

Individual Capstone Assignment: Athena Softworks Inc.

MQM Marketing 552Q: Market Intelligence

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1. We can answer the three key decisions to be made as follows:

A. Which game should Athena pursue, if any?

Action Alternatives for deducting Athena's choice of game to pursue, we will do market share simulation based on individual ranking towards the 6 games including 3 of Athena's competitors. In different scenarios, it is studied as to which game is the most preferred keeping all games price constant. It turns out that Athena should pursue 'Seraph Guardians' as it has the most market share in many action alternatives. Apart from simulation, its ideal price is also very competitive at \$35. Alongside, we see the game attributes to be the most essential to our active audience. Enjoyment from single players, being immersive and strategic game plan are common ideas shared among various segments of our market.

B. How should the game be priced?

The game should be priced at \$35. This is deduced from Gabor Granger plots. With it, we have the customer willingness to pay showing 82% and predicted revenue to be \$7470 considering 827 respondents charged at \$35.

C. How should Athena position this game?

Athena should position this game is positioned in age of 18-25 and 26-35 and not above. As Strategic Explorers and Immersive Power Seekers are dominating these age groups and found in West and South, they should be targeted. The positioning of this game should be as centered to at most two segments who like strategic immersive single player games with moderate violence, goal orientation and interest in collecting elements and completing tasks. Action deliverable should be focused on which segment (factor analysis followed by cluster analysis) of the market finds the following attributes in them. Understanding their demographic features can help us narrow down more as to who exactly can be our target audience.

2. To answer questions around Athena's stance in the industry and decipher its growth considering COVID, we can say:

A. What is the market size for the types of games Athena sells in 2019? How did you determine this number and which resources did you use?

The market size of the type of games Athena sells in 2019 is **1.20B i.e. 1%** of the total gaming and interactive media industry. This number was derived from 'Athena details' and 'SuperData_2019_Year_in_Review' pdfs. Athena details pdf mentions that it specializes in premium roleplaying games for PC with 8 games currently on the market. The SuperData's report tells us about the granular numbers in gaming and media industry. It states that digital games account for 91.09% of gaming and media industry. Further Premium PC games accounted for \$5.2B revenue in 2019. The pdf mentions role-playing game's market share for free-to-play games to be 23%. Considering the same percentage for Premium PC games role playing games, we get \$1.20 i.e., 1% to be market share of games like Athena's.

Alternative granularity to exactly understand a firm like Athena's market share we can say that of this 5.2B, as average market share of Steam (publisher of Athena's 8 games) is estimated to be 39%, its earning can be estimated to be \$2.03B i.e., 1.69%. Details about Steam's market share in the late of 2019 is said to be 37% but details about other players capturing a bit of market share in late 2019

are mentioned. Thus, I am assuming that if we must estimate numbers for 2019 as a whole, average percentage of Steam's market share should be a bit higher than 37%.

Particulars	Revenue	Percentage
Games and interactive Media	\$ 120.10	
Digital Games	\$ 109.40	91.09
Premium PC	\$ 5.20	4.33
Premium PC role playing games market share	\$ 1.20	1.00
Alternate granularity		
Steam's Share in Premium PC	\$ 2.03	1.69

B. What do you project the market size to be in 2020, ignoring COVID-19? Why?

The market size of role-playing premium PC games in 2020 ignoring COVID-19 would be \$1.22 i.e., 1.01% of the total gaming and interactive media industry of 120.1B. This might not be a great increase from last year. This increase is estimated by picking \$5.3B as Premium PC's market share in 2020 and keeping 23% estimation of role-playing games from free-to-play games being constant from 2019 to 2020.

C. How would you expect COVID-19 to impact this market? (No analysis, just a thoughtful response.)
Moving forward, you may ignore any effects of COVID-19 on the market.

COVID-19 might rather increase the market share. With knowledge of lockdowns increasing the market share of gaming platform in real world, I expect the role-playing games in Premium PC category to increase to at least 1.5%. This guestimate also has assumptions of people might not spend much as unemployment also increased and being home, people might consider playing on PC more than mobile as portability factor of mobile phone negated because a person must stay home.

3. I have investigated the coworker's data, and the analysis is as follows:

A. To identify potential segments in the market, first perform factor analysis. Include the factor loadings in your report. Name and interpret the factors. Identify the most relevant survey statements for each factor.

The potential segments based on factor analysis are 11. These 11 segments along with their solutions are as follows.

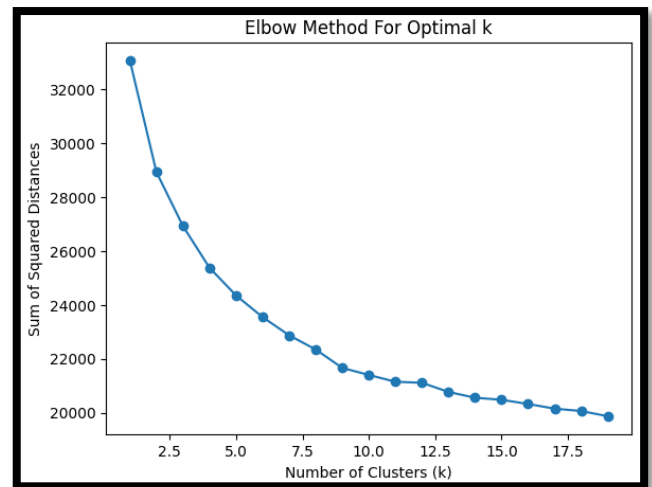
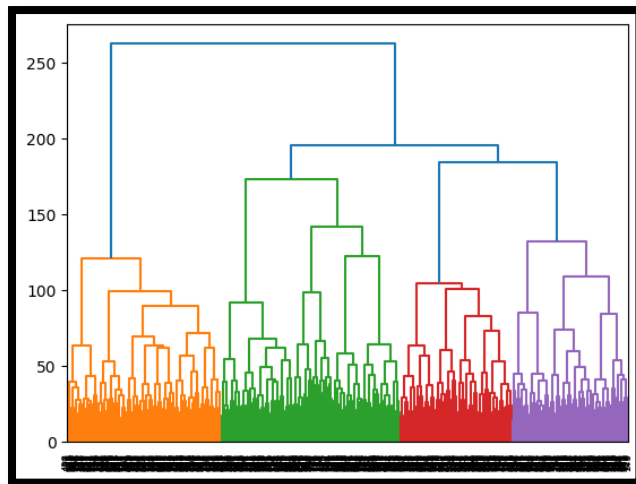
	Bounty Hunter	Gardener	Architect	Slayer	Lazy Slayer	Loafing Acrobat	Acrobat	Gladiator	Ninja	Bard	Skirmisher
imp.challenge	-0.0571	-0.0340	0.2777	-0.1264	-0.1650	0.0294	0.0108	0.0948	-0.0291	-0.0277	-0.7313
imp.unlocks	0.0318	0.1307	-0.0881	-0.1147	0.0119	0.0900	0.8019	0.0576	0.0008	-0.1800	-0.0106
imp.customize	0.1986	-0.0646	0.0397	-0.1352	-0.1152	-0.0161	-0.0067	-0.1072	0.7725	0.0094	0.0081
imp.difficulty	-0.0176	-0.0268	0.2529	-0.1419	-0.1480	0.0458	0.0199	0.0867	0.0257	-0.0763	-0.6985
imp.characters	0.2681	0.0935	0.0274	0.0007	-0.0878	0.0235	-0.0359	-0.7982	0.0609	-0.0075	0.0511
imp.storyline	0.2874	0.0620	0.0341	-0.0182	-0.0927	-0.0098	-0.0699	-0.7762	0.1318	-0.0373	0.0709
imp.mastery	-0.0275	-0.0037	0.5710	-0.1114	-0.1098	0.0417	-0.0889	0.0045	0.0070	0.0352	-0.4601
imp.backstory	0.2712	0.0517	0.0002	-0.0045	-0.0987	0.0490	-0.0229	-0.8024	0.1041	-0.0329	0.0674
imp.dominate	-0.0182	-0.7288	0.0309	0.0027	-0.0524	-0.1575	-0.1073	0.0506	0.0698	0.1215	-0.0257
imp.completion	0.0153	0.1612	-0.0553	-0.1234	0.0404	0.1065	0.7604	0.0473	-0.0263	-0.2016	0.0130
imp.wealth	0.1817	0.0489	0.0371	-0.0605	-0.1330	-0.1218	0.1056	-0.0447	0.2065	-0.3069	-0.0244
imp.fantasy	0.7644	0.0443	0.0534	-0.1159	-0.1254	0.0051	-0.0110	-0.1218	0.1415	-0.0353	0.0107
imp.items	0.6831	0.0479	0.0341	-0.0764	-0.1130	0.0077	0.0000	-0.3293	0.1193	-0.0751	-0.0082
imp.power	0.7471	0.0164	-0.0199	-0.1062	-0.1107	0.0505	0.0312	-0.1433	0.1707	-0.0356	0.0053
imp.offbeat	0.1786	-0.0046	0.0863	-0.0886	-0.7343	0.0117	-0.0442	-0.1069	0.0377	0.0286	-0.1475
imp.collect	0.0312	0.1574	-0.0685	-0.1167	0.0386	0.1248	0.7928	0.0195	-0.0001	-0.1900	-0.0035
enj.excitement	0.0014	-0.1169	0.0333	0.1342	-0.0410	-0.7292	-0.0684	0.0441	0.0522	0.0514	0.0247
enj.destruction	-0.1325	-0.0279	-0.1047	0.7810	0.1151	-0.0876	-0.0917	-0.0085	-0.0822	0.0190	0.0841
enj.others	-0.0041	-0.3208	0.0045	0.0176	-0.0481	-0.0554	-0.1804	0.0164	0.0731	0.7143	0.0336
enj.react	0.0009	-0.1196	0.0261	0.0891	0.0189	-0.7563	-0.1190	0.0309	0.0063	-0.0138	0.0044
enj.duels	-0.0793	-0.7360	-0.0202	0.0710	0.0003	-0.1109	-0.1817	0.0782	0.0228	0.2144	0.0021
enj.strategy	0.0083	-0.0491	0.8184	-0.0749	-0.1066	-0.0334	-0.0527	-0.0191	0.0153	0.0062	-0.0823
enj.roleplay	0.7452	0.0251	-0.0143	-0.0727	-0.1530	-0.0245	0.0472	-0.1627	0.1533	-0.0104	0.0489
enj.competition	-0.0622	-0.7771	-0.0182	0.0655	0.0059	-0.1175	-0.1504	0.0734	-0.0028	0.2636	-0.0231
enj.decisions	0.0360	0.0123	0.7589	-0.1275	-0.0823	0.0189	-0.0337	-0.0439	0.0014	0.0196	-0.1207
enj.common.goal	0.0008	-0.1636	0.0226	0.0261	-0.1030	-0.0644	-0.1501	0.0104	0.0562	0.7948	0.0366
enj.planning	0.0141	0.0222	0.7891	-0.1186	-0.0960	-0.0418	-0.0661	-0.0142	0.0661	0.0023	-0.0996
enj.immersion	0.7840	0.0346	-0.0101	-0.0951	-0.1375	-0.0257	0.0182	-0.1421	0.1348	-0.0399	0.0198
enj.helping	-0.0232	-0.1137	0.0705	0.0058	-0.0686	-0.0634	-0.1431	0.0116	0.0144	0.7857	-0.0018
enj.fast	-0.0053	-0.0967	-0.0384	0.1102	-0.0228	-0.7063	-0.0803	-0.0194	0.0479	0.0222	0.0453
enj.guns	-0.0898	-0.0323	-0.1298	0.7718	0.1008	-0.0920	-0.0964	0.0081	-0.0798	0.0537	0.0796
enj.gore	-0.0918	-0.0365	-0.1141	0.7809	0.1119	-0.1155	-0.1368	0.0232	-0.1015	0.0259	0.0946
enj.blow.up	-0.1257	-0.0440	-0.1264	0.7602	0.0800	-0.1053	-0.0376	0.0115	-0.1334	0.0392	0.0762
freq.explore	0.1506	-0.0099	0.1305	-0.0819	-0.7664	-0.0125	-0.0569	-0.0634	0.1118	0.0279	-0.0593
freq.experiment	0.1153	0.0024	0.1195	-0.1209	-0.7834	-0.0130	-0.0286	-0.0413	0.0606	0.0670	-0.0565
freq.study	0.0033	0.0344	0.5641	-0.1149	-0.1031	0.0093	0.0038	0.0252	0.0060	-0.0242	-0.4856
freq.char.creation	0.2045	-0.0369	0.0305	-0.0938	-0.0874	-0.0179	-0.0179	-0.0827	0.7325	0.0096	-0.0082
freq.stats	0.1832	0.0574	0.1118	-0.1096	-0.0946	-0.1508	0.1012	-0.0367	0.1591	-0.2864	-0.0434
freq.customize	0.2188	-0.0133	0.0024	-0.1273	-0.0708	-0.0770	-0.0191	-0.0771	0.7400	-0.0005	0.0035
freq.test.world	0.1529	-0.0500	0.0834	-0.1055	-0.7871	-0.0484	0.0403	-0.0680	0.1039	-0.0135	-0.1022

Here, we can see that a combination of attributes together made the best choice of the factor name. Based on ‘9 Player Segments Quantic Foundry’ & ‘Gamer-Motivation-Model-Reference’ pdfs, I have curated names of the 11 factors. These names were chosen as each 9 player names were compared with score values of the factors. Then, those who resemble the significance in those factors together as a combination was given that name. Note that along with 9 factor names, 2 were chose by myself which were completely based on the knowledge from the two pdfs. The factor names along with the most relevant survey statement for each of them are:

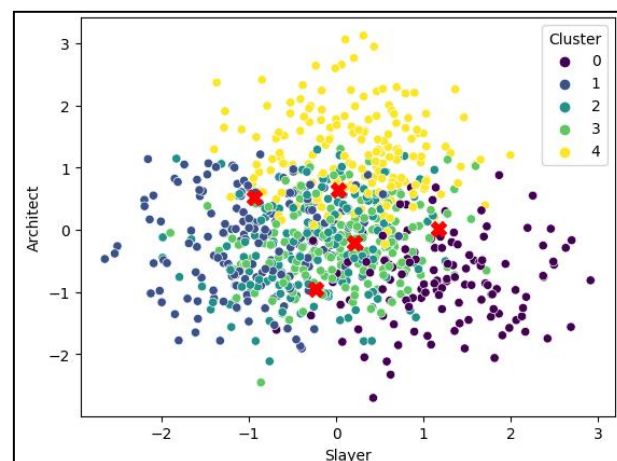
1. Bounty Hunter - Enjoyment: Being immersed in another world / place (enj.immersion)
2. Architect - Enjoyment: Gameplay that requires long-term planning and strategy (enj.strategy)
3. Slayer - Enjoyment: Being an agent of chaos and destruction (enj.destruction)
4. Acrobat - Importance: Getting every possible star / trophy / unlock in a game (imp.unlocks)
5. Ninja - Importance: Having many customization colors, styles, skins, and options (imp.customize)
6. Bard - Enjoyment: Working towards a common goal with other players (enj.common.goal)
7. Gardener - Importance: Completing all possible missions and achievements in a game (imp.completion)
8. Gladiator - Importance: Taking on difficult challenges that may take many tries to succeed (imp.challenge)
9. Skirmisher - Enjoyment: Gameplay that is fast-paced and intense (enj.fast)
10. Lazy Slayer- Enjoyment: Gameplay with lots of blood and gore (enj.gore)
11. Loafing Acrobat- Importance: Making an effort to get every collectible item in the game (imp.collect)

Here, the intensity of each statement's score might not be the same. The notion is to identify the most important attribute in the form of statement for each of the factor.

- B. After deciphering and naming the factors well, looking at the dendrogram and elbow curve to find the optimal number of clusters (k) would be 5. 5 clusters will infer most of the patterns required. Below is the dendrogram and elbow graph:



Below is the graph showing cluster centers when factors of 'Slayer' and 'Architect' were put on the axis:



Graph interprets that the cluster differences based on 'Slayer' and 'Architect' as the factors. We can see the cluster centers varying on the two factors. After interpreting their nature, names for all clusters along with the most important factor for each of them is as follows:

1. Cluster 0 is named Chaotic Thrill-Seekers. For them destruction, gore are essential elements to derive enjoyment from the game. Thus, for this segment, Slayers play a very crucial role as attributes like getting enjoyment from being an agent of chaos & destruction (enj.destruction) and enjoyment from gameplay with lots of blood & gore (enj.gore).
2. Cluster 1 is named Tactical Thinkers. Architect is quite a relevant factor apart from Gardener. Importance to characters with interesting back-stories and personalities (imp.characters) and enjoyment from gameplay that requires a lot of thinking and planning (enj.planning) are of quite essence to them.
3. Cluster 2 is named Strategic Explorer. Acrobats are the most relevant factor to this segment. Attributes like Importance to completing all possible missions and achievements in a game (imp.completion) and Importance to making an effort to get every collectible item in the game (imp.collect) are very important to them.

4. Cluster 3 is named Immersive Power-Seeker. The factor of Ninja is quite relevant to this segment. The attributes which are important to them can be importance given to having many customization colors, styles, skins, and options (imp.customize) or importance given to pretending that I am someone / somewhere else (imp.fantasy).
5. Cluster 4 is named Cooperative Adventurers. This segment is full of helping individuals like Bards. Enjoying working towards a common goal with other players (enj.common.goal) and Enjoyment in grouping up with other players (enj.others).

C. Demographic analysis is carried out in two ways i.e., cross tabulation and regression. Essentially based on the demographic factor being ordinal or nominal analysis method was chosen. To further go deeper:

- I. Age: This was studied with a linear regression and cross tabulation with age baskets. With a significant overall chi-square value and p-value less than 0.05, relation with clusters and individual age groups was found. We deciphered that Immersive Power-seekers and Strategic Explorers could be analyzed as they had individual chi-square value more than critical value. From the table we see that more elderly people (age groups of 36-45, 46-55 and 55+) are Immersive power-seekers than its expected population. Contrary to that Strategic Explorers were the younger population having age group of 18-25 being the most engaged followed by 26-35. When I further see the regression, I understand expected age of each cluster's population without regards to statistical significance of p-value:
 - A. Chaotic Thrill-Seekers has people of age close to 27 with Cooperate Adventurers and Tactical Thinkers accompanying them.
 - B. Immersive power seekers have an average age of 23 which is relatively less in line from cross tabulation inference. Whereas Strategic explorers are commonly found in the age of 33 years.

Below are the two images showcasing Chi-square cross-tabulation and regression summary:

Chi-squared value: 156.6183281322476
P-value: 3.86093667710891e-25

		Age_Group					
		18-25	26-35	36-45	46-55	56-65	
Cluster_Label	Observed	60	43	20	4	2	
	Expected	63.72	44.2	11.56	4.53	5.0	
	Chi squared	0.22	0.03	6.17	0.06	1.8	
Cooperative Adventurers	Observed	96	72	6	8	3	
	Expected	91.38	63.38	16.57	6.5	7.17	
	Chi squared	0.23	1.17	6.75	0.35	2.42	
Immersive Power-Seekers	Observed	45	59	33	16	23	
	Expected	86.93	60.3	15.77	6.18	6.82	
	Chi squared	20.23	0.03	18.83	15.61	38.4	
Strategic Explorers	Observed	118	51	2	0	0	
	Expected	84.46	58.59	15.32	6.0	6.62	
	Chi squared	13.31	0.98	11.58	6.0	6.62	
Tactical Thinkers	Observed	89	58	13	1	4	
	Expected	81.5	56.53	14.78	5.79	6.39	
	Chi squared	0.69	0.04	0.21	3.97	0.9	

OLS Regression Results

Dep. Variable:	age	R-squared:	0.174
Model:	OLS	Adj. R-squared:	0.170
Method:	Least Squares	F-statistic:	43.21
Date:	Sat, 16 Dec 2023	Prob (F-statistic):	6.20e-33
Time:	20:53:58	Log-Likelihood:	-2968.7
No. Observations:	827	AIC:	5947.
Df Residuals:	822	BIC:	5971.
Df Model:	4		
Covariance Type:	nonrobust		

	coef	std err	t	P> t	[0.025	0.975]
const	27.6279	0.774	35.691	0.000	26.108	29.147
1	-1.6279	1.033	-1.575	0.116	-3.656	0.400
2	-4.7975	1.025	-4.679	0.000	-6.810	-2.785
3	6.9879	1.018	6.866	0.000	4.990	8.986
4	-1.3955	1.008	-1.384	0.167	-3.375	0.584

Omnibus: 219.217 Durbin-Watson: 1.874
Prob(Omnibus): 0.000 Jarque-Bera (JB): 516.755
Skew: 1.409 Prob(JB): 6.14e-113
Kurtosis: 5.656 Cond. No. 6.52

- II. Income: This was studied by regression itself. Analysis presents that Chaotic thrill seekers and Immersive Power Seekers are two segments who earn relatively more than other segment of audience. Cooperative adventurers, Tactical thinkers, and then Strategic Explorers earn the least.

OLS Regression Results						
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Dep. Variable:	income	R-squared:	0.119			
Model:	OLS	Adj. R-squared:	0.115			
Method:	Least Squares	F-statistic:	27.86			
Date:	Sat, 16 Dec 2023	Prob (F-statistic):	1.01e-21			
Time:	20:58:45	Log-likelihood:	-9743.1			
No. Observations:	827	AIC:	1.950e+04			
Df Residuals:	822	BIC:	1.952e+04			
Df Model:	4					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]

const	5.478e+04	2794.720	19.600	0.000	4.93e+04	6.03e+04
1	-7666.1029	3730.525	-2.055	0.040	-1.5e+04	-343.626
2	-1.745e+04	3701.697	-4.715	0.000	-2.47e+04	-1.02e+04
3	1.682e+04	3674.620	4.577	0.000	9605.284	2.4e+04
4	-6521.1397	3640.971	-1.791	0.074	-1.37e+04	625.556
=====						
Omnibus:	210.086	Durbin-Watson:	1.992			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	624.591			
Skew:	1.246	Prob(JB):	2.35e-136			
Kurtosis:	6.452	Cond. No.	6.52			

III. Gender: To learn more about gender, I analyzed its distribution on clusters through chi-square cross tabulation. It showed that there is no significant relation of gender distribution with clusters formed as the overall chi-square value was lesser than the critical value of 15.507 calculated by formula in excel. Alongside the p-value was also greater than 0.05. Irrespective of statistical significance, I got only Strategic Explorers and somewhat Cooperative Adventurers to be females. Rest all clusters were male dominated with non-binary population being Cooperative adventurers the most. When we only see Observed values of females, we find that Strategic explorers (53.75%), Immersive power seekers (45.20%) and Cooperative adventurers (42.16%) have female populations relatively close to or more than males.

Chi-squared value: 10.586772060306407				
P-value: 0.226229918930682				
	gender	female	male	nonbinary
Cluster_Label				
Chaotic Thrill-Seekers	Observed	54	72	3
	Expected	58.81	68.17	2.03
	Chi squared	0.39	0.22	0.47
Cooperative Adventurers	Observed	78	102	5
	Expected	84.33	97.76	2.91
	Chi squared	0.48	0.18	1.5
Immersive Power-Seekers	Observed	80	94	3
	Expected	80.69	93.53	2.78
	Chi squared	0.01	0.0	0.02
Strategic Explorers	Observed	93	77	1
	Expected	77.95	90.36	2.69
	Chi squared	2.9	1.98	1.06
Tactical Thinkers	Observed	72	92	1
	Expected	75.22	87.19	2.59
	Chi squared	0.14	0.27	0.98

IV. Location was also studied with cross tabs but dividing them into regions where the states belonged. Here as well, we didn't observe statistical significance with low chi-square value and high p-value. Not taking that into account, I saw Immersive power seekers to be in West and Midwest, Chaotic thrill-seekers in the South, Cooperative adventurers in Northeast and South, Strategic explorers in northeast and west and Tactical thinkers in South.

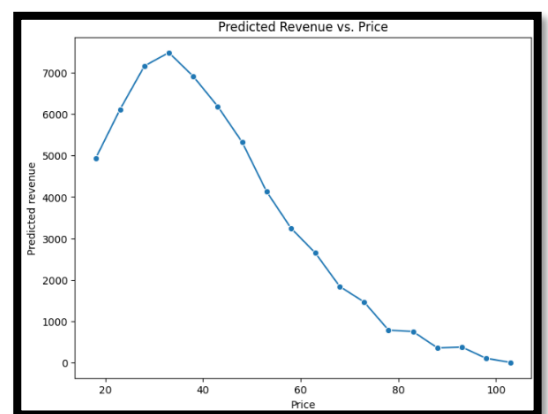
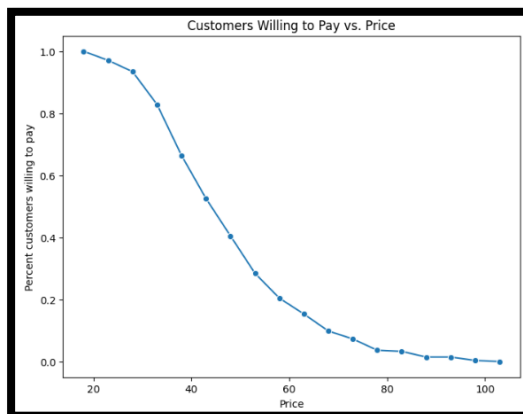
	Region	Midwest	Northeast	South	West
Cluster_Label					
Chaotic Thrill-Seekers	Observed	20	24	58	27
	Expected	24.18	23.09	49.76	31.98
	Chi squared	0.72	0.04	1.36	0.77
Cooperative Adventurers	Observed	32	38	76	39
	Expected	34.67	33.11	71.36	45.86
	Chi squared	0.21	0.72	0.3	1.03
Immersive Power-Seekers	Observed	38	26	63	50
	Expected	33.17	31.68	68.27	43.88
	Chi squared	0.7	1.02	0.41	0.85
Strategic Explorers	Observed	33	35	55	48
	Expected	32.05	30.6	65.96	42.39
	Chi squared	0.03	0.63	1.82	0.74
Tactical Thinkers	Observed	32	25	67	41
	Expected	30.93	29.53	63.65	40.9
	Chi squared	0.04	0.69	0.18	0.0

4. We understand the price structure and the most probable purchase possibility which leads us to gross and net revenues. Here is how its analyzed:

A. With the two Gabor Granger plots, we found the ideal price point of each game as follows:

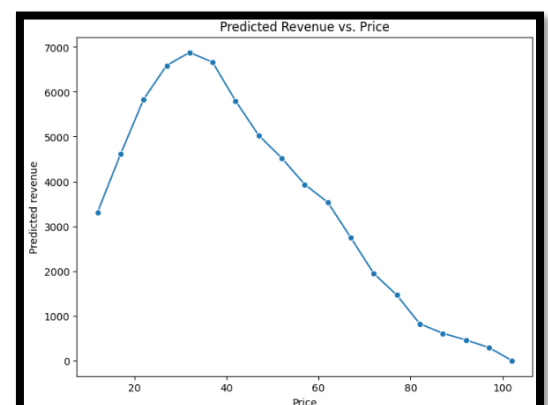
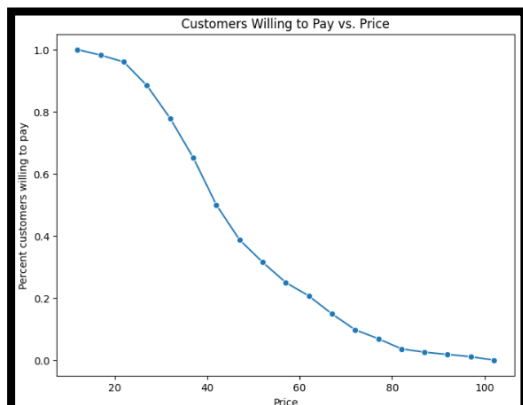
I. Warrior Guild: Maximum revenue is achieved at the price of \$33 having customer willingness to pay at 82.85% which is projected through the two graphs as well:

	price	per_customers_wtp	pred_revenue
0	18	1.000000	4932
1	23	0.970803	6118
2	28	0.934307	7168
3	33	0.828467	7491
4	38	0.664234	6916
5	43	0.525547	6192
6	48	0.405109	5328
7	53	0.284672	4134
8	58	0.204380	3248
9	63	0.153285	2646
10	68	0.098540	1836
11	73	0.072993	1460
12	78	0.036496	780
13	83	0.032847	747
14	88	0.014599	352
15	93	0.014599	372
16	98	0.003650	96
17	103	0.000000	0



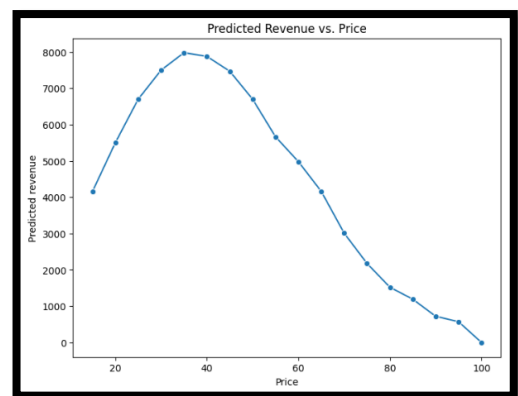
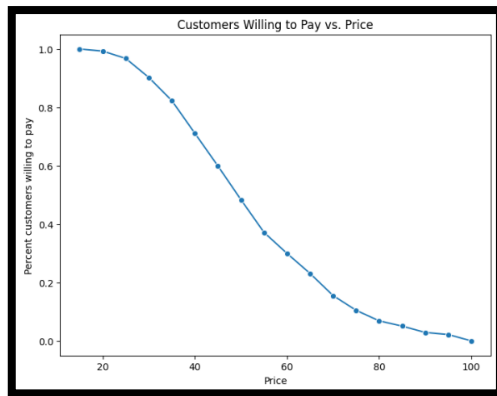
II. Evercrest: Maximum revenue is achieved at the price of \$32 having customer willingness to pa at 77.90% which is projected through the two graphs as well:

	price	per_customers_wtp	pred_revenue
0	12	1.000000	3312
1	17	0.981884	4607
2	22	0.960145	5830
3	27	0.894058	6588
4	32	0.778986	6880
5	37	0.652174	6660
6	42	0.500000	5796
7	47	0.387681	5029
8	52	0.315217	4524
9	57	0.250000	3933
10	62	0.206522	3534
11	67	0.148551	2747
12	72	0.097826	1944
13	77	0.068841	1463
14	82	0.036232	820
15	87	0.025362	609
16	92	0.018116	460
17	97	0.010870	291
18	102	0.000000	0



III. Seraph Guardians: Maximum revenue is achieved at the price of \$35 having customer willingness to pa at 77.90% which is projected through the two graphs as well:

	price	per_customers_wtp	pred_revenue
0	15	1.000000	4155
1	20	0.992780	5500
2	25	0.967509	6700
3	30	0.902527	7500
4	35	0.823105	7980
5	40	0.711191	7880
6	45	0.599278	7470
7	50	0.483755	6700
8	55	0.371841	5665
9	60	0.299639	4980
10	65	0.231047	4160
11	70	0.155235	3010
12	75	0.104693	2175
13	80	0.068592	1520
14	85	0.050542	1190
15	90	0.028881	720
16	95	0.021661	570
17	100	0.000000	0



B. By running regression on filtered data of the three games under consideration, I deduced the following:

- I observed that for the game ‘Warrior Guild’ Chaotic Thrill-Seekers are the segment who will be probable to pay and seem interested in the game.
- Also, Strategic Explorers derived the most value are the most interested in ‘Evercrest’ and ‘Seraph Guardians’.

Graphs are below:

OLS Regression Results						
Dep. Variable:	gg_maxprice	R-squared:	0.114			
Model:	OLS	Adj. R-squared:	0.101			
Method:	Least Squares	F-statistic:	8.626			
Date:	Sat, 16 Dec 2023	Prob (F-statistic):	1.45e-06			
Time:	22:19:27	Log-Likelihood:	-1122.9			
No. Observations:	274	AIC:	2256.			
DF Residuals:	269	BIC:	2274.			
DF Model:	4					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
const	50.4865	2.418	20.882	0.000	45.727	55.246
1	-7.8711	3.163	-2.489	0.013	-14.098	-1.644
2	-9.9173	3.029	-3.275	0.001	-15.880	-3.954
3	3.5942	3.055	1.176	0.240	-2.421	9.609
4	-6.1589	3.094	-1.990	0.048	-12.251	-0.067
Omnibus:	21.598	Durbin-Watson:	2.046			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	24.308			
Skew:	0.696	Prob(JB):	5.27e-06			
Kurtosis:	3.441	Cond. No.	6.98			

OLS Regression Results							
Dep. Variable:	gg_maxprice	R-squared:	0.124				
Model:	OLS	Adj. R-squared:	0.112				
Method:	Least Squares	F-statistic:	9.628				
Date:	Sat, 16 Dec 2023	Prob (F-statistic):	2.71e-07				
Time:	22:21:11	Log-likelihood:	-1169.3				
No. Observations:	276	AIC:	2349.				
DF Residuals:	271	BIC:	2367.				
DF Model:	4						
Covariance Type:	nonrobust						
	coef	std err	t	P> t	[0.025	0.975]	
const	46.1887	2.320	19.909	0.000	41.621	50.756	
1	-6.1702	3.266	-1.889	0.060	-12.680	0.259	
2	-4.8553	3.365	-1.443	0.150	-11.481	1.770	
3	11.5521	3.266	3.537	0.000	5.122	17.982	
4	-3.1887	3.185	-1.027	0.305	-9.381	2.924	
Omnibus:	24.942	Durbin-Watson:	2.195				
Prob(Omnibus):	0.000	Jarque-Bera (JB):	29.411				
Skew:	0.795	Prob(JB):	4.11e-07				
Kurtosis:	3.169	Cond. No.	5.95				

OLS Regression Results						
Dep. Variable:	gg_maxprice	R-squared:	0.173			
Model:	OLS	Adj. R-squared:	0.161			
Method:	Least Squares	F-statistic:	14.26			
Date:	Sat, 16 Dec 2023	Prob (F-statistic):	1.41e-10			
Time:	22:21:34	Log-Likelihood:	-1160.8			
No. Observations:	277	AIC:	2352.			
DF Residuals:	272	BIC:	2369.			
DF Model:	4					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
const	49.5641	2.583	19.186	0.000	44.478	54.650
1	-3.3777	3.329	-1.014	0.311	-9.932	3.177
2	-1.4262	3.341	-0.427	0.670	-8.083	5.151
3	14.9933	3.308	4.533	0.000	8.481	21.505
4	-3.8974	3.318	-1.175	0.241	-10.438	2.635
Omnibus:	18.836	Durbin-Watson:	2.186			
Prob(Omnibus):	0.004	Jarque-Bera (JB):	11.228			
Skew:	0.492	Prob(JB):	0.00365			
Kurtosis:	3.076	Cond. No.	6.04			

C. For gross and net revenue, I have made the following table for all three games. ‘Seraph Guardians’ will be the game delivering the most amount of revenue followed by Warriier Guild and lastly Evercrest. Table is as under.

Particulars	Warriier Guild (\$)	Evercrest (\$)	Seraph Guardians (\$)
Per Cutomer WTP	82.85%	77.90%	82.31%
Demand Correction	30.00%	30.00%	30.00%
Total Active Customer	10000000	10000000	10000000
Demand	2485500	2337000	2469300
Ideal Price	33	32	35
Expected Gross Revenue	82021500	74784000	86425500
Gross Revenue (After first 10 mn)	72021500	64784000	76425500
Gross Revenue (After first 50 mn)	32021500	24784000	36425500
Expense: Fixed Cost	7000000	7000000	7000000
Expese: Variable Cost	5000000	6000000	5500000
Expense: Royalty Payment	4101075	3739200	4321275
Valve 1st share (10 mn share)	300000	300000	300000
Valve 2nd share (10 mn to 50 mn)	18005375	16196000	19106375
Valve 3rd share (After 50 mn)	6404300	4956800	7285100
Expected Net Revenue	41210750	36592000	42912750

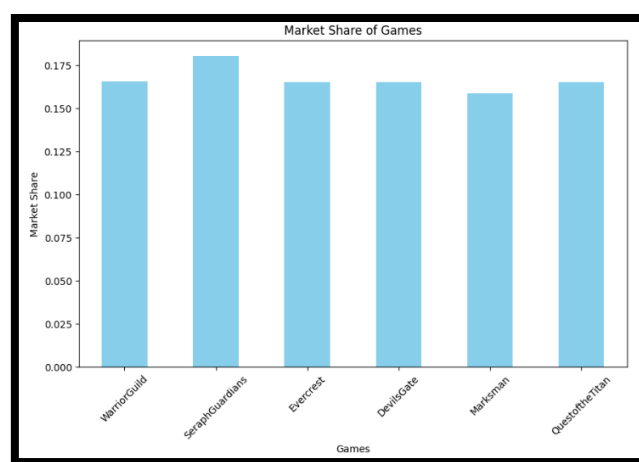
5. Ranking and estimating our market share can be done in the following way:

- Assuming all games are priced equally, three games of Athena competing against three games of competitors with different action alternatives give Athena’s market share to mostly be above 50%. Seraph Guardian turns out to be the best game of Athena. Among Competitors Quest of the Titans is

quite compelling and is the closest to Athena's best game (Seraph Guardian). We can see this in Action alternative 3, 5 & 7 that when Seraph Guardian's share is not computed, Quest of the Titans takes over the market. Graph is as under:

Action Alternative	Warrior Guild	Seraph Guardians	Evercrest	Devils Gate	Marksman	Quest of the Titan	Athena's Share
1	12.00%	54.00%	10.00%	16.00%	2.00%	6.00%	76.00%
2		56.00%	11.00%	24.00%	2.00%	7.00%	67.00%
3	18.00%		17.00%	23.00%	9.00%	33.00%	35.00%
4	15.00%	58.00%		18.00%	1.00%	8.00%	73.00%
5	24.00%			26.00%	9.00%	41.00%	24.00%
6		62.00%		28.00%	2.00%	8.00%	62.00%
7			19.00%	35.00%	11.00%	35.00%	19.00%

- B. Assumption is price is constant and ranking of '1' is only taken into consideration for individual choice. In my simulation I gave weights to ranks and then computed the market share. Nevertheless, it was Seraph Guardians which had the highest market share. But this time, it was very close to other games in the market. Below is the graph:



We can see Seraph Guardians having a market share of 18% while the other games being at 16% on average. This alternate way makes sure that ranking is not an extreme means of idealizing individual choice. If individual's choice of rank 1 is not available, rank 2 is also considered which brings down market share supremacy of Seraph Guardians from 54% to 18% which is a more realistic number. Individual paying for the game has many factors to be considered than just ranking in a survey. Thus, giving weight might capture those other factors like price, availability, liking etc.

- Understanding through market simulation and clustering analysis, we got that Seraph Guardians should be the game Athena should pursue. Being a role-playing game, it should be targeted at Immersive Power Seekers and Strategic Explorers as per our factor and cluster analysis. As we see these two segments give importance to developing a character and enjoying that role, collection of items and completion of tasks, immersion, and planning with being in a place or person who is not themselves. These set of attributes are likely to be delivered by the game Seraph Guardians. It should be targeted in the West, South and a bit of Midwest location for the age group of 18-25 and 26-35. By gender it should be to male population living in have a decent or high standard of living. The ideal price to be charged is \$35 to balance market share and maximize revenue. Targeted advertisements focusing on how immersive roles with customizable clothes, skin and other character change game delivers with strategic progress will be a good selling point. Essential value proposition can also be that the game is a gradual development of character in the fantasy world which will be loved by these set of gamers.