Business Data Management

End – Term Submission

Strategic Analysis and Enhancement of Admission Dynamics at Aishwarya College: A Case Study

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Tabel of Content

1. Executive Summary:

Aishwarya College, a relatively new institution, is currently facing challenges in managing and optimizing its undergraduate admissions.

To achieve this, a detailed analysis was carried out using Microsoft Excel and Google Sheets. Key methods include the use of conditional formulas, COUNTIF-based transition tracking, and descriptive statistics to assess trends across categories like gender, stream preference.

Graphical representations—bar charts, pie charts, and line graphs—were extensively used to visualize trends and anomalies. The findings will inform practical recommendations to improve enrolment rates and strengthen Aishwarya College's market positioning and increase the Admissions as increase in Admission is increment in Revenue.

This end-term report extends the mid-term study by incorporating deeper insights, resolving earlier shortcomings, and aligning the analysis with the broader strategic goals of the college.

This report analyses three years (2021–2023) of admission and finance data to identify patterns in pre-qualifying test participation, stream transitions, program preferences, and fees.

Key findings:

(1) female applicants show higher pre-test participation but conversion is uneven (see Fig. 3.1);
(2) substantial stream switching occurs from Science → Arts/Commerce, causing an estimated revenue loss of ~₹1 crore over three years (see Fig. 3.7);
(3) BSc/BCA enrollments underperform relative to local market demand while BA/B.Com remain dominant (see Fig. 3.3); and
(4) admissions growth slowed in 2021, indicating saturation and poor program diversification (see Fig. 3.6).

Recommendations focus on:

(a) a scholarship-style admission test to convert high-quality, test-driven candidates;
(b) program redesign and marketing for science/tech streams with industry tie-ups;
(c) early career counselling and bridge courses to reduce stream switching;
(d) use of remaining marketing budget and data dashboarding to improve conversions.
Implementation of these measures is expected to boost admission quality, reduce revenue leakage, and increase future enrolments.
Detailed methods, results, and stepwise action items are presented in Sections 2–4.

2. Detailed Explanation of Analysis Process/Method:

2.1 Addition Data and its Pre Processing:

Additional Data is also taken from Institute to finding Impact of Revenue in decrement of 1st year students. Additional Data Includes: Financial Expenditure, Revenue Overview and Fee Structure Across years of all 4 UG Degrees. Additional Data is already in formatted version.

2.2 Finding the Number of Male or Female Students

First, let's calculate the number of admission over the years.
Using this formulae :

$$\sum_{i=1}^{n} x_i \qquad \text{where } x_i \text{ is represent no. of students.}$$

And to find male students and female students this process uses this formulae `=IF(B5="Male","1","")` this gives us a list in the column if B*i* (where B is column name and i = 5,6,…..so on) has a value equals to Male then set the value to 1 (string) else None. Then we use `=COUNTIF(AD5:AD412, "1")` in gives us no of male student same for female students also.

2.3 Finding the percentage of students who give Pre-qualifying Test

So, to calculate No. of students who give pre qualifying test over the years.
By using these formulae,
`=IF(B5 = "Male", "1", "")` so that to get 1 for those males who give test and then use this `=COUNTIF(AD5:AD412, "1")` formulae to count all the 1's to get number of males who give test.
Let,
M_{yes} = number of males who give test
M_{total} = total male students
P_{male} = percentage of male test takers

$$P_{male} = \left(\frac{M_{yes}}{M_{total}}\right) \text{ x } 100$$

Using these same formulae for females also.

2.4 Finding the UG Program preference.

Since the better program is directly proportional to increment in Student Admission. So, to count total students enrolled in each degree (BA, BSc, B.Com., BCA)
For example to calculate the number of student in BA,
the calculation needs this excel formulae `=IF(U5="B.A.","1","").`

So, it give if a student select BA as a UG Program then 1(string) is set and then use this `=COUNTIF(AD5:AD412, "1")` formulae to count the number of students in each UG program across the year then we calculate the percentage of admission in each degree program by using this formulae

Let,

T_A = Total Number of Admissions done in that specific year

T_G = Total Number of students admitted in that specific program

P_G = Percentage of students

$$P_G = \frac{T_G}{T_A} \text{ x } 100$$

This is used to compare each UG program across the yrs.

2.5 Finding the Distribution of approximate distance from student house to college:

The college is located in postal region 342005 (Jodhpur). To estimate the geographic spread of students, the pin codes collected from admission data were used to approximate distance ranges from the campus.

First, all unique pin codes were extracted and then grouped into four distance categories based on their relative proximity to the college's pin code. Since precise latitude–longitude data was not available, the grouping was performed through AI-assisted estimation using the Gemini model by Google and verified with Google Maps API look-ups for reference distances between postal areas.

The group were define as

1. Less than 6 Km range
2. 6 km to 10 km range
3. 10 km to 15 km range
4. More than 15 km range

For example to calculate the Number of student who are in less than 6 Km, currently we have the list of all pin-code in classified manner.

We use this formulae to find number of student:

```
=IF(OR(N5=342005, N5=342013,), "1", "")
```

Finally in last we use `=COUNTIF(AM5:AM412, "1")` formulae to calculate the number of students.

We will do same for other categories too.

From an unofficial source college has around 4 van and 2 mini-Buses and 2 Buses was taken on rent. And the data retrieve is given in below table:

Distance	Vehicles
< 6 Km range	1 van (capacity each ~10-12)
6 Km – 10 Km	3 van (capacity each ~10-12)
10 Km – 15 Km	3 mini bus (capacity each ~30-35)
> 15 Km	2 bus (capacity each ~50-55)

Tabel 1 *(as of 2023 only)

Then To calculate number of vehicles needed for a specific range of distance we use this formulae:
T_s = Total Number of students of each distance category
V_c = Approx Vehicle capacity
V_n = Number of vehicles needed.

$$V_n = \frac{T_s}{V_c}$$

2.6 Finding the Transitions in stream

Transition has been occurred in each year. To find this we firstly calculate the number of students that has change stream. For this an excel formulae can be used:

```
=IF(OR(AND(R5="Science (Bio)",V5="BSc"),
       AND(R5="Science (Mathematics)",V5="BSc"),
       AND(R5="Science (Mathematics)",V5="BCA"),
       AND(R5="Commerce",V5="B.Com."),
       AND(R5="Humanities/Arts",V5="B.A.")), "1", "")
```

By this formulae it gives number of student who did not switch there stream. Then we use `=COUNTIF(AO5:AO14, "1")` formulae to find number of 1 (string) this give us total Number of student who did not did not change there stream.
T_{total} = Total Number of students across the year.
T_n = Total student who did not do any stream changes.
$P_{transition}$ = Percentage of student who did not do any

$$P_{transition} = \frac{T_n}{T_{total}} \text{ x } 100$$

For Detail Analysis:

Since, Science stream consists of BCA and BSc programs, Commerce stream consists of B.Com programs, Arts stream consists of B.A programs.
So for example to calculate transition in bio to arts it uses this excel

```
=IF(AND(Q5="Science (Bio)", U5="B.A."), "1", "")
```

Similarly done for other transitions like

- Science Bio to Commerce and Arts,
- Science Maths to Commerce and Arts,
- Commerce to Arts.

Then to calculate total no of students who didn't change their stream this process uses these formulae
For ex: to calculate no of student who have commerce in class 12th and took B.Comm. then we calculate them by:

```
=IF(AND(Q5="Commerce", U5="B.Com."), "1", "")
```

This same is apply for arts students also.

But for science to science this is different it is due to science stream consist of BCA with BSc and there are in total 2 types of science streams are present which are Science Bio and Science Maths.

So formulae is:

```
=IF(AND(OR(Q5="Science (Bio)", Q5="Science (Mathematics)"), OR(U5="Bsc", U5="BCA")), "1", "")
```

To count all the "1" we use `=COUNTIF(AO5:AO14, "1")` formulae.
Now to find the ratio process uses use this formulae

$$Transition\ Ratio = \frac{\sum(Bio\ to\ arts) + \sum(Bio\ to\ comm) + \sum(Math\ to\ arts) + \sum(mat\ \ to\ comm) + \sum(comm\ to\ arts)}{\sum(science\ to\ science) + \sum(comm\ to\ comm) + \sum(arts\ to\ arts)}$$

Also to finding the impact of transition on revenue.
For this process, we multiply total number of students (who did transition) with the actual fees and expected fees
For ex. total number of student who has science bio in class 12th and choose BA in 2021 are 80 students.
so the fee for BA is 19,200 INR and for BSc its 26,200 INR then
Now Revenue if these 80 students paid currently fee:
80 x 26,200 = 15,36,000
Expected Revenue if these 80 students of BSc or BCA then:

Stream (year)	Fees
BSc (2021)	(26200)

Table 2

*(For ex. demonstration we take Bsc Fees)

Now if those 80 student if took BSc or BCA then
80 x 26200 = 20,96,000 INR

This give a example table Actual Revenue vs Expected Revenue

Actual Revenue (in lakhs)	Expected Revenue (in lakhs)
15.36	20.96

Table 3

This same is apply on transition of other streams.
So for calculation this procedure uses the below table as avg fees for each stream the average fees is calculated by taking the average of 1st year fees of each stream across the year
So each stream average fees formulae for calculation is given below:
Science = (Bsc + BCA fees of all 3 years) ÷ 6
Commerce = B.Comm fees of all 3 years ÷ 3
Arts = B.A. fees of all 3 years ÷ 3
By this we get our average fees show below:

Science	32515
Commerce	21700
Arts	21140

Table 4

2.7 Analysis on Additional Data

Additional data that has been taken which has been explain in section 2.1 Financial Expenditure includes budget allotted by college management and expenditure overview
Since we know,
Profit = $Revenue - Total\ Expenditure$
We will calculate profit by using above formulae.

Then we get a table this.

Analysis	Year	Revenue (in INR Lakhs)	Expenditure (in Lakhs)	Profit (in Lakhs) = Revenue - Total Expenditure
	2021	440.42	159.74	280.68
	2022	378.31	126.81	251.51
	2023	321.99	120.73	201.26

Table 5

2.8 Finding the approximate percentage of total allotted budget on marketing.

From the given data an analysis has been conducted year-wise on total budget allotted, total expenditure, Remaining budget, spend on marketing.

Analysis on Marketing						
Analysis	Year	Total Budget Alloted (in Lakhs)	Total Expenditure (in Lakhs)	Remaining budget (in Lakhs)	Actual Spend on Marketing (in Lakhs)	Expected can spend on Marketing (in Lakhs)
	2021	170	159.74	10.26	7.2	17.46
	2022	140	126.81	13.19	6.3	19.49
	2023	135	120.73	14.27	5.4	16.67

Table 6

This table is created to calculate and find the remaining budget and budget spend on marketing.
In above table few things has been calculated.
Remaining Budget = $Total\ Budget\ Alloted - Total\ Expenditure$

Expected Spending
$= Remaining\ Budget + Actual\ Spend\ on\ marketing$

2.9 Finding the Average Family income:

To From Admission Data the average family income has been calculated Using formulae

Avg Income = $\frac{Sum\ of\ family\ income\ of\ all\ students}{Total\ Number\ of\ students}$

3. Result and Findings:

3.1 Gender Analysis on Number of admission:

As explained in point 2.2 to calculate the number of male and female admission for over the year. A graph is drawn.

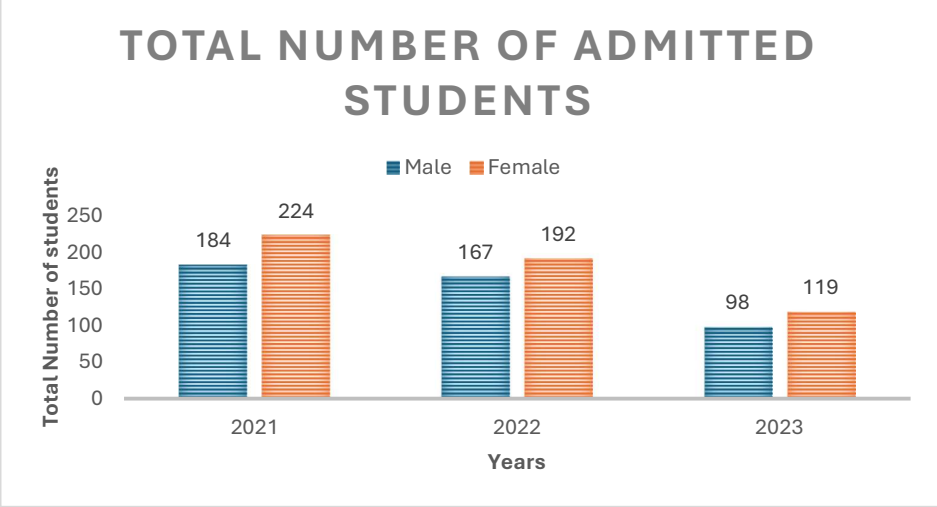


Fig 1

This graph clearly shows the number of admissions are continuously decreasing specially the number of male students is decreasing each year. This creates a gender mis-balance and it creating a significant impact on number of admissions.

3.2 Gender-wise Participation in Pre-Qualifying Tests:

From point 2.3 a table is has been create which has been show in Additional analysis result excel file and from that table the below graph is drawn.

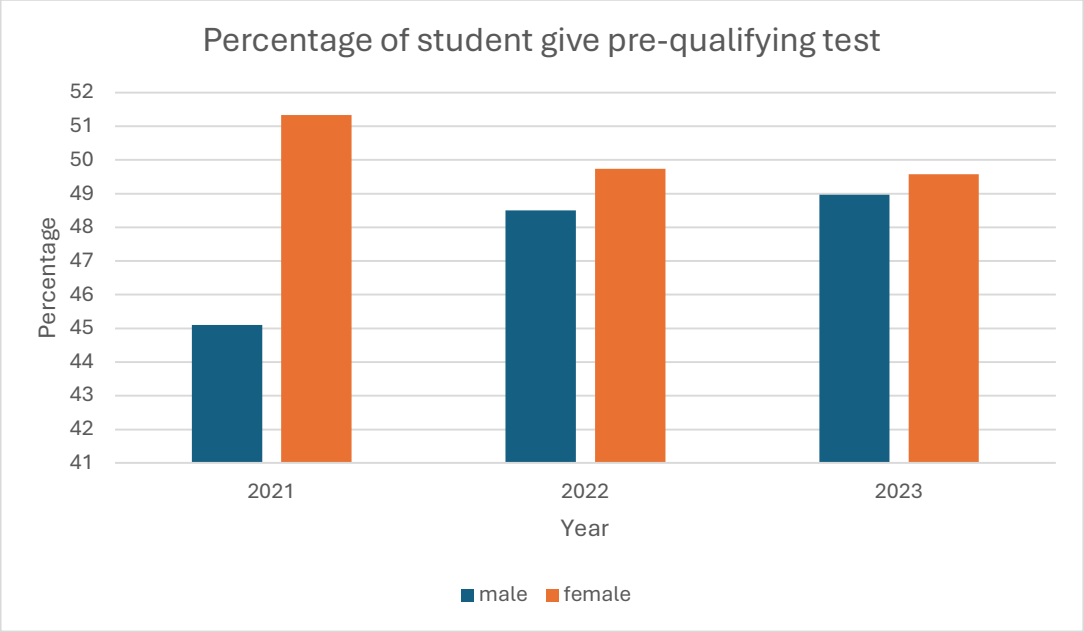


Fig 2

Some group of students consistently outperformed other group in pre-qualifying test over the three years. This presents a clear and strong opportunity to design a test -based strategies for attracting focused, merit driven students.

This graph compares the percentage of male and female who gave pre - qualifying tests in 2021, 2022 and 2023 Each year male participation is rates exceed by 3-5 % with the widest gap observed in 2021-2022.
This interpretation shows female students appear more responsive to formal assessments and shows stronger academic engagement. But it has been declining year on year which indicates some progressive and positive environment needs to be create. This makes them better candidates for test linked admission model or scholarship filters

3.3 UG Programme Preference Trend:

From the method 2.3 a table has been create and shown below from which it is observe that the number of admission in each degree in single admission year and from below table a graph has been created.

Year	BSc	BCA	B.Comm	B.A.
2021	91	41	139	135
2022	76	35	124	121
2023	78	19	71	79

Table 7

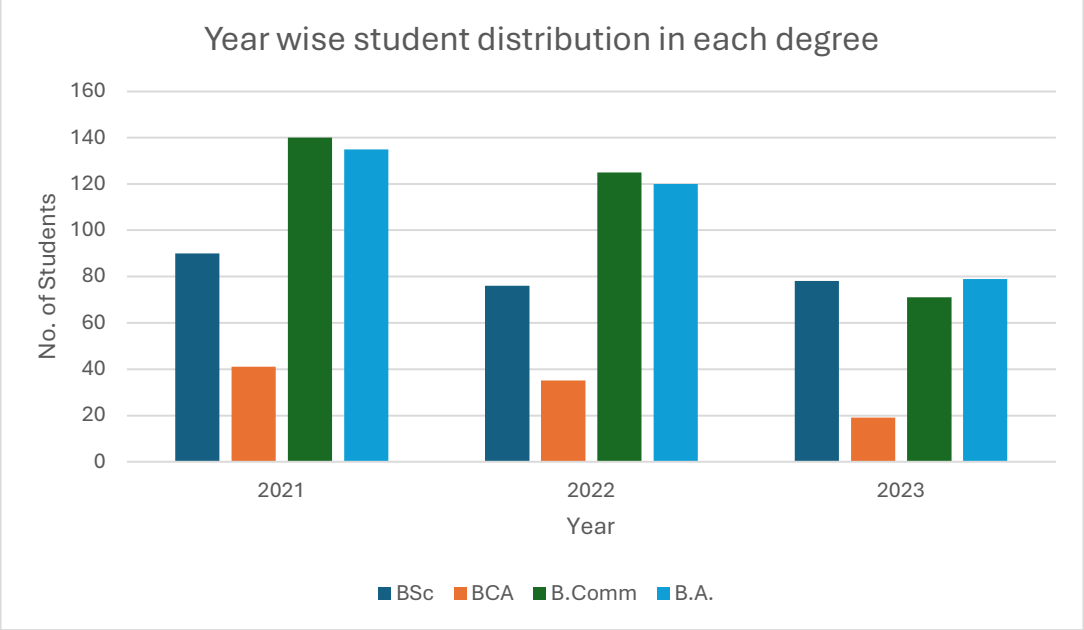


Fig 3

From the above chart it is clearly seen that BSc degree is at a nearly saturated stage, and some degree like BA and B.Comm are start to becoming less preferred program.

In BCA program are around to continuous to fall over the year.

Admission data shows student prefers Arts and Commerce programs over Science – based ones, despite national trends favouring technical and job oriented degrees. This mismatch signals a gap in program perception and promotion.

- This chart compares enrolment in each UG program from 2021 to 2023. BA consistently leads in number, followed by B.Comm, with BSc and BCA are trailing significantly.
- Despite growing market demands for tech and life science professionals, students opt for BA and BCom due to perceived ease, low risk, and lack of program visibility in Science streams.

- There is a disconnection between actual market value and student perception. Arts programs are over selected despite offering fewer job outcomes. Science programs are under selected due to awareness gaps and outdated course content.
- Arts program yields lower average revenue and placement results.
- Science program under-enrolment reduces the college's competitiveness in tech sector.
- Lack of balance in program mix weakens branding and career trust.

3.4 Distance from student house to college:

From the admission data, a table has been created which show about the transport facility provided by college.

Year	< 6 Km	6 Km – 10 Km	10 Km – 15 Km	> 15 Km
2021	75	60	76	185
2022	61	46	67	173
2023	34	29	47	103

Table 8

From table 8 it is clearly show majority of student came daily college by far distance which is more than 15 km.

From the method 2.5 and table 1, and new table (table 9) is created

Distance	Actual Vehicles	Expected Vehicles
< 6 Km	1 van	7 vans
6 Km – 10 Km	3 van	6 vans
10 Km – 15 Km	3 mini bus	5 mini buses
> 15 Km	2 bus	8 buses

Table 9

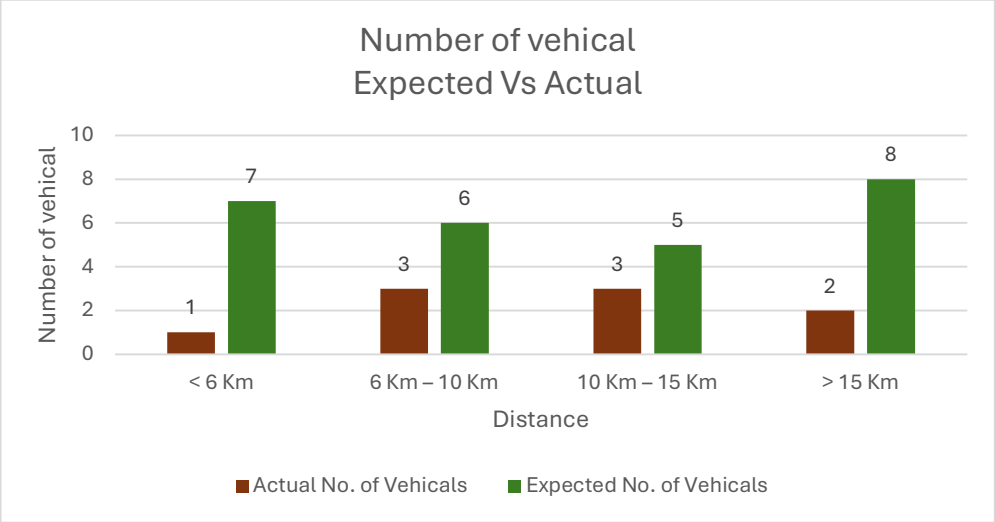


Fig 4

From table 9 and fig 4 it is clearly seen too many vehicle are needed to fulfil the requirement of transportation.

College either can create the arrangement of hostel facility or hire more transport vehicles.

3.5 Stream Switching: The Hidden Failure

As the method explain point 2.6 by which an analysis table has been created which shows the number of students who did not change there stream

Year	Total no. of student who did not change there stream
2021	275
2022	237
2023	134

Table 10

From table 10 and method 2.2 by which gives total number of students has been calculate, a graph has been plotted to visualise the percentage of transition in each year.

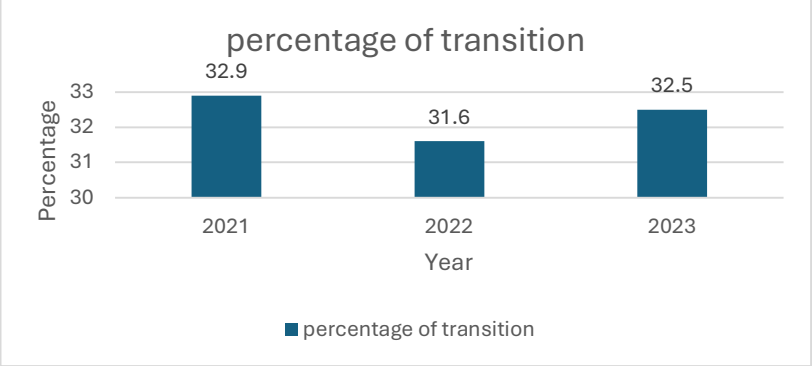


Fig 5

From data points of fig 5 and one more calculation has been done to find the average percentage of transition, and below graph shows the Avg. percentage of transition of all the years.

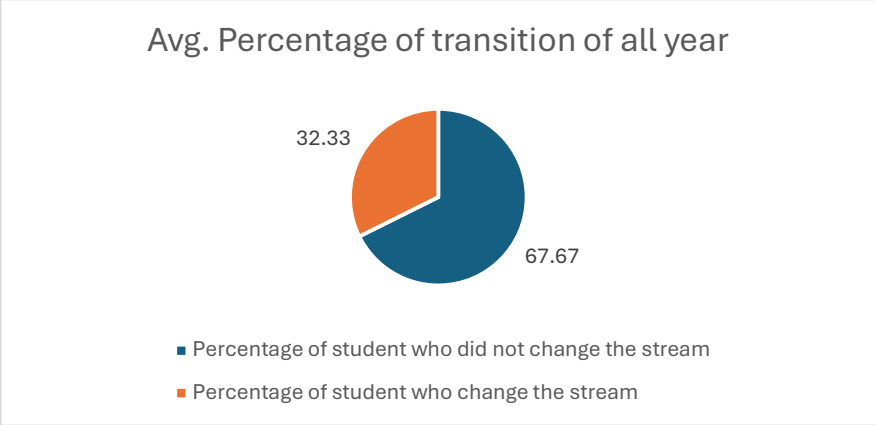


Fig 6

From the detail analysis which has been explained in method 2.6 a table has been created and shown in additional analysis excel file.
The below graph shows total number of student across the year who changes there stream.
A significant portion of student switch from science to arts or commerce after class XII revealing a critical gap between student expectation and the college academic offering.

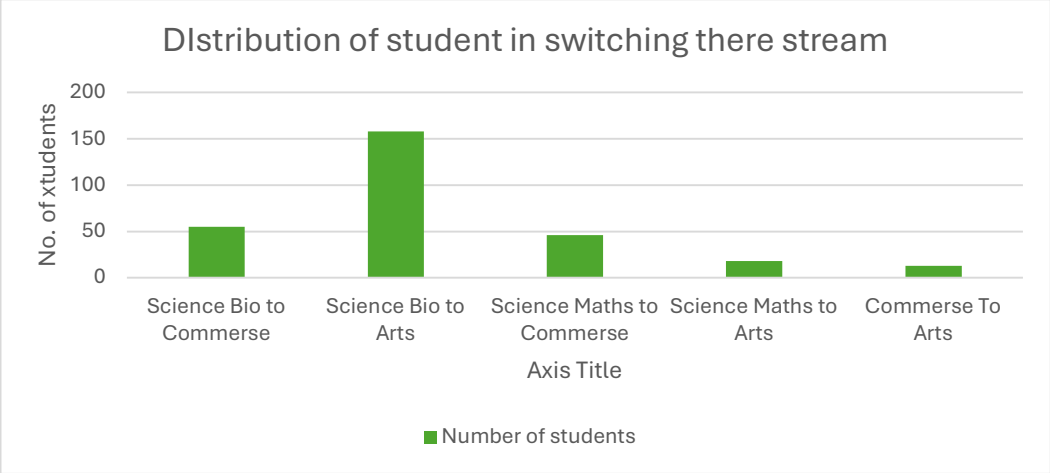


Fig 7

From method 2.6, aim also was to identify the revenue impact on number of admission, for this analysis has been done in analysis excel file and from that table the fig 8 has been shown.

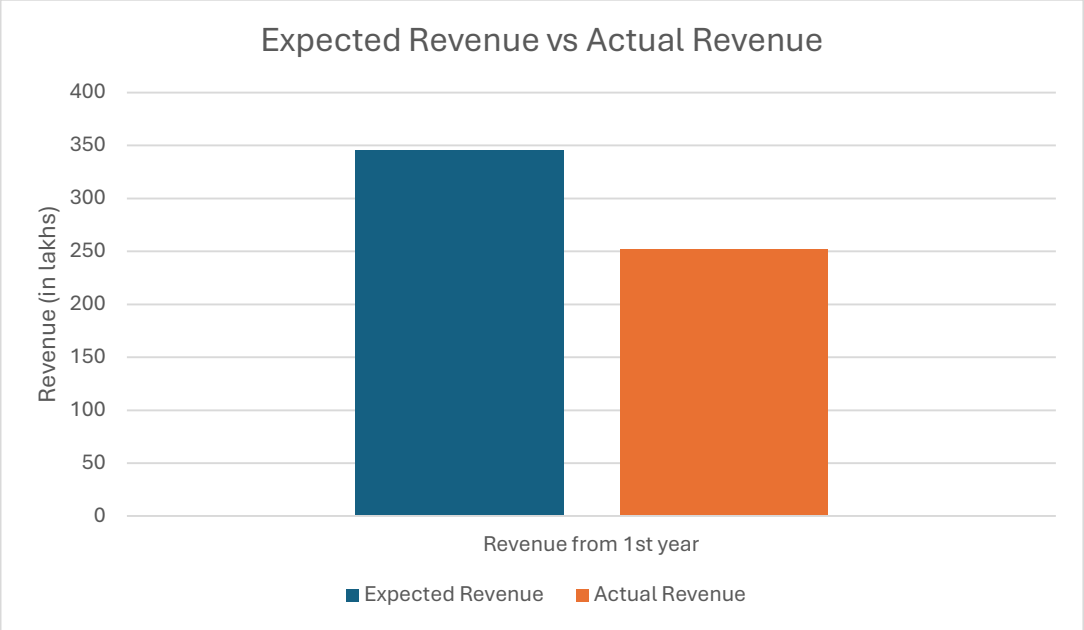


Fig 8

- These visual graphs student transitions from their Class XII stream (Science Bio, Science Math, Commerce, Arts) to their chosen UG program (BA, BCom, BSc, BCA). The highest volume of transitions occurs from Science streams to BA.
- Science students are not seeing value in continuing with their domain at Aishwarya College. This suggests that the UG offerings are either outdated, lack lab facilities, or don't align with student goals.
- Such switches are not due to aptitude mismatch but systemic failure in course positioning and marketing. Students downgrade their academic track due to unavailability of compelling science-aligned programs.
- From fig 8 it is clearly seen that transition has been affected in revenue. There is an approx. 1 cr revenue loss can be seen, which is a concerning for college.
- These zones clearly highlight high-error transitions like Bio → BA, B.Comm and Math → BCom.
- High transition rates reduce confidence in program quality and lead to unintentional "stream dilution," where students abandon their original academic strengths

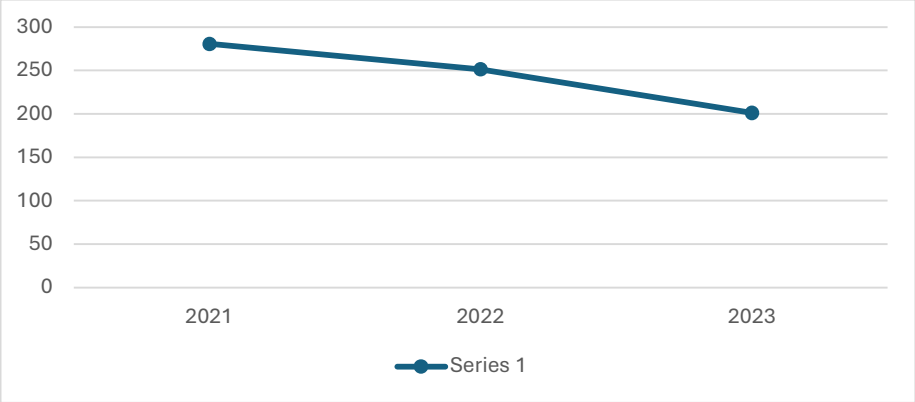
$$Transition\ Rate \propto \left[\frac{1}{Admission\ Rate} = \frac{1}{Revenue}\right]$$

- Stream switching negatively impact admissions. It is inversely related to revenue.
- It creates a perception that the college has lack of strong science offerings.

- It causes loss of high – fee, lab based students
- It limits future placement potential and trust among schools.

3.6 Year on Year Profit Analysis:

Profits of Aishwariya college has been decreased gradually from 2021 to 2023. This trend, though negative, reflects missed potential due to unresolved structural issues.

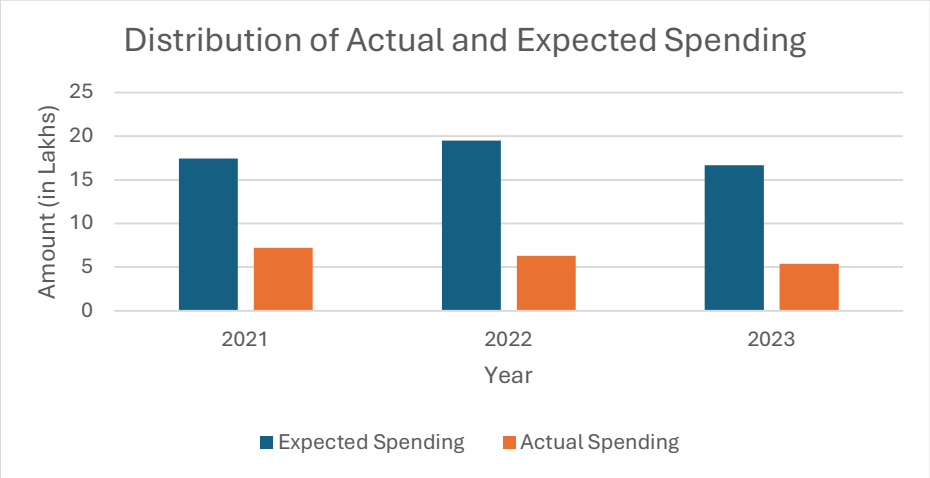


- The curve in 2023 indicates number of admission is going decrease year on year.
- The college's grows is over reliant on one -two streams. Without balanced stream contribution, year on year growth will eventually decrease, as interested student in a single stream exhaust.

3.7 Unconditional Aspects:

3.7.1 Expenditure on marketing Analysis:

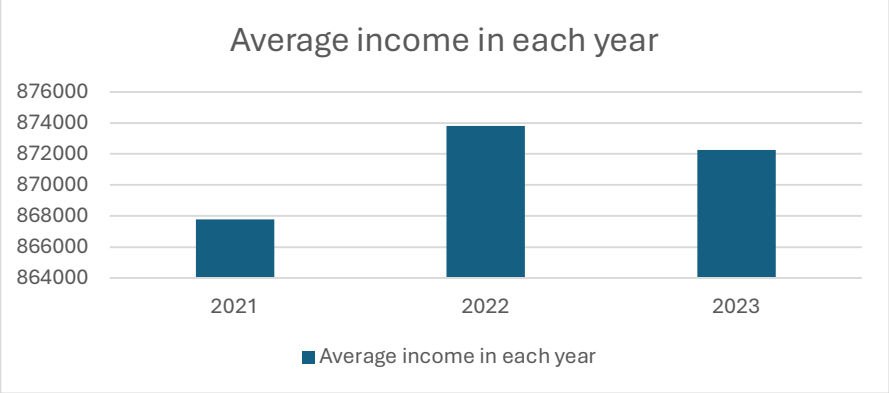
From method 2.8 and table 6 the below graph has been constructed show expected spend and actual spend on marketing



This shows graph clearly shows that expected spending can be done on marketing to attract more student. Since from table 6 it is clearly seen that average of 10 lakhs amount is remaining every year and which can be used in marketing.

3.7.2 Average income of student household:

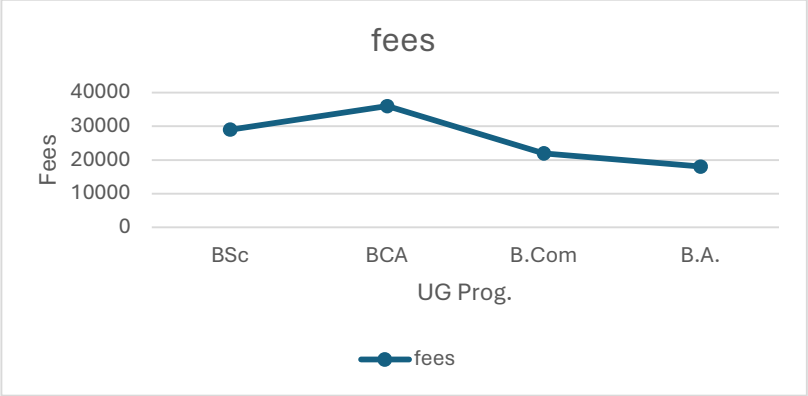
From the method 2.9, the average income of students can be calculated from this



From this it can be clearly observer that each average income of student is around 8 lakhs per annum. So for them either scholarship test can be introduce.

3.7.3 Fee structure analysis:

Stream transition from higher fee science program to lower fee arts or commerce courses lead to direct revenue loss. Each switch represents a missed opportunity to maximize program profitability and institutional growth.



- This chart compares the tuition fee of each program (BSc, BCA, BA, BCom) against the number of enrolled students. Science programs have higher fees but lower enrolments due to switching.
- The institution's most valuable programs (by fee structure and lab facilities) are underutilized. Stream switching effectively drives students away from revenue-generating academic tracks
- Every Science → Arts switch leads to a per-student revenue drop of ~₹20,000 or more. With 40–50 such switches per year, losses can exceed ₹1 crore over three years.
- Institutional revenue is over-dependent on BA and BCom, which have lower margins. This threatens sustainability and limits investment in infrastructure or faculty development

4. Results and Recommendation:

4.1 Interpretation of Key Finding

4.1.1 Stream switching Indicates Systemic Gaps: From result 3.5, it can been observe that considerable number of students who pursued Science in Class XII switched to BA or BCom programs. This indicates either a lack of interest-aligned options or unawareness of available science programs at the college.

4.1.2 Preference for Non-Science Programs: From result 3.3 it can be observed that Most students prefer BA and BCom programs, likely due to familiarity, low tuition, or lower academic difficulty. Programs like BSc and BCA, despite higher market demand, are under-enrolled

4.1.3 Student transport facility: it can be clearly observe from point 3.4 that student has to manage there own transport facility. Since this may impact on number of admission

4.1.4 Revenue Impact of Stream Switching: From 3.5 and 3.6 it can be clearly observe that Transition from Science to Arts results in a significant reduction in per-student revenue. The college loses nearly ₹1 Cr annually due to program downgrades

4.1.5 Admission Growth Trend with Saturation Risk: From 3.1 it can be clearly seen that While overall admissions have downing from 2021 to 2023, growth rate slowed in 2023. Without program diversity or strategic engagement, future growth may plateau ram downgrades. And from 3.2 and 3.3, 50% percentage of number of student has been interested giving test and there is need to introduce the scholarship test and there is need of awareness in degrees like BCA.

4.2 Strategic Recommendations

4.2.1 Academic Realignment and Program Innovation

4.2.1.1 Introduce Career-Oriented Programs: Launch modern UG programs aligned with job markets (e.g., Data Science, Biotechnology, AI & Ethics, Environmental Sciences).

4.2.1.2 Modular Course Design: Allow flexible combinations like BSc with Management or BCA with Digital Marketing to attract cross-stream interest.

4.2.1.3 Skill Certifications: Include optional micro-certifications from platforms like Coursera or NSDC embedded within degree programs.

4.2.2 Stream Switching Prevention and Early Guidance

4.2.2.1 Mandatory Career Counselling: Conduct program-specific counseling sessions during the admission window to help students retain their Class XII stream.

4.2.2.2 Pre-Admission Interest Mapping: Use a short questionnaire to guide students based on aptitude and interests.

4.2.2.3 Bridge Courses: Offer orientation courses to help students adapt to Science or Tech programs if they feel underprepared.

4.2.3 Admission Process Enhancement

4.2.3.1 Scholarship Test Launch: Introduce a Pre-Admission Scholarship Test modeled after NEET/JEE to capture high-potential applicants early.

4.2.3.2 **Incentive for Participation**: Offer application fee waiver or reserved counseling slots to test participants.

4.2.3.3 **Automated Communication Flow**: Use WhatsApp/email campaigns to engage inquiries with updates, program guides, and FAQs.

4.2.4 Marketing and Brand Development

4.2.4.1 **Success Story Integration**: Publish alumni placement stories (especially BCA/BSc students) on website and brochures.

4.2.4.2 **Parent-Specific Materials**: Create a separate booklet for parents explaining program ROI, safety, and faculty quality.

4.2.4.3 **School Partnership Drive**: Assign outreach officers to local schools for recurring presentations and pre-admission workshops.

4.2.5 Financial Strategy and Revenue Retention

4.2.5.1 **Targeted Discounts for Science Programs**: Offer merit-based tuition waivers to Science students likely to switch to Arts.

4.2.5.2 **Cross-Subsidy Modelling**: Use surplus from high-volume Arts programs to enhance labs and faculty hiring in Science/BCA.

4.2.5.3 **Batch Size Restructuring**: Reduce batch size for low-demand programs and increase seats for BCA/BSc where conversion is likely with minimal investment.

4.2.6 Enhancing Post-Admission Retention

4.2.6.1 **Continuous Engagement**: Conduct monthly webinars on career planning, entrepreneurship, and placement preparation.

4.2.6.2 **Institutional Identity Building**: Create a unified student portal and branded college app for communication, class updates, and learning resources.

5. Conclusion:

This capstone project provided a comprehensive, data-driven examination of the admission dynamics at Aishwarya College, focusing on patterns, inefficiencies, and strategic opportunities within the current UG admission framework. Drawing from three years of structured admission data, the analysis highlighted several key insights that can directly influence future admission growth, academic alignment, and institutional revenue.

One of the most critical findings was the high rate of stream switching, particularly from Science (Bio or Math) to Arts and Commerce. This transition not only represents a systemic misalignment between student expectations and college offerings but also results in significant financial losses due to lower program fees in non-science courses. The institution's over-reliance on Arts programs, while stable in volume, limits its reach among career-focused students and lowers long-term growth potential.

The recommendations provided in this report—including program innovation, scholarship-based admissions, gender-targeted marketing, and financial realignment—are designed not only to resolve the identified gaps but also to position Aishwarya College as a future-ready institution. If implemented strategically, these changes will not only increase admission volume and quality but also significantly boost revenue and institutional reputation in the highly competitive undergraduate education landscape.

G-Drive URL : All the data and all excel files are present in below folder
https://drive.google.com/drive/folders/1DBhQag9xHDa3PACpay6AqaMy0sePSgg_?usp=drive_link

* Admission analysis is done within the admission data file only and rest analysis has been done in another file present in the folder only