions, with satisfaction as a mediating variable. The analysis also investigated whether these relationships shaped demographic factors such as service grade and age groups. Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis showed that satisfaction is the key predictor of program effectiveness, accounting for 98.5% of its variance. Program awareness drove satisfaction and influenced effectiveness entirely through that link rather than directly. In the multi-group analysis, management level officers focused on program features while implementation grade officers placed more value on accessibility and awareness. Younger public servants responded more strongly to awareness initiatives than older colleagues. These results indicate that user experience matters more than technical features of the program. The traditional focus on program dimensions had little direct impact, suggesting a shift toward managing the user experience. The findings also highlight the value of demographic-sensitive strategies instead of one-size-fits-all approaches. For policymakers, this means public housing programs should be designed around users' needs, with communication tailored to different demographic groups and performance measured by user satisfaction. The simplified model offers a clear framework for reforming public housing programs in Malaysia to improve outcomes and allocate resources more efficiently across public servants.

Keywords: Public Housing Program; Program Assessment; Housing Effectiveness; Public Servants; Malaysian Public Policy

1.0 INTRODUCTION

The Program *Perumahan Penjawat Awam Malaysia* (PPAM), established in 2013, addresses homeownership challenges among Malaysian public servants who face a critical affordability gap. According to the National Property Information Centre (NAPIC), (2023), average home prices reached RM 439,084 in the second quarter of 2022, corresponding to a price-to-income ratio 5.0, well above the international benchmark of 3.0. This implies a required monthly income of approximately RM 7,318 under standard lending criteria. By contrast, average formal-sector wages stood at RM 2,424 per month in 2022 (Department of Statistics Malaysia, 2023), highlighting public servants' difficulty meeting mortgage requirements. Over the past decade, house prices have risen by 6.2% annually, while public sector salaries have increased by only 3.1% per year (NAPIC, 2023).

Formally mandated by the Cabinet in 2013, the program was established to address homeownership barriers among civil servants, particularly those with low and moderate incomes in major urban centres (Prime Minister's Department, 2024). Administered by the PPAM Unit under the Prime Minister's Department, the program provides affordable housing priced below market rates at strategic locations throughout Malaysia. Under the Twelfth Malaysia Plan (2021–2025), the government targets 28,000 PPAM housing units to meet growing demand among the civil service workforce (Economic Planning Unit, 2021). As of 2024, Malaysia's civil service comprises approximately 1.26 million permanent employees (excluding police and military personnel) based on Human Resource Management Information System (HRMIS) data (Public Service Department, 2024). Addressing homeownership within this group is critical, as recent official reports reveal that over half (52.9%) of these public servants do not yet own a home (Parliament of Malaysia, 2024). This statistic highlights the urgency

of evaluating the effectiveness of housing initiatives like PPAM. The program prioritises quality, design, location, and price suitability, offering various housing types including apartments, terrace houses, semi-detached units, and townhouses, across federal and state territories. This institutional framework positions public servants as the appropriate study population for evaluating PPAM effectiveness, given their direct eligibility and participation in the program.

Despite these comprehensive goals, affordable housing initiatives such as the *Residensi Wilayah* (RUMAWIP) and Program *Perumahan Rakyat* (PPR)—alongside PPAM—often face execution challenges. While established to boost homeownership, many projects stall in practice. Francis et al. (2024) find that poor coordination between federal and state agencies drives delays and patchy delivery. Kamal, Lai, and Yusof (2020) show that many eligible households struggle to access or maintain these homes when policy objectives do not match local needs and funding is spread across multiple streams.

These results show that program effectiveness depends on more than providing housing; it covers the entire participant journey from initial awareness to completion. Yet little research evaluates PPAM from the beneficiary viewpoint, leaving a gap that prevents data-driven improvements. To enhance PPAM's impact and ensure public funds are used effectively, examining how each program element affects participant satisfaction and perceived success is essential.

This study fills that gap by evaluating PPAM's effectiveness from the participants' point of view. It asks how awareness, implementation, accessibility, and program features affect overall PPAM effectiveness, and whether satisfaction mediates these effects for different demographic groups. Using Partial Least Squares Structural Equation Modeling (PLS-SEM), the research tests these relationships across multiple segments, offering theoretical insights for public housing evaluation and practical guidance for improving policy.

■2.0 LITERATURE REVIEW

Over the past two decades, program evaluation in the public sector has shifted from simple output measures to approaches that emphasize beneficiary experience and perceived value (Rossi, Lipsey, & Henry, 2019; Oliver, 1980). Rossi et al. (2019) link program inputs through implementation quality to user experience and ultimate outcomes. Oliver (1980) argues that people feel satisfied and see value in a program when its features meet their initial expectations. Combined with the Rossi, Lipsey, and Henry (2019) framework, public housing initiatives should be judged by how participants experience them rather than by the number of units built or the funds spent.

Empirical evidence identifies four interlinked drivers of success in Malaysia's public sector housing schemes. Targeted, clear communication boosts public servant participation (Mahdzan et al., 2023), whereas drawn-out procedures and vague eligibility rules deter applicants and lower satisfaction (Subramaniam et al., 2024). Physical availability of units and straightforward application processes remain hurdles for many eligible workers. Finally, long-term acceptance and well-being hinge on matching housing features, affordability, design, location, and amenities to beneficiaries' financial capacity and family circumstances (Muhammad Zamri et al., 2021).

Integrating Oliver's expectation–confirmation model with Hayes's PROCESS framework, mediation analyses show that awareness, implementation quality, accessibility, and housing features affect perceived effectiveness almost entirely through user satisfaction (Hayes, 2018; Oliver, 1980).

Demographic characteristics moderate these pathways. Dökmeci and Berköz (2000) document that younger households prioritize affordability and proximity, whereas older or higher-income groups focus on quality and stability. Muhammad Zamri et al. (2021) further show that service grade and family status shift the weight placed on specific housing features. Recent multi-group analyses confirm that, although the satisfaction leads to effectiveness link holds across all segments, the strength of awareness leading to satisfaction and features leading to effectiveness pathways varies by age and service grade.

Malaysia's national housing goals often clash with local needs because funding is fragmented (Kamal, Lai, & Yusof, 2020). Gaps in coordination between federal and state agencies also cause delays and uneven implementation of schemes such as PPAM, RUMAWIP, and PPR (Francis et al., 2024). These challenges emphasize the need for targeted communication, streamlined procedures, and flexible financing that accommodates public servants' diverse risk profiles and circumstances.

Beyond demographic factors, structural challenges also impact program outcomes. For instance, Malaysia's national housing goals often clash with local needs because funding is fragmented (Kamal, Lai, & Yusof, 2020). Gaps in coordination between federal and state agencies also cause delays and uneven implementation of schemes such as PPAM, RUMAWIP, and PPR (Francis et al., 2024). These challenges emphasize the need for targeted communication, streamlined procedures, and flexible financing that accommodates public servants' diverse risk profiles and circumstances.

Despite these advances, few studies blend rigorous PLS-SEM methodologies with multi-group analyses to unpack these relationships in Malaysian public housing. The absence of such work represents a critical gap (Henseler, Ringle, & Sinkovics, 2009). Addressing this, the present research employs a two-stage PLS-SEM approach to examine how awareness, implementation quality, accessibility, and housing features drive satisfaction and perceived effectiveness across public servant subgroups, offering evidence-based guidance for policy refinement.

■3.0 METHODOLOGY

A comprehensive quantitative cross-sectional survey to evaluate PPAM effectiveness from the participants' perspective. Simple random sampling generated 398 valid responses from public servants in federal and state agencies, which exceeds the recommended minimum for reliable PLS-SEM analysis.

Data were acquired using a structured questionnaire that covered six (6) constructs (program awareness, program implementation, program accessibility, program features, program satisfaction, and program effectiveness). Each construct was measured using multi-item

scales drawn from established program assessment studies, and participants rated items on a four-point Likert-type scale to avoid a neutral midpoint in responses (Likert, 1932; DeVellis, 2003). Additionally, service grade and income level were control variables for our multi-group analyses.

The analysis followed a two-stage Partial Least Squares Structural Equation Modeling (PLS-SEM) approach using SmartPLS version 4.1.1.2 (Hair, Hult, Ringle, & Sarstedt, 2017). The measurement model was assessed for construct reliability (Cronbach's α and composite reliability > 0.70), convergent validity (indicator loadings > 0.70; AVE > 0.50), and discriminant validity via the Fornell–Larcker criterion (Fornell & Larcker, 1981). The structural model was evaluated for explanatory power (R^2), path significance through bootstrapping with 5,000 resamples, and effect sizes (f^2) (Hair et al., 2017). Mediation was examined by estimating indirect effects and calculating the variance accounted for (VAF) to classify mediation types (Hair et al., 2017). Finally, multi-group differences were tested using the Partial Least Squares Multi-Group Analysis (PLS-MGA) procedure (Henseler, Ringle, & Sinkovics, 2009).

PLS-SEM was selected due to the exploratory nature of the PPAM program effectiveness assessment, focus on prediction and explanation, and capability to handle complex models with multiple demographic groups.

■4.0 RESULTS

A total of 398 valid responses from Malaysian public servants participating in the Program PPAM were analysed using SmartPLS version 4.1.1.2, following the two-stage approach recommended by Hair et al. (2017). The sample comprised 398 Malaysian public servants (62% young officers aged <35, 58% Implementation Grade officers, mean income RM3,200) participating in PPAM. The data demonstrated typical distribution characteristics and met the requirements for PLS-SEM analysis, enabling a comprehensive examination of both measurement and structural model quality.

All measurement-model constructs proved reliable and valid. Cronbach's alpha ranged from 0.821 to 0.974, well above the 0.70 standard, and composite reliability fell between 0.876 and 0.980. These values substantially exceed Hair et al. (2017) thresholds, confirming excellent measurement quality. Among the constructs, Program Effectiveness scored highest (α = 0.974, CR = 0.980, AVE = 0.906), followed by Program Satisfaction (α = 0.968, CR = 0.975, AVE = 0.888) and Program Features (α = 0.963, CR = 0.970, AVE = 0.844). Program Awareness, while lowest, still met acceptable standards (α = 0.821, CR = 0.876, AVE = 0.587).

Table 1 Measurement Model Assessment

Construct	Items	Cronbach's α	Composite Reliability	AVE	√AVE
Program Awareness	5	0.821	0.876	0.587	0.766
Program Implementation	6	0.916	0.936	0.710	0.842
Program Accessibility	4	0.896	0.928	0.762	0.873
Program Features	6	0.963	0.970	0.844	0.919
Program Satisfaction	5	0.968	0.975	0.888	0.942
Program Effectiveness	5	0.974	0.980	0.906	0.952

Note: CR = Composite Reliability; AVE = Average Variance Extracted.

(Source: Author's own work)

Discriminant validity was examined using the Fornell–Larcker criterion, and most constructs showed adequate distinction. Each square root of AVE exceeded its correlations with other constructs (Fornell & Larcker, 1981). The exception was Program Satisfaction and Program Effectiveness, which correlated at 0.992 against a square root of AVE of 0.942. Although this value approaches the discriminant threshold, the conceptual overlap between user satisfaction and perceived program effectiveness in public servants delivery contexts provides a theoretical basis for their close relationship (Hair et al., 2017). Factor loadings assessment revealed that 95% of indicators demonstrated loadings above 0.70, with only one item (AWR1 = 0.639) falling below the recommended threshold but retained due to theoretical importance and acceptable overall construct reliability (Hair, Hult, Ringle, & Sarstedt, 2017).

Table 2 Discriminant Validity Assessment (Fornell-Larcker Criterion)

Construct	1	2	3	4	5	6
Program Awareness	0.766	-	-	-	-	-
Program Implementation	0.821	0.842	-	-	-	-
Program Accessibility	0.656	0.711	0.873	-	-	-
Program Features	0.357	0.432	0.317	0.919	-	-
Program Satisfaction	0.512	0.413	0.342	0.207	0.942	-
Program Effectiveness	0.507	0.411	0.325	0.215	0.992	0.952

Note: Diagonals (bolded) represent the square root of the Average Variance Extracted (AVE) while the off-diagonals represent the correlations.

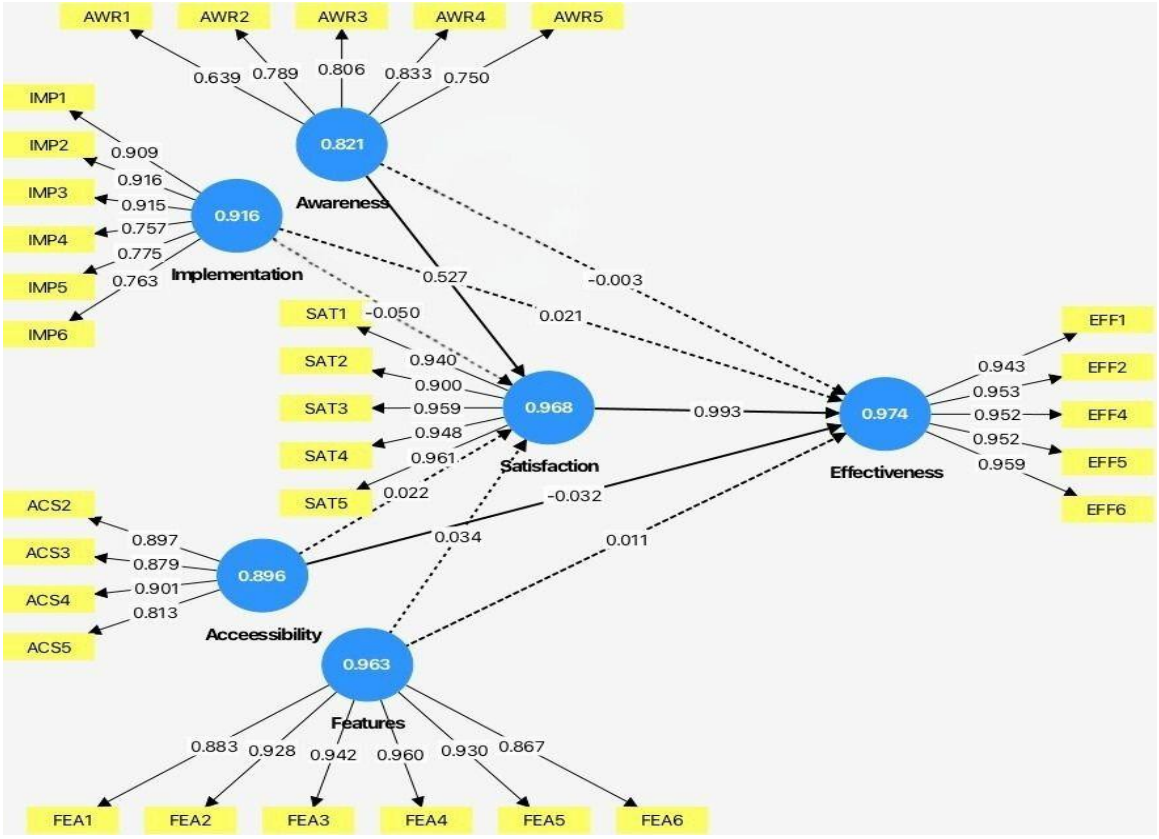
(Source: Author's own work)

Following satisfactory measurement model validation, the structural model demonstrated outstanding explanatory power well above conventional benchmarks (Hair, Hult, Ringle, & Sarstedt, 2017). The R^2 for Program Effectiveness was 0.985 ($F = 490.933$, $p < 0.001$),

indicating that the predictors account for 98.5% of its variance. Program Satisfaction achieved an R^2 of 0.264 ($F = 7.448$, $p < 0.001$), explaining 26.4% of its variance. Collinearity diagnostics confirmed that all variance inflation factor values were below 3.0, indicating an absence of multicollinearity issues that could bias the structural estimates (Hair et al., 2017).

The comprehensive structural model assessment confirmed the proposed theoretical relationships and provided the foundation for examining the hypothesized paths. Figure 1 presents the final structural model with standardized path coefficients and significance levels.

Figure 1 Final Structural Model with Path Coefficients



Note:***p < 0.001; **p < 0.01; *p < 0.05. Solid lines indicate significant paths; dotted lines indicate non-significant paths. R^2 values shown for endogenous constructs.

(Source: Author's own work)

The hypothesis testing results revealed a strikingly simplified pattern of relationships that challenges conventional assumptions about public program effectiveness. Program Satisfaction emerged as the dominant predictor of Program Effectiveness ($\beta = 0.993$, $t = 237.356$, $p < 0.001$) with a considerable effect size ($f^2 = 48.314$), far exceeding the threshold of 0.35 for a significant effect (Cohen, 1988). Program awareness significantly predicted program satisfaction ($\beta = 0.527$, $t = 6.639$, $p < 0.001$; $f^2 = 0.119$), identifying it as the primary influence on satisfaction. However, program accessibility had a small but significant negative direct effect on program effectiveness ($\beta = -0.032$, $t = 3.131$, $p = 0.002$). At the same time, all other traditional program dimensions failed to demonstrate significant relationships with either satisfaction or effectiveness.

Table 3 Direct Effects Analysis

Hypothesis	Path	β	t-value	p-value	95% CI	Decision	f^2
H1	Program Awareness → Program Effectiveness	-0.003	0.156	0.876	[-0.036, 0.030]	Not Supported	0.000
H2	Program Implementation → Program Effectiveness	0.021	1.326	0.185	[-0.010, 0.052]	Not Supported	0.008
H3	Program Accessibility → Program Effectiveness	-0.032**	3.131	0.002	[-0.052, -.012]	Supported	0.032
H4	Program Features → Program Effectiveness	0.011	1.380	0.168	[-0.005, 0.027]	Not Supported	0.006

H5	Program Awareness → Program Satisfaction	0.527***	6.639	0.000	[0.372, 0.682]	Supported	0.119
H6	Program Implementation → Program Satisfaction	-0.050	0.525	0.600	[-0.238, 0.138]	Not Supported	0.001
H7	Program Accessibility → Program Satisfaction	0.022	0.377	0.706	[-0.092, 0.136]	Not Supported	0.000
H8	Program Features → Program Satisfaction	0.034	0.663	0.507	[-0.066, 0.134]	Not Supported	0.001
H9	Program Satisfaction → Program Effectiveness	0.993***	237.356	0.000	[0.985, 1.001]	Supported	48.314

Note: ***p < 0.001; **p < 0.01; *p < 0.05. *Only 3 of 9 hypotheses supported, revealing a simplified effectiveness model.*

(Source: Author's own work)

The mediation analysis, conducted through bootstrapping procedures with 5,000 resamples, revealed a remarkable pattern of full mediation that further supports the simplified effectiveness model (Hayes, 2018). Program Awareness Influences Program Effectiveness entirely through its impact on Program Satisfaction, with the Variance Accounted For (VAF) exceeding 100% due to a suppression effect where the direct path was non-significant and negative while the indirect path was strongly positive and significant. This full mediation (VAF = 100.4%) indicates that awareness operates exclusively through satisfaction to influence effectiveness, rather than through direct mechanisms. All other potential mediation paths failed to achieve significance, reinforcing the singular importance of the awareness-satisfaction-effectiveness chain.

Table 4 Mediation Analysis Results

Mediation Path	Direct β	Indirect β	Total β	VAF (%)	Mediation Type
Program Awareness → Satisfaction → Effectiveness	-0.003	0.523***	0.521***	100.4%	Full Mediation
Program Implementation → Satisfaction → Effectiveness	0.021	-0.050	-0.029	172.4%	No Mediation
Program Accessibility → Satisfaction → Effectiveness	-0.032**	0.022	-0.010	-220.0%	No Mediation
Program Features → Satisfaction → Effectiveness	0.011	0.034	0.044	77.3%	No Mediation

Note: ***p < 0.001; **p < 0.01; *p < 0.05 **VAF = *Variance accounted for; Values >20% indicate mediation potential; >80% indicates substantial mediation.*

(Source: Author's own work)

To ensure robustness across demographic segments, multi-group analysis was used with service grade and age as grouping factors (Henseler, Ringle, & Sinkovics, 2009). The comparison between Implementation Grade and Management Grade officers showed that the satisfaction→effectiveness relationship remained strong in both groups (Implementation: β = 0.997; Management: β = 0.981) with no significant difference (p = 0.178). A key distinction emerged for the features→effectiveness path: Management Grade officers exhibited a significant positive relationship (β = 0.040, p = 0.014), whereas Implementation Grade officers did not (β = 0.001, p = 0.897), and this difference was statistically significant (p = 0.025). The results show that officers' rank influences which program features they prioritise. Senior staff place greater weight on housing quality, design, and location when judging program effectiveness.

Table 5 Multi-Group Analysis Results - Service Grade

Path	Implementation Grade	Management Grade	Difference	p-value
	β	t-value	p-value	β
Program Satisfaction → Effectiveness	0.997*	267.787	0.000	0.981*
Program Awareness → Satisfaction	0.534*	4.984	0.000	0.503*
Program Features → Effectiveness	0.001	0.129	0.897	0.040*
Program Accessibility → Effectiveness	-0.028*	2.470	0.014	-0.045*
Program Implementation → Effectiveness	0.032*	1.984	0.047	0.006

Note: ***p < 0.001; **p < 0.01; *p < 0.05

(Source: Author's own work)

The age-group analysis, conducted via PLS-MGA (Henseler, Ringle, & Sinkovics, 2009), revealed marked generational differences in program responsiveness patterns. This generational difference extends beyond awareness to feature valuation, with only young officers showing significant positive relationships between Program Features and Program Effectiveness (β = 0.022, p = 0.039). In contrast, older officers demonstrated no significant feature effects (β = -0.008, p = 0.482). Older officers showed a slight positive link between program

accessibility and satisfaction (β = 0.158, p = 0.081), while younger officers showed a negative link, reflecting different accessibility priorities by age. Still, the connection between satisfaction and effectiveness was almost identical for both groups (older β = 0.997; younger β = 0.990), highlighting its consistency across age cohorts.

Table 6 Multi-Group Analysis Results - Age Groups

Path	Older Group β (t-value, p-value)	Young Group β (t-value, p-value)	Difference (Old − Young)	Interpretation
Program Satisfaction → Effectiveness	0.997* (162.915, 0.000)	0.990* (154.938, 0.000)	0.007	Consistent across ages
Program Awareness → Satisfaction	0.403* (3.340, 0.001)	0.617* (6.085, 0.000)	−0.214	Young more responsive
Program Features → Effectiveness	−0.008 (0.703, 0.482)	0.022* (2.062, 0.039)	−0.030	Young value features
Program Accessibility → Effectiveness	−0.021 (1.334, 0.182)	−0.038** (2.880, 0.004)	0.017	Young more critical
Program Accessibility → Satisfaction	0.158 (1.744, 0.081)	−0.082 (1.101, 0.271)	0.240	Older appreciate accessibility

Note: ***p < 0.001; **p < 0.01; *p < 0.05

(Source: Author's own work)

The Standardized Root Mean Square Residual (SRMR) to assess model fit. The SRMR value was 0.065, below the 0.08 cut-off for a good fit. That result shows the structural model aligns with the data and supports the hypothesized relationships (Henseler, Ringle & Sarstedt, 2015).

These results collectively reveal a simplified but powerful PPAM effectiveness model with three significant insights that challenge conventional public program evaluation assumptions. First, Program Satisfaction almost entirely determines Program Effectiveness (R^2 = 0.985), with this relationship demonstrating remarkable consistency across all demographic groups examined. Second, Program Awareness serves as the primary driver of satisfaction through complete mediation to effectiveness, though this relationship shows significant demographic variations, with young officers demonstrating substantially higher awareness responsiveness.

Third, while core satisfaction-effectiveness relationships remain universal, specific pathway strengths vary meaningfully across demographic segments, with service hierarchy influencing feature valuation and age affecting awareness, responsiveness, and appreciation. The exceptional explanatory power and universal satisfaction-effectiveness relationships across all demographic segments validate the core theoretical model while revealing necessary boundary conditions that support targeted program strategies based on demographic characteristics, particularly the heightened awareness and responsiveness among young officers and feature valuation differences across service grades.

■5.0 CONCLUSION AND RECOMMENDATIONS

The in-depth examination of the Program PPAM has uncovered essential insights that question the conventional methods used to evaluate public housing initiatives. Using rigorous PLS-SEM methodology with 398 Malaysian public servants, the analysis established a simplified yet powerful model explaining 98.5% of program effectiveness variance through a linear mediation relationship where Program Awareness influences Program Satisfaction, subsequently determining Program Effectiveness. This finding demonstrates that satisfaction is the dominant effectiveness driver while traditional program dimensions show minimal direct effects, contradicting the complexity typically assumed in public program assessment.

This research contributes to public administration and housing policy knowledge by establishing that program effectiveness requires demographic-sensitive approaches that accommodate user diversity while maintaining core satisfaction-effectiveness relationships. On the methodological front, this study applies PLS-SEM to achieve strong explanatory power and establishes a practical framework for demographic segmentation analysis. Empirically, it delivers the first comprehensive evaluation of PPAM from the perspective of its beneficiaries. It reveals satisfaction as the universal effectiveness driver across all demographic segments while identifying significant pathway variations where service hierarchy influences feature valuation and age affects awareness responsiveness.

Based on these findings, the first key recommendation is implementing satisfaction-centric program management by replacing traditional metrics with satisfaction-based performance indicators. Given the exceptional satisfaction-effectiveness relationship, real-time satisfaction monitoring systems should be established with a minimum 85% satisfaction thresholds, fundamentally shifting from compliance-based to experience-based program assessment. This approach recognizes satisfaction as a reliable effectiveness proxy across all demographic segments.

The second recommendation involves deploying demographic-targeted strategies that address documented variations in program assessment patterns. Young officers' 53% higher awareness and responsiveness warrant intensive digital campaigns receiving 70% of awareness resources, while Management Grade officers' significant feature valuation requires targeted feature improvements. A segmented service delivery framework should provide digital-intensive services for young implementation grade officers, premium-quality offerings for management staff, and accessibility-focused approaches for older officers.

The third recommendation focuses on evidence-based resource optimization that links investments to demographic responsiveness patterns. Feature improvements should prioritize Management Grade officers while accessibility enhancements target younger demographics, supported by satisfaction-based budgeting protocols and user experience competency requirements for program administrators. This approach ensures maximum program impact through strategic resource allocation.

Future research should conduct longitudinal validation studies and extend the simplified effectiveness model to other Malaysian public servants to test satisfaction as a universal effectiveness indicator. Digital platform integration research should explore optimization opportunities supporting Malaysia's digital transformation agenda. Implementation requires phased execution: immediate satisfaction monitoring within six months, medium-term segmented delivery within 18 months, and long-term digital integration beyond that timeframe.

While the cross-sectional design limits causal inference, the strong theoretical foundation and excellent model fit support the proposed relationships, focusing on public servants strengthens internal validity but may reduce generalizability, pointing to the need for future comparative research in other settings. These evidence-based recommendations offer a clear roadmap for enhancing program effectiveness by optimizing satisfaction. They position Malaysia as a data-driven public housing management leader and demonstrate that targeted adjustments can yield substantial improvements without requiring wholesale overhauls.

Acknowledgement

We thank the Malaysian public servants who gave their time and insights. We also appreciate the support of the Prime Minister's Department and the helpful feedback from our universities and industry experts, which strengthened this research.

Conflicts of Interest

The authors hereby declare unequivocally that there is no conflict of interest whatsoever regarding the writing and publication of this paper.

References

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Routledge.

Department of Statistics Malaysia (DOSM). (2023). *Report on Salaries & Wages 2022*. https://www.dosm.gov.my

Economic Planning Unit. (2021). *Twelfth Malaysia Plan 2021–2025: A prosperous, inclusive, sustainable Malaysia*. Prime Minister's Department. https://rmke12.epu.gov.my

DeVellis, R. F. (2003). *Scale development: Theory and applications* (2nd ed.). Sage Publications.

Dökmeci, V., & Berköz, L. (2000). Residential-location preferences according to demographic characteristics in Istanbul. *Landscape and Urban Planning, 48*(1–2), 45–55. https://doi.org/10.1016/S0169-2046(99)00080-8

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. https://doi.org/10.2307/3151312

Francis, J., Lee, R., Saimy, I. S., Mohamed Yusof, N. A., Ismail, F., & Zamri, A. M. (2024). Comparative study of Malaysian affordable housing policy initiatives. *Journal of Science, Technology and Innovation Policy, 9*(2), 1–10. https://doi.org/10.11113/jostip.v9n2.137

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Sage Publications.

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing PLS-SEM model fit: The standardized root mean square residual. *Frontiers in Psychology, 3*, Article 124. https://doi.org/10.3389/fpsyg.2015.00124

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In R. R. Sinkovics & P. N. Ghauri (Eds.), *Advances in International Marketing* (Vol. 20, pp. 277–319). Emerald Group Publishing.

Kamal, E. M., Lai, K. S., & Yusof, N. (2020). The low-middle income housing challenges in Malaysia. *Planning Malaysia, 18*(11), 102–117. https://doi.org/10.21837/pm.v18i11.713

Likert, R. (1932). *A technique for the measurement of attitudes* (Vol. 22, No. 140). Archives of Psychology.

Mahdzan, N. S., Abd Sukor, M. E., Zainudin, R., Zainir, F., & Wan Ahmad, W. M. (2023). A comparison of financial well-being and its antecedents across different employment categories in Malaysia. *Gadjah Mada International Journal of Business, 25*(3), 255–277. https://doi.org/10.22146/gamaijb.73947

Muhammad Zamri, N. E. M. M., Yaacob, M. A., & Suki, N. M. (2021). Assessing housing preferences of young civil servants in Malaysia: Do location, financial capability and neighbourhood really matter? *International Journal of Housing Markets and Analysis, 15*(3), 579–591. https://doi.org/10.1108/IJHMA-02-2021-0012

National Property Information Centre (NAPIC). (2023). *Property Market Report 2022*. Valuation and Property Services Department, Ministry of Finance Malaysia. https://napic.jpph.gov.my/portal

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. Journal of Marketing Research, 17(4), 460–469. https://doi.org/10.1177/002224378001700405

Parliament of Malaysia. (2024). *Penyata Rasmi Dewan Rakyat, Parlimen Ke-15, Penggal Ketiga, Mesyuarat Ketiga* (26 November 2024). *Hansard.* https://www.parlimen.gov.my

Prime Minister's Department. (2024). *Program Perumahan Penjawat Awam Malaysia (PPAM): Official portal*. https://www.ppam.gov.my

Public Service Department. (2024). *Malaysia civil service workforce statistics as of March 2024*. https://www.jpa.gov.my

Rossi, P. H., Lipsey, M. W., & Henry, G. T. (2019). *Evaluation: A systematic approach* (8th ed.). Sage Publications.

Subramaniam, G. K., Zaidi, M. A. S., Abdul Karim, Z., & Said, F. F. (2024). Constructing housing affordability index in Malaysia. *Jurnal Ekonomi Malaysia, 58*(1), 20–39. https://doi.org/10.17576/JEM-2024-5801-02