<u>Analysis Report</u>

This report is structured as follows.

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Sample Characterization

The table below presents the sample characterization of the study participants across various demographic and lifestyle categories.

Category	Level	Count	Percentage
Residency	Abu Dhabi	199	26.7
	Ajman	22	3.0
	Dubai	414	55.6
	Fujairah	3	0.4
	Ras Al Khaimah	11	1.5
	Sharjah	87	11.7
	Umm Al Quwain	8	1.1
Gender	Female	406	54.6
	Male	338	45.4
Status_UAE	Expatriate Resident (non-UAE citizen)	561	75.5
	Local Resident (UAE citizen)	175	23.6
	Tourist	7	0.9
Occupation	Retired or Student	18	2.4
	Self-employed/ Business owner	46	6.2
	Unemployed	56	7.5
	Working (full-time)	569	76.5
	Working (part-time)	55	7.4
Age	20–29	12	1.6
	30–39	339	45.6
	40–49	285	38.3
	50–59	86	11.6
	60 and above	20	2.7
	Under 20	2	0.3
Education	Bachelor's degree	399	53.7
	Doctoral degree	35	4.7
	High school diploma or equivalent	80	10.8
	Less than high school	7	0.9
	Master's degree	222	29.9
Household_Income	101,000 – 150,000 AED	132	17.7
	151,000 – 200,000 AED	118	15.9
	201,000 – 250,000 AED	114	15.3
	51,000 – 100,000 AED	113	15.2
	Less than 50,000 AED	112	15.1
	More than 250,000 AED	155	20.8
Car_Ownership	1 car	360	48.4
	2 cars	234	31.5
	3 cars	53	7.1
	4 cars or more	26	3.5
	No car	71	9.5

In terms of residency, a majority of the respondents reside in Dubai (55.6%), followed by Abu Dhabi (26.7%) and Sharjah (11.7%). Only a small fraction of participants are from Ajman (3.0%), Ras Al Khaimah (1.5%), Umm Al Quwain (1.1%), and Fujairah (0.4%).

Gender distribution shows a slight skew towards females (54.6%) compared to males (45.4%). The status in the UAE is predominantly represented by expatriate residents (non-UAE citizens) constituting 75.5% of the sample, while local residents (UAE citizens) make up 23.6%, and tourists account for a minimal portion (0.9%).

Occupation-wise, a significant majority of participants are working full-time (76.5%). This is followed by individuals who are unemployed (7.5%), working part-time (7.4%), self-employed or business owners (6.2%), and a small percentage of retired individuals or students (2.4%).

The age group distribution indicates a concentration in the middle-age brackets, with 45.6% of participants in the 30–39 age group and 38.3% in the 40–49 age group. The 50–59 age group accounts for 11.6%, while those aged 60 and above represent 2.7%. The youngest age groups (20–29 and under 20) are the least represented at 1.6% and 0.3%, respectively.

Regarding education, more than half of the participants (53.7%) hold a bachelor's degree. This is followed by those with a master's degree (29.9%), a high school diploma or equivalent (10.8%), a doctoral degree (4.7%), and a minority with less than a high school education (0.9%).

In terms of household income, the distribution is relatively even across different income brackets, with the highest representation in the 'More than 250,000 AED' category (20.8%). The other income categories range from 15.1% to 17.7%.

Finally, car ownership patterns indicate that nearly half of the respondents (48.4%) own one car, and 31.5% own two cars. Fewer respondents report owning three cars (7.1%) or four or more cars (3.5%), and a minority (9.5%) do not own a car.

Descriptives – Attitudinal Variables

The table below presents the mean scores, standard errors of the mean, standard deviations, and Cronbach's alpha values for various attitudinal scales and their corresponding items.

Variable	Mean	SE_of_the_Mean	StDev	Alpha
PRT1	3.793	0.039	1.070	
PRT2	3.954	0.035	0.961	
PRT3	3.868	0.035	0.950	
PRT4	4.059	0.033	0.910	
Pro-technology	3.919	0.030	0.825	0.868
PRE1	3.817	0.035	0.943	
PRE2	3.798	0.033	0.889	
PRE3	3.823	0.034	0.934	
PRE4	3.867	0.034	0.940	
Pro-environment	3.826	0.029	0.784	0.867
PTA1	3.046	0.044	1.199	
PTA2	2.692	0.045	1.217	
Public transport attitude	2.869	0.039	1.066	0.715
PE1	3.915	0.031	0.859	
PE2	3.918	0.033	0.908	
PE3	3.988	0.032	0.863	
PE4	4.048	0.030	0.827	
PE5	3.937	0.033	0.905	
Performance expectancy	3.961	0.026	0.720	0.883
EE1	4.017	0.029	0.803	
EE2	4.059	0.029	0.781	
EE3	4.067	0.029	0.784	
EE4	4.044	0.031	0.843	
Effort expectancy	4.047	0.025	0.680	0.868
SI1	3.839	0.035	0.949	
SI2	3.727	0.034	0.931	
SI3	3.863	0.034	0.922	
Social Influence	3.810	0.031	0.835	0.874
FC1	4.176	0.031	0.838	
FC2	4.242	0.030	0.829	
FC3	4.175	0.032	0.869	
FC4	4.192	0.033	0.888	
Facilitating Conditions	4.196	0.026	0.707	0.845
HM1	3.956	0.032	0.876	
HM2	3.972	0.030	0.822	
HM3	3.897	0.032	0.881	
Hedonic Motivation	3.941	0.028	0.761	0.861
PV1	3.914	0.030	0.831	
PV2	3.984	0.030	0.815	
PV3	4.044	0.032	0.865	

PV4	3.862	0.033	0.896	
Price value	3.951	0.023	0.636	0.735
PR1	2.980	0.044	1.187	
PR2	3.266	0.041	1.127	
PR3	3.356	0.040	1.079	
PR4	3.005	0.043	1.182	
Perceived risks	3.152	0.035	0.954	0.854
BI1	3.923	0.030	0.814	
BI2	3.945	0.030	0.831	
BI3	3.977	0.032	0.859	
BI4	3.965	0.032	0.875	
Behavioural Intention	3.953	0.026	0.723	0.877

All reliabilities (Cronbach's alpha values) for the scales were good, indicating a high level of internal consistency within each scale. This reliability is crucial for ensuring that the scales are accurately measuring the constructs they intend to measure. For instance, the 'Pro-technology' scale shows a Cronbach's alpha of 0.868, and the 'Behavioural Intention' scale shows a Cronbach's alpha of 0.877, both of which are well above the commonly accepted threshold of 0.7 for good internal consistency.

The box plot below shows the distribution of scores for the whole sample regarding all the attitudinal scales. The red dots represent the means.
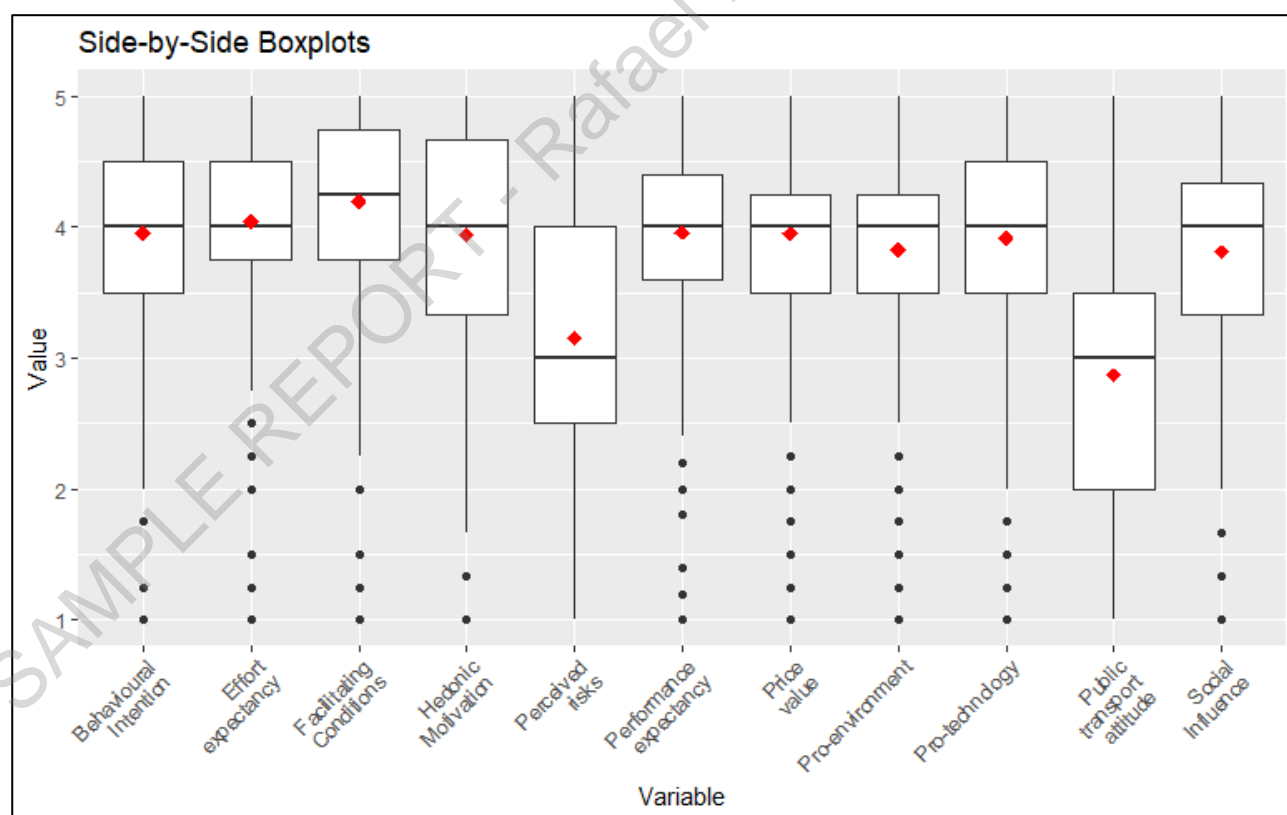
Notably, the mean of Perceived Risks and Public Transport Attitude were relatively lower compared to other cosntructs.

## Cluster Analysis – Finding the Optimal Number of Clusters

After describing the data and testing for reliability, the analysis proceeded to the clustering algorithms. A hierarchical clustering approach was adopted to establish initial centroids for subsequent k-means clustering. This approach began with the selection of relevant variables for clustering from the dataset. These variables were utilized to compute a dissimilarity matrix, suitable for handling mixed data types, using the daisy function.

Hierarchical clustering was conducted using the Ward.D2 method via the hclust function. The Ward.D2 method is particularly effective in minimizing the total within-cluster variance, thus ensuring more homogenous clusters. This method iteratively merges the pair of clusters that result in the smallest increase in total within-cluster variance after merging.

Once the hierarchical clustering was complete, the dendrogram was cut at various levels (ranging from 2 to 10 clusters) to obtain different cluster assignments. For each of these assignments, centroids were calculated by aggregating the data for each cluster and computing their mean values. These centroids, representing the center point of each cluster, served as initial seeds for the k-means clustering algorithm.

To determine the optimal number of clusters, we employed two distinct but complementary methods: the Elbow Method and the Gap Statistic.

Elbow Method: This method involved plotting the total within-cluster sum of squares (WSS) against the number of clusters. The 'elbow' point in this plot, where the rate of decrease sharply changes, signifies a suitable number of clusters. The rationale is that adding another cluster beyond this point does not provide much better modeling of the data. The plot is shown below.
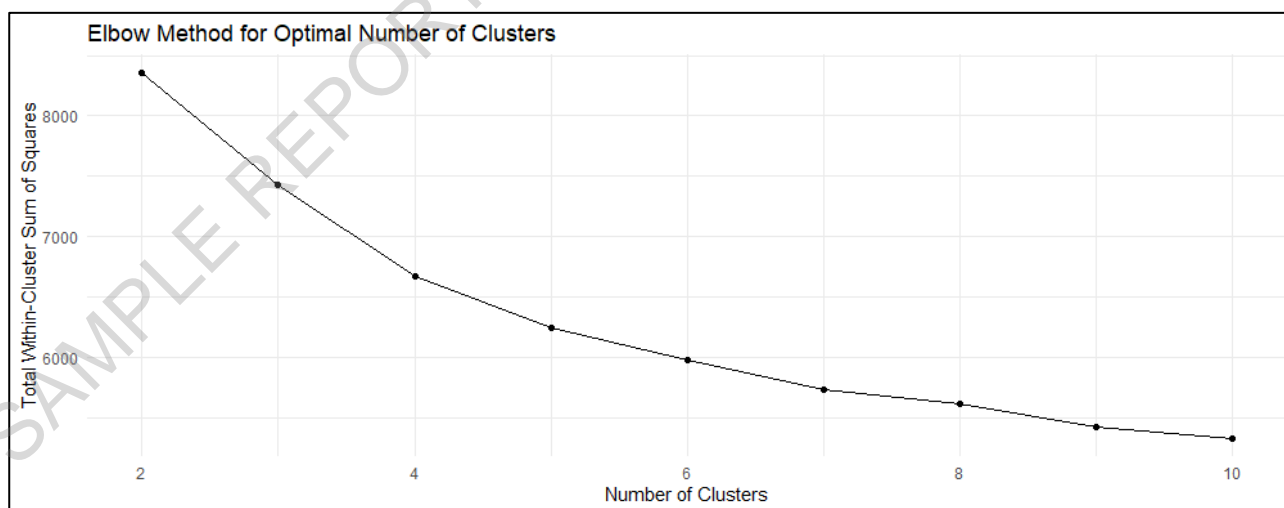
There is no clear 'elbow' in the plot and it suggests that the optimal solution might be between 4 or 6 clusters. It is also notable that any solution beyond 6 clusters might make interpretation difficult.

The sum of squares drop by 10.2% from 4 to 5 clusters and then only 6.5% from 5 clusters to 6. It's the highest drop observed in the series, which might indicate that the best solution if 5 clusters.

Gap Statistic: This method compares the total within intra-cluster variation for different numbers of clusters with their expected values under null reference distribution of the data. The optimal number of clusters is identified at the point where the gap statistic starts to plateau or decrease.
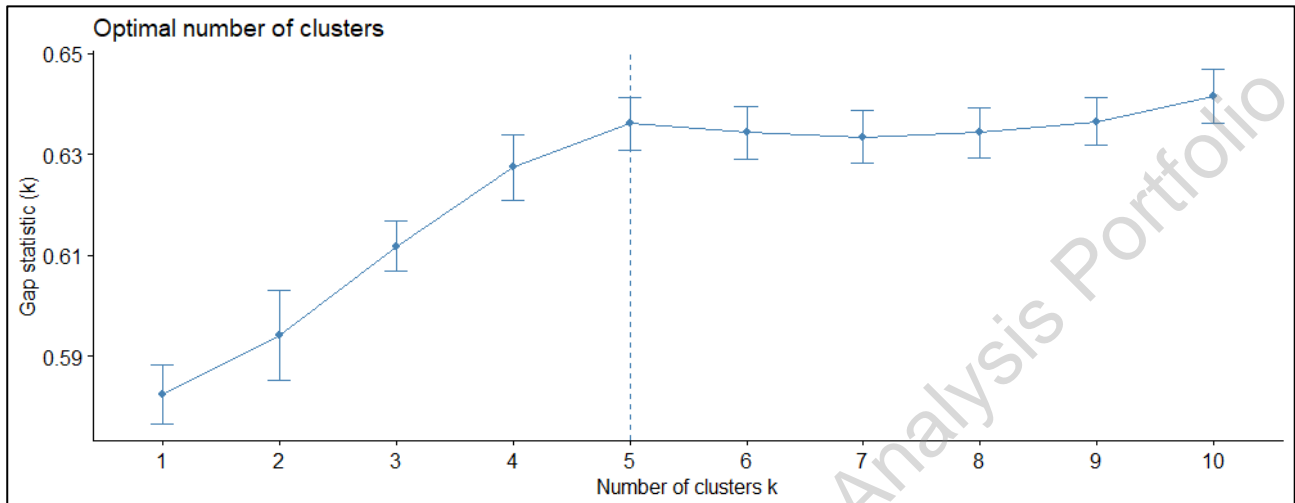
The figure above clearly suggests that 5 clusters is the optimal solution.

In order to make a final decision, ANOVAs were executed on the clustering variables to evaluate the solution with the highest degree of differentiation, indicated by largest F-statistics. The table below presents that.

Dependent Variable	4 Cluster Solution		5 Cluster Solution		6 Cluster Solution	
	F	p	F	p	F	p
Gender Female	2.297	0.130	5.987	0.015	7.118	0.008
Gender Male	2.297	0.130	5.987	0.015	7.118	0.008
Status UAE Expatriate Resident non UAE citizen	4.052	0.044	0.740	0.390	0.452	0.501
Status UAE Local Resident UAE citizen	4.171	0.041	1.296	0.255	0.228	0.633
Status UAE Tourist	0.032	0.858	2.057	0.152	1.481	0.224
Status UAE NA	0.245	0.621	0.511	0.475	0.691	0.406
Occupation Self employed Business owner	14.405	0.000	10.524	0.001	10.729	0.001
Occupation Unemployed	1.927	0.165	3.634	0.057	6.488	0.011
Occupation Working full time	20.824	0.000	25.784	0.000	39.415	0.000
Occupation Working part time	0.606	0.437	2.287	0.131	6.431	0.011
What is the highest level of education that you have completed	23.975	0.000	10.902	0.001	5.721	0.017
What is your households annual income	72.503	0.000	26.591	0.000	6.017	0.014
How many cars do you own in your household	141.795	0.000	129.855	0.000	73.048	0.000
How frequently do you go out for shopping activities per month	0.702	0.402	0.000	0.998	0.341	0.559
How frequently do you go out for leisure and fun activities per month	0.773	0.380	0.001	0.981	1.355	0.245
How frequently do you go out for social visits per month	3.541	0.060	5.066	0.025	8.760	0.003
How frequently do you walk cycle or use a scooter per month	27.174	0.000	29.940	0.000	41.105	0.000
How frequently do you use your private car per month	291.337	0.000	294.919	0.000	205.827	0.000

How frequently do you use public transport bus tram or metro per month	324.365	0.000	367.758	0.000	396.751	0.000
How frequently do you use a taxi per month	185.626	0.000	212.282	0.000	215.272	0.000
Sum of F	1122.64		**1136.12**		1034.34	

The last line of the table shows that, when summing up all F's, the 5-cluster solution shows the highest number, which further indicates that this solution is best.

Cluster Profiling

The solution led to relatively similar cluster sizes (table below). The larges cluster was Cluster 3 with 174 individuals.

Cluster	N
1	151
2	128
3	174
4	169
5	122

The table below presents mean (M) and standard deviation (SD) values for various activities across five clusters. Notable differences among clusters are observed in several activities.

Variable	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5	
	M	SD	M	SD	M	SD	M	SD	M	SD
How frequently do you go out for shopping activities per month	3.556	0.846	3.305	0.952	4.103	0.812	4.284	0.765	2.910	0.918
How frequently do you go out for leisure and fun activities per month	3.232	0.787	2.938	0.849	3.609	0.851	4.118	0.747	2.459	0.740
How frequently do you go out for social visits per month	3.026	0.856	2.797	0.807	3.534	0.823	3.964	0.844	2.574	0.812
How frequently do you walk cycle or use a scooter per month	2.887	1.181	2.633	1.049	3.914	0.839	4.183	0.828	2.803	1.183
How frequently do you use your private car per month	4.338	0.879	4.523	0.664	4.167	0.783	4.225	0.911	1.754	0.846
How frequently do you use public transport bus tram or metro per month	1.709	0.813	1.602	0.691	3.075	0.887	3.639	0.896	3.156	1.157
How frequently do you use a taxi per month	1.901	0.746	1.648	0.759	2.966	0.949	3.574	0.949	2.762	0.891

The profiling of the five cluster solutions across various variables included in the clustering process, reveals distinct characteristics for each group:

Cluster 1: This group is characterized by moderate to high frequencies in shopping, leisure, and social visit activities, indicating an active social lifestyle. They rely heavily on private cars, suggesting a preference or need for personal transportation. Their use of public transport and taxis is relatively lower compared to other clusters.

Cluster 2: Members of this cluster show a slightly lower frequency in leisure and social activities compared to Cluster 1. They exhibit the highest frequency in using private cars, indicating a strong reliance on personal transportation. This cluster has the lowest usage of public transport and taxis, which might be due to either preference or accessibility issues.

Cluster 3: This cluster is characterized by the highest frequencies in using public transport and taxis, indicating a strong reliance on these modes of transportation. They also show high frequencies in leisure activities and walking, cycling, or using a scooter, suggesting an active and diverse transportation and leisure lifestyle.

Cluster 4: Similar to Cluster 3, this group has high usage of public transport and taxis. They exhibit the highest frequency in leisure activities, indicating a very active social and recreational life. Their use of private cars is above average, suggesting a balance between personal and public transportation.

Cluster 5: This group is marked by the lowest frequencies in almost all activities, including shopping, leisure, social visits, and the use of private cars. They show a moderate to high frequency in using public transport and taxis. This pattern might reflect a lifestyle with less emphasis on social activities and personal vehicle usage.

The following tables present the proportion of individuals on each cluster regarding categorical variables used in the clustering process. Next table shows the statistics for Cluster 1.

Variable	Level	Count	Percentage
Residency	Abu Dhabi	33	21.9%
Residency	Ajman	6	4.0%
Residency	Dubai	95	62.9%
Residency	Fujairah	0	0.0%
Residency	Ras Al Khaimah	3	2.0%
Residency	Sharjah	13	8.6%
Residency	Umm Al Quwain	1	0.7%
Gender	Female	84	55.6%
Gender	Male	67	44.4%
Status_UAE	Expatriate Resident (non-UAE citizen)	104	68.9%
Status_UAE	Local Resident (UAE citizen)	45	29.8%
Status_UAE	Tourist	2	1.3%
Occupation	Retired or Student	7	4.6%
Occupation	Self-employed/ Business owner	17	11.3%
Occupation	Unemployed	13	8.6%
Occupation	Working (full-time)	105	69.5%
Occupation	Working (part-time)	9	6.0%

Age	20–29	3	2.0%
Age	30–39	48	31.8%
Age	40–49	63	41.7%
Age	50–59	27	17.9%
Age	60 and above	10	6.6%
Age	Under 20	0	0.0%
Education	Bachelor's degree	76	50.3%
Education	Doctoral degree	12	7.9%
Education	High school diploma or equivalent	7	4.6%
Education	Less than high school	1	0.7%
Education	Master's degree	55	36.4%
Household_Income	101,000 – 150,000 AED	1	0.7%
Household_Income	151,000 – 200,000 AED	30	19.9%
Household_Income	201,000 – 250,000 AED	52	34.4%
Household_Income	51,000 – 100,000 AED	0	0.0%
Household_Income	Less than 50,000 AED	0	0.0%
Household_Income	More than 250,000 AED	68	45.0%
Car_Ownership	1 car	43	28.5%
Car_Ownership	2 cars	73	48.3%
Car_Ownership	3 cars	25	16.6%
Car_Ownership	4 cars or more	9	6.0%
Car_Ownership	No car	1	0.7%

Cluster 1 is distinguished by a higher proportion of female participants (55.6%) compared to males (44.4%). The majority of individuals in this cluster are expatriate residents (68.9%), with a significant segment of local residents (29.8%). Occupation-wise, a substantial majority are working full-time (69.5%), while a smaller fraction are self-employed or business owners (11.3%). This cluster predominantly comprises individuals aged between 40 and 49 years (41.7%), with bachelor's degrees being the most common educational qualification (50.3%). The household income range is diverse, but a notable proportion earns more than 250,000 AED (45%). Car ownership is inclined towards owning two cars (48.3%). Next table shows the same information for Cluster 2.

Variable	Level	Count	Percentage
Residency	Abu Dhabi	39	30.5%
Residency	Ajman	6	4.7%
Residency	Dubai	59	46.1%
Residency	Fujairah	1	0.8%
Residency	Ras Al Khaimah	3	2.3%
Residency	Sharjah	19	14.8%
Residency	Umm Al Quwain	1	0.8%
Gender	Female	44	34.4%
Gender	Male	84	65.6%
Status_UAE	Expatriate Resident (non-UAE citizen)	99	77.3%

Variable	Level	Count	Percentage
Status_UAE	Local Resident (UAE citizen)	28	21.9%
Status_UAE	Tourist	0	0.0%
Occupation	Retired or Student	7	5.5%
Occupation	Self-employed/ Business owner	10	7.8%
Occupation	Unemployed	17	13.3%
Occupation	Working (full-time)	78	60.9%
Occupation	Working (part-time)	16	12.5%
Age	20–29	4	3.1%
Age	30–39	56	43.8%
Age	40–49	46	35.9%
Age	50–59	19	14.8%
Age	60 and above	1	0.8%
Age	Under 20	2	1.6%
Education	Bachelor's degree	74	57.8%
Education	Doctoral degree	3	2.3%
Education	High school diploma or equivalent	20	15.6%
Education	Less than high school	1	0.8%
Education	Master's degree	30	23.4%
Household_Income	101,000 – 150,000 AED	40	31.3%
Household_Income	151,000 – 200,000 AED	2	1.6%
Household_Income	201,000 – 250,000 AED	0	0.0%
Household_Income	51,000 – 100,000 AED	44	34.4%
Household_Income	Less than 50,000 AED	42	32.8%
Household_Income	More than 250,000 AED	0	0.0%
Car_Ownership	1 car	75	58.6%
Car_Ownership	2 cars	34	26.6%
Car_Ownership	3 cars	9	7.0%
Car_Ownership	4 cars or more	8	6.3%
Car_Ownership	No car	2	1.6%

Cluster 2 features a male majority (65.6%) and a high percentage of expatriate residents (77.3%). Full-time workers form the bulk of this cluster (60.9%). The age group of 30-39 years is predominant (43.8%), and most individuals hold a bachelor's degree (57.8%). The household income is varied, but a large segment falls within the 101,000 – 150,000 AED range (31.3%). The majority own one car (58.6%).

Variable	Level	Count	Percentage
Residency	Abu Dhabi	46	26.4%
Residency	Ajman	7	4.0%
Residency	Dubai	92	52.9%
Residency	Fujairah	2	1.1%
Residency	Ras Al Khaimah	1	0.6%
Residency	Sharjah	24	13.8%
Residency	Umm Al Quwain	2	1.1%
Gender	Female	104	59.8%

Gender	Male	70	40.2%
Status_UAE	Expatriate Resident (non-UAE citizen)	153	87.9%
Status_UAE	Local Resident (UAE citizen)	21	12.1%
Status_UAE	Tourist	0	0.0%
Occupation	Retired or Student	1	0.6%
Occupation	Self-employed/ Business owner	9	5.2%
Occupation	Unemployed	14	8.0%
Occupation	Working (full-time)	133	76.4%
Occupation	Working (part-time)	17	9.8%
Age	20–29	2	1.1%
Age	30–39	93	53.4%
Age	40–49	65	37.4%
Age	50–59	12	6.9%
Age	60 and above	2	1.1%
Age	Under 20	0	0.0%
Education	Bachelor's degree	106	60.9%
Education	Doctoral degree	4	2.3%
Education	High school diploma or equivalent	16	9.2%
Education	Less than high school	1	0.6%
Education	Master's degree	47	27.0%
Household_Income	101,000 – 150,000 AED	66	37.9%
Household_Income	151,000 – 200,000 AED	44	25.3%
Household_Income	201,000 – 250,000 AED	0	0.0%
Household_Income	51,000 – 100,000 AED	42	24.1%
Household_Income	Less than 50,000 AED	22	12.6%
Household_Income	More than 250,000 AED	0	0.0%
Car_Ownership	1 car	123	70.7%
Car_Ownership	2 cars	47	27.0%
Car_Ownership	3 cars	1	0.6%
Car_Ownership	4 cars or more	1	0.6%
Car_Ownership	No car	2	1.1%

Cluster 3 is characterized by a female majority (59.8%) and an overwhelming number of expatriate residents (87.9%). The predominant occupation is full-time work (76.4%), and the age group of 30-39 years is the most represented (53.4%). Education-wise, bachelor's degree holders are the majority (60.9%). In terms of household income, a significant portion earns 101,000 – 150,000 AED (37.9%). Car ownership is high for one car (70.7%).

Variable	Level	Count	Percentage
Residency	Abu Dhabi	56	33.1%
Residency	Ajman	1	0.6%
Residency	Dubai	98	58.0%
Residency	Fujairah	0	0.0%
Residency	Ras Al Khaimah	0	0.0%
Residency	Sharjah	12	7.1%

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Residency	Umm Al Quwain	2	1.2%
Gender	Female	100	59.2%
Gender	Male	69	40.8%
Status_UAE	Expatriate Resident (non-UAE citizen)	102	60.4%
Status_UAE	Local Resident (UAE citizen)	66	39.1%
Status_UAE	Tourist	1	0.6%
Occupation	Retired or Student	2	1.2%
Occupation	Self-employed/ Business owner	6	3.6%
Occupation	Unemployed	1	0.6%
Occupation	Working (full-time)	152	89.9%
Occupation	Working (part-time)	8	4.7%
Age	20–29	0	0.0%
Age	30–39	75	44.4%
Age	40–49	77	45.6%
Age	50–59	13	7.7%
Age	60 and above	4	2.4%
Age	Under 20	0	0.0%
Education	Bachelor's degree	71	42.0%
Education	Doctoral degree	15	8.9%
Education	High school diploma or equivalent	5	3.0%
Education	Less than high school	0	0.0%
Education	Master's degree	78	46.2%
Household_Income	101,000 – 150,000 AED	0	0.0%
Household_Income	151,000 – 200,000 AED	28	16.6%
Household_Income	201,000 – 250,000 AED	55	32.5%
Household_Income	51,000 – 100,000 AED	0	0.0%
Household_Income	Less than 50,000 AED	0	0.0%
Household_Income	More than 250,000 AED	86	50.9%
Car_Ownership	1 car	64	37.9%
Car_Ownership	2 cars	76	45.0%
Car_Ownership	3 cars	18	10.7%
Car_Ownership	4 cars or more	8	4.7%
Car_Ownership	No car	3	1.8%

Cluster 4 presents a balance between female (59.2%) and male (40.8%) participants. Expatriate residents (60.4%) and local residents (39.1%) are almost equally represented. Most individuals in this cluster are full-time workers (89.9%), and the age groups are fairly distributed between 30-49 years. Educationally, the cluster has a high proportion of master's degree holders (46.2%), and the household income is skewed towards higher income brackets, with 50.9% earning more than 250,000 AED. Car ownership is primarily one or two cars.

Variable	Level	Count	Percentage
Residency	Abu Dhabi	25	20.5%
Residency	Ajman	2	1.6%
Residency	Dubai	70	57.4%
Residency	Fujairah	0	0.0%
Residency	Ras Al Khaimah	4	3.3%
Residency	Sharjah	19	15.6%
Residency	Umm Al Quwain	2	1.6%
Gender	Female	74	60.7%
Gender	Male	48	39.3%
Status_UAE	Expatriate Resident (non-UAE citizen)	103	84.4%
Status_UAE	Local Resident (UAE citizen)	15	12.3%
Status_UAE	Tourist	4	3.3%
Occupation	Retired or Student	1	0.8%
Occupation	Self-employed/ Business owner	4	3.3%
Occupation	Unemployed	11	9.0%
Occupation	Working (full-time)	101	82.8%
Occupation	Working (part-time)	5	4.1%
Age	20–29	3	2.5%
Age	30–39	67	54.9%
Age	40–49	34	27.9%
Age	50–59	15	12.3%
Age	60 and above	3	2.5%
Age	Under 20	0	0.0%
Education	Bachelor's degree	72	59.0%
Education	Doctoral degree	1	0.8%
Education	High school diploma or equivalent	32	26.2%
Education	Less than high school	4	3.3%
Education	Master's degree	12	9.8%
Household_Income	101,000 – 150,000 AED	25	20.5%
Household_Income	151,000 – 200,000 AED	14	11.5%
Household_Income	201,000 – 250,000 AED	7	5.7%
Household_Income	51,000 – 100,000 AED	27	22.1%
Household_Income	Less than 50,000 AED	48	39.3%
Household_Income	More than 250,000 AED	1	0.8%
Car_Ownership	1 car	55	45.1%
Car_Ownership	2 cars	4	3.3%
Car_Ownership	3 cars	0	0.0%
Car_Ownership	4 cars or more	0	0.0%
Car_Ownership	No car	63	51.6%

Cluster 5 shows a slight female majority (60.7%). The majority are expatriate residents (84.4%), and a significant number are full-time workers (82.8%). The age group of 30-39 years is most common (54.9%). Most individuals have a bachelor's degree (59.0%), and the household income is diverse, with a notable proportion earning less than 50,000 AED (39.3%). This cluster has a high percentage of individuals with no car (51.6%).

The following table and graphs profile the clusters with respect to the psychographic variables.

Variable	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Pro_technology	3.745	0.811	3.668	0.790	4.047	0.695	4.417	0.592	3.523	0.949
Pro_environment	3.586	0.759	3.609	0.717	3.963	0.667	4.253	0.691	3.566	0.863
Public_transport_attitude	2.745	0.947	2.848	0.824	2.641	1.112	3.302	1.163	2.770	1.068
Performance_expectancy	3.735	0.692	3.766	0.693	4.105	0.665	4.284	0.554	3.795	0.849
Effort_expectancy	3.921	0.678	3.887	0.595	4.134	0.579	4.404	0.510	3.754	0.856
Social_Influence	3.468	0.821	3.555	0.768	3.935	0.738	4.262	0.704	3.694	0.907
Facilitating_Conditions	4.175	0.714	4.070	0.742	4.257	0.666	4.451	0.472	3.914	0.851
Hedonic_Motivation	3.768	0.697	3.724	0.725	4.052	0.691	4.314	0.659	3.710	0.872
Price_value	3.811	0.603	3.814	0.620	4.023	0.591	4.223	0.548	3.787	0.731
Perceived_risks	3.053	0.859	3.047	0.794	3.033	0.977	3.464	1.103	3.121	0.883
Behavioural_Intention	3.671	0.776	3.713	0.680	4.085	0.618	4.365	0.518	3.793	0.780
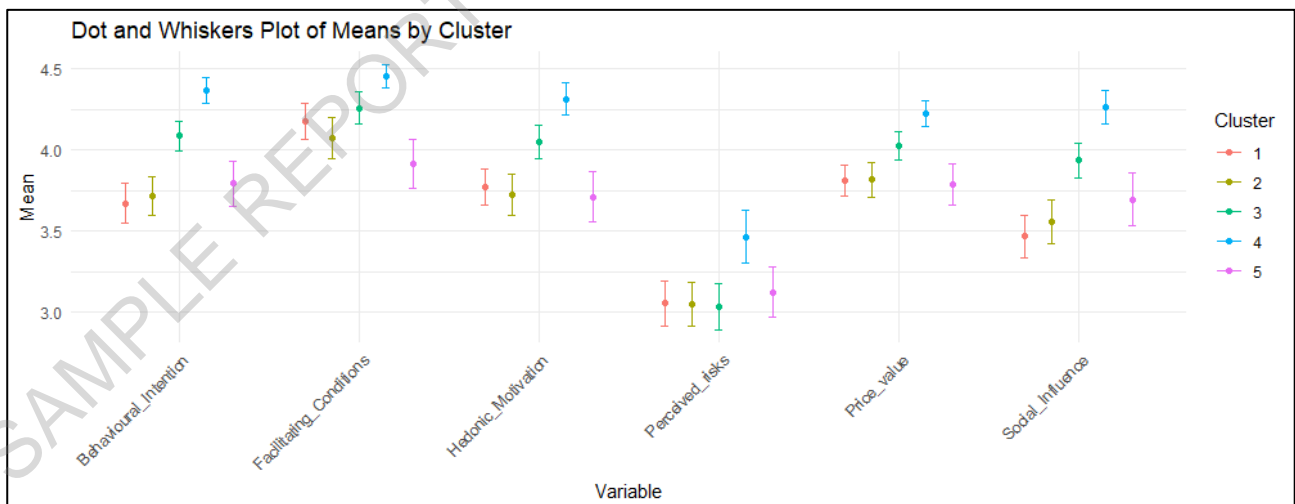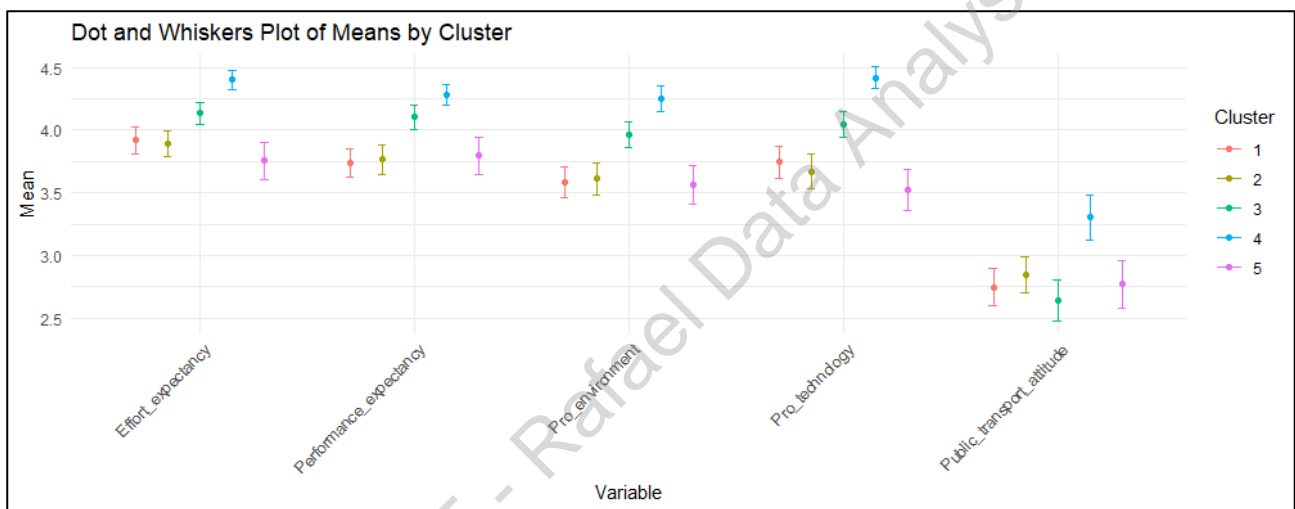
Cluster 1 shows moderate to high means across all variables, with the highest mean in Facilitating Conditions (4.175) and the lowest in Public Transport Attitude (2.745). The standard deviations are relatively moderate, indicating a somewhat consistent response within this cluster.

Cluster 2 exhibits similar patterns to Cluster 1, with slightly lower means in most variables. Notably, it has the highest means in Price Value (3.814) and the lowest in Perceived Risks (3.047). The standard deviations are generally lower than in Cluster 1, suggesting a more homogeneous group.

Cluster 3 stands out with the highest means in most variables, especially in Performance Expectancy (4.105) and Effort Expectancy (4.134), indicating a very positive attitude towards technology and its ease of use. The standard deviations are among the lowest, suggesting high agreement among members of this cluster.

Cluster 4 has the highest means overall, particularly in Pro-technology (4.417) and Facilitating Conditions (4.451), showing a very strong positive orientation towards technology. The standard deviations are the lowest across all clusters, indicating a very cohesive group in their responses.

Cluster 5 shows lower mean values in comparison to other clusters, with the highest in Behavioural Intention (3.793) and the lowest in Pro-technology (3.523). The standard deviations are generally higher, implying a greater variability in responses within this cluster.

In summary, Clusters 3 and 4 exhibit the most favorable attitudes towards technology and its related aspects, with Cluster 4 being the most cohesive and positive. Clusters 1 and 2 show moderate levels of technology acceptance, while Cluster 5 appears to be the least positive, with greater variability in its responses.

Finally, one-way ANOVAs were conducted to identify the scales that exhibited the greatest level of differentiation across the clusters. Subsequent post-hoc analyses were carried out to examine the specific pairwise differences between the clusters in detail (table below).

Variable	F	p	Post-hoc Clusters	1	2	3	4
Pro technology	5.535	0.019	2	1.000			
			3	0.004	0.000		
			4	0.000	0.000	0.000	
			5	0.167	1.000	0.000	0.000
Pro environment	14.131	0.000	2	1.000			
			3	0.000	0.000		
			4	0.000	0.000	0.003	
			5	1.000	1.000	0.000	0.000
Public transport attitude	5.080	0.024	2	1.000			
			3	1.000	0.881		
			4	0.000	0.002	0.000	
			5	1.000	1.000	1.000	0.000
Performance expectancy	16.325	0.000	2	1.000			
			3	0.000	0.000		
			4	0.000	0.000	0.158	
			5	1.000	1.000	0.001	0.000
Effort expectancy	3.535	0.060	-	NA	NA	NA	NA
Social Influence	36.704	0.000	2	1.000			
			3	0.000	0.000		

Variable	F	p	Cluster				
			4	0.000	0.000	0.001	
			5	0.180	1.000	0.094	0.000
Facilitating Conditions	0.017	0.897	-	NA	NA	NA	NA
Hedonic Motivation	9.458	0.002	2	1.000			
			3	0.005	0.001		
			4	0.000	0.000	0.008	
			5	1.000	1.000	0.001	0.000
Price value	7.739	0.006	2	1.000			
			3	0.020	0.037		
			4	0.000	0.000	0.026	
			5	1.000	1.000	0.012	0.000
Perceived risks	6.249	0.013	2	1.000			
			3	1.000	1.000		
			4	0.001	0.002	0.000	
			5	1.000	1.000	1.000	0.022
Behavioural Intention	30.867	0.000	2	1.000			
			3	0.000	0.000		
			4	0.000	0.000	0.001	
			5	1.000	1.000	0.003	0.000

The following insights were identified based on this analysis:

Pro Technology: The F-test is significant, with notable differences particularly between Clusters 3 and 4 against others. Considering the mean scores, Clusters 3 and 4 have higher pro-technology attitudes, which is consistent with their significant differentiation in the post-hoc analysis. These clusters are more technology-oriented compared to Clusters 1, 2, and 5.

Pro Environment: This variable shows a high discriminatory power, with significant differences mainly between Clusters 3 and 4 against the rest. The mean scores indicate that Clusters 3 and 4 have higher pro-environment attitudes, which aligns with the F-test results, suggesting these clusters value environmental aspects more than the others.

Public Transport Attitude: The moderate significance in the F-test, particularly for Cluster 4, aligns with its higher mean score in this variable. Cluster 4's distinct attitude towards public transport is characterized by a more favorable view, differentiating it from the other clusters.

Performance Expectancy: Highly significant in the F-test, particularly for Cluster 4. The mean scores corroborate this, with Cluster 4 having the highest score, indicating that this cluster has the highest expectations regarding the performance of technologies.

Effort Expectancy and Facilitating Conditions: These variables showed limited discriminatory power in the F-test, and their mean scores across clusters are relatively close. This suggests that perceptions regarding the effort required to use technology and the conditions facilitating its use are not significantly different across the clusters.

Social Influence: The high significance in the F-test, especially for Cluster 4, is reflected in its highest mean score. This indicates that Cluster 4 is more influenced by social factors compared to other clusters.

Hedonic Motivation, Price Value, and Perceived Risks: Significant differences found in the F-tests for these variables are in line with the mean scores. Clusters 3 and 4, which have higher mean scores, are differentiated from others, indicating that enjoyment, cost-effectiveness, and risk perceptions are more favorable in these clusters.

Behavioural Intention: The F-test shows this variable as highly significant in differentiating clusters, especially Clusters 3 and 4. This is consistent with their higher mean scores, suggesting these clusters have stronger intentions to use technology.

Conclusions

The bullet points below summarize the profile of the clusters with respect to the clustering variables (sociodemographic, travel lifestyle, and car ownership):

- Cluster 1: Middle-aged, well-educated expatriates, full-time workers, high income. High car ownership, active in shopping, leisure, social visits, reliant on private cars.
- Cluster 2: Mostly male expatriates, full-time workers, wide age range, diverse incomes. Highest private car usage, less active in leisure/social activities.
- Cluster 3: Female-dominated, expatriates, full-time workers, mid-range income earners. High public transport and taxi use, active in leisure, alternative transportation modes.
- Cluster 4: Balanced gender, expatriates and locals, aged 30-49, high education, high income. Public transport and taxi usage similar to Cluster 3, highest leisure activity frequency.
- Cluster 5: Slight female majority, expatriates, full-time workers, 30-39 age group, lower incomes. Low activity frequencies, moderate to high public transport use, many without cars.

With respect to the UTAUT variables, a summary of the cluster profiles is:

- Cluster 1: Moderate scores in technology and environmental attitudes. Less inclined towards public transport and innovation, reflecting their reliance on private cars.
- Cluster 2: Similar to Cluster 1, slightly lower technology and environmental scores. High private car usage aligns with their traditional transport preferences.
- Cluster 3: High scores in technology and pro-environmental scales, consistent with their preference for public transport and alternative modes.

- Cluster 4: Highest scores in most UTAUT variables, indicating strong technology and environmental consciousness, balanced transportation choices.
- Cluster 5: Intermediate scores, pragmatic approach to technology and environment, reflecting their moderate use of public transport and lower activity levels.