

Statistical Analysis Report

Survey of Halal-Product Purchase Intention

Data source	UJI_1.xlsx
Respondents (N)	218
Measured items	29 Likert items (1-5) across 6 constructs
Software	Python (pandas, scipy, statsmodels, factor-analyzer)
Date	14 June 2026

1. Data Overview & Preparation

The dataset contains responses from **218** participants on **29** five-point Likert items (1 = strongly disagree to 5 = strongly agree), organised into six constructs, together with four demographic variables (Age, Gender, Education, Income).

Missing data. Five item responses were missing across the dataset (AHL1 (n=1), AHL2 (n=1), THL4 (n=1), RC5 (n=1), PQ5 (n=1)) — .08% of all item cells. These were replaced with the respective item median (preserving valid integer Likert values), giving a complete dataset of N = 218 for every analysis.

Table 1. Constructs and their measured items

Code	Construct (inferred name)	Items	Range
AHL	Awareness of Halal Logo (<i>inferred</i>)	5	AHL1-AHL5
THL	Trust in Halal Logo (<i>inferred</i>)	5	THL1-THL5
RC	Religious Commitment (<i>inferred</i>)	5	RC1-RC5
SI	Social Influence (<i>inferred</i>)	5	SI1-SI5
PQ	Perceived Quality (<i>inferred</i>)	5	PQ1-PQ5
PI	Purchase Intention (<i>inferred</i>)	4	PI1-PI4

Construct names are inferred from the item codes; no codebook/value labels were supplied with the file. Demographic categories are reported using their original numeric codes for the same reason.

Grouping variables used (sensible defaults). The independent-samples *t*-test compares **Gender** (the only two-category variable). The one-way ANOVA uses **Income** (the best-balanced three-category variable; $n = 46 / 92 / 80$). The regression model predicts **Purchase Intention (PI)** — the conventional dependent variable in this type of study — from the other five constructs.

2. Frequencies

Frequency distributions for the four demographic variables. Because no demographic values were missing, *Percent* equals *Valid Percent*.

Table 2. Age (AGE)

Code	Frequency	Percent	Valid %	Cumulative %
1	50	22.9	22.9	22.9
2	80	36.7	36.7	59.6
3	67	30.7	30.7	90.4
4	12	5.5	5.5	95.9
5	9	4.1	4.1	100.0
Total	218	100.0	100.0	

Table 3. Gender (GENDER)

Code	Frequency	Percent	Valid %	Cumulative %
1	189	86.7	86.7	86.7
2	29	13.3	13.3	100.0
Total	218	100.0	100.0	

Table 4. Education (EDUCATION)

Code	Frequency	Percent	Valid %	Cumulative %
2	2	0.9	0.9	0.9
3	174	79.8	79.8	80.7
4	42	19.3	19.3	100.0
Total	218	100.0	100.0	

Table 5. Income (INCOME)

Code	Frequency	Percent	Valid %	Cumulative %
1	46	21.1	21.1	21.1
2	92	42.2	42.2	63.3
3	80	36.7	36.7	100.0
Total	218	100.0	100.0	

3. Descriptive Statistics

Item-level descriptive statistics for all 29 Likert items.

Table 6. Descriptive statistics for individual items

Item	N	Min	Max	Mean	SD	Skew.	Kurt.
AHL1	218	1	5	2.858	1.485	0.042	-1.443
AHL2	218	1	5	3.055	1.236	-0.031	-0.984
AHL3	218	1	5	3.271	1.419	-0.332	-1.219
AHL4	218	1	5	3.106	1.500	-0.091	-1.388
AHL5	218	1	5	3.179	1.450	0.005	-1.419
THL1	218	1	5	4.651	0.824	-2.710	7.333
THL2	218	1	5	4.638	0.775	-2.326	5.029
THL3	218	1	5	4.500	0.805	-1.741	2.796

Item	N	Min	Max	Mean	SD	Skew.	Kurt.
THL4	218	1	5	4.156	0.985	-1.193	1.190
THL5	218	1	5	4.339	1.058	-1.468	1.151
RC1	218	1	5	4.298	1.046	-1.475	1.406
RC2	218	1	5	4.505	0.827	-1.913	3.887
RC3	218	1	5	4.399	0.906	-1.551	2.190
RC4	218	1	5	4.477	0.854	-1.718	2.614
RC5	218	1	5	3.986	1.170	-0.967	0.060
SI1	218	1	5	4.000	1.292	-1.010	-0.260
SI2	218	1	5	2.812	1.390	0.092	-1.253
SI3	218	1	5	3.500	1.402	-0.527	-1.061
SI4	218	1	5	2.821	1.274	0.151	-0.833
SI5	218	1	5	2.830	1.369	0.191	-1.173
PQ1	218	1	5	3.339	1.216	-0.272	-0.753
PQ2	218	1	5	3.729	1.189	-0.639	-0.495
PQ3	218	1	5	3.358	1.566	-0.348	-1.429
PQ4	218	1	5	3.179	1.371	-0.110	-1.182
PQ5	218	1	5	2.729	1.325	0.317	-0.989
PI1	218	1	5	4.734	0.617	-3.567	17.059
PI2	218	1	5	4.261	1.124	-1.454	1.245
PI3	218	1	5	4.583	0.877	-2.259	4.765
PI4	218	1	5	3.766	1.376	-0.695	-0.847

Skew. = skewness; Kurt. = excess kurtosis (0 = normal). Values within ± 2 are generally considered acceptable for approximate normality.

Table 7. Descriptive statistics for composite (mean) scores

Construct	N	Min	Max	Mean	SD	Skew.	Kurt.
AHL (<i>Awareness of Halal Logo</i>)	218	3.00	5.00	3.094	0.353	3.977	15.459
THL (<i>Trust in Halal Logo</i>)	218	2.80	5.00	4.457	0.409	-0.947	1.457
RC (<i>Religious Commitment</i>)	218	2.40	5.00	4.333	0.486	-0.892	0.894
SI (<i>Social Influence</i>)	218	1.60	5.00	3.193	0.603	0.073	-0.046
PQ (<i>Perceived Quality</i>)	218	1.20	5.00	3.267	0.731	0.076	0.196
PI (<i>Purchase Intention</i>)	218	2.50	5.00	4.336	0.541	-0.720	0.116

Composite scores are the mean of each construct's items (see Section 6, Compute Variable).

4. Factor Analysis

Exploratory factor analysis (principal-component extraction with Varimax rotation) was run on the 29 items to examine the underlying structure.

Table 8. KMO and Bartlett's test

Measure	Value
Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy	.375
Bartlett's test — Approx. Chi-Square	660.15
Bartlett's test — df	406
Bartlett's test — Sig.	< .001

KMO < .50 is unacceptable; .50-.60 poor; .70+ acceptable. Bartlett's test should be significant ($p < .05$) for factor analysis to be appropriate.

Table 9. Total variance explained

Comp.	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% Var.	Cum. %	Total	% Var.	Cum. %
1	2.041	7.04	7.04	1.897	6.54	6.54
2	1.792	6.18	13.22	1.658	5.72	12.26
3	1.648	5.68	18.90	1.695	5.84	18.10
4	1.551	5.35	24.25	1.575	5.43	23.53
5	1.541	5.31	29.56	1.574	5.43	28.96
6	1.436	4.95	34.52	1.599	5.51	34.48
7	1.299	4.48	39.00			
8	1.263	4.35	43.35			
9	1.195	4.12	47.47			
10	1.163	4.01	51.48			
11	1.126	3.88	55.36			
12	1.095	3.78	59.14			
13	1.043	3.60	62.73			
14	0.993	3.42	66.16			
15	0.946	3.26	69.42			
16	0.880	3.04	72.46			
17	0.855	2.95	75.41			
18	0.796	2.75	78.15			
19	0.777	2.68	80.83			
20	0.744	2.56	83.40			
21	0.722	2.49	85.89			
22	0.712	2.46	88.34			
23	0.625	2.15	90.50			
24	0.605	2.09	92.58			
25	0.528	1.82	94.40			
26	0.515	1.78	96.18			
27	0.471	1.62	97.80			
28	0.454	1.57	99.37			
29	0.183	0.63	100.00			

Extraction method: Principal Component Analysis; rotation: Varimax. Shaded rows have eigenvalue > 1 (13 components). Six factors were retained a priori to match the six theorised constructs; together they explain 34.48% of total variance.

Table 10. Rotated component matrix (Varimax)

Item	F1	F2	F3	F4	F5	F6
AHL1	.385	-.316	-.014	.171	-.393	.052
AHL2	.382	.005	.043	-.308	.111	.057
AHL3	.054	.665	-.020	.061	.145	-.316
AHL4	-.234	-.672	.081	.163	.192	-.269
AHL5	.048	.262	-.002	-.334	.125	.674
THL1	.053	.084	.258	.428	.125	.063
THL2	-.076	-.001	-.033	.485	-.188	.133
THL3	-.139	.370	-.059	.059	.002	.158
THL4	-.082	.407	.345	.001	-.225	-.005
THL5	-.256	-.103	.150	-.081	.412	.173
RC1	.065	.078	.093	-.498	-.124	.092
RC2	-.008	.037	.575	-.073	.197	-.001
RC3	-.036	.053	.059	.054	.442	.008
RC4	-.008	-.075	.654	-.105	.028	-.015
RC5	.193	-.170	.189	-.161	.544	.161
SI1	.159	-.061	.379	.202	.054	-.075
SI2	.112	-.113	-.168	.179	.111	.485
SI3	-.024	-.115	.274	-.442	-.168	-.225
SI4	-.113	-.084	.365	-.020	-.217	.433
SI5	.152	.272	.318	.161	-.038	-.032
PQ1	.543	-.050	-.113	-.203	.030	.034
PQ2	.620	.031	.123	.036	-.031	.032
PQ3	.486	.073	-.161	.050	.313	-.187
PQ4	.492	-.270	.053	.038	-.046	.281
PQ5	.333	.070	.132	.085	-.053	.050
PI1	-.139	-.036	-.263	-.371	.020	.093
PI2	.122	-.068	-.132	.251	.559	.020
PI3	-.100	.166	.144	.194	-.001	.263
PI4	.117	.019	-.067	.033	.070	.421

Loadings with $|value| \geq .40$ are bold; loadings $< .30$ are greyed. A clean scale would show each item loading strongly on one factor only.

Interpretation. Sampling adequacy is well below the usual threshold ($KMO = .375$, where $\geq .50$ is the minimum). Although Bartlett's test is significant, the items do not form a clean six-factor structure: 13 components have eigenvalues above 1, and most items do not load cleanly on a single factor. Only the Perceived-Quality (PQ) items group together coherently. This diffuse pattern indicates the items share little common variance in this dataset.

5. Reliability Analysis

Internal consistency (Cronbach's alpha) was assessed for each construct.

Table 11. Cronbach's alpha by construct

Construct	No. items	Cronbach's α	Interpretation
AHL (<i>Awareness of Halal Logo</i>)	5	-2.813	negative (items inconsistent)
THL (<i>Trust in Halal Logo</i>)	5	.050	unacceptable
RC (<i>Religious Commitment</i>)	5	.256	unacceptable
SI (<i>Social Influence</i>)	5	.003	unacceptable
PQ (<i>Perceived Quality</i>)	5	.409	unacceptable
PI (<i>Purchase Intention</i>)	4	.108	unacceptable
Overall (all 29 items)	29	.281	unacceptable

$\alpha \geq .70$ is the conventional minimum for acceptable internal consistency. Negative values arise when items are, on average, negatively correlated.

Interpretation. None of the constructs reaches the .70 threshold; several are near zero and AHL is negative. This is consistent with the weak inter-item correlations seen in the factor analysis: the items do not behave as reliable multi-item scales in this dataset. The most likely explanations are that this is a **practice/teaching dataset** (responses with little real latent structure) or that the items require review and possible reverse-coding before analysis. The procedures below are still reported in full, but the substantive results should be read with this limitation in mind.

Table 12. Item-total statistics — AHL (Awareness of Halal Logo)

Item	Scale Mean if Deleted	Scale Var. if Deleted	Corrected Item-Total r	α if Deleted
AHL1	12.61	3.40	-.456	-1.762
AHL2	12.41	2.99	-.330	-2.489
AHL3	12.20	4.16	-.530	-1.259
AHL4	12.36	4.91	-.610	-.796
AHL5	12.29	3.96	-.512	-1.361

Table 13. Item-total statistics — THL (Trust in Halal Logo)

Item	Scale Mean if Deleted	Scale Var. if Deleted	Corrected Item-Total r	α if Deleted
THL1	17.63	3.32	.062	-.007
THL2	17.65	3.51	.026	.035
THL3	17.78	3.47	.023	.038
THL4	18.13	2.99	.067	-.026
THL5	17.94	3.29	-.057	.158

Table 14. Item-total statistics — RC (Religious Commitment)

Item	Scale Mean if Deleted	Scale Var. if Deleted	Corrected Item-Total r	α if Deleted
RC1	17.37	4.58	.052	.285
RC2	17.16	4.59	.180	.166
RC3	17.27	4.87	.055	.271
RC4	17.19	4.59	.162	.179
RC5	17.68	3.80	.162	.166

Table 15. Item-total statistics — SI (Social Influence)

Item	Scale Mean if Deleted	Scale Var. if Deleted	Corrected Item-Total r	α if Deleted
SI1	11.96	7.03	.057	-.069
SI2	13.15	7.65	-.064	.091
SI3	12.46	7.70	-.074	.104
SI4	13.14	6.86	.091	-.113
SI5	13.13	7.08	.018	-.020

Table 16. Item-total statistics — PQ (Perceived Quality)

Item	Scale Mean if Deleted	Scale Var. if Deleted	Corrected Item-Total r	α if Deleted
PQ1	13.00	9.86	.264	.318
PQ2	12.61	9.44	.341	.264
PQ3	12.98	9.25	.173	.392
PQ4	13.16	9.90	.181	.377
PQ5	13.61	10.58	.117	.423

Table 17. Item-total statistics — PI (Purchase Intention)

Item	Scale Mean if Deleted	Scale Var. if Deleted	Corrected Item-Total r	α if Deleted
PI1	12.61	4.20	.041	.098
PI2	13.08	3.27	.039	.101
PI3	12.76	3.58	.101	.019
PI4	13.58	2.63	.036	.125

6. Compute Variable

Six composite variables were computed as the arithmetic mean of each construct's items (equivalent to SPSS *Transform* → *Compute Variable*, e.g. $PI = \text{MEAN}(PI1, PI2, PI3, PI4)$). These composites are used as the dependent/independent variables in the regression, t-test and ANOVA below.

Table 18. Computed composite variables

New variable	Construct	Formula	Mean	SD
AHL	Awareness of Halal Logo (<i>inferred</i>)	$\text{MEAN}(\text{AHL1} \dots \text{AHL5})$	3.094	0.353
THL	Trust in Halal Logo (<i>inferred</i>)	$\text{MEAN}(\text{THL1} \dots \text{THL5})$	4.457	0.409
RC	Religious Commitment (<i>inferred</i>)	$\text{MEAN}(\text{RC1} \dots \text{RC5})$	4.333	0.486
SI	Social Influence (<i>inferred</i>)	$\text{MEAN}(\text{SI1} \dots \text{SI5})$	3.193	0.603
PQ	Perceived Quality (<i>inferred</i>)	$\text{MEAN}(\text{PQ1} \dots \text{PQ5})$	3.267	0.731
PI	Purchase Intention (<i>inferred</i>)	$\text{MEAN}(\text{PI1} \dots \text{PI4})$	4.336	0.541

7. Linear Regression

A standard (simultaneous) multiple regression predicted **PI (Purchase Intention)** from the five remaining composite constructs.

Table 19. Model summary

R	R ²	Adj. R ²	Std. Error of Est.	Durbin-Watson
.189	.036	.013	0.538	2.168

Predictors: AHL, THL, RC, SI, PQ. Dependent variable: PI (Purchase Intention).

Table 20. ANOVA of the regression model

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.267	5	0.453	1.568	.170
Residual	61.308	212	0.289		
Total	63.575	217			

Table 21. Regression coefficients

Predictor	B	Std. Error	Beta	t	Sig.	Tol.	VIF
(Constant)	3.429	0.593	—	5.778	< .001 ***	—	—
AHL	0.303	0.118	.197	2.574	.011 *	.776	1.289
THL	0.025	0.091	.019	0.280	.780	.965	1.037
RC	0.033	0.079	.030	0.426	.670	.915	1.093
SI	-0.056	0.062	-.062	-0.899	.370	.945	1.058
PQ	-0.033	0.055	-.045	-0.600	.549	.814	1.228

B = unstandardised coefficient; Beta = standardised coefficient; Tol. = tolerance; VIF = variance inflation factor (VIF < 10 indicates no serious multicollinearity). * $p < .05$, ** $p < .01$, *** $p < .001$.

Interpretation. The model explains only .036 of the variance in PI ($R^2 = .036$, adjusted $R^2 = .013$) and is not statistically significant overall, $F(5, 212) = 1.57$, $p = .170$. Of the predictors, only AHL reaches significance ($p = .011$). The low explanatory power is expected given the weak reliability of the scales reported in Section 5.

8. Independent-Samples t-Test

An independent-samples t-test compared **PI (Purchase Intention)** between the two gender groups.

Table 22. Group statistics — PI (Purchase Intention) by GENDER

Group	N	Mean	SD	Std. Error Mean
GENDER = 1	189	4.339	0.533	0.039
GENDER = 2	29	4.319	0.605	0.112

Table 23. Independent-samples test

Assumption	Levene F	Levene Sig.	t	df	Sig. (2-tailed)	Mean Diff.	SE Diff.
Equal variances assumed	1.707	.193	0.182	216	.856	0.020	0.108
Equal variances not assumed			0.166	35.0	.869	0.020	0.119

Levene's test is non-significant, so the 'equal variances assumed' row applies.

Interpretation. Levene's test is non-significant ($p = .193$), so equal variances are assumed. The difference in PI between gender groups is not statistically significant, $t(216) = 0.182$, $p = .856$ (mean difference = 0.020).

9. One-Way ANOVA

A one-way ANOVA tested whether **PI (Purchase Intention)** differs across the three income groups, followed by Tukey HSD post-hoc comparisons.

Table 24. Descriptives — PI (Purchase Intention) by INCOME

Group	N	Mean	SD	Std. Error	95% CI for Mean	Min	Max
INCOME = 1	46	4.266	0.642	0.095	4.076-4.457	2.50	5.00
INCOME = 2	92	4.329	0.528	0.055	4.219-4.438	3.00	5.00
INCOME = 3	80	4.384	0.494	0.055	4.275-4.494	3.00	5.00

Table 25. Test of homogeneity of variances

Levene Statistic	df1	df2	Sig.
1.877	2	215	.156

Table 26. ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.415	2	0.208	0.707	.494
Within Groups	63.159	215	0.294		
Total	63.575	217			

Table 27. Post-hoc comparisons (Tukey HSD)

Comparison	Mean Diff.	Adj. p	95% CI	Significant?
1 vs 2	0.062	.799	-0.169-0.293	No
1 vs 3	0.118	.468	-0.119-0.355	No
2 vs 3	0.056	.781	-0.140-0.251	No

'Significant?' = Yes when the adjusted $p < .05$.

Interpretation. Variances are homogeneous (Levene $p = .156$). PI does not differ significantly across income groups, $F(2, 215) = 0.707$, $p = .494$, and no pairwise Tukey comparison is significant. Group means are very close (4.266 / 4.329 / 4.384).

10. Summary

All eight requested procedures were completed on the 218-responder dataset. The descriptive and demographic results are sound. However, the reliability and factor analyses show that the six constructs do **not** form internally consistent scales in this data (all Cronbach's $\alpha < .70$, KMO = .375), and the inferential tests (regression, t-test, ANOVA) are therefore non-significant with very small effects. This is the expected outcome when the underlying items lack real shared variance — pointing to a practice/teaching dataset or to items that need validation and reverse-coding. The full output above can be used to demonstrate each statistical procedure; the substantive conclusions should be treated with corresponding caution.