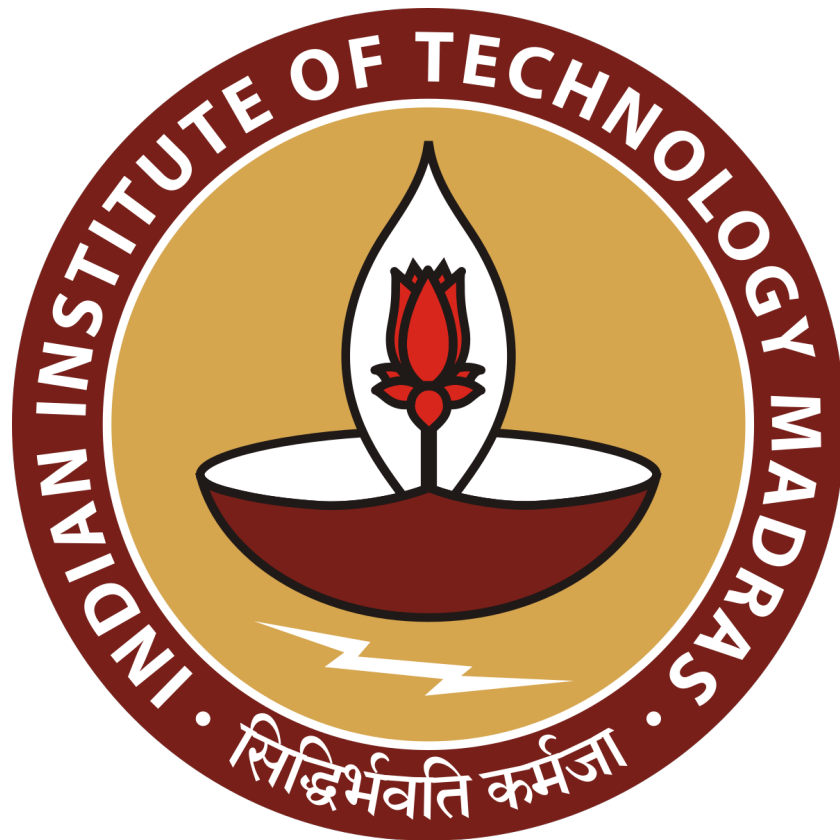


**Driving Sales Growth and Expanding Market Reach:
A Strategic Solution for Audio Visuals Inc
End Submission Report**

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Contents

1	Declaration Statement	3
2	Executive Summary	4
3	Employed Analysis Methods	5
3.1	Identifying Keystone Categories	5
3.2	Exploring Time Series Data	5
3.3	Comparative Analysis	5
3.4	Marketing Strategies	5
4	Results & Findings	6
4.1	Keystone items	6
4.2	Time-Series Data	7
4.3	Regional Revenue Examination	10
4.4	Customer Retention	11
4.5	Role of Competitors	13
4.6	Limitations in Audio Visuals'	14
5	Solution to problems	15
5.1	Best Pricing Strategy	15
5.2	Marketing Strategies	17
5.2.1	Digital Marketing:	17
5.2.2	Content Marketing:	17
5.2.3	Email & Whatsapp Marketing	18
5.2.4	Customer Reviews and Testimonials:	18
5.2.5	Partnerships and Collaborations:	18
5.2.6	Email Signatures and Invoices:	18
5.2.7	Customer Loyalty Programs:	18
5.2.8	Visual Content:	18
5.2.9	Customer Feedback:	18
5.3	Google Ads and Pay-Per-Click Advertising:	19
5.4	Advertising Strategies	19
6	Conclusion	20

1 Declaration Statement

I am working on a Project titled “**Driving Sales Growth and Expanding Market Reach: A Strategic Solution for Audio Visuals Inc**”. I extend my appreciation to **Audio Visuals Inc**, for providing the necessary resources that enabled me to conduct my project.

I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered from primary sources and carefully analyzed to assure its reliability.

Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

I am dedicated to adhering to the principles of academic honesty and integrity, and I am receptive to any additional examination or validation of the data contained in this project report.

I understand that the execution of this project is intended for individual completion and is not to be undertaken collectively. I thus affirm that I am not engaged in any form of collaboration with other individuals, and that all the work undertaken has been solely conducted by me. In the event that plagiarism is detected in the report at any stage of the project’s completion, I am fully aware and prepared to accept disciplinary measures imposed by the relevant authority.

I understand that all recommendations made in this project report are within the context of the academic project taken up towards course fulfillment in the BS Degree Program offered by IIT Madras. The institution does not endorse any of the claims or comments.

A handwritten signature in blue ink, appearing to read "Janani D.", with a stylized flourish at the end.

Janani D
November 13, 2023

2 Executive Summary

This report provides a comprehensive overview of the method of analysis employed. In this study, the time series data was gathered to improve the firm's performance both on a monthly and weekly basis. A thorough and a comparative analysis was undertaken to enhance the pricing strategy of Audio Visuals' products, by using the pricing data from Amazon and Flipkart.

This report provides a detailed explanation of the analytical methods utilized. It delves into the process of defining and identifying keystone items or categories that play a pivotal role in the firm. Furthermore, the report discusses the key indicators used to measure and evaluate the business's overall success, providing valuable insights into its performance and achievement of objectives. This includes statistical analysis to support the recommendations.

The findings from state-wise sales data analysis for Audio Visuals showcase diverse revenue patterns across states and key product categories are identified. With expansion opportunities in mind, a phased strategy prioritizing high-performing states has been outlined. Recommendations encompass product optimization, customer-centric approaches, and operational enhancements, providing a comprehensive roadmap for future growth.

In addition to the analysis of performance and pricing strategies, this report also incorporates recommendations for marketing strategies that Audio Visuals can employ to expand its customer base. These marketing strategies are aimed at attracting and retaining customers, enhancing brand awareness, and increasing market share. This comprehensive analysis aims to inform strategic decision-making and enhance the understanding of critical factors driving the business's prosperity.

3 Employed Analysis Methods

3.1 Identifying Keystone Categories

Identifying keystone categories is important for optimizing inventory and revenue growth. After a thorough data analysis, the top-performing categories that collectively drive significant revenue were found. This insight empowers the firm to strategically focus on its inventory management, marketing, and pricing efforts on these high-demand categories, ultimately enhancing profitability and customer satisfaction.

3.2 Exploring Time Series Data

The time series data was used for a comprehensive examination of Audio Visuals' performance on both monthly and weekly basis, enabling an in-depth analysis of revenue trends over time. This analysis provides valuable insights into how Audio Visuals' business operations fluctuate over different time intervals, aiding in the identification of revenue patterns, seasonal variations, and the potential impact of weekdays on sales and overall performance.

3.3 Comparative Analysis

A comparative study was done to assess Audio Visuals' pricing strategy in relation to Amazon and Flipkart. This analysis involved comparing the prices of Audio Visuals' products with those on Amazon and Flipkart, all on the same day. The objective was to gain insights into the competitive pricing landscape and determine the potential room for price adjustments that could enhance Audio Visuals' revenue. This analysis is helpful in suggesting a suitable pricing strategy for Audio Visuals' which balances its competitiveness in market and maximize the revenue.

3.4 Marketing Strategies

Upon reviewing Audio Visuals' sales data and assessing their shop's location, it becomes evident that there is a noticeable gap in their marketing efforts. Effective marketing can significantly boost their customer base and subsequently drive revenue growth. Enhancing these efforts can help them tap into their full business potential and compete more effectively in the market.

4 Results & Findings

4.1 Keystone items

To identify the keystone products the pivot tables were used to extract the information about the revenue generated across the categories. From the pivot table it is seen that the categories **Studio, Monitor & Talkback Controller, Microphone and Audio Interface** contribute to 76% of the Shop’s revenue. Furthermore the items sold under the category **Studio** was examined and it was found that **Apple customized Mac Studio** gave the highest revenue.

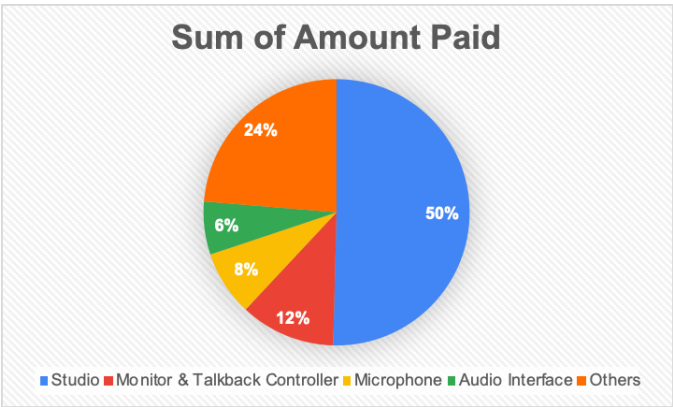
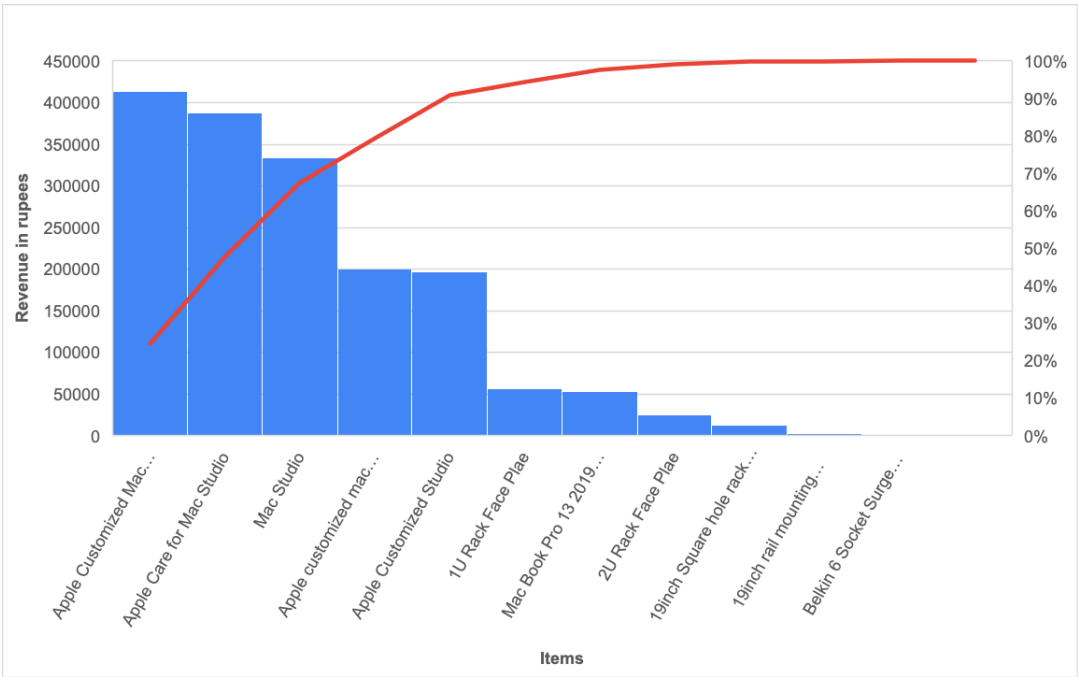


Figure 1: Revenue generated from Studio

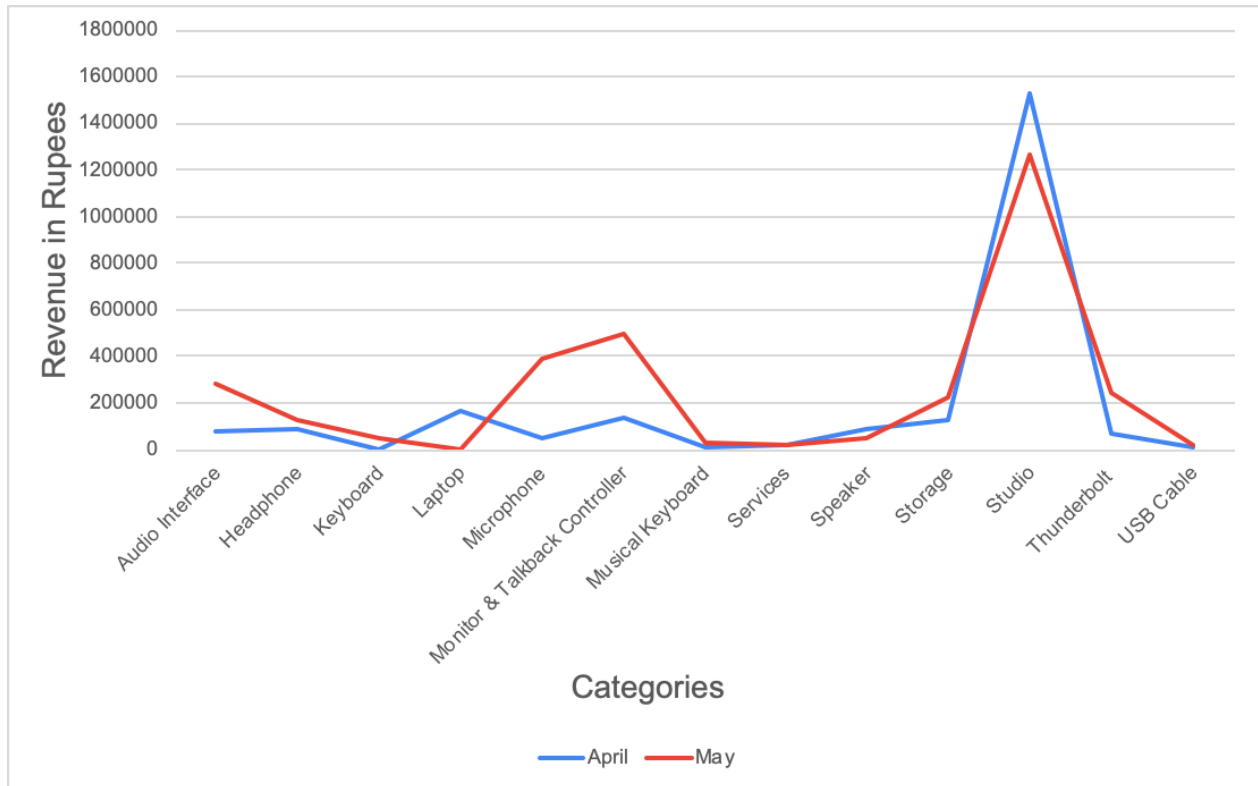


The Pareto chart analysis reveals that **Apple Customized Mac Studio** generates the highest revenue within the Studio category. Further inquiry has shown that these MacBooks are customized by Audio Visuals to meet individual customer preferences. To maximize this revenue stream, Audio Visuals should consider intensifying their investments in MacBook customization services along with seeking customer feedback to enhance their customization offerings.

4.2 Time-Series Data

The time series data for Audio visuals' sales covers the months of April and May 2023, this serves the purpose of analysing the revenue trends within this specific time frame. In addition to offering insights into the broader sales patterns, this data is further broken down on a week-by-week basis to provide a more granular understanding of the sales fluctuations. This week-wise breakdown allows for a more detailed examination of how sales and revenue vary within the monthly context, helping to identify the potential factors influencing these trends.

Figure 2: **Revenue generated across months**



The graph depicting revenue is obtained from Audio Visuals' revenue data for the months of April and May. From the graph it is observable that the revenue in May is notably higher than April. Despite this increase, it is worth noting that certain product categories, such

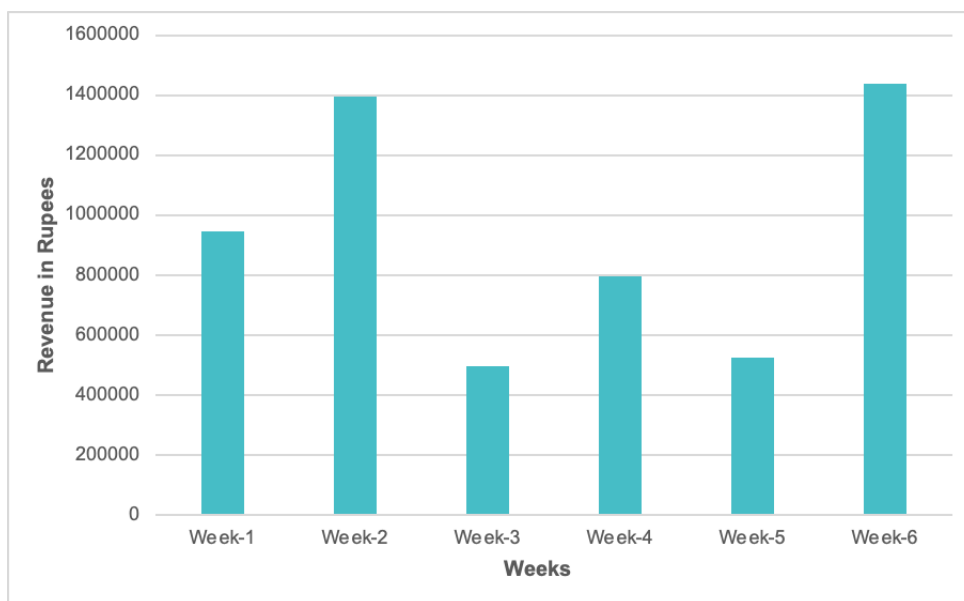
Table 1: Revenue Percentage

Week	Revenue in ₹	Percentage change
Week-1	₹946783	-
Week-2	₹1392701	7.98%
Week-3	₹495337	-16.06%
Week-4	₹793851	5.34%
Week-5	₹522466	-4.85%
Week-6	₹1435117	16.33%

as Laptops, Speakers and Studio experienced a decline in revenue from April to May. But the decline in the sales of laptops in May is of least importance as only 1 laptop was sold in April. It is noticeable that the category **Monitor & Talkback Controller** experienced a hike in sales during the month of May. This is followed by **Microphone, Audio Interface and Thunderbolt**.

Other categories like **Laptops, Services, Speaker and Studio** experienced less revenue in May compared to April. On analysing about the reason behind this decrease, it is observed that the usage of speakers was low during the month of May as there were less number of musical festivals occurring during May. The services was also less compared to April as the workers of the shop were given a week holiday during May.

Figure 3: Revenue generated across weeks



The week wise data of the firm is collected and the salient findings is mentioned above. In **Table 1**, it is evident that Audio Visuals' revenue does not exhibit a consistent trend and fluctuates, with some instances of increase compared to the previous figures and some

cases of decrease. Specifically, revenue decreases in 2 out of 5 cases, while in the remaining scenarios, an average increase of approximately 10 % is observed.

The trend in revenue across the weeks is visible in the **Figure 3**. An increase in revenue is observed in week-2, week-4 and week-6 on comparing with it's previous weeks. Rest of the weeks experienced a decrease in revenue.

Figure 4: **Count of items sold across categories in April and May**

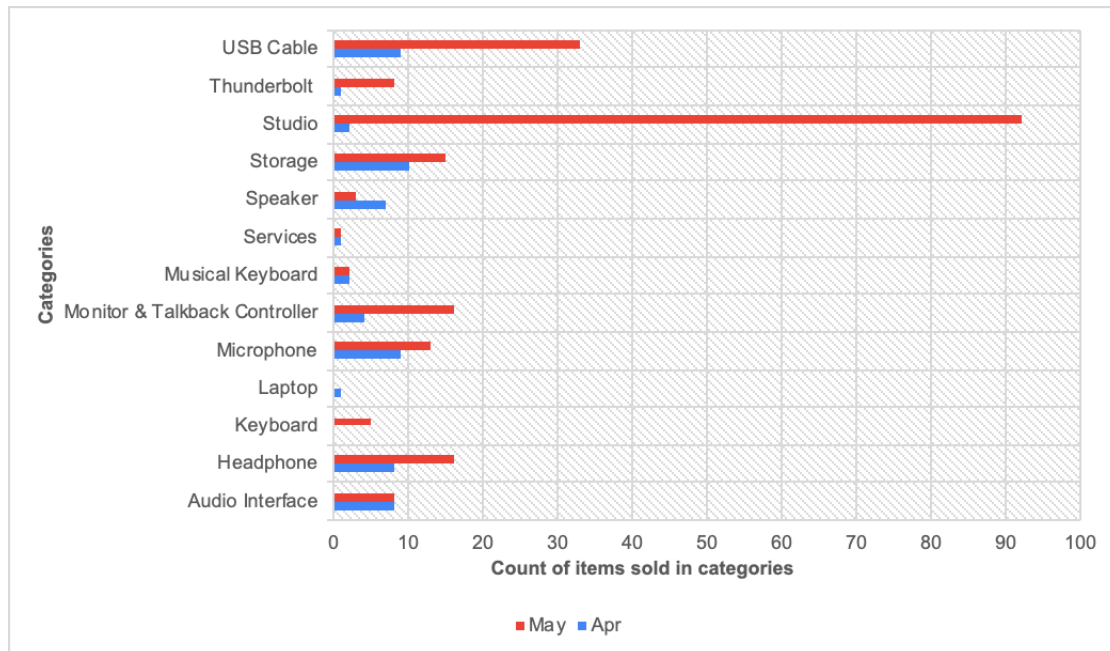


Figure 4 reveals that the category **Studio** had a lower count in April compared to May. However, despite the lower count, the revenue generated by the Studio category in April exceeded that of May. This anomaly can be attributed to Audio Visuals' acquisition of two significant contracts in April, involving acoustic work and customized Mac systems for Logic Pro, which contributed significantly to the higher revenue in that month. So it is suggestible to take more contracts in **Studio** category and sell products in bulk to contractors rather than focusing more on selling Studio related products to general customers.

The next increase is observed in the category **USB Cable**. The sales of USB cable has increased nearly to 4 times as that on April due to the increased demand. The revenue obtained from USB cable is also increased during May.

Figure 5: Revenue of Categories in 6 weeks

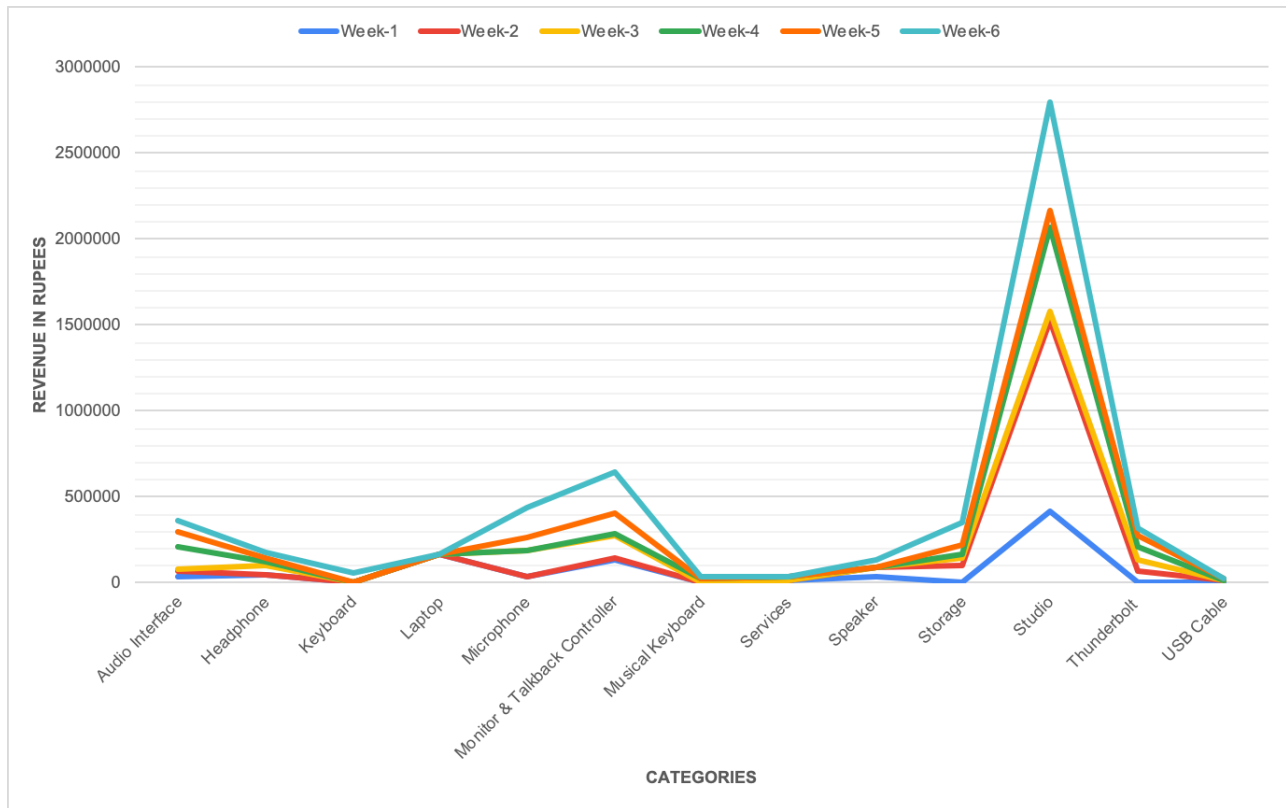
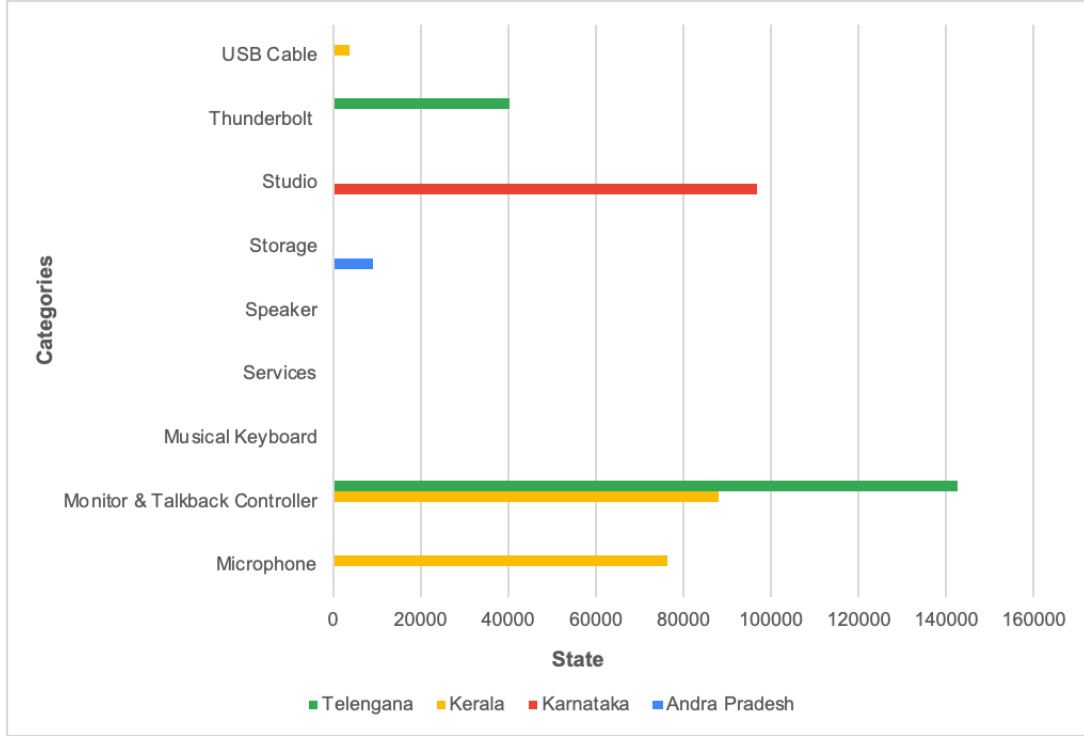


Figure 5 depicts the overall revenue of Audio Visuals' in a period of 6 weeks. From the graph it is evident that the overall revenue is increasing every week for most of the categories and only few categories deviate from the increase. It is advisable to stock products from categories **Studio** and **Monitor & Talkback Controller** to get a stable increasing revenue.

4.3 Regional Revenue Examination

State wise sales data, including various product categories, were gathered during discussions with the owner of Audio Visuals'. Notably, he expressed his interest in expanding the business to multiple branches due to the revenue obtained from contractors and customers from different states. As a result, an analysis of Audio Visuals' revenue across diverse states was conducted, encompassing all available product categories.

Figure 6: **Revenue of Categories across States**



Audio Visuals' currently has a branch in Chennai so Tamil Nadu, is excluded from the graph. The chart focuses on other states, namely Telangana, Andhra Pradesh, Kerala, and Karnataka. It is clear from the graph that the category **Monitor and Talkback Controller** stands out as the top revenue generator followed by the category **Studio** among all the categories across these states.

Upon closer examination of the graph, it becomes evident that **Telangana** stands out as the state where Audio Visuals' achieves the highest revenue among all the states. Though it is observable that Telangana has gained the highest revenue among the other states it's revenue is contributed only by the category **Monitor & Talkback Controller**. Since the rest of the categories do not play a significant role in the revenue, it is not advisable for Audio Visual's to begin a new branch in Telangana. Instead of this it is advisable to have a local partnership with the vendors of Telangana or focus on digital marketing.

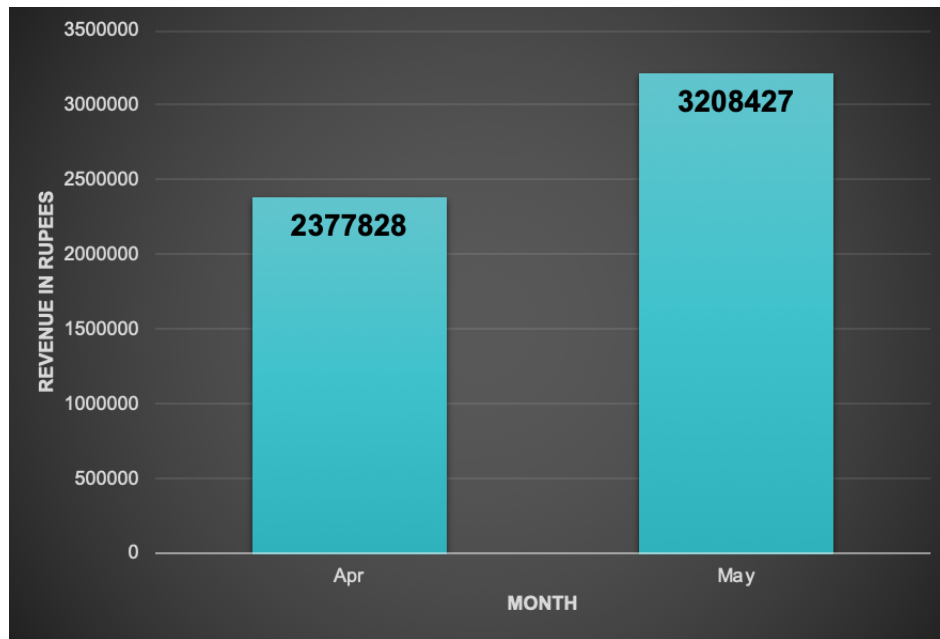
4.4 Customer Retention

On observing Audio Visuals' customer data it is observed that 4 customers bought products from Audio Visuals' in both April and May. Considering these customers as frequent customers the amount paid by them to buy products in both April and May is tabulated.

Table 2: Revenue from recurring customers

Customer	April	May
Harr Studio	₹1,86,440	₹3,728
Murugan	₹423	₹425
Pyramid Medi	₹4,915	₹28,000
Sean Roldan	₹4,14,023	₹14,322

Figure 7: Month Wise Revenue



From the figure it is observable that in the month of April, Audio Visuals' got a revenue of ₹23,77,828. But from Table-2 it is evident that ₹4,14,023 was the amount paid by **Sea Roldan**. This amount contributes to 17.5% of the revenue gained in April. The firm must focus on retaining this customer to increase their revenue. This can be done by giving timely discounts and offers.

4.5 Role of Competitors

Audio Visuals' maintain a strong competition with it's neighboring local shops in it's locality. However, its most formidable competitors are the e-commerce giants, Amazon and Flipkart. During the mid-semester submission, a price comparison was conducted between Amazon and Audio Visuals' for various product categories. In this end-semester report, the inclusion of Flipkart's data adds a more comprehensive perspective to the competitive landscape, offering insights into how Audio Visuals' pricing strategy fares against both major online retailers.

Figure 8: Price of Products across firms

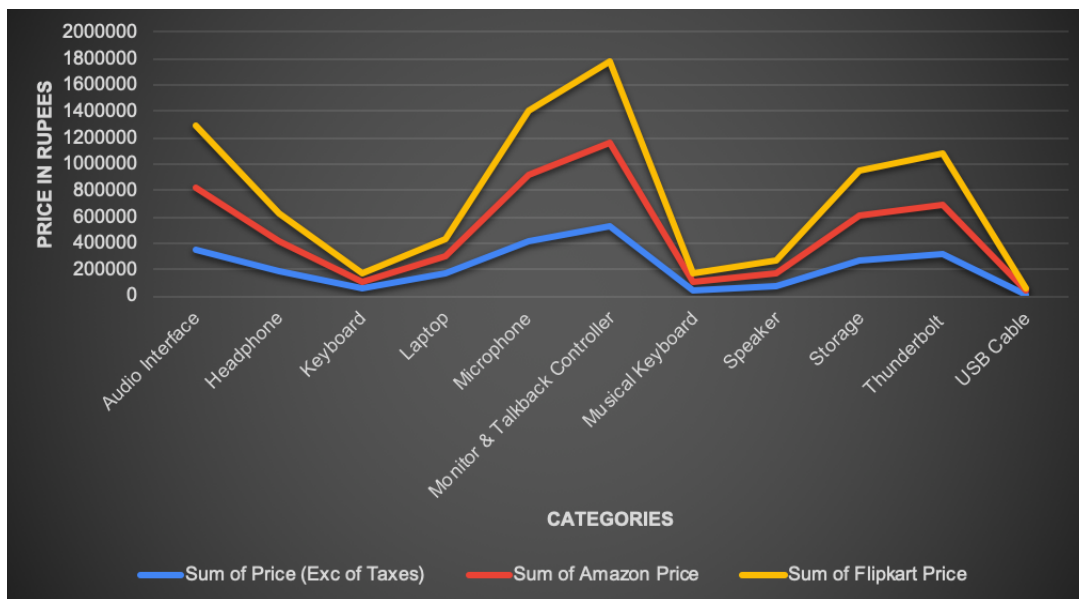


Figure-8 clearly illustrates that Flipkart's pricing surpasses that of both Audio Visuals' and Amazon. The categories **Studio and Services** is not included in this graph. Category Studio comprises of customised products and category services includes the labour's service to the customers. As both Amazon and Flipkart doesn't progress in a significant way in these categories these categories are dropped from analysis. However, it is observable that Audio Visuals' pricing is significantly lower than that of its primary competitors. This discrepancy suggests that Audio Visuals' may be operating with slim profit margins or even at times, selling products at a loss. To enhance revenue generation, there is potential for Audio Visuals to optimize its pricing strategy, thereby increasing profitability while remaining competitive in the market.

4.6 Limitations in Audio Visuals'

Audio Visuals' has primarily concentrated on revenue and sales growth, but it has largely overlooked the implementation of effective marketing strategies and basic advertising techniques. The major methods lagged by Audio Visuals' are:

Marketing Strategies:

Audio Visuals' could significantly benefit from incorporating various advertising techniques to boost its market presence and connect with a broader customer audience. This may involve digital marketing, social media campaigns, and traditional advertising methods.

Underutilized Website:

While Audio Visuals' maintains a website for its Chennai shop, Link, it remains relatively obscure due to inadequate promotion. The company's lack of promotional efforts has kept this online platform hidden from potential customers.

Advertising Skills:

Audio Visuals seems to lack some fundamental advertising skills necessary for creating brand awareness. A well-structured marketing strategy could address this gap, helping the business tap into its full potential.

Missed Opportunities on Bills:

Even in its billing processes, Audio Visuals misses an opportunity to promote its online presence and services. The absence of website links on bills can leave many customers unaware of the shop's shipping and service capabilities, limiting the reach of its offerings.

Figure 9: Sample Bill of Audio Visuals

DELIVERY NOTE (DUPLICATE FOR TRANSPORTER)

AUDIO VISUALS INC.
No. 64, Thiruvalluvar Road,
B-4, Silver Park Apartment,
T. Nagar, Chennai - 600 017
GSTIN/IN: 33AEPPT19622G
GST: 855846
GSTIN/IN: 33BHP50107M1ZP
State Name: Tamil Nadu, Code: 33
E-Mail: audiovisuals2009@gmail.com
Buyer (Bill to):
Visual Media System
B12 PARK Commercial Complex,
1, Kodambakkam High Road,
Geyser, Chennai
GSTIN/IN: 33BHP50107M1ZP
State Name: Tamil Nadu, Code: 33

Delivery Note No. **5** Dated **31-Mar-23**
Mode/Terms of Payment
Reference No. & Date. Other References
Buyer's Order No. Dated
Dispatch Doc No.
Dispatched through Destination
Terms of Delivery

SI No.	Description of Goods	HSN/SAC	Quantity	Rate	per	Disc. %	Amount
	AKG C 214 Microphone S/N: 850254120	85181000	1.00 NOS	24,576.27	NOS		24,576.27
	OUTPUT CGST 9%				9 %		2,211.86
	OUTPUT SGST 9%				9 %		2,211.86
	ROUND OFF						0.01
	Total		1.00 NOS				₹ 29,000.00 E & O.E

Amount Chargeable (in words) **Indian Rupees Twenty Nine Thousand Only**

HSN/SAC	Taxable Value	Rate	Central Tax Amount	State Tax Amount	Total Tax Amount
85181000	24,576.27	9%	2,211.86	2,211.86	4,423.72
	Total		24,576.27	2,211.86	2,211.86

Tax Amount (in words) **Indian Rupees Four Thousand Four Hundred Twenty Three and Seventy Two paise Only**

Company's PAN : **AEPPT19622G**
Recd. in Good Condition
Signature: **638698980**
This is a Computer Generated Document

AUDIO VISUALS INC.
No. 64, Thiruvalluvar Road,
B-4, Silver Park Apartment,
T. Nagar, Chennai - 600 017
GSTIN/IN: 33AEPPT19622G
GST: 855846

5 Solution to problems

5.1 Best Pricing Strategy

As sales were not too good in the Audio Visuals' , the price of the products were reduced to increase the revenue. This resulted in slim profit. Based on Figure 8, it's evident that both Flipkart and Amazon offer products at higher prices compared to Audio Visual's. Upon conversing with the owner of Audio Visuals', it became apparent that sales were more robust on Amazon and Flipkart than in their store. Intriguingly, some customers preferred purchasing items from Amazon and Flipkart even after physically inspecting them in their shop.

To assess the pricing competitiveness of Audio Visuals' compared to Amazon and Flipkart, a hypothesis test using a t-test is conducted. The focus will be on the category **Monitor & Talkback Controller** which generates the second-highest revenue overall and highest revenue in the sales category. For this analysis, the items in the Monitor & Talkback Controller category is listed, and the sum of their prices constitute one sample. The second sample (E-Commerce Price) consists of the average prices from Amazon and Flipkart for these identical items. This approach will enable a rigorous statistical comparison between Audio Visual's pricing and that of its competitors.

Price Table

Row Labels	Audio Visual's Price	E-Commerce Price
Monitor & Talkback Controller	532558	620793.5
ATHM40X Professional Monitor	56489	81424.5
KRK RP 103	47500	53220
KRK s10 4 Subwoofer	47500	49900
M-Audio BX3 Pair	10169	12139.5
Monitor & Talkback Controller	112000	136250
Neumann KH80 DSP	43983	43650
Presonus Eris E5	17250	29945
Professional Monitor	3389	3575
Studio Display Std Glass	135508	149500
Studio Monitor pads	805	1440
Ultra HD Monitor LG	57965	59749.5

Here, the null and alternative hypothesis is defined as follows.

H_0 : There is no significant difference in pricing of Audio Visuals' and E-Commerce.

H_1 : There is a significant difference between the pricing of Audio Visuals' and E-Commerce.

Here,

Sample -1 is Audio Visuals' Price

Sample - 2 is E-Commerce's Price

\bar{X}_1 = Mean of sample 1

\bar{X}_2 = Mean of sample 2

σ_1^2 = variance of sample 1

σ_2^2 = variance of sample 2

n_1 = size of sample 1

n_2 = size of sample 2

Here,

$\bar{X}_1 = 88759.66667$, $\bar{X}_2 = 103465.5833$, $\sigma_1^2 = 21217832486$, $\sigma_2^2 = 28756721499$,
 $n_1 = 12$, $n_2 = 12$

The formula to calculate the t-statistic for a two-sample independent t-test is as follows:

$$\begin{aligned} t &= \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}} \\ &= \frac{88759.66667 - 103465.5833}{\sqrt{\frac{21217832486}{12^2} + \frac{28756721499}{12^2}}} \\ &= 0.2278 \end{aligned}$$

By applying the above formula the t-value was found to be **0.2278** when tested with a significance level of **0.05** the P value for two tailed test was **0.8218**.

As **P value (0.8218) > 0.05** we accept the null hypothesis.

The significance level α represents the probability of incorrectly rejecting the null hypothesis when it is actually true. It is commonly set at 0.05, at this level it signifies a 5% risk of committing a Type I error, erroneously rejecting a true null hypothesis. This predetermined level guides the determination of critical values for the test statistic.

The p-value, or observed significance level, quantifies the likelihood of obtaining a test statistic as extreme as observed under the assumption that the null hypothesis is true. It serves as a crucial metric in hypothesis testing, aiding the decision-making process. Comparison of the p-value to the predetermined significance level determines whether to reject or fail to reject the null hypothesis. A p-value less than or equal to the significance level prompts rejection, suggesting a significant difference between groups.

Accepting the null hypothesis, indicates that there is no significant price difference between the average prices of Amazon and Flipkart with Audio Visuals' price. This implies that Audio Visuals' prices are almost identical to e-commerce sites. Consequently, if sales are declining, price reduction may not be necessary. In fact Audio Visuals' can try increasing the price of products by 10% as even that does not decrease the p value below 0.05 to reject the null hypothesis. Audio Visuals' should prioritize marketing and advertising strategies to boost sales.

5.2 Marketing Strategies

5.2.1 Digital Marketing:

Audio Visuals' has a website for their shop. As the findings of section 5.1 indicates that price reduction is not necessary to improve the sales, Audio visuals' should promote it's website to attract more customers who are at distant locations who cannot visit their Chennai branch for purchase. In the website, search engine optimization (SEO) techniques can be done to improve website visibility on search engines like Google. Furthermore social media platforms could be utilized to engage with customers, share product updates, and run targeted ad campaigns.

5.2.2 Content Marketing:

Content marketing is important to attract the customers who are in need of good quality products sold in Audio Visuals'. This can be done by creating informative and engaging content such as blog posts, videos, and how-to guides related to Audio & musical equipment and technology. Further, this content should be shared on the website and social media to position the brand as an industry expert.

5.2.3 Email & Whatsapp Marketing

To retain the customers and attract them to visit the shop frequently Whatsapp messages and emails could be sent indicating the arrival of new products in Audio Visuals' and discounts available. This can be done by building and segmenting an email list and contact list of customers and potential clients. Further, regular newsletters, product updates, and special promotions should be sent to keep the customers informed and engaged.

5.2.4 Customer Reviews and Testimonials:

As Audio Visuals' gains the highest revenue from Studio category and as Studio category refers to the customized products sold, Audio Visuals' must encourage satisfied customers to leave reviews and testimonials on the website and review platforms. This could help the firm to make more products which are customized according to the current trend.

5.2.5 Partnerships and Collaborations:

Establishing partnerships with other businesses or influencers in the audio-visual industry can be done to increase the revenue gained across different states of India.

5.2.6 Email Signatures and Invoices:

Include the website link and social media profiles in email signatures and on invoices for added visibility.

5.2.7 Customer Loyalty Programs:

Audio Visuals' can try implementing a customer loyalty program that rewards repeat customers with discounts or exclusive offers.

5.2.8 Visual Content:

Audio Visuals' should utilize high-quality images and videos to showcase products and their benefits as people tend to be more attracted towards visual contents and get tempted to buy them.

5.2.9 Customer Feedback:

The firm should actively seek and respond to customer feedbacks. Customer feedback is important to make improvements and show customers their opinions are valued.

5.3 Google Ads and Pay-Per-Click Advertising:

Audio Visuals' can try investing in paid online advertising to increase visibility in search engine results.

5.4 Advertising Strategies

Audio Visuals' should consider enhancing its physical store's visibility by investing in advertising methods like posters, banners, and a storefront makeover. Currently, its location is tucked behind a flat. It may limit its accessibility and visibility to potential customers. By strategically placing eye-catching posters and banners near the flat's entrance, the shop can draw attention and attract passersby. Moreover, a storefront makeover, including improved signage and an inviting facade, can transform the shop into a more attractive destination. Posters like these can help to attract customers to the store.



6 Conclusion

Based on the analysis conducted, here are the key observations and recommendations:

Price Increase for Monitor & Talkback Controller:

The data suggests that the prices of products in the **Monitor & Talkback Controller** categories can be increased by 10%, as the null hypothesis remains unchanged. This implies that customers are likely receptive to a price hike in these product categories. **Focus on**

Marketing and Advertising:

The recommendation is to shift the focus towards enhancing marketing and advertising efforts to boost sales. Instead of reducing prices, this strategy has the potential to increase revenue without compromising profit margins.

Customized Studio Products:

Notably, the **Studio** category includes customized products not readily available on e-commerce platforms. Therefore, there is an opportunity to raise the prices of these unique items, as demand for such specialized products may be less price-sensitive. Proper en-cooperation of customer feedbacks and advertising for these customized products should be done to improve the sales.

Geographic Expansion Consideration:

While sales are stronger in Telangana in one particular category, the analysis suggests that expanding a physical shop in this region might not be the most profitable course of action. Instead, the advisable approach could involve exploring alternatives like establishing remote sales channels or forming partnerships with local vendors to drive sales growth in the area.

Increasing Services

From the time-series data it is notable that Audio Visuals' should broaden their service sector by employing more people for doing services to avoid reduction in revenue and build trust in customers.

These conclusions are drawn from the data and statistical analysis conducted, and they provide valuable insights for decision-makers. These steps should be followed by Audio Visuals' to increase their overall revenue and profit.