Progressive Education Society's

Modern College of Arts, Science and Commerce, (Autonomous)

Shivajinagar, Pune – 411005.

DEPARTMENT OF STATISTICS
Academic Year 2024-2025

OJT PROJET REPORT

"MULTIVARIATE EXPERIMENTS DRIVEN PRODUCT STRATEGY OPTIMIZATION FOR BANKING PRODUCTS IN THE REGION OF SHIVAJINAGAR (PUNE) ACROSS DIFFERENT DEMOGRAPHICS"

Submitted by

Name: Kiran Vishnu Sanap

Class: M.Sc.-I (Statistics)

Roll No.: 2433303

Date of Submission: 17 June 2024

On Job Training Completion Certificate

This is to confirm that the student from Progressive Education Society's Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 5, **Miss. Kiran Vishnu Sanap** of Class **MSc-I** Division **A** having roll number **2433303** has successfully completed the On Job Training in the Subject/Course Name 'On Job Training' prescribed for Semester II of the academic year **2024-2025**.

The duration of the On Job Training for **Miss. Kiran Vishnu Sanap** in our organization was from **5 May** to **10 June**. she has worked **4** hours per day.

Her performance during the On Job Training in our Organization was Excellent / Good / Satisfactory / unsatisfactory. We are relieving her on date **10 June** after her office hours.

We wish her all the best for her future endeavours.

Mr. Santosh Dnyaneshwar Awasarkar.

(PURSULLENCE GLOBAL BUSINESS SOLUTIONS LLP, INDIA)

DEPARTMENT OF STATISTICS

OJT Project Certificate

This is to certify that **Miss Kiran Vishnu Sanap** Roll No. **2433303** has successfully completed the OJT Project in **PURSULLENCE GLOBAL BUSINESS SOLUTIONS LLP, INDIA** towards the partial fulfillment of the **M.Sc. Statistics** curriculum during the academic year 2024 - 2025. The OJT is completed in the duration 5 May to 10 June.

Internal Mentor   **PG Coordinator**   **Head of the Dept**

Date: 18 June 2024.

Place: Modern college, Pune

Department of Industrial Policy & Promotion (DIPP), Ministry of Commerce and Industry, Govt. Of India Recognized Start-Up ID #DIPP7603

Acceptance Letter for On Job Training

This is to confirm that we, the **PURSULLENCE GLOBAL BUSINESS SOLUTIONS LLP, INDIA** accept the application received from the student of from Progressive Education Society's Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 5, **Miss Kiran Vishnu Sanap** of Class **MSc-I** Division **A** having roll number **2433303**.

The duration of the On Job Training for **Miss Kiran Vishnu Sanap** in our organization will be from **5 May** to **10 June**. He will work for 4 hours per day to complete the total of 120 hours.

Her performance during the On Job Training in our Organization will be monitored and the attendance will be maintained.

The point of contact from our organization for the student progress is **Mr. Santosh Awasarkar**.

Mr. Santosh Dnyaneshwar Awasarkar.

(PURSULLENCE GLOBAL BUSINESS SOLUTIONS LLP, INDIA)

Acknowledgement

I express my heartfelt gratitude to Prof. Dr. Rajendra Zunjarrao, Principal of our college, for granting me permission to utilize the institutional facilities and resources essential for the successful execution of my project.

I am deeply thankful to Dr. Manisha Sane, Head of the Department of Statistics, along with all the teaching faculty and non-teaching staff, for their continuous support, encouragement, and assistance throughout the duration of my work.

A special note of appreciation goes to my project guide, Mr. Santosh Awasarkar, whose valuable guidance, constant encouragement, and insightful supervision played a crucial role in the completion of my project.

I also extend my sincere thanks to the lab assistants, whose cooperation and technical support greatly contributed to my progress.

My heartfelt thanks to my classmates for their collaborative spirit and meaningful discussions, which helped me shape and enhance my ideas. I also acknowledge those individuals who supported me behind the scenes — their indirect contributions have been significant, and I am truly grateful to them.

Progressive Education Society's

MODERN COLLEGE OF ARTS, SCIENCE & COMMERCE
(AUTONOMOUS) SHIVAJINAGAR, PUNE – 411005

Attendance Sheet

Name of the student: Kiran Vishnu Sanap

Class: M.Sc.-I (Statistics)   **Div:** A

Name of the company/ Institute: PURSULLENCE GLOBAL BUSINESS SOLUTIONS LLP, INDIA.

	Date	Time in	Time out	Sign of Student	Sign of external supervisor	Remark
1	5 May	10 AM	2 PM			
2	6 May	10 AM	2 PM			
3	7 May	10 AM	2 PM			
4	8 May	10 AM	2 PM			
5	9 May	10 AM	2 PM			
6	10 May	10 AM	2 PM			
7	12 May	10 AM	2PM			
8	13 May	10 AM	2 PM			
9	14 May	10 AM	2 PM			
10	15 May	10 AM	2 PM			
11	16 May	10 AM	2 PM			
12	17 May	10 AM	2 PM			
13	19 May	10 AM	2 PM			
14	20 May	10 AM	2 PM			
15	21 May	10 AM	2 PM			
16	22 May	10 AM	2 PM			
17	23 May	10 AM	2 PM			
18	24 May	10 AM	2 PM			
19	26 May	10 AM	2 PM			
20	27 May	10 AM	2 PM			
21	28 May	10 AM	2 PM			
22	29 May	10 AM	2 PM			
23	30 May	10 AM	2 PM			
24	31 May	10 AM	2 PM			
25	2 June	10 AM	2 PM			
26	3 June	10 AM	2 PM			
27	4 June	10 AM	2 PM			
28	5 June	10 AM	2 PM			
29	6 June	10 AM	2 PM			
30	7 June	10 AM	2 PM			
31	9 June	10 AM	2 PM			
32	10 June	10 AM	2 PM			

Index

Introduction

India's banking sector stands as a pillar of the nation's economic progress, playing a vital role in mobilizing capital, expanding credit access, and driving financial inclusion. As per the Reserve Bank of India (RBI), India's banking sector is sufficiently capitalized and well-regulated. The financial and economic conditions in the country are far superior to any other country in the world.

This report presents a detailed study conducted under the Business Experiments & Analytics framework, focusing on the Fixed Deposit (FD) product in the Indian banking sector. The banking industry plays a crucial role in the financial system by offering a wide range of products and services to both individuals and businesses. Among these, Fixed Deposits (FDs) continue to be a preferred investment option due to their safety, reliability, and assured returns.

However, in recent times, one of the leading banks in India—well known for its strong customer satisfaction across services—has experienced a decline in customer ratings specifically for its FD products over the last two quarters. This trend appears to be driven by growing competition in the financial market and a noticeable shift in customer preferences toward mutual funds and other investment avenues.

To address this challenge, there is a need to redesign and reposition FD products in a way that better aligns with customer expectations. This is where Business Experiments and Analytics becomes essential. It involves using data-driven methods to gain meaningful insights that support informed decision-making and strategic improvements.

The primary objective of this project is to analyze the current performance of FD products, understand customer behavior, and explore ways to enhance customer satisfaction and market competitiveness. By applying data analytics techniques and conducting business experiments, this study aims to uncover actionable insights that can guide product optimization and promotional strategies.

To structure this approach, the project utilizes the DMADV framework from Lean Six Sigma methodology. This structured model includes the following five phases:

Define – Identifying the problem and setting clear project goals.

Measure – Gathering relevant data on key performance indicators.

Analyze – Exploring the underlying factors influencing customer preferences and satisfaction.

Design – Developing data-informed strategies to improve the FD product and its positioning.

Validate – Testing and confirming the effectiveness of these strategies through business experiments.

By following the DMADV framework, this project aims to offer data-driven solutions to enhance the FD product experience, regain customer trust, and strengthen the bank's competitive position in the evolving financial landscape.

Objectives

The Objective of this project are as follows:

- To understand what customers like, how they behave, and how they make decisions by using data collected through conjoint analysis.

- To study customer feedback and data gathered from a business experiment focused on a specific group of people.

- To find out how different features of the FD product affect customer choices.

- To see how different FD product offerings influence customer preferences.

- To help improve the bank's business strategies and decision-making.

- To analyse why customer satisfaction with the bank's FD products has gone down.

- To create practical solutions for improving the FD product and increasing customer interest.

- To use business experiments and data analysis to discover the main reasons behind the drop in customer satisfaction and suggest ways to improve it.

Work Done Chart

Problem Defining- 1 hour

Brainstorming – 4 hours

Preparation of Conjoint Questionnaire – 12 hours

Data collection of measure phase -56 hours

Data entry in the tool – 2 hours

Analysis and Interpretations- 6 hours

New offer selection – 1 hour

Validation questionnaire – 2 hours

Data collection of validation phase – 34 hours

Data entry of validation phase- 1 hour

Final conclusion (Validation performance) – 1hour

Total Time: 120 hours

Conceptual Background

➢ **Business Experiment & Analytics:**

Business Experiment and Analytics play an important role in helping companies make smarter decisions, bring new ideas to life, and stay ahead in a competitive market.

Business Experiments are about testing new ideas or changes—like a new product, service, or process on a small scale before applying them fully. This helps businesses see what works and what doesn't, so they can avoid mistakes and reduce risk. The goal is to:

* Try out new ideas or improve existing ones,
* Learn how changes affect results,
* Make better decisions with less risk.

Business Analytics means studying data to understand how the business is doing, spot patterns or problems, and plan better for the future. The goal of analytics is to:

* Understand past performance,
* Find trends and insights,
* Make smarter decisions for both daily operations and long-term planning,
* Predict future outcomes.

Together, experiments and analytics help businesses grow, improve their services, and make more confident, data-based decisions.

➢ **Lean Six Sigma (DMADV):**

Lean Six Sigma is a method used to improve business performance by identifying problems, analyzing them, and creating better strategies based on data. In this project, we use the DMADV framework—which stands for Define, Measure, Analyze, Design, and Validate—to study and improve a product (Fixed Deposit) based on customer preferences.

1) Define Phase

* Identify the main problem (e.g., drop in customer satisfaction or sales).
* Understand how the current product is performing and compare it to industry standards.
* Set clear goals for how much you want to improve.

2) Measure Phase

* Use brainstorming to list all features of the product or service.
* Pick the top 5 most important features from the customer's point of view.
* Come up with new, cost-effective, and easy-to-implement offers for each feature.
* Use experimental design to create combinations of current and new offers.
* These combinations are generated mathematically using the formula L^F (L = levels of options, F = number of features).
* Create a conjoint analysis questionnaire using these combinations.
* Collect customer responses using this questionnaire.

4

3) Analyze Phase

- Use statistical tools to find out which features and offers matter most to customers.
- The software will analyze your data and show results in tables and graphs.
- Key terms:
- P-value tells you how important or risky a feature is.
- Slope coefficient shows which offer is preferred most.
- Based on this, you can choose the best combination of features and offers.

4) Design Phase

- Finalize the most preferred combination of features and offers.
- Create a new questionnaire using these final combinations.
- Collect customer feedback again using this improved version.
- Organize responses into two categories: Compliance (positive) and Non-compliance (negative).

5) Validate Phase

- Compare how many people accepted (Compliance) vs. rejected (Non-compliance) the final product.
- Add all responses into the software tool.
- The system will automatically show:
- P-value (lower is better),
- DPMO (Defects per million),
- Sigma Value (quality level),
- A graph comparing actual results to the target.
- A low p-value means the product changes are successful and preferred by most customers.

Learning During the On Job Training

During the On-Job Training (OJT) in Business Experiments and Analytics, I was exposed to real-world business scenarios that helped bridge the gap between theoretical knowledge and actual industry practices. This hands-on experience strengthened my understanding of how data-driven decisions are made and applied in solving real business problems. Here are the important lessons and skills I gained:

1. Defining Clear Business Goal

- Understood the importance of setting well-defined objectives before starting any analysis.
- Learned how to frame precise business problems and develop testable hypotheses for experiments.

2. Designing Structured Experiments

- Gained experience in planning experiments using tools like brainstorming, ideation, and prioritization techniques.
- Understood how to identify key product features and customer-centric offers to be tested.

3. Practical Exposure to Data Collection

- Learned how to build effective conjoint analysis questionnaires and deploy them for meaningful data collection.
- Understood how to handle data integrity and ensure quality in the responses collected.

4. Hands-On Data Analysis

- Acquired skills in interpreting statistical outputs such as p-values, t-statistics, and slope coefficients.
- Understood how to identify statistically significant factors that influence customer preferences

5. Using Industry Tools

- Gained working knowledge of tools like Microsoft Excel and Pursullence's Analytical Software to design experiments, analyse data, and generate visual insights.
- Developed confidence in using dashboards and interpreting analytical models.

6. Applying Lean Six Sigma DMADV Framework

- Experienced the full application of the DMADV methodology (Define, Measure, Analyse, Design, Validate) in business analytics setting.
- Learned how structured frameworks can be used for continuous product or service improvement.

7. Time and Project Management

- Developed better time management and prioritization skills while meeting deadlines and delivering results under a structured timeline.
- Learned how to manage tasks independently and in coordination with team members.

8. Effective Business Communication

- Enhanced skills in preparing professional reports and presenting insights clearly to stakeholders.
- Learned the importance of storytelling with data—turning numbers into business recommendations.

9. Teamwork and Collaboration

- Experienced working in a collaborative environment, contributing ideas, and learning from peers and mentors.
- Understood the value of cross-functional collaboration in achieving successful project outcomes.

10. Decision-Making Based on Insights

- Learned how businesses use analytics not just to understand what is happening, but to make informed, forward-looking decisions.
- Understood how insights from experiments can shape strategies in product design, marketing, and customer engagement.

Benefits of the On Job Training

On-the-job training (OJT) is one of the best ways to learn by doing. It helped us gain real experience, apply our knowledge, and grow professionally. Here are the main benefits we experienced:

- Real-World Experience

We got the chance to work on actual tasks and projects, which helped us understand how things work in a real business environment.

- Improved Job Skills

OJT helped us build and improve specific skills related to business experiments and analytics, such as data collection, analysis, and reporting.

- Better Problem-Solving

We learned how to think quickly and solve real-time problems that come up during projects, which made us more resourceful.

- Learning from Mentors

We received helpful guidance and tips from experienced mentors and team members, which improved our understanding and confidence.

- Stronger Communication & Teamwork

By working with others, we improved our ability to communicate clearly, share ideas, and work effectively in a team.

- Boosted Confidence

Hands-on experience gave us the confidence to handle tasks independently and make informed decisions.

- Adaptability

We learned how to handle different challenges and adjust to changing situations, just like in real work life.

- Time Management

Working on deadlines during OJT taught us how to manage time efficiently and stay organized.

- Career Readiness

The skills, exposure, and learning from OJT prepared us better for future job roles in the business and analytics fields.

Project Methodology

To solve the problem of declining Fixed Deposit (FD) customer satisfaction and improve product preference, we used the Lean Six Sigma approach with the DMADV framework. This method helped us plan and conduct a business experiment in a structured way. Here, we used Lean Six Sigma tool which involves DMADV Phases (Define, Measure, Analyze, Design & Validate Phase)

1) Define Phase – Identify the Problem

- The bank observed that customer satisfaction for its FD products has dropped in the last two quarters.

- Other banking services still have high ratings.

- The drop may be due to increased competition and customers preferring mutual funds or other investment options.

- The goal is to redesign the FD product to make it more appealing and improve customer satisfaction.

2) Measure Phase – Understand Key Features : Measure Phase involves measure input features or root causes that impact the problem.

- Group of experienced bank officials- Branch Manager, Asst. managers and experienced bank employees from FD division came up with the features they are providing to customers currently and the new features they can provides to the customers are as follows:

Sr.No	NO. FO FEATURES / FACTORS OF FD SCHEMES AT CICIC	CURRENT OFFER	CHALLENGER
1	Deposit Term & Interest rate	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
2	Minimum Deposit Amount Allowed	Rs.10, 000 /-	Rs.15, 000 /-
3	Interest Payment Frequency	Monthly interest payments	Quarterly interest payments
4	Early Withdrawal Penalty	0.5% of the principal amount	1% of the principal amount
5	Account Access	Online access and management	Phone-based customer service and support
6	Renewal Options	Automatic renewal at maturity	Option to renew and add additional funds at maturity
7	Add Up Services with FDs	Overdraft facilities	Option to take a loan against the fixed deposit
8	Loyalty Offers and Benefits	Loyalty rewards or bonus interest rates	Discounts on bank's other services

- To design attractive FD scheme with customer favoring features and thus increase customer satisfaction ratings & conversion rate for bank.
- Group members need to discuss & prioritize 5 possibly most attractive features based on regular customer feedbacks, competitor's features and their own experience

- During Brain Stroming Session, from the list of possible new offerings of each feature, group members had found out '5 best' possible new offering that they assume is better than current offering, that customers may find 'Attractive', at the same time 'Easy to Implement' & 'Cost Effective' to their Company or Bank. Hence, after Brain Stroming Session, 5 best possible features and offers are as shown below:

#	DENOTATION	FEATURES	LEVEL1	LEVEL 2
1	A	Deposit Term & Interest rate	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
2	B	Minimum Deposit Amount Allowed	Rs.10, 000 /-	Rs.15, 000 /-
3	C	Account Access	Online access and management	Phone-based customer service and support
4	D	Renewal Options	Automatic renewal at maturity	Option to renew and add additional funds at maturity
5	E	Add Up Services with FDs	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit	Option to take a loan upt o 110% against the fixed deposit

- 5 features, each with 2 levels (offers) were finalized based on what is attractive, cost-effective, and easy to implement.
- Total combinations using the formula L^F (2^5) = 32 combinations were generated.
- These were replicated 10 times for accuracy → 320 combinations.
- Using Pursullence's Analytics Software, the combinations were generated and converted into questionnaires (4 questions each).
- This gave 80 questionnaires, and data was collected from 80 customers using rating-based conjoint analysis. So, Sample Measure Phase Conjoint Questionnaire are as follows:

3) Analyse Phase – Find What Works Best

- Data collected was fed into the software, which analysed it and generated tables & graphs.

- We reviewed statistical values like:

    Slope coefficient – shows which offers are most preferred

    P-value – indicates how significant each feature is

- Based on this analysis, we selected the optimum offers across the 5 features.

4) Design Phase – Create Best FD Offer

- From the analysis, we created a new, optimized FD product by selecting the best offer for each feature.

- We built a new questionnaire where customers rated each offer between 0 to 10:

    0 means Definitely NOT willing to invest in Scheme B over Scheme A

    10 means Definitely YES willing to invest in Scheme B over Scheme A

- We collected data from 100 customers to see how many preferred the new design.

- Responses were categorized as:

    Compliance (1) = Supports new offer

    Non-compliance (0) = Does not support new offer

5) Validate Phase – Confirm the Strategy

- Purpose: To validate if the new product design is truly preferred by customers.

- We used a 1-Proportion Test in the software to compare:

    Number of 1s (Compliances) vs. target of 50%.

- If the proportion of compliances is significantly more than 50%, the p-value becomes low, which statistically confirms that the new product is effective.

- The software also calculated:

    DPMO (Defects Per Million Opportunities)

    Sigma Value, showing quality level of the new offer

Limitations

The limitations for this project are as follows:

- **Area:** We need to collect data in a specific area for this project. So, we have to collect the data from Shivajinagar and PMC especially in Pune.

- **Timeline:** We have to complete data collection for this project within 25 days.

- **Constrained Experimental Design:** Only 5 features with 2 offers each were considered. Real-life FD products may involve more complex features and offer combinations that were not tested due to time and design limitations.

Observations (Data Presentation, Analysis and Interpretation)

A)Data Presentation, Analysis and Interpretation for Measure Phase:

1)Data Presentation: Measure Phase Questionnaires driven data collection are as follows:

Questionnaire: 1			
Combination 1	**Combination 2**	**Combination 3**	**Combination 4**
Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
Rs.10, 000 /-	Rs.10, 000 /-	Rs.15, 000 /-	Rs.15, 000 /-
Online access and management	Online access and management	Online access and management	Online access and management
Automatic renewal at maturity	Automatic renewal at maturity	Automatic renewal at maturity	Automatic renewal at maturity
Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.
31.5	**20.5**	**25.0**	**45.0**
33.5	**12.0**	**25.5**	**28.0**
32.5	**41**	**25**	**38**
32	**45**	**28**	**26**
15	**16**	**17**	**18**
25	**31**	**15**	**25**
38	**48**	**12**	**45**
48	**50**	**49**	**50**
35	**25**	**15**	**27**
32.5	**41**	**25**	**38**

Questionnaire: 2			
Combination 1	**Combination 2**	**Combination 3**	**Combination 4**
Min. 21 days with interest rate of 1.75%	Min. 50 days with **interest** rate of 4.75%	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
Rs.10, 000 /-	Rs.10, 000 /-	Rs.15, 000 /-	Rs.15, 000 /-
Phone-based customer service and support	Phone-based customer service and support	Phone-based customer service and support	Phone-based customer service and support
Automatic renewal at maturity	Automatic renewal at maturity	Automatic renewal at maturity	Automatic renewal at maturity
Overdraft facilities with Option to take a loan up to 50% against the fixed	Overdraft facilities with Option to take a loan up to 50% against the fixed	Overdraft facilities with Option to take a loan up to 50% against the fixed	Overdraft facilities with Option to take a loan up to 50% against

deposit.	deposit.	deposit.	the fixed deposit.
23.5	45.2	19.8	40.7
33.7	23.9	47.3	36.2
48	46.3	47.8	49.3
11	35	21.5	45.5
35.5	41.4	25.5	29.5
37	34.5	32	27.8
23.4	27.1	28.9	30.4
28.9	26.7	30.5	40.2
31.6	44	39	38
36	28	49	42

		Questionnaire: 3	
Combination 1	**Combination 2**	**Combination 3**	**Combination 4**
Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
Rs.10, 000 /-	Rs.10, 000 /-	Rs.15, 000 /-	Rs.15, 000 /-
Online access and management	Online access and management	Online access and management	Online access and management
Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity
Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.
43.0	40.0	40.0	45.0
38.0	40.0	37.0	34.0
40.0	39.0	34.0	30.0
30.2	38.0	20.0	22.5
5.0	40.0	50.0	40.0
31.5	25.0	40.0	20.0
33.0	38.0	36.0	55.0
31.0	33.0	34.0	45.0
34.0	40.0	38.0	50.0
35.0	25.0	36.0	40.0

		Questionnaire: 4	
Combination 1	**Combination 2**	**Combination 3**	**Combination 4**

Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
Rs.10, 000 /-	Rs.10, 000 /-	Rs.15, 000 /-	Rs.15, 000 /-
Phone-based customer service and support	Phone-based customer service and support	Phone-based customer service and support	Phone-based customer service and support
Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity
Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.	Overdraft facilities with Option to take a loan upto 50% against the fixed deposit.	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.
42.0	**28.0**	**32.0**	**40.0**
20.0	**40.0**	**30.0**	**50.0**
21.0	**30.0**	**28.0**	**45.0**
20.0	**40.0**	**31.0**	**38.0**
40.0	**35.0**	**36.0**	**41.0**
41.0	**35.0**	**42.0**	**45.0**
40.0	**30.0**	**35.0**	**45.0**
40.0	**45.0**	**30.0**	**35.0**
42.0	**28.0**	**32.0**	**40.0**
46.0	**44.0**	**38.0**	**29.0**

Questionnaire: 5			
Combination 1	**Combination 2**	**Combination 3**	**Combination 4**
Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
Rs.10, 000 /-	Rs.10, 000 /-	Rs.15, 000 /-	Rs.15, 000 /-
Online access and management	Online access and management	Online access and management	Online access and management
Automatic renewal at maturity	Automatic renewal at maturity	Automatic renewal at maturity	Automatic renewal at maturity
Option to take a loan upt o 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit
10.0	**15.0**	**22.0**	**35.0**
30.0	**10.0**	**35.0**	**22.0**
9.0	**25.0**	**29.0**	**30.0**
17.0	**34.0**	**24.0**	**25.0**
26.0	**31.0**	**12.0**	**21.0**
27.0	**21.0**	**30.0**	**22.0**
46.0	**39.0**	**32.0**	**40.0**
28.0	**40.0**	**17.2**	**35.0**
40.0	**35.0**	**36.0**	**41.0**

25.0	35.0	45.0	10.0

Questionnaire: 6			
Combination 1	**Combination 2**	**Combination 3**	**Combination 4**
Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
Rs.10, 000 /-	Rs.10, 000 /-	Rs.15, 000 /-	Rs.15, 000 /-
Phone-based customer service and support	Phone-based customer service and support	Phone-based customer service and support	Phone-based customer service and support
Automatic renewal at maturity	Automatic renewal at maturity	Automatic renewal at maturity	Automatic renewal at maturity
Option to take a loan upt o 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit
43.0	34.0	27.0	19.0
23.0	38.0	40.0	35.0
34.0	25.0	45.0	40.0
39.0	35.0	40.0	25.0
50.0	36.0	40.0	20.0
44.0	30.0	42.0	39.0
15.0	20.0	35.0	40.0
17.0	35.0	25.0	21.0
21.0	30.0	41.0	10.0
5.0	10.0	15.0	13.0

Questionnaire: 7			
Combination 1	**Combination 2**	**Combination 3**	**Combination 4**
Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
Rs.10, 000 /-	Rs.10, 000 /-	Rs.15, 000 /-	Rs.15, 000 /-
Online access and management	Online access and management	Online access and management	Online access and management
Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity
Option to take a loan upt o 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit
45.0	42.0	38.0	29.0
35.0	45.0	42.0	46.0
29	32	42	40

16	20	35	43
31	33	35	40
35	25	25	45
47	39	36.8	28.7
31	29	50	10
38	42	26	40
50	40	45	42

Questionnaire: 8			
Combination 1	**Combination 2**	**Combination 3**	**Combination 4**
Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%	Min. 21 days with interest rate of 1.75%	Min. 50 days with interest rate of 4.75%
Rs.10, 000 /-	Rs.10, 000 /-	Rs.15, 000 /-	Rs.15, 000 /-
Phone-based customer service and support	Phone-based customer service and support	Phone-based customer service and support	Phone-based customer service and support
Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity	Option to renew and add additional funds at maturity
Option to take a loan upt o 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit	Option to take a loan up to 110% against the fixed deposit
45.0	**50.0**	**32.0**	**27.6**
45.0	**20.0**	**36.0**	**42.0**
25.0	**41.0**	**36.0**	**42.0**
36.0	**29.0**	**43.0**	**25.0**
50.0	**45.0**	**44.0**	**50.0**
45.0	**34.0**	**43.0**	**45.0**
30.5	**21.3**	**40.3**	**42.5**
20.0	**50.0**	**25.0**	**50.0**
31.0	**28.2**	**31.5**	**26.4**
35.0	**37.0**	**38.0**	**42.0**

2) Data Analysis & Interpretation:

During the Measure Phase, we collected data using conjoint questionnaires from 80 customers. We entered this data into the "Define & Measure" tab of the Pursullence Analytical Software.

The software then processed the data and automatically suggested the best offers in the "Analyse & Design" tab, shown in a table.

Interpretation: From above Experimental Data Analytics Summary table, using different

ANALYSE & DESIGN: EXPERIMENTAL DATA ANALYTICS SUMMARY					
EXPERIMENTAL FEATURES	Deposit Term & Interest rate	Minimum Deposit Amount Allowed	Account Access	Renewal Options	Add Up Services With FDs
EXPERIMENTAL DESIGN EFFECT	1.647	1.691	2.303	5.929	-1.221
SLOPE COEFFICIENT [BETA]	0.824	0.845	1.152	2.964	-0.611
STUDENT STAT. DISTRIBUTION	1.484	1.523	2.075	5.342	-1.100
P VALUE	0.139	0.129	0.039	0.000	0.272
GUARRANTY (%)	86.11	87.12	96.12	100.00	72.79
BEST OFFERS	Deposit Term & Interest rate : Min. 50 days with interest rate of 4.75%	Minimum Deposit Amount Allowed : Rs.15, 000 /-	Account Access : Phone-based customer service and support	Renewal Options : Option to renew and add additional funds at maturity	Add Up Services With FDs : Overdraft facilities with Option to take a loan upto 50% against the

statistical values like Experimental Design Effect, Slope Coefficient (Beta), Std. Error, t-statistics, p-value for each feature, we can interpret how different statistical values give best offers for each feature. Thus, the interpretation of above table are as follows:

Here, **P-value** is probability value. It indicates risk associated with given feature. Thus, p-value of each feature indicates criticality or importance of given feature. In other words, it indicates customer preference or inclination towards given feature. If given feature is important or critical from customers perspective, it will have lower p value.

P-value is indicator of risk associated in believing, considering or presuming given feature preferred by most of the respondents or customers. Hence, p value * 100 = % risk. And 100 - % risk = assurance or guaranty in believing, considering or presuming that given feature preferred by most of the respondents or customers.

Significance level: As all the responses are based on human psychology, hence significance level should be 0.9. When we select the challenger i.e. new (or current) offer by the Experimental Design Effect and by Slope Coefficient & if p-value is greater than significance level then we continue with current offer.

Feature	p-Value	Risk (%)	Assurance (%)	Interpretation
Deposit Term & Interest Rate	0.139	13.90%	86.10%	**Moderately important**, not highly significant.
Minimum Deposit Amount Allowed	0.129	12.90%	87.10%	**Moderately important**, somewhat significant.
Account Access	0.039	3.90%	96.10%	**Highly significant**, strongly preferred.
Renewal Options	0	0.00%	100%	**Most significant**, customers definitely prefer this feature.
Add Up Services with FDs	0.272	27.20%	72.80%	**Less significant**, not strongly preferred.

Here,

- Renewal Options has p = 0.000, meaning 0% risk and 100% assurance that it is a preferred feature. This is the most critical feature for customers.
- Account Access has p = 0.039, meaning very low risk (3.9%). It is also a very important feature.
- Minimum Deposit Amount and Deposit Term & Interest Rate have moderate p-values (12.9% and 13.9%) — these are somewhat important, but not strongly preferred.
- Add Up Services with FDs has the highest p-value (0.272), meaning 27.2% risk this feature is not very significant, so it's less preferred by customers.

Now, If **Slope Coefficient** is positive (+ve), it indicates that from tested 2 offers, customers are preferring new offer over current offer. Hence, Bank need to change current offer to new one to improve customer satisfaction score.
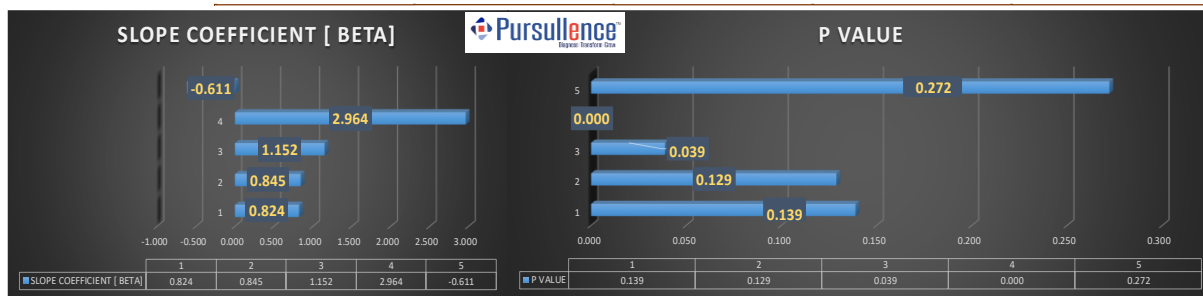
If slope coefficient is negative (-ve), it indicates that from tested 2 offers, customers are preferring current offer over new offer. Hence, Bank can continue with current offer to improve customer satisfaction score.

Feature	Slope Coefficient (β)	Customer Preference	Action for Bank
Deposit Term & Interest Rate	0.824	Customers prefer **new offer**	Change to: **Min. 50 days with interest rate of 4.75%**
Minimum Deposit Amount Allowed	0.845	Customers prefer **new offer**	Change to: **Min. deposit of ₹15,000**
Account Access	1.152	Customers prefer **new offer**	Change to: **Phone-based customer service & support**
Renewal Options	2.964	Customers prefer **new offer**	Change to: **Option to renew and add funds at maturity**
Add Up Services with FDs	–0.611	Customers prefer **current offer**	Retain: **Existing overdraft/loan facility with FDs**

Summary

- 4 out of 5 features show positive slope coefficients and low p-values, meaning customers prefer the new offers and the results are statistically significant.

- Only "Add Up Services with FDs" shows a negative slope and high p-value, meaning customers prefer the current offer and this preference is not statistically strong, but should still be retained.

Graphical Presentation: Below is the plot of Slope Coefficients (Beta) and P-value points which makes easy to understand Data Analysis Summary:

	SLOPE COEFFICIENT [BETA]				
	1	2	3	4	5
SLOPE COEFFICIENT [BETA]	0.824	0.845	1.152	2.964	-0.611

	P VALUE				
	1	2	3	4	5
P VALUE	0.139	0.129	0.039	0.000	0.272

B)Data Presentation, Analysis and Interpretation for Validate Phase:

1)Data Presentation:

The purpose of the validate phase is to check whether the newly designed fixed deposit (FD) offers are preferred by customers. For this, we developed a new questionnaire comparing the current FD scheme (A) with the new FD scheme (B). We collected responses from 100 customers using a rating scale from 0 to 10, where:

- 0 means Definitely NOT willing to invest in Scheme B over Scheme A
- 10 means Definitely YES willing to invest in Scheme B over Scheme A

This helps us understand how many customers like the new FD offers.

CURRENT PACKAGE OF FIXED DEPOSIT PRODUCT (Scheme A)

Features	Current Offers
Deposit Term & Interest rate	Min. 21 days with interest rate of 1.75%
Minimum Deposit Amount Allowed	Rs.10, 000 /-
Interest Payment Frequency	Monthly interest payments
Early Withdrawal Penalty	0.5% of the principal amount
Account Access	Online access and management
Renewal Options	Automatic renewal at maturity
Add Up Services with FDs	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.
Loyalty Offers and Benefits	Bonus interest rates

NEW PACKAGE OF FIXED DEPOSIT PRODUCT (Scheme B)

Features	New Offers

20

Deposit Term & Interest rate	Min. 50 days with interest rate of 4.75%
Minimum Deposit Amount Allowed	Rs.15, 000 /-
Interest Payment Frequency	Monthly interest payments
Early Withdrawal Penalty	0.5% of the principal amount
Account Access	Phone-based customer service and support
Renewal Options	Option to renew and add additional funds at maturity
Add Up Services with FDs	Overdraft facilities with Option to take a loan up to 50% against the fixed deposit.
Loyalty Offers and Benefits	Bonus interest rates

Then we converted the collected data as Compliance and Non-compliance. Thus, the data collection for validate phase are as follows:

RESPONDENTS	RESPONSE / RATINGS	COMPLIANCE / NON COMPLIANCE (NC<4)
1	7	C
2	8	C
3	5	C
4	9	C
5	4	C
6	6	C
7	1	NC
8	10	C
9	3	NC
10	8	C
11	7	C
12	6	C
13	5	C
14	2	NC
15	7	C
16	5	C
17	10	C
18	4	C
19	9	C
20	7	C
21	3	NC
22	1	NC

23	6	C
24	3	NC
25	10	C
26	8	C
27	7	C
28	2	NC
29	1	NC
30	4	C
31	5	C
32	9	C
33	5	C
34	6	C
35	4	C
36	1	NC
37	8	C
38	6	C
39	5	C
40	5	C
41	10	C
42	5	C
43	6	C
44	4	C
45	2	NC
46	6	C
47	5	C
48	10	C
49	6	C
50	4	C
51	3	NC
52	5	C
53	3	NC
54	4	C
55	9	C
56	2	NC
57	4	C
58	6	C
59	9	C
60	10	C
61	4	C
62	2	NC
63	6	C
64	3	NC
65	7	C
66	6	C
67	10	C
68	5	C

69	10	C
70	7	C
71	3	NC
72	1	NC
73	3	NC
74	10	C
75	9	C
76	5	C
77	3	NC
78	5	C
79	1	NC
80	6	C
81	9	C
82	1	NC
83	8	C
84	1	NC
85	9	C
86	10	C
87	2	NC
88	10	C
89	6	C
90	5	C
91	4	C
92	6	C
93	8	C
94	3	NC
95	8	C
96	5	C
97	3	NC
98	4	C
99	7	C
100	10	C

Here total NCs count is 25.

2) Data Analysis & Interpretation:

The purpose of the validate phase is to validate or verify the acceptability of the strategy that we would like to execute after validation. Here we compared compliance (Cs) with non-compliance (NCs) which means we check how many respondents are favoring this newly designed FD product. Here, we used 1-Proportional test. Pursullence's Analytics Software System has algorithm built in for a statistical test called 1 proportion test. As we have already added, ratings or responses given by customers (0 to10) in 'Validate tab' of software, then software automatically analyzed & calculated different statistical values shown in the table below:

| STATISTICAL INFENRECE TABLE	
TARGET [C]	43.21
TEST STATISTICS	6.417
P VALUE	0.000
DPMO	250000
SIGMA VALUE	0.67

Interpretation:

Interpretation of the above table values are as follows:

• The purpose of this validate phase is to confirm whether our new FD strategy is acceptable to customers.

• We used a 1-Proportion Test, which checks whether the number of customers favouring the new FD offer is significantly higher than the target value 43.21%.

• From the data, the test statistic is 6.417, and the p-value is 0.000.
This very low p-value means the result is statistically significant, and most customers are favouring the new FD scheme.

• The DPMO (Defects Per Million Opportunities) is 250,000, showing the level of non-favourable responses.

• A Sigma value of 0.67 suggests that there are still a high number of defects or non-favourable responses, as also shown by the DPMO of 250,000 (which means 250,000 defects per million opportunities).

Graphical Presentation: Below is the plot of Compliance vs Non-compliance & Observed proportion of "C" vs Target which makes easy to understand Validate phase:
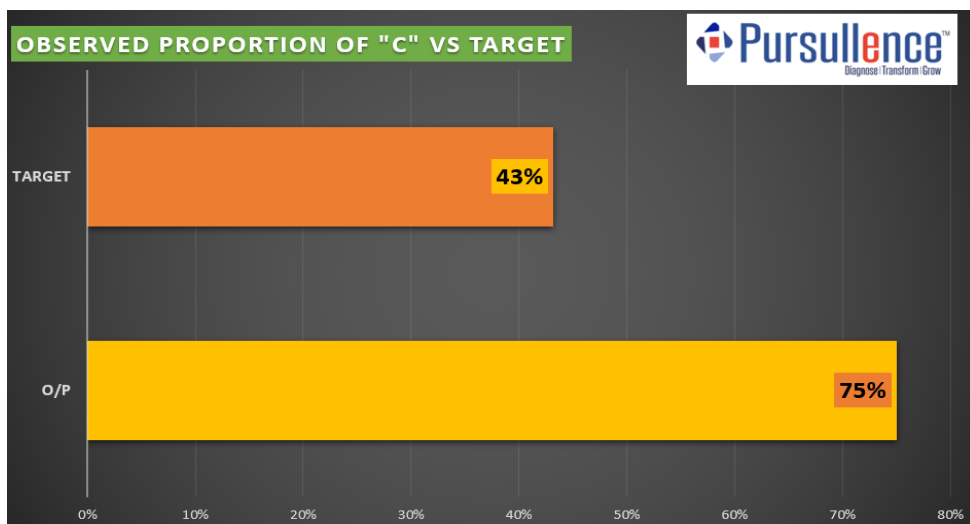
1)Plot of Compliance vs Non-compliance:
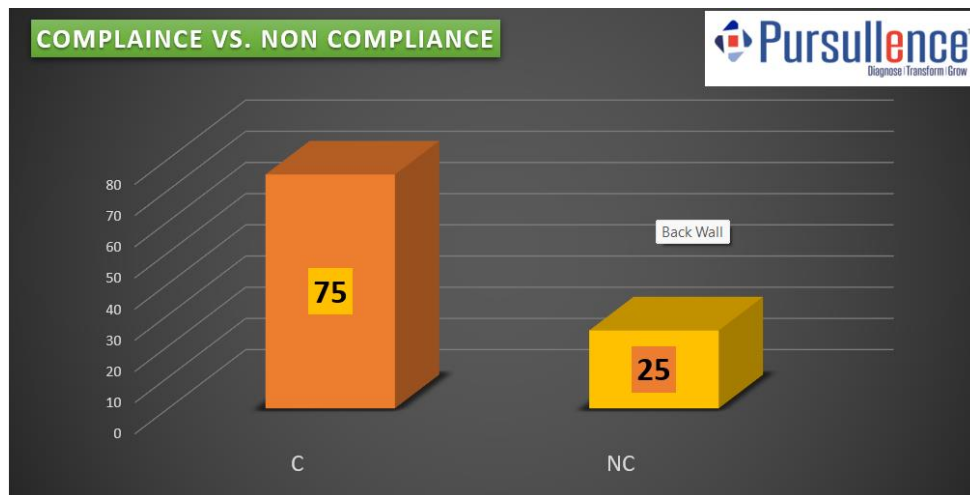
In above graph out of the total 100 respondents:
- 75 individuals (or 75%) fall under Compliance (C), indicating that they agree with or support the proposed strategy/product.
- 25 individuals (or 25%) fall under Non-Compliance (NC), indicating that they do not support or disagree with it.

2) Plot Observed proportion of "C" vs Target:

From above graph we conclude that the actual compliance level of 75% exceeds the target of 43%, indicating strong acceptance and validation of the proposed product. This suggests that the strategy is well-received and can be confidently considered for implementation.

Conclusion

In response to declining customer satisfaction with Fixed Deposit (FD) products, a structured improvement initiative was undertaken using the Lean Six Sigma DMADV methodology. This project aimed to redesign FD offerings based on customer preferences and data-driven insights.

The validation phase of this Lean Six Sigma-based Business Experiment & Analytics project has confirmed the effectiveness of the newly designed Fixed Deposit (FD) product strategy. By leveraging customer feedback and statistical analysis, the project successfully identified key features that significantly influence customer preferences.

Most of the newly proposed features have been positively received by customers, indicating a strong preference for innovation in the bank's FD offerings. This validation highlights the relevance of customer-centric design and the importance of data-driven decision-making in shaping financial products. Even features with moderate or lower significance offer valuable insights into customer behaviour and should be considered for strategic refinement rather than elimination.

The project outcomes demonstrate that the new FD product design aligns closely with customer expectations and has the potential to reverse the decline in satisfaction scores observed in recent quarters. By implementing the validated feature combinations, the bank is positioned to enhance customer satisfaction, regain competitive advantage, and drive long-term engagement with its FD portfolio.

This initiative sets a strong precedent for continuous improvement and reaffirms the value of applying the Lean Six Sigma DMADV approach in addressing critical business challenges through structured, analytical, and customer-focused strategies.

Future Enhancement

Although this project has successfully improved the Fixed Deposit (FD) product using the Lean Six Sigma DMADV method, there are still many ways to make it even better in the future:

1. **Reach More Types of Customers**
   In the next steps, we can include different customer groups like senior citizens, people from rural areas, or wealthy individuals. This will help design FD offers that suit their specific needs.

2. **Use Digital Feedback Tools**
   Adding online feedback systems (through mobile apps or websites) will help the bank understand changing customer opinions quickly and make faster improvements.

3. **Review Offers Regularly**
   Since customer preferences can change over time, it's important to regularly test and adjust the FD offers to stay updated and competitive.

4. **Understand Customer Behaviour Better**
   Using tools like behaviour analysis and customer journey tracking can help the bank understand why people choose or avoid FDs, so offers can be better targeted.

5. **Compare with Competitors**
   By studying what other banks and financial services are offering (like mutual funds or digital bonds), the bank can keep its FD products attractive.

6. **Apply to Other Bank Products**
   The same research method used in this FD project can also be used to improve other products like savings accounts, recurring deposits, and loans.

7. **Use AI for Personalization**
   In the future, Artificial Intelligence (AI) can help offer personalized FD schemes to customers based on their financial behaviour, making the offers more relevant and increasing customer interest.

References

- Training PPT of Pursullence.
- Measure phase & Validate phase Questionnaires.
- Pursullence Analytical Software tool in MS-Excel.
- www.airtel.in (Reasons Behind The Decline In Fixed Deposit (FD) Interest Rates Over The Years)
- www.ibef.org (Banking Sector in India)