American Express Campus Challenge 2025

Amex Offer Rollout Analytics – Product Track

Agenda

- Background of Campus Challenge

- Stages of Competition

  - Round1 - Crossword

  - Round2 – Amex Offerings Problem Statement

  - Round3 – Deck submission and Presentation

- Data Details

- Guidelines & Submission Format

Background

Let's see, what The American Express Campus Challenge 2025 is all about?

The **American Express Campus Challenge** is an analytics based competition for campus students. It's a platform to showcase your talent and compete with the best minds across India.

American Express India Centre of Excellence(CoE) is a two-decade-old establishment serving as an "analytical and product powerhouse" for American Express. Our Risk Product and Data Strategy team within Credit and Fraud Risk is the backbone of all product innovation and data-driven decisions across the customer life cycle at American Express. How do you engage with a customer? Who should you target for a credit card? Should a card be approved or declined? How much credit should be extended to the customer? Is it really the customer making the transaction – or is it a fraudster? To solve these problems, we take advantage of the big-data ecosystem by leveraging our data suite and the next generation of AI and technology.

In this year's competition, we are looking for innovative minds to express their proficiency in data analytics & product mindset to solve for key questions a product developer faces while reviewing a strategy for marketing.

What's in it for you?

Exciting **prizes** for the winners & top performers!
***Pre-Placement Interviews (PPIs)** for top performers!
Amex merchandise & participation certificates!

Disclaimer: Participation in challenge doesn't guarantee employment with Amex.

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Stages of Competition

Round 1

(Crossword submission)

→

Round 2

(Amex Offerings Problem statement submission)

→

Round 3

(Deck Submission and Presentation)
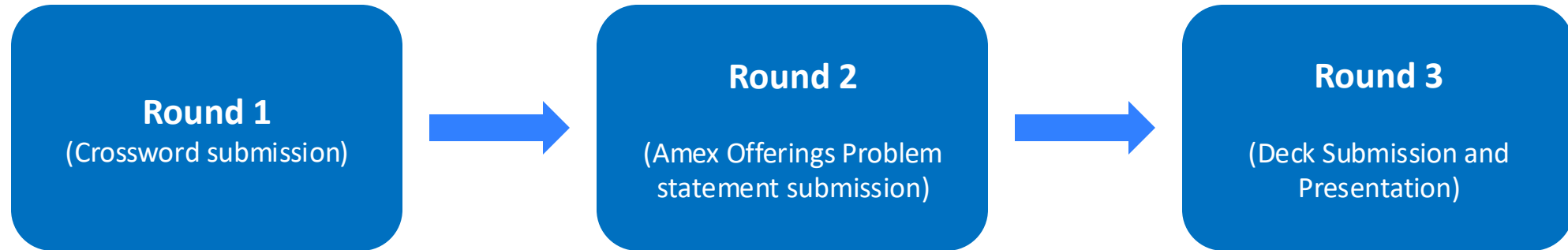
Round 1

Crossword Puzzle – Solve the crossword puzzle related to terminologies used in Risk and Product industry & correctly guess the highlighted words in the crossword.

Evaluation Process :
Anyone guessing the right words, will get a password to unlock the next around. All the participants with correct word guesses will proceed for Round 2.

No cap on number of submissions for Round 1

Round 2

Problem Statement

Offer 4

Offer 3

Offer 1

Offer 2

- Clickstream data of the digital footprint left behind by customers as they browse and interact with Amex's marketing offers online will be provided.

- The end objective of this problem statement is to analyze this behavioral data and submit the solution to the questions and sub questions asked in the format described as per the guidelines.

- Participants are not only required to develop deep understanding of the data but also understand how it can be made fit to use and derive key actionable insights to achieve the desired solution.

- There are 6 questions in the problem statement.

Round 2 – Questions for participants(1/3)

- **Question 1 :** Using the Data Provided, validate the following statements: (Note : Active User of Amex Portal for a provided timeframe are people who have visited the Amex Portal at least once in the past 30 days from any given date within the provided timeframe)
    1. Active Users of Amex Portal are more likely to choose Airline Offers than another offer category
    2. Active Users of Amex Portal are generally able to save more money from Discounts than other users.
    3. Mention Total Population of unique customer IDs out of total customers who actively use Amex Portal and have clicked on an Airline Offer.

    Answer for 1 & 2 is expected to be TRUE or FALSE. Answer 3 is an integer value denoting the population.

- **Question 2 :** Does the customer value a **'High Discount Value per Dollar'** offer more for the following categories:
  Note:
  Exclude the offers with no Discount Value per dollar for the analysis.
  High Disc Value per Dollar Offers are represented by Offers with Disc Value per Dollar >= 50th Percentile.
  Low Disc Value per Dollar Offers are represented by Offers with Disc Value per Dollar < 50th Percentile.

  Share the difference of successful offer conversions rates for [High Disc Value per Dollar – Low Disc Value per Dollar] offers across the following offer categories.
    1. Services
    2. Shopping
    3. Travel

    Answer to 1, 2 and 3 will be a floating-point value rounded off(floor) to 3 decimal places.

Round 2 – Questions for participants (2/3)

- **Question 3 :** Let Spending of a customer be defined by the Maximum of spend amount spent by customer in last 3 months for any given Timeframe. Divide the Customer Population into Low, Medium & High Spending category by referring to Entire Timeframe of Provided data ensuring equal number of distinct customers per category.
  1. Calculate the Average Reward Point to Dollar Value Conversion Rate of the offers offered to each of these categories.
  2. Calculate the Average Reward Point to Dollar Value Conversion Rate of the offers in each of these categories that customer has participated in.
  3. Amongst these categories which segment performed the best for Amex in terms of offers rolled out vs offers participated in.

  Note : Spends can be negative as well (indicative of cases where money is credited to the customer account)

  Answer to 1 and 2 will be a floating-point value corresponding to each of the categories rounded off(floor) to 3 decimal places.
  Answer to 3 will be a single value denoting the category i.e. LOW, MEDIUM or HIGH

- **Question 4 :** Using the data, build top 10 offer profile basis the offer conversion rate. [Offer conversion rate = Number of Offers Clicked / Number of Offers viewed]
  1. Share top 10 Offer ID to Offer category mappings.
  2. Find the average 3 month spend of the customers(across all categories) opting for these offers as of 7th November 2023.
  3. Find the average conversion rate(across all categories) for customers enrolling for each of these offers over the last 30 days as of 7th November 2023.

  Note: A Top Offer must be presented to Users at least above the average offer presentation count

  Answer to 1 will be top 10 OfferID:Offer Category Mappings.
  Answer to 2 will be a single value i.e. the average of the last 3 month spend(floating point, rounded off(floor) to 3 decimal) for the customers who opted for offers listed in Answer 1 across all categories.
  Answer to 3 will be 10 offer ID: values mapping i.e. avg conversion rate(across all categories) (floating point, rounded off(floor) to 3 decimal) corresponding to all offers listed in Answer 1

Round 2 – Questions for participants (3/3)

- **Question 5 :** Using the data build top 15 customer profiles basis the offer conversion rate who have participated in our email campaigns in the past 30 days as of 14th November 2023.
  [Offer conversion rate = Number of Offers Clicked/ Number of Offers viewed]
  1. Find the ratio of total offer clicks to count of distinct channels used to visit Amex portal in the past 30 days as of 14th November 2023 for these top 15 customers.
  2. What is the overall top performing offer category for each of these customers.
  3. To evaluate the performance of the email campaign, find the ratio of email offer clicks to email offers sent out for each customer in the past 30 days as of 14th November 2023.

  Answer to 1 will be CustomerID:Ratio mapping for top 15 customers. Ratio will be a floating-point value rounded off(floor) to 3 decimal places.
  Answer to 2 will be CustomerID:OfferCategory mapping for top 15 customers.
  Answer to 3 will be CustomerID:Ratio mapping for top 15 Customers. Ratio will be a floating-point value rounded off(floor) to 3 decimal places.

- **Question 6 :** Calculate the following on the entire data.
  1. The probability of clicking on marketing email offer being sent out.
  2. Calculate the probability given that the user has clicked on an offer in the past.

  Note:
  To ensure the recency bias while computing the probabilities EWMA can be leveraged across dates with alpha as 0.5 [Someone who has been clicking on more offers recently will have a higher chance]
  Overall Ratio of Population can be calculated by taking Average of the Ratios of a Given Population

  Answer for 1 & 2 will be a single floating-point value round value rounded off(floor) to 3 decimal places.

Digital offerings Ecosystem

Offer Set up and Eligibility → **Arbitration** → **Delivery**

Targeting based on Customer segments
- Customer profile
- CM product
- Geography
- Spend Behavior

Personalization decision engine which arbitrates across variety of content based on behavioral patterns to present the best offer

Personalization engine works across various channels and placements.
- Amex.com
- Mobile App
- Email

Sample Amex Offers

Offerings	Offerings Program Details
Offer 4	Get +5 Membership Rewards® points per eligible dollar spent. Up to 2,500 points Spend $50 or more, get $10 back Spend $1,250 or more, get 2,500 Membership Rewards® points. Up to 3 times
Offer 2	Earn 3 additional miles per dollar spent on purchases
Offer 3	Get 10% back on purchases, up to $5

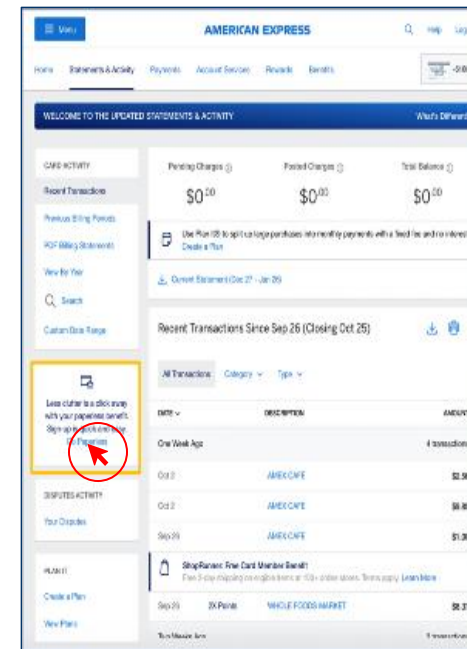# Offer Action Variable

- Binary outcome takes 1 if a Card Member(CM) has clicked on an offering and 0 otherwise, given that CM has seen that offering

Impression   *Click*
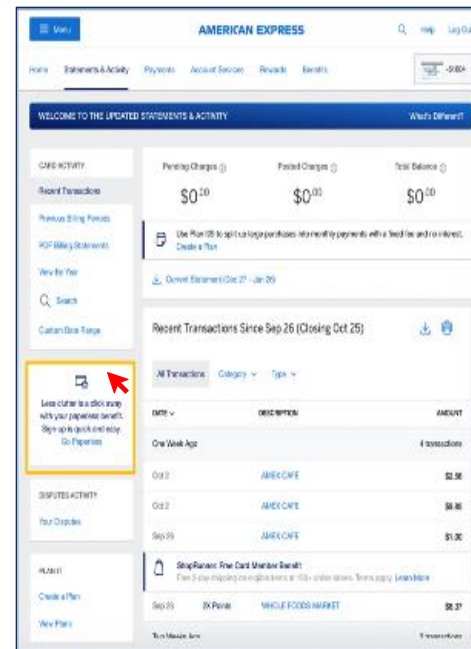
CM scrolled over the defined area confirming the interest and **offerings seen**.

CM **clicked** on the call-to-action button confirming click conversion.

Evaluation Criteria:

- The contestants will be evaluated basis the response submitted corresponding to each of the questions and sub questions.

- Partial scores will be awarded if partial responses are submitted.

- In case of a tie in scores, ranking will be basis the submission timestamp. I.e. early submissions will be ranked higher.

- The leaderboard ranking is subject to change basis internal assessments for cheating and malpractices. All the submissions will be evaluated for plagiarism.

Public Leaderboard:
- Final Score will calculated based on the evaluation criteria mentioned above post each submission.

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Data

Round	Theme	File Name	Desc	Location/Name
Round 1	Cross word	Campus_Challenge_2025_Cross Word_Product_Track	Fill the crossword related to credit industry based on hints shared	*To be downloaded from the unstop website (available to all registered candidates)*
Round 2	Amex Offer Rollout Problem	• amex_offers_data.parquet • Data_dictionary.xlsx	Analyze this behavioral data and extract actionable insights	
Round 3	Presentation	To be submitted by participants	Present a deck on the problem statement to Amex leaders	

➢ Next round will only be unlocked after successfully solving current round – i.e., Round 2 will be unlocked after solving Round 1. Round 3 will be enabled after submission deadline of Round 2.

Sample Data – Round 1

Across:
- L3 - Hint 1
- I6 - Hint 2
- N9 - Hint 3
- C12 - Hint 4
- C14 - Hint 5
- M19 - Hint 6

Down:
- P2 - Hint 1
- K4 - Hint 2
- I8 - Hint 3
- S8 - Hint 4
- D11 - Hint 5
- G11 - Hint 6
- M11 - Hint 7
- O11 - Hint 8

Unscramble the letters highlighted in yellow to get the password for the next round

S	N	S	I	U	E	B	S

→ Letters highlighted in yellow

B	U	S	I	N	E	S	S

→ Unscrambled word – to be used as password for Round 2

Sample Data – Round 2

customer_id	offer_id	event_ts	event_dt	offer_action	var_1	var_2	var_3	var_4	var_5	var_6	var_7	var_8	var_9	var_10	var_11	var_12	var_13	var_14	var_15	var_16	var_17	var_18	var_19	var_20	var_21	var_22	var_
1134332	654480	54:12.4	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	57941	52:30.0	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	69479	14:00.1	11/6/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	91659	54:28.4	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	605824	13:54.5	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	654840	52:18.8	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	55247	15:03.0	11/6/2023	1	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	83102	53:03.9	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	87230	52:06.7	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	27363	52:38.5	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	2302673	13:47.4	11/6/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	260951	54:24.9	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	99856	54:28.3	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	82205	52:53.9	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	475056	54:16.7	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	88148	54:26.2	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	88691	15:03.5	11/6/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	122267	52:04.6	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	58448	14:22.8	11/6/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	64062	53:14.5	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	114553	52:54.0	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	92870	52:05.8	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	1.54E+08	53:36.6	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	98922	52:10.5	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	391125	52:07.4	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	449308	52:36.4	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	33452	54:25.3	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	654840	14:00.1	11/6/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	87386	53:22.6	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	801481	52:30.8	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	88933	52:31.4	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	29593	54:16.6	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	159555	15:10.2	11/6/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		
1134332	83469	53:21.1	11/9/2023	0	41	42	1	28		41	46	46	49		45	46	18				64	1529.87	2551.15	1100	0		

Please use Data_dictionary.xlsx excel file for variable list mapping along with its description.

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Round 1 Guidelines

➢ The words in the crossword are related to common terminologies used in Credit Card and Product based industries.

➢ Hints to fill the Crossword are provided in that sheet itself

➢ The cell in which hint cell number is mentioned is also part of the word

➢ All Cells highlighted in yellow color in Crossword needs to be unscrambled to get a word relevant to the Industry.

➢ Participants are required to download and follow exact templates of the submission files from Unstop website

➢ You will be asked to submit the unscrambled word as well as the completed crossword for evaluation in submission template and upload on the website in CSV format only

➢ The unscrambled word will also act as a password/key for Round 2. Unscrambled word can be a combination of two words and should be submitted without spaces e.g. Data Quality should be submitted as Dataquality.

➢ Amex will thoroughly evaluate the solution to ensure integrity & guarding against any misuse or gaming

Sample Submission File – Round 1

Words can go across or down.

ACROSS
L3. hint...
I6. hint...
N9. hint...
C12. hint...
C14. hint...
M19. hint..

DOWN
P2. hint...
K4. hint..
I8. hint..
S8. hint..
D11. hint...
G11. hint...
M11. hint...
O11. hint...

Unscramble the letters highlighted in yellow to get the password for the next round

The submissions should follow the naming convention: *r1_crossword_<name>_<rollno>.xlsx*

Round 2 Guidelines

➢ Please use the unscrambled word in uppercase from Round 1 as password for Round 2 which will enable you to participate in Round2

➢ The shared data has certain set of anomalies (please refer to the table below). The participants are required to clean up the data basis the rules shared to ensure accuracy in their solution.

➢ The data is shared in parquet format can can be read into python data frame directly using pandas read_parquet() function. To view the data, it can be further saved into csv or excel format.

➢ Participants can use the variables shared to derive insights to answer the posed questions.

➢ Participants need to submit the response to the questions in an csv file in Round 2 in the format shared along with the code used to derive these insights.

➢ Participants are required to download and follow exact templates of the submission files from Unstop website

➢ Submissions per day are capped to 20, leaderboard would be public basis submission of File.

➢ The final ranking will also be updated basis some internal rules mapped on the submissions made.

➢ In case of a tie in scores, ranking will be basis the submission timestamp. i.e. early submissions will be ranked higher.

➢ Amex will be thoroughly evaluating all solutions to ensure integrity & guarding against any misuse or gaming.

S.No.	Anomaly Details	
	Type	**Correction**
1	Duplicate Removal	Remove the duplicate records and only keep the latest one.
2	Datatype Conversions	Convert value to consistent appropriate datatype
3	Date format mismatch	Convert incorrect date formats. Eg., Format - MM/DD/YYYY but takes the value 28/07/2025
4	Out-of-bound values	Exclude the records where the values are identified to be out of bounds. E.g. Probability scores should be between 0-1, spends should not be negative, etc.
5	Bool Value Correction	Categorical variables/columns e.g. offer action variable, var49, etc. take values as 1 or 0. However True and False are replaced randomly which needs to be converted back to 1 and 0 respectively

Round 2 Submission Guidelines

➤ Participants must use the submission file format shared.

➤ The submission file has the following columns:
  o Question ID.
  o Part ID.
  o Answer

➤ For example, if you are attempting the part 2 of question number 4. For which the answer is a key value pair separated by : . The submission will be as follows,

question_id	part_id	answer
4	2	<key>:<value>

Please Note: The key and values are separated by the **':'**

Sample Submission – Round 2

question_id	part_id	answer
Q1	1	TRUE
Q1	2	FALSE
Q1	3	12.5
Q2	1	100
Q2	2	200
Q2	3	300
Q3	1	10
Q3	1	20
Q3	1	30
Q3	2	40
Q3	2	50
Q3	2	60
Q3	3	Low
Q4	1	offerID:offerCategory
Q4	1	offerID:offerCategory
Q4	1	offerID:offerCategory
Q4	1	offerID:offerCategory
Q4	1	offerID:offerCategory
Q4	1	offerID:offerCategory
Q4	1	offerID:offerCategory
Q4	1	offerID:offerCategory
Q4	1	offerID:offerCategory
Q4	1	offerID:offerCategory
Q4	2	150
Q4	3	offerID:1.10
Q4	3	offerID:1.10
Q4	3	offerID:1.10
Q4	3	offerID:1.10
Q4	3	offerID:1.10
Q4	3	offerID:1.10
Q4	3	offerID:1.10
Q4	3	offerID:1.10
Q4	3	offerID:1.10
Q4	3	offerID:1.10
Q5	1	customerID:100
Q5	1	customerID:100
Q5	1	customerID:100
Q5	1	customerID:100
Q5	1	customerID:100

The submissions should follow the naming convention: *r2_submission_<name>_<rollno>. csv*

We will provide details about submission format of additional files related to variables on Unstop.

Final Round Guidelines

➢ Top participants with combined evaluation score across Round 1, Round 2 and who qualify Amex sanity checks, will be shortlisted for the Final Round.

Participants will be required to create a deck and present a Go-to-Live strategy for launching personalized marketing offers on a credit card website.

The details of Round 3 will only be shared with top Students qualifying Round 2.

Participants will be presenting their decks to the panel. The deck should not have more than 7 Slides and the presentation time should not exceed 7 mins.

Top participants will be selected as winners based on Round 2 score as well as scores from the presentation

Thank You

All the Best!