NESPRESSO

MARKET RESEARCH PROPOSAL

ST 3188 coursework

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Executive Summary

This research proposal outlines a comprehensive study aimed at supporting Nespresso's business objective of maintaining its position as a market leader in the premium coffee market. Nespresso's strategic priorities include production innovation, customer satisfaction, and sustainability performance. The findings from this research will provide Nespresso with valuable insights to fulfil these aims, enabling a deeper understanding of consumer attitudes, beliefs, and preferences.

The research methodology incorporates a multi-method approach, including street surveys, focus groups, and online questionnaires, to gather crucial insights for Nespresso. We will employ a combination of exploratory, descriptive, and causal research designs to address the research aims outlined in the client brief. Research questions and objectives have been developed to guide each phase of the study, ensuring alignment with both the research aims and business objectives.

For data collection, emphasis is placed on ensuring data quality, prompting careful selection of sampling methods and data collection approaches. Considerations also extend to factors such as time requirements, cost-effectiveness, and the need to include both Nespresso customers (individual and corporate) and customers of its competitors.

Multivariate statistical methods such as Multiple Linear Regression and 2-way ANOVA have been chosen to address the research objectives, provide actionable insights, and support decision-making in line with Nespresso's strategic goals. Additionally, focus group techniques such as mood boards and projective techniques will be utilised to uncover hidden insights and address potential pain points.

Through the findings of this research, Nespresso can develop targeted marketing strategies to deepen market penetration. This may involve introducing differentiated products tailored to specific consumer segments and identifying early adopters of new brewing technology. Additionally, the research will help Nespresso identify gaps in awareness and effectiveness of its current sustainability initiatives. With this information, Nespresso can refine its communication strategies or adjust its sustainability initiatives to better resonates with specific markets.

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[3000 words[1] – excluding headers, footnotes, labels, and executive summary]

1) Background

Established in 1986, Nespresso pioneered the coffee capsule system, becoming a rapidly growing segment in the coffee market. Their machines are designed to allow consumers to enjoy a high-quality coffee at the touch of a button. Nespresso prioritises sustainability, focusing on delivering sustainable quality throughout their operations. Recognised as the most sustainable company in the coffee processing industry, Nespresso operates globally in 81 countries[2].

2) Problem Definition

Nespresso aims to uphold its market leader position in the coffee market amidst increasing competition. To achieve this, it prioritises product innovation and enhancing the customer experience based on feedback. Additionally, Nespresso seeks to foster positive perceptions of its sustainability efforts among customers.

3) Research Aims (RAs)

Through the client brief, we have identified 3 main research aims that this research proposal will address.

- **RA1:** We want to accurately understand customer's preferences for new coffee blends and new brewing technology.
- **RA2:** We want to better understand any customer pain points to identify areas for improvement in product quality, packaging and customer service.
- **RA3:** We want to evaluate the effectiveness of its sustainability initiatives and identify opportunities for further improvement.

[1] Summary of word count in Technical Appendix (pg.45)
[2] Information taken from Nespresso's website

4) Research Questions (RQs) and Research Objectives (ROs)

We have proposed the following (RQs) followed by (ROs) to address each research aims:

For RA1

RQ	RO
RQ1: How does the preferences in coffee blends differ across different markets and customer types?	**RO1.1:** Examine if blend preference scores is different across different variables.
RQ2: What are the factors that will influence customers' interest in purchasing new brewing technology?	**RO2.1:** Examine factors that will influence customers' interest in purchasing new brewing technology.

For RA2

RQ	RO
RQ3: What are the factors surrounding customer service, product quality and packaging significantly influence overall customer satisfaction across different variables?	**RO3.1:** Identify variables that affect customer satisfaction amongst existing customers.
	RO3.2: Examine relationships between overall customer satisfaction and various variables.
RQ4: Does customer service satisfaction vary between online and offline shoppers?	**RO4.1:** Examine if there's a difference in customer service satisfaction score between online and offline shoppers.

For RA3

RQ	RO
RQ5: How does the awareness level of Nespresso's sustainability initiatives vary across different markets?	**RO5.1:** Examine the association between awareness levels of the current sustainability initiatives implemented by Nespresso and market.
RQ6: How can Nespresso's sustainability initiatives be improved?	**RO6.1:** Identify strategies to enhance Nespresso's sustainability efforts.
	RO6.2: Determine if there is an improvement to the sustainability rating scores before and after exposure to Nespresso's sustainability practices.

5) Methodology

Research Design

This research proposal encompasses a combination of exploratory, descriptive, and causal research designs (Malhotra, 2017, p. 70).

Exploratory Research

Through exploratory research, we aim to gain insights into customer satisfaction and perceptions of Nespresso's sustainability initiatives. This will involve conducting online focus groups with diverse participants groups. Considering these topics are too broad to be pursued efficiently, the purpose of exploratory research is to identify key variables within these broad topics for more focused investigation.

Descriptive Research

Descriptive research will be employed to provide a comprehensive description of various aspects pertaining to blend preferences, customer satisfaction and other key topics within our research scope.

Employing quantitative analysis, we will formulate hypotheses for each research objective and utilise statistical methods to describe the phenomena under examination.

Causal Research

Causal research will be undertaken to investigate the cause-and-effect relationships for Nespresso's current sustainability initiatives and their impact on customer perception. This research aims to determine whether the implementation of sustainability initiatives directly influences customers' perceptions positively.

6) Data Collection Method

All survey participants will be within the age range of 18-65 years[3]. Nespresso's guidance regarding the specific age group for research will be considered to ensure alignment with their target audience demographics. Additionally, participants must be literate to comprehend and provide feedback effectively.

Quantitative

For this research, primary data will be collected through a combination of street surveys and online questionnaires. Secondary data will be sourced from online statistical sources and Nespresso's internal database to provide estimates for the variables used in our analysis.

Before the main survey, a pilot test with 30 respondents from the same population will be conducted for both the street survey and online questionnaire. The goal is to ensure the questionnaires effectively address research questions and identify any potential problems that are costly in time and money early on. Additionally, data from the pilot test, such as σ value, π value, and response rates, will aid in determining the sample size for the actual survey.

[3] More than one third of Americans didn't start drinking coffee regularly until they were at least 21 according to YouGov, 2022.

Street Survey (Personal face-to-face) – For RA1 and RA3

Street surveys will be the preferred method to gather input from non-Nespresso coffee drinkers, allowing for face-to-face interactions to ensure higher quality responses (Malhotra, 2017, p. 475). Our surveyors are trained to identify misunderstandings, lack of engagement, or any real-time issues to maintain data quality. Equipped with iPads, surveyors will verbally communicate questions to respondents and record their choices electronically. While this approach is time-consuming and less cost-efficient, multiple surveyor teams across Nespresso-operating regions will ensure data collection within two months.

To prevent survey fatigue, survey will be kept short and concise, taking less than 10 minutes to complete. Closed-ended questions will be predominantly used, while open-ended questions will be reserved for focus groups. Additionally, incentives will be provided to all participants upon completion to encourage participation.

Sampling Technique

Given the absence of a sampling frame for non-Nespresso coffee drinkers, we propose a two-stage quota sampling technique. While convenience sampling is considered for its efficiency and low cost, it is not a good representative of the population. Therefore, quotas will be determined based on market size and surveyors will be allocated to specific locations like malls, residential areas or central business districts within the target market. Participants will then be conveniently selected based on the assigned quotas. This method ensures a more accurate representation of the population compared to other non-probability methods and is fast to execute. However, potential selection bias persists, as with any non-probability sampling method.

Sample Size

With 95% confidence interval, and assuming $\pi = 0.5$ as a 'conservative' choice, the minimum sample size can be determined with the below formula.

$$n \geq \frac{z_{\frac{\propto}{2}}^2(\pi(1-\pi)}{e^2}$$

$$n \geq \frac{1.96^2(0.5(1-0.5))}{0.05^2} \approx 385$$

To determine the sample size for RA1, which targets coffee drinkers, we'll consider that roughly 60% of the population consumes coffee, based on various sources[4].

$$n \geq \frac{1.96^2(0.5(1-0.5))}{0.05^2} * \frac{1}{0.6} \approx 641$$

The sample size of 641 will be split proportionally according to the assigned quota. While it falls below the client's requested size of 5000, it can still yield statistically significant results. Nespresso may opt for a larger sample size for increased accuracy, bearing in mind the associated higher cost and time.

Online Questionnaire – For RA2

RA2 involves gathering customer ratings of Nespresso's performance. Due to the potential bias for positive ratings in face-to-face interviews, utilising an online questionnaire is proposed for gathering customer ratings of Nespresso's performance. This approach can offer participants anonymity and a comfortable environment to provide honest feedback, potentially reducing social desirability bias (Malhotra, 2017, p. 384). Additionally, an online questionnaire allows for efficient data collection at low cost. However, a limitation of this method is the lack of control over the survey environment and respondent behaviour. To boost response rates, a cover letter written by a credible representative from Nespresso will be sent to participants, along with incentive given upon completion of questionnaire.

Sampling Technique

The sampling frame for this study is derived from Nespresso's internal database. We will employ a probabilistic method known as Proportionate Two-stage Stratified Sampling technique. This method partitions the sampling into different strata based on Markets and Customer segments, distinguishing between Individual and Corporate customers. Subsequently, participants will be randomly selected using Simple Random Sampling proportionate to the relative size of each stratum in the total population. While cluster sampling is considered due to its lower cost, it poses challenges when forming clusters in heterogeneous markets where different characteristics are exhibited. If clusters are formed by grouping markets, the sampling results may be relatively imprecise as the sampled market may not accurately represent the population (Malhotra, 2017, p. 429). Hence, stratified sampling is the preferred sampling method to ensures representation across markets and customer segments.

[4] Coffee consumption statistics taken from National Library of Medicine and Drive research. While sources indicate that approximately 74% of individuals in the United States consume coffee, a conservative estimate of 60% will be used for our analysis.

Sample Size

We will use the formula below to determine the minimum sample size. The standard deviation value is estimated based on secondary data from Nespresso's internal database.

$$n \geq \frac{\left(z_{\frac{\alpha}{2}}\right)^2 \sigma^2}{e^2} * \frac{1}{Response\ Rate}$$

At a 95% confidence interval, and with an estimated standard deviation of 0.7 and a response rate of 30 %[5], we can calculate the preliminary estimated sample size as follows:

$$n \geq \frac{1.96^2 0.7^2}{0.05^2} * \frac{1}{0.3} \approx 2510$$

Therefore, the estimated total sample size required is 2510. A more accurate figure will be determined following the completion of the pilot test.

Qualitative – Online Focus Groups(FG) for RO3.1 and RO6.1

We recommend conducting the focus group sessions online to provide participants with the flexibility to choose a comfortable environment. All participants must enable their video cameras in the video conference, allowing moderators to observe facial expressions during discussions. This visual feedback aids in understanding participants' attitudes towards various topics. Interested participants will be prompted to fill out an interest form after the survey. To incentivise involvement, all participants will receive incentives. Experimental groups will be utilised in both focus group studies to experiment with different discussion approaches and techniques.

We propose to conduct a total of 16 homogenous focus groups for each focus group study, consisting of one experimental group and 5 actual focus groups for each market. Each focus group will consist of 6-8 participants and 2 moderators. Participants will be screened through demographic classification based on average income. Homogenous groups aim to avoid major conflict among individuals with different perspectives (Malhotra, 2017, p. 184).

[5] Response rate taken from Sciencedirect. Considering the variability of response rate, an estimate value of 30% will be used for our analysis.

Flow Chart and Questionnaire Preview for RA1 and RA3

Flow Chart

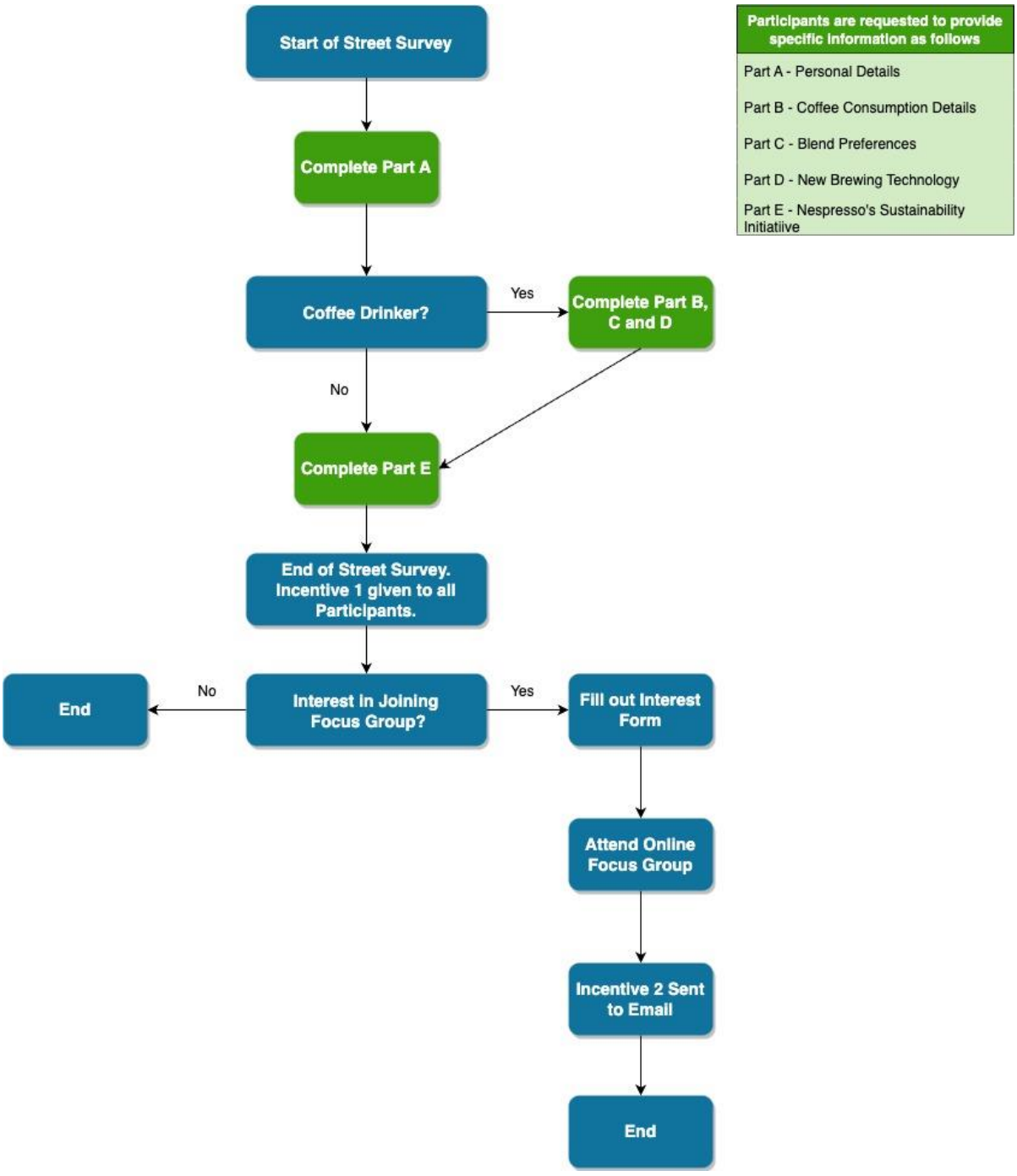


Figure 1: Flowchart for Street Survey and Focus Group (RO 6.1)

Questionnaire

Part A

1. What is your age? *
   Please enter a number (in years)
   Enter your answer

2. What is your Gender? *
   Select the gender assigned at birth
   - ◯ Male
   - ◯ Female

3. Which region do you currently reside in? *
   - ◯ United States
   - ◯ Europe
   - ◯ China
   - ◯ Other

4. Approximately, what is your average monthly household income? *
   Please enter a number (USD)
   Enter your answer

5. Select the phrase that best describes you. *
   - ◯ I am a coffee drinker.
   - ◯ I don't drink coffee.

Figure 2: Part A - Street Survey Questionnaire (Preview)

Part B

1. What is your preferred method of drinking coffee? *

- ◯ Nespresso Coffee Pods
- ◯ Coffee Sachet
- ◯ Cafe
- ◯ Homemade with Coffee Beans
- ◯ Other

2. On average, how frequently do you drink coffee? *

- ◯ **Very Often** (Daily)
- ◯ **Often** (4 to 6 times a week)
- ◯ **Sometimes** (1 to 3 times a week)
- ◯ **Occasionally** (1 to 3 times a month)
- ◯ **Rarely** (Less than once a month)

Figure 3: Part B - Street Survey Questionnaire (Preview)

Part C

1. Please rate your preferences for the following aspects of coffee blends on a scale from 1 to 5, where 1 indicates 'Not preferred' and 5 indicates 'Highly preferred'

Note to Surveyor - If respondents are unsure or don't understand the terms, please provide the following explanations:

- *Roast Intensity: This refers to how dark or light the coffee beans are roasted. Light roast is typically milder and has more acidic notes, while dark roast tends to be stronger and richer in flavor.*
- *Coffee Intensity: This refers to the strength or boldness of the brewed coffee itself. It can vary based on factors like the roast level, bean type, and brewing method. Stronger coffee may have a more robust flavor and higher caffeine content.*
- *Nutty Flavour: This refers to the taste or aroma reminiscent of nuts, such as almonds or hazelnuts.*
- *Fruity Flavour: This refers to the taste or aroma reminiscent of fruits, such as berries or citrus.*
- *Chocolatey Flavour: This refers to the taste or aroma reminiscent of chocolate.*

	1) Not Preferred	2) Slightly Preferred	3) Neutral	4) Preferred	5) Highly Preferred
Roast Intensity	○	○	○	○	○
Coffee Intensity	○	○	○	○	○
Nutty Flavour	○	○	○	○	○
Fruity Flavour	○	○	○	○	○
Chocolatey Flavour	○	○	○	○	○

Figure 4: Part C - Street Survey Questionnaire (Preview)

Part D

1. Are you interested in purchasing new brewing technology?

   ◯ Yes

   ◯ No

2. How important are the following factors to you when considering the purchase of new brewing technology? Please rate each factor on a scale from 1 to 5, where 1 indicates 'Not important' and 5 indicates 'Very important'.

	1) Not Important	2) Somewhat Important	3) Neutral	4) Importa
Price	◯	◯	◯	◯
Features and Functionality	◯	◯	◯	◯
Brand	◯	◯	◯	◯
Technology Innovation	◯	◯	◯	◯
Aesthetic	◯	◯	◯	◯

Figure 5: Part D - Street Survey Questionnaire (Preview)

Part E

1. Please indicate your level of awareness of the following Nespresso sustainability initiatives. *

	Not Aware - I have not heard of this initiative before	**Partial Awareness -** I have heard of this initiative, but I don't know the details.	**Full Awareness -** I am familiar with this initiative and know its details.
Coffee Pods Recycling Program	◯	◯	◯
The Positive Cup	◯	◯	◯
AAA Sustainable Quality Program	◯	◯	◯
Water Stewardship	◯	◯	◯

2. Please rate Nespresso's performance in terms of sustainability on a scale from 1 to 7, where 1 indicates 'Very poor' and 7 indicates 'Excellent'. *

1	2	3	4	5	6	7

3. After watching the video, please rate Nespresso's performance in terms of sustainability again on the same scale from 1 to 7, where 1 indicates 'Very poor' and 7 indicates 'Excellent'. *

Note to Surveyor - Please show participant Nespresso's Sustainability Video.

1	2	3	4	5	6	7

Figure 6: Part E - Street Survey Questionnaire (Preview)

Data Collected Through Street Survey

Table 1: List of Data Collected through Street Survey

Variable	Data Type
Street Survey - Multiple Customer Types (Café Customer, Nespresso Customer, Homemade with Coffee Beans, etc)	
Age	Continous
Gender	Nominal Categorical
Market Region	Nominal Categorical
Average Monthly Income	Continous
Coffee Drinker (Yes/No)	Nominal Categorical
Preferred Method of Drinking Coffee	Nominal Categorical
Coffee Consumption Frequency Level	Continous Rating Scale
Blend Preferences Rating -Roast Intensity -Coffee Intensity -Nutty Flavour -Fruity Flavour -Chocolatey Flavour	5 Points Likert Scale
Interest in Purchasing New Brewing Technology (Interested, Not Interested)	Nominal Categorical
Importance Rating for New Brewing Technology -Price -Features and Functionality -Brand -Technology Innovation -Aesthetic	5 Points Likert Scale
Nespresso Sustainability Initiatives Awareness Level -Coffee Pods Recycling Program -The Positive Cup -AAA Sustainable Quality Program -Water Stewardship	Ordinal Categorical
Sustainability Rating Scores -Before Exposure to Sustainability Information -After Exposure to Sustainability Information	Semantic Differential Scale

Flowchart and Questionnaire Preview for RA2

Flowchart

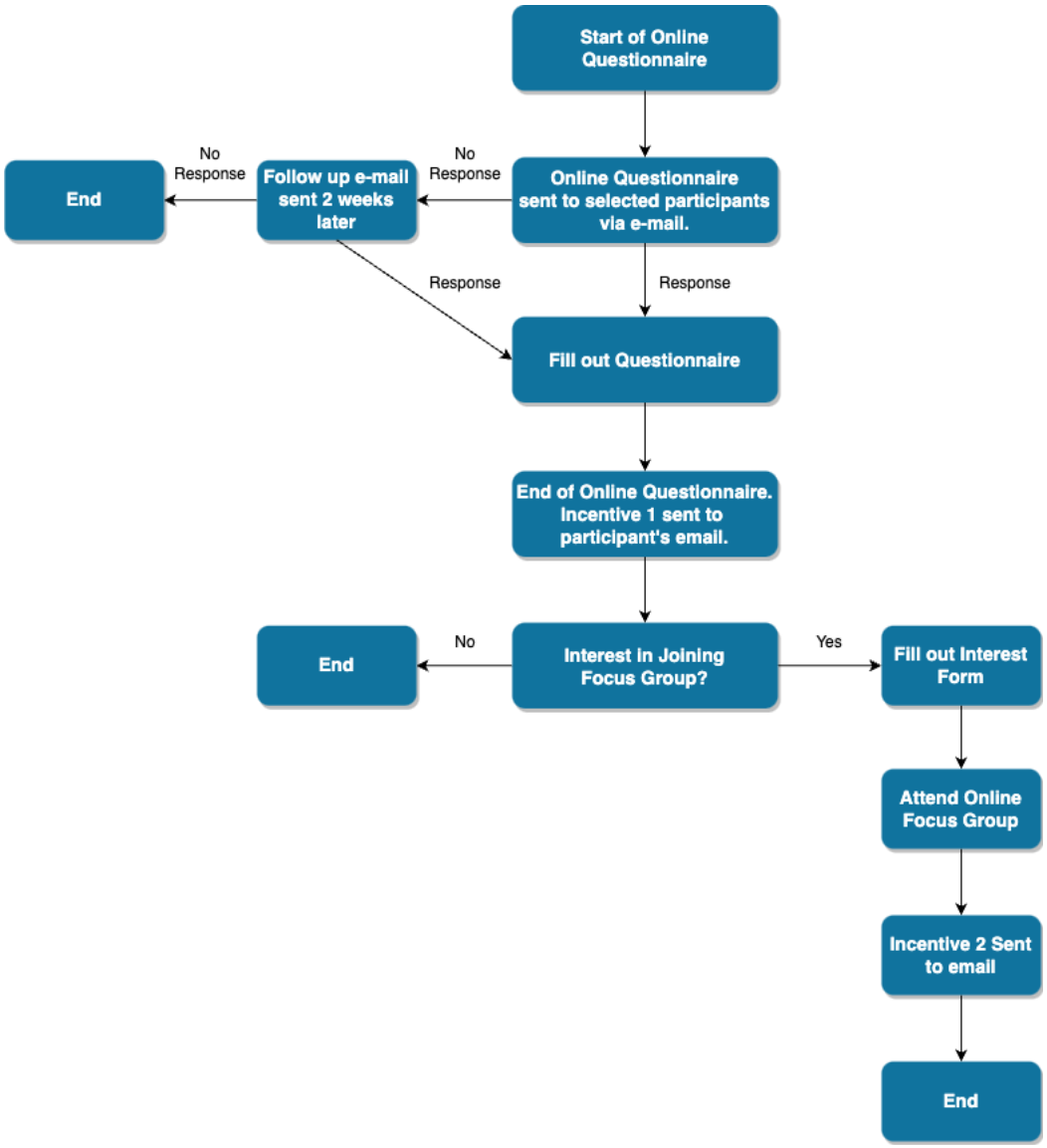


Figure 7:Flowchart for Online Questionnaire and Focus Group (RO 6.1)

Questionnaire

Cover Letter

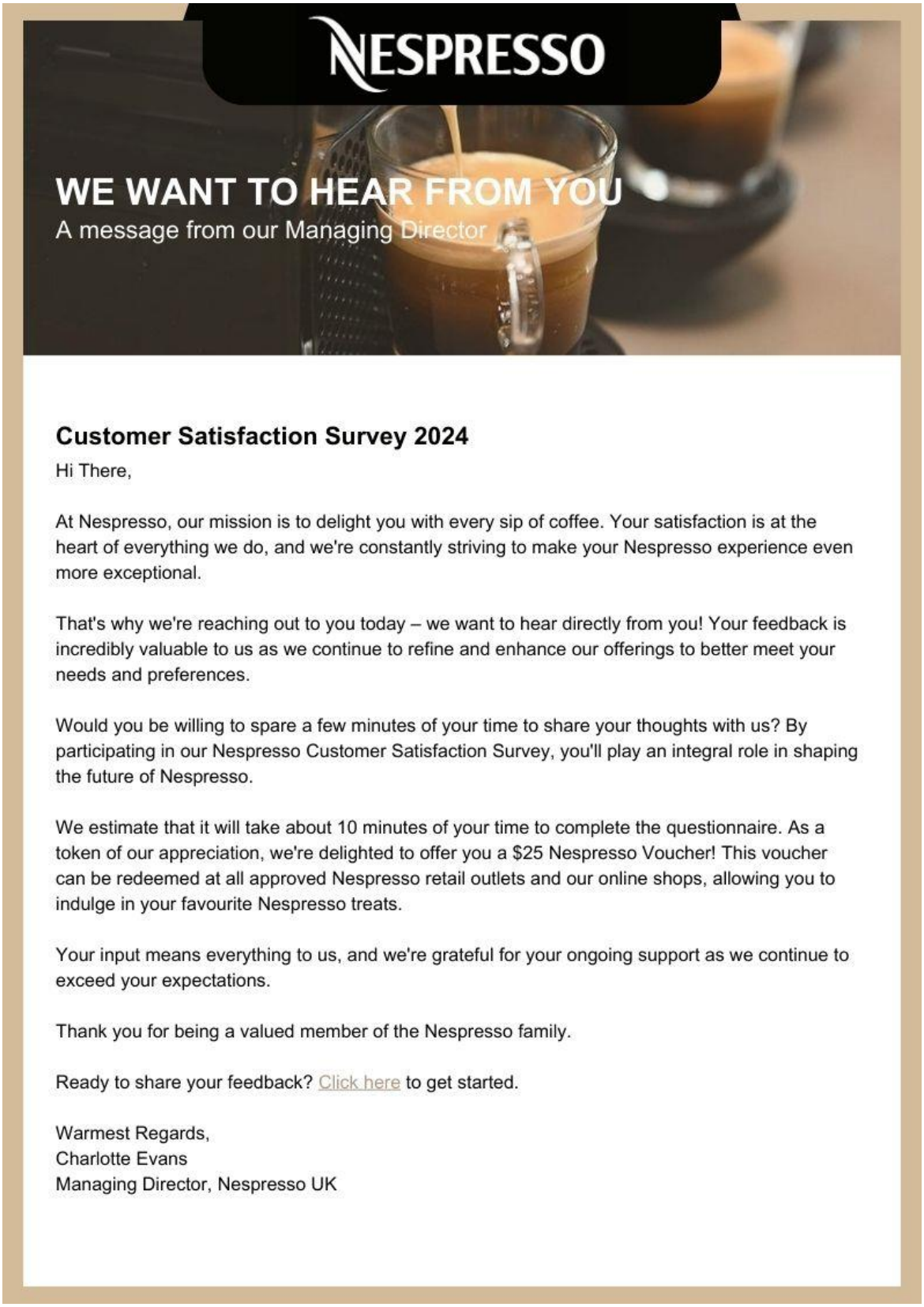


Figure 8: E-mail Cover letter for Online Questionnaire

Online Questionnaire

1. What is your birthdate? *

Please input date (dd/MM/yyyy)

2. What is your Gender? *

Select the gender assigned at birth

- ◯ Male
- ◯ Female

3. Which region do you currently reside in? *

- ◯ United States
- ◯ Europe
- ◯ China
- ◯ Other

4. What has been your preferred shopping method over the past year? *

- ◯ Online
- ◯ Offline (Physical shops)

5. In the past year, which type of buyer best describes you? *

- ◯ Individual Buyer
- ◯ Corporate Buyer

Figure 9: Part 1 - Online Questionnaire (Preview)

6. Approximately, what is your average monthly household income? *

Please enter a number (USD)

7. On a scale of 1 to 7, where 1 represents 'Very Dissatisfied' and 7 represents 'Very Satisfied', please rate your overall satisfaction with Nespresso over the past year. *

1	2	3	4	5	6	7

8. Please rate your satisfaction for the following aspects of your experience with Nespresso over the past year, where 1 indicates 'Very Dissatisfied' and 5 indicates 'Very Satisfied' *

	1) Very Dissatisfied	2) Dissatisfied	3) Neutral	4) Satisfied	5) Very Satisfie
Customer Service	◯	◯	◯	◯	◯
Packaging	◯	◯	◯	◯	◯
Product Quality	◯	◯	◯	◯	◯

9. Thank you for completing our questionnaire! Please provide us with the email address where you'd like to receive the Nespresso $25 e-voucher. *

10. Would you be interested in participating in our online focus group discussion? We'll be covering topics related to our customer service, packaging, and product quality. During the session, you'll have the opportunity to share any pain points or insights you may have. The focus groups will be held on weekends in April and will last for approximately 3 hours. All participants will receive a $100 Nespresso voucher as a token of appreciation for their time.

If you're interested, please indicate your interest below. If selected, you will receive a follow-up email with instructions on how to select your focus group time slot. We regret to inform you that participation is by invitation only, and only selected participants will be invited to join. Thank you for considering! *

◯ I am interested

◯ I am not interested

Figure 10: Part 2 - Online Questionnaire (Preview)

Data Collected Through Online Questionnaire

Table 2: List of Data Collected Through Online Questionnaire

Variable	Data Type
Online Questionnaire - Current Nespresso Customer	
Age	Continous
Gender	Nominal Categorical
Market Region	Nominal Categorical
Preferred Shopping Method (Online/Physical Shops)	Nominal Categorical
Buyer Type (Individual/Corporate)	Nominal Categorical
Monthly Income	Continous
Overall Customer Satisfaction Rating	Semantic Differential Scale
Satisfaction Rating for the for the following aspects: -Customer Service -Packaging -Product Quality	1 to 5 Likert Scale

7) Statistical Analysis Techniques

Two-way ANOVA (RO1.1) - To examine if blend preference scores is different across different variables.

We employ two-way ANOVA to address RO1.1. Below are the variables slated for our analysis.

Table 3: Classification of Variables for RO1.1

Dependent Variable	Y_1 = Roast Intensity Preferencing Rating *or* Y_2 = Coffee Intensity Preferencing Rating *or* Y_3 = Nutty Flavour Preferencing Rating *or* Y_4 = Fruity Flavour Preferencing Rating *or* Y_5 = Chocolatey Flavour Preferencing Rating
Independent Variable	X_1 = Market X_2 = Customer Type (Preferred Method of Drinking Coffee)

Table 4: Categories of Independent Variables for RO1.1

Market	Customer Type
United States Europe China	Nespresso Pods Café Coffee Sachet Homemade with Coffee Beans

Assuming the collected data meet the assumptions for ANOVA, we will use SPSS to generate the two-way ANOVA report for each dependent variable.

Two-way ANOVA report

Table 5: Test of Between-Subjects Effects Table

Test of Between-Subjects Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model						
Intercept						
Market						
Customer Type						
Market * Customer Type						
Error						
Total						
Corrected Total						

Hypotheses

Table 6: Summary of Null and Alternative Hypotheses of Main Effects for RO1.1

Main Effect	**Customer Type**		**Market**	
Dependent Variable	H_0	H_1	H_0	H_1
Roast Intensity	Mean preference score for roast intensity is the same across different customer types.	Mean preference score for roast intensity is different across different customer types.	Mean preference score for roast intensity is the same across different markets.	Mean preference score for roast intensity is different across different markets.
Coffee Intensity	Mean preference score for coffee intensity is the same across different customer types.	Mean preference score for coffee intensity is different across different customer types.	Mean preference score for coffee intensity is the same across different markets.	Mean preference score for coffee intensity is different across different markets.
Nutty Flavour	Mean preference score for nutty flavour is the same across different customer types.	Mean preference score for nutty flavour is different across different customer types.	Mean preference score for nutty flavour is the same across different markets.	Mean preference score for nutty flavour is different across different markets.
Fruity Flavour	Mean preference score for fruity flavour is the same across different customer types.	Mean preference score for fruity flavour is different across different customer types.	Mean preference score for fruity flavour is the same across different markets.	Mean preference score for fruity flavour is different across different markets.
Chocolatey Flavour	Mean preference score for chocolatey flavour is the same across different customer types.	Mean preference score for chocolatey flavour is different across different customer types.	Mean preference score for chocolatey flavour is the same across different markets.	Mean preference score for chocolatey flavour is different across different markets.

Table 7: Null and Alternative Hypotheses of Interaction Effect for RO1.1

Interaction Effect	H_0	H_1
Market * Customer Type	There is no significant interaction effect between market and preferred method of drinking coffee on blend preferences rating (Y_1, Y_2,... Y_5).	There is a significant interaction effect between market and preferred method of drinking coffee on blend preferences rating (Y_1, Y_2,... Y_5).

Analysis

The analysis involves examining the main effects of both independent variables and their interaction effect on the dependent variable. We reject H_0 if P-value is less than 0.05. Furthermore, Partial Eta Squared (η^2) measures the proportion of variance in the dependent variable that is accounted by the associated independent variable while controlling for the other independent variables in the model.

Application

The results indicate differences in blend preferences based on market and coffee consumption habits, including their interaction effect. Nespresso can leverage on these insights by developing coffee beans tailored to consumers who prefer brewing with coffee beans. Furthermore, introducing new flavours in their pod line-up for diverse customer segments can enhance competitiveness. Assessing the interaction effect helps evaluate how market variables depend on customer types and vice versa. Using η^2, Nespresso can identify factors with the greatest impact on blend preferences, allowing marketers to customize offerings for specific market segments and consumption habits.

Two-group Discriminant Analysis (RO2.1) - Examine factors that will influence customers' interest in purchasing new brewing technology.

We employ two-group discriminant Analysis to address RO2.1. Below are the variables slated for our analysis.

Table 8: Classification of Variables for RO2.1

Dependent Variable	Y_1 = Interest in Purchasing New Brewing Technology (Interested/Not Interested)
Independent Variable	X_1 = AGE (age) X_2 = INCOME (income) X_3 = PRICE (price importance rating) X_4 = FAF (features and functionality importance rating) X_5 = BRAND (brand importance rating) X_6 = TECH (technology innovation importance rating) X_7 = AESTHETIC (aesthetic importance rating) X_8 = CCF (coffee consumption frequency)

Theoretical Model

$$D = \beta_0 + \beta_1 AGE + \beta_2 INCOME + \beta_3 PRICE + \beta_4 FAF + \beta_5 BRAND + \beta_6 TECH + \beta_7 AESTHETIC + \beta_8 CCF$$

D = Discriminant Score

β_k= Discriminant weight or coefficient for variable k, k = 1, 2, …., 8

Estimated Model

$$\widehat{D} = \widehat{\beta_0} + \widehat{\beta_1} AGE + \widehat{\beta_2} INCOME + \widehat{\beta_3} PRICE + \widehat{\beta_4} FAF + \widehat{\beta_5} BRAND + \widehat{\beta_6} TECH + \widehat{\beta_7} AESTHETIC + \widehat{\beta_8} CCF$$

We will use SPSS to generate the Two-group Discriminant Analysis report.

Two-group Discriminant Analysis report

Table 9: Group Statistics Table

Group Statistics

New Brewing Technology Interest		Mean	Std. Deviatio
Interested	Age		
	Income		
	Price importance rating		
	Features and functionality importance rating		
	Brand importance rating		
	Technology innovation importance rating		
	Aesthetic Importance Rating		
	Coffee consumption frequency		
Not Interested	Age		
	Income		
	Price importance rating		
	Features and functionality importance rating		
	Brand importance rating		
	Technology innovation importance rating		
	Aesthetic Importance Rating		
	Coffee consumption frequency		
Total	Age		
	Income		
	Price importance rating		
	Features and functionality importance rating		
	Brand importance rating		
	Technology innovation importance rating		
	Aesthetic Importance Rating		
	Coffee consumption frequency		

Table 10: Canonical Discriminant Function Coefficients and Structure Matrix tables

Canonical Discriminant Function Coefficients

	Function 1
Age	
Income	
Price importance rating	
Features and functionality importance rating	
Brand importance rating	
Technology innovation importance rating	
Aesthetic Importance Rating	
Coffee consumption frequency	

Structure Matrix

	Function 1
Age	
Income	
Price importance rating	
Features and functionality importance rating	
Brand importance rating	
Technology innovation importance rating	
Aesthetic Importance Rating	
Coffee consumption frequency	

Table 11: Eigenvalues and Wilks' Lambda Tables

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1				

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-Square	df	Sig.
1				

Table 12: Tests of Equality of Group Means Table

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Age					
Income					
Price importance rating					
Features and functionality importance rating					
Brand importance rating					
Technology innovation importance rating					
Aesthetic Importance Rating					
Coffee consumption frequency					

Table 13: Functions at Group Centroids table

Functions at Group Centroids

Interest in new brewing technology	Function 1
Interested	
Not Interested	

Unstandardized canonical discriminant functions evaluated at group means

Table 14: Classification Results Table

Classification Results

				Predicted Group Membership		
			Interest in new brewing technology	Interested	Not Interested	Total
Cases Selected	Original	Count	Interested			
			Not Interested			
		%	Interested			
			Not Interested			
Cases Not Selected	Original	Count	Interested			
			Not Interested			
		%	Interested			
			Not Interested			

Hypotheses

Table 15: Null and Alternative Hypotheses for significance of Two-group Discriminant Analysis Model

Significance of Model

H_0	H_1
There is no significant difference in the discriminant function between participants interested and not interested in purchasing new brewing technology.	There is significant difference in the discriminant function between participants interested and not interested in purchasing new brewing technology.

Table 16: Summary of Null and Alternative Hypotheses for Test of Equality of Group Means

Variable	H_0	H_1
Age	There is no significant difference in the mean age between participants interested and not interested in purchasing new brewing technology.	There is significant difference in the mean age between participants interested and not interested in purchasing new brewing technology.
Income	There is no significant difference in the mean income between participants interested and not interested in purchasing new brewing technology.	There is significant difference in the mean income between participants interested and not interested in purchasing new brewing technology.
Price importance rating	There is no significant difference in the mean importance rating for price between participants interested and not interested in purchasing new brewing technology.	There is significant difference in the mean importance rating for price between participants interested and not interested in purchasing new brewing technology.
Features and functionality importance rating	There is no significant difference in the mean importance rating for features and functionality between participants interested and not interested in purchasing new brewing technology.	There is significant difference in the mean the importance rating for features and functionality between participants interested and not interested in purchasing new brewing technology.
Brand importance rating	There is no significant difference in the mean importance rating for brand between participants interested and not interested in purchasing new brewing technology.	There is significant difference in the mean importance rating for brand between participants interested and not interested in purchasing new brewing technology.
Technology innovation importance rating	There is no significant difference in the mean importance rating for technology innovation between participants interested and not interested in purchasing new brewing technology.	There is significant difference in the mean importance rating for technology innovation between participants interested and not interested in purchasing new brewing technology.
Aesthetic importance rating	There is no significant difference in the mean importance rating for aesthetic between participants interested and not interested in purchasing new brewing technology.	There is significant difference in the mean importance rating for aesthetic between participants interested and not interested in purchasing new brewing technology.
Coffee consumption frequency	There is no significant difference in the mean coffee consumption frequency between participants interested and not interested in purchasing new brewing technology.	There is significant difference in the mean coffee consumption frequency between participants interested and not interested in purchasing new brewing technology.

Analysis

We evaluate the model's significance using the 'Eigenvalues' and 'Wilks' Lambda' tables. A higher Eigenvalue indicates stronger discriminant ability. The model's function is considered significant if the P-value associated with the chi-square statistic in the 'Wilks Lambda' table is less than 0.05. The classification results table shows how well cases are classified into groups based on predictor variables.

Differences between groups for each predictor variable are assessed using the 'Test equality of group means' table. A P-value less than 0.05 indicates significant differences in predictor variable means between groups. Additionally, the group statistics table helps identify which group has higher or lower values.

Discriminant function coefficients are found in the Canonical Discriminant Function Coefficients table. The 'Functions at Group Centroids' table displays discriminant scores for each group centroid. The Structure Matrix table identifies predictors strongly correlated with the discriminant function.

Application

The analysis enables Nespresso to identify the characteristics of potential customers interested in purchasing new brewing technology, often categorised as "Innovators" and "Early Adopters" in the innovation diffusion curve. This insight allows Nespresso's marketers to forecast their preferences, priorities and attributes in advance, enabling strategic planning to effectively target them for the adoption of the new technology. As early adopters spread awareness through word of mouth, they facilitate the adoption process among late adopters, thereby accelerating the technology's market penetration (Rogers, 1983, p. 188).

Multiple Linear Regression (RO3.2) - To examine relationships between overall customer satisfaction and various variables.

We employ Multiple Linear Regression(MLR) to address RO3.2. Below are the variables slated for our analysis.

Table 17: Classification of variables for RO3.2

Dependent Variable	Y_1 = Overall Customer Satisfaction Score
Independent Variable	X_1 = AGE X_2 = CSS (customer service satisfaction score) *or/and* PSS (packaging satisfaction score) *or/and* PQS (product quality satisfaction score) **During focus group discussions (RO3.1), we will identify the key factors to include in the multiple regression model.* X_3 = INCOME X_4 = GENDER (Categorical Nominal) X_5 = CUSTOMER_SEGMENT (Categorical Nominal)

Table 18: Dummy Variables used for RO3.2

Gender	Customer Segment
0: Female 1: Male	0: Corporate customer 1: Individual customer

The MLR equation to predict the dependent variable is:

$$\hat{Y} = \widehat{\beta_0} + \widehat{\beta_1}AGE + \widehat{\beta_2}CSS + \widehat{\beta_3}INCOME + \widehat{\beta_4}GENDER + \widehat{\beta_5}CUSTOMER\_SEGMENT$$

$\hat{Y}$: Estimated value of Overall Customer Satisfaction Score

$\widehat{\beta_0}$: Coefficient of intercept

$\widehat{\beta_k}$: When the amount of Y changes when the particular X_k, increase by one unit, with the values of all other independent variables held constant, k =1, 2,..., 5

Before conducting the regression analysis, we will perform tests including calculating the Variance Inflation Factor (VIF) and generating scatterplots between the dependent variable (Y) and each independent variable to assess assumptions.

Multiple Linear Regression Report

Table 19: Coefficients table of Overall Customer Satisfaction Score

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)							
AGE							
CSS							
INCOME							
GENDER							
CUSTOMER_SEGMENT							

Dependent Variable: Overall Customer Satisfaction Score

Table 20: Model Summary Table

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1				

Table 21: ANOVA Table

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression					
	Residual					
	Total					

Hypotheses

Table 22: Null and Alternative Hypothesis for ANOVA Global F-test

ANOVA Table, Global F-test

H_0	H_1
$\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ Overall model is not statistically significant. None of the predictors have a statistically significant effect on predicting overall customer satisfaction score.	$At\ least\ one\ \beta_k \neq 0$, k = 1, 2, ..., 5 Overall model is statistically significant. At least one of the predictor has a statistically significant effect on predicting overall customer satisfaction score.

Table 23: Null and Alternative Hypothesis for Independent T-test

Independent T-test

H_0	H_1
$\beta_k = 0$, k = 1,2, ..., 5 Variable X_k does not have a statistically significant impact on the overall customer satisfaction score.	$\beta_k \neq 0$, k = 1,2, ..., 5 Variable X_k have a statistically significant impact on the overall customer satisfaction score.

Analysis

The model summary table provides an overview of the regression model's fit. The R-squared value signifies the proportion of variance in the dependent variable explained by the independent variables. To determine the overall significance of the model, we examine the P-value associated with the F-statistic in the ANOVA table, rejecting the null hypothesis if the P-value is below 0.05. In the coefficients table, each independent variable's regression coefficient indicates the strength and direction of its relationship with the dependent variable, with significance levels determining whether these relationships are statistically significant. A variable is deemed a significant predictor if its p-value is less than 0.05.

Application

The regression analysis can help Nespresso understand which factors have the greatest influence on customer satisfaction, allowing Nespresso to allocate its resources effectively. Additionally, by scrutinising the regression coefficients linked to dummy variables like Gender and Customer Segment, Nespresso can tailor marketing strategies to demographic groups showing lower satisfaction scores.

Independent T-test (RO4.1) - Examine if there's a difference in customer service satisfaction score between online and offline shoppers.

Independent T-test is suitable in addressing RO4.1. Below are the variable slated for our analysis.

Table 24: Classification of Variables for RO4.1

Dependent Variable	Y_1 = Customer Service Satisfaction Score
Independent Variable	X_1 = Preferred Shopping Method (Online/Offline Physical Shops)

We ignore normality assumptions since sample size is large. We will use SPSS to generate Independent T-test report.

Independent T-test Report

Table 25: Independent Samples Test Table

		Levene's Test for Equality		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig.(2tailed)	Mean Difference	Std.Error Difference	Lower	Upper
Customer Service Satisfaction Score	Equal Variances assumed									
	Equal Variances not assumed									

Hypotheses

Table 26: Null and Alternative Hypothesis for Levene's Test for Equality of Variances

Levene's Test

H_0	H_1
$\sigma_{Online}{}^2 = \sigma_{Offline}{}^2$ Population variances of customer service satisfaction score for both Online and Offline shoppers are not significantly different.	$\sigma_{Online}{}^2 \neq \sigma_{Offline}{}^2$ Population variances of customer service satisfaction score for both Online and Offline shoppers are significantly different.

Table 27: Null and Alternative Hypothesis for Independent T-test for Equality of Means

Independent T-test

H_0	H_1
$\mu_{online} - \mu_{offline} = 0$ Mean customer service satisfaction score is the same for both online and offline shoppers.	$\mu_{online} - \mu_{offline} \neq 0$ Mean customer service satisfaction score is different for both online and offline shoppers.

Analysis

Levene's Test assesses whether there is equality of variances between the two groups. Ideally, we aim for a P-value greater than 0.05, as unequal variances may impact the interpretation of t-test results. We examine the P-value associated with the t-statistics to determine if there are significant differences between the group means. If the P-value is less than 0.05, we reject the null hypothesis and conclude that the differences in means are statistically significant. The 95% Confidence Interval of the Difference provides additional information about the precision of the estimates, indicating whether the mean satisfaction score for online shoppers is higher than for offline shoppers.

Application

Through the analysis, Nespresso can assess the effectiveness of its distribution channels. For instance, if online shoppers exhibit higher satisfaction scores compared to offline shoppers, it may indicate that Nespresso's online channels offer a better customer experience.

χ^2 test for association, Contingency Table, Cramer's V (RO5.1) - To examine the association between awareness levels of the current sustainability initiatives implemented by Nespresso and market.

We employ χ^2 test for association and Contingency Table to address RO5.1. Below are the variables slated for our analysis.

Table 28: Classification of variables for RO5.1

Dependent Variable	Y_1 = Awareness Level (Not Aware, Partial Awareness, Full Awareness)
Independent Variable	X_1 = Market (United States, China, Europe)

Contingency Table

We will employ contingency table to examine relationships between both variables. Given that sample sizes vary across markets due to assigned quotas, the values in the contingency table will be represented as proportions rather than counts.

Table 29: Contingency Table of Awareness Level against Market

Proportion		Awareness Level			
		Not Aware	Partial Awareness	Full Awareness	Total
Market	United States				100%
	Europe				100%
	China				100%

χ^2 test for association and Cramer's V report

We will run χ^2test of association on SPSS to generate the following tables:

Table 30: Chi-Square Tests Table

Chi-Square Tests

	Value	df	Asymptotic Significance (2sided)
Pearson Chi-Square			
Likelihood Ratio			
Libear-by-Linear Association			
N of Valid Cases			

Table 31: Symmetric Measure Table

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi		
	Cramer's V		
	Contingency Coefficient		
N of Valid Cases			

Table 32: Directional Measures Table

Directional Measures

		Value	Asymptotic Standard Error	Approximate T	Approximate Significance
Nominal by Nominal Lambda	Symmetric				
	Awareness Level Dependent				
	Market Dependent				

Hypothesis

Table 33: Null and Alternative Hypothesis for Chi-square Test of Association

H_0	H_1
There is no association between Awareness Level and Market.	There is association between Awareness Level and Market.

Analysis

We examine the Pearson Chi-square P-value to assess the statistical significance of the association between Awareness Level and Market. If the P-value is less than 0.05, we reject the null hypothesis, indicating a significant association between the variables.

Cramer's V, obtained from Symmetric Measures, quantifies the strength of association between Awareness Level and Market, ranging from 0 to 1. A value closer to 1 suggests a stronger association.

We refer to the Asymmetric Lambda value in the Directional Measures Table to evaluate if Market enhances our ability to predict Awareness Level, with Awareness Level as the dependent variable.

Application

The analysis reveals how aware customers are of Nespresso's sustainability initiatives across different markets. The findings can help Nespresso to improve future initiatives and identify gaps in awareness among different markets, enabling them to focus efforts on areas where awareness is lacking.

Furthermore, By identifying markets with low awareness levels, we can prioritise these areas during the focus group discussions (RO6.1) to gather insights on the factors contributing to the lack of awareness.

Paired Sample T-test (RO6.2) To determine if there is an improvement to the sustainability rating scores before and after exposure to Nespresso's sustainability practices.

We will employ Paired Sample T-test to address RO6.2. Given our research design, employing a one-group pre-test post-test experimental design is most appropriate as we sample the same individuals. However, a potential challenge lies in controlling for extraneous variables and managing the interactive testing effect as participants are made aware of the experiment, hence they pay more attention to the test.

Table 34: Experimental Design(RO6.2)

One Group Pre-test Post-test Design
$O_1 \quad X \quad O_2$ • A pre-test measurement of Sustainability Rating score is taken (O_1) • Participants are asked to watch a sustainability campaign video • Then, a post-test measurement of Sustainability Rating score is taken (O_2) Treatment effect is $O_2 - O_1$

We ignore normality assumptions since sample size is large. We will use SPSS to generate Paired Sample T-test report.

Paired Sample T-test Report

Table 35: Paired Samples Test Table

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval				
				Lower	Upper			
Before - After								

Table 36: Null and Alternative hypothesis for Paired Sample T-test

Paired Sample T-test

H_0	H_1
$\mu_d = 0$ There is no significant difference in sustainability rating before and after exposure to Nespresso's sustainability practices.	$\mu_d \neq 0$ There is significant difference in sustainability rating before and after exposure to Nespresso's sustainability practices.

Analysis

We will reject the null hypothesis if the P-value associated with the T-statistics is less than 0.05, indicating a significant difference in sustainability ratings before and after exposure to Nespresso's sustainability practices. Additionally, if the 95% confidence interval for both ends is positive, this suggests that exposure to the sustainability practices improves the sustainability ratings.

Application

The analysis will provide Nespresso insights into the effectiveness of their sustainability campaign. If the sustainability rating significantly improves after exposure, it indicates that the campaign successfully resonated with customers and positively influenced their perception of Nespresso's sustainability practices.

8) Focus Groups Techniques

Focus Groups for RO3.1 - Identify variables that affect customer satisfaction amongst existing customers.

To address the potential challenge of desirable bias in Focus Group RO3.1, we will employ a Dueling-Moderator approach. Here, two moderators will take opposing viewpoints on the topics discussed to explore both positive and negative perspectives. Utilising direct approach, the purpose of the research will be disclosed to participants. Exploration questions will be structured to draw out unknown information such as customer pain points or obstacles in the customer journey.

Table 37: Exploration Questions Examples (RO3.1)

Examples of Exploration Questions for RO3.1

Topics	Questions
Customer Service	What do you like best about Nespresso's customer service? What do you not like about Nespresso's customer service? Can anyone else relate to what participant X has experienced?
Packaging	In which area do you think Nespresso's packaging could be enhanced? Please look at the following packaging samples that I will be sharing on the screen and let me know your thoughts.
Quality	If Nespresso were unavailable, which brand of coffee would you opt for instead? What factors influence your choice?

Focus Groups for RO6.1 - To identify strategies to enhance Nespresso's sustainability efforts.

Dual-moderator groups will be employed, with one moderator overseeing the discussion's progression and the other ensuring all relevant topics are covered. Considering the complex, sensitive and nuanced nature of sustainability-related topics, indirect approach will be employed to address RO6.1 effectively. This will involve using a combination of projective techniques such as association technique, mood boards, and completion technique during the focus groups. This approach not only encourages

participants to freely express their feelings, beliefs, and attitudes but also fosters active participation, which allows a greater depth of insights to be uncovered.

9) Budget and Timeline

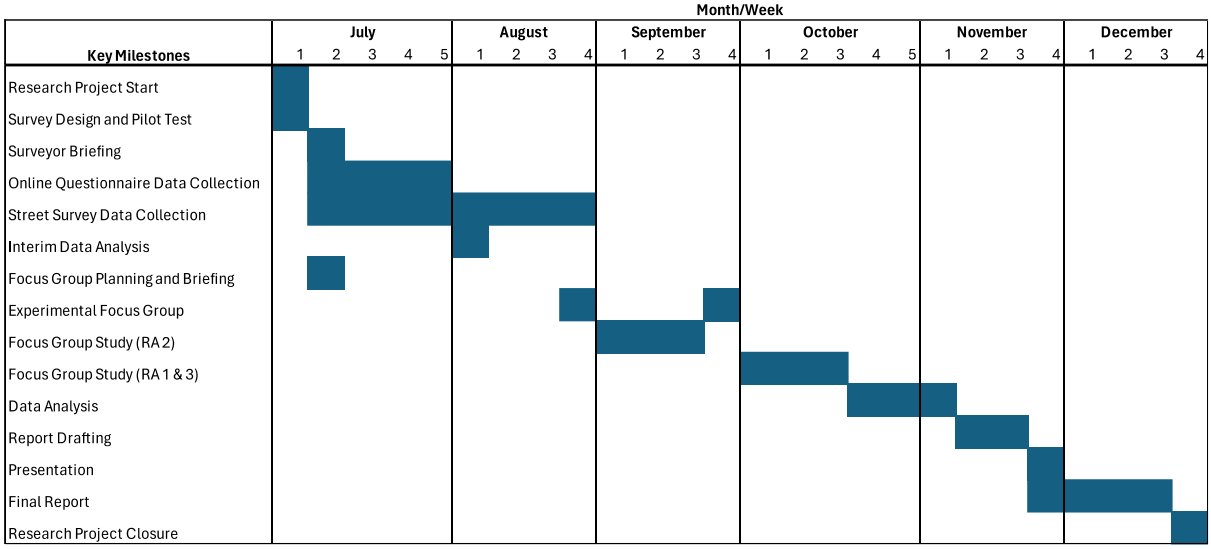
Budget Breakdown

Table 38: Budget Breakdown Table

Expenses	Qty	Cost Per Unit(USD)	Total(USD)
Consultation Fees (Based on Man-hours)			
Research Objectives	12	$ 500.00	$ 6,000.00
Research Methodology	12	$ 500.00	$ 6,000.00
Sampling Methods	10	$ 500.00	$ 5,000.00
Data Processing and Analysis Fees	40	$ 500.00	$ 20,000.00
Reporting and Recommendations	40	$ 750.00	$ 30,000.00
			$ 67,000.00
Data Collection Expenses (Including Incentives)			
Street Survey	641	$ 35.00	$ 22,435.00
Online Questionnaire	2510	$ 30.00	$ 75,300.00
Focus Groups	260	$ 120.00	$ 31,200.00
			$ 128,935.00
Manpower Expenses			
Travel	1	$ 2,000.00	$ 2,000.00
Accomodations	1	$ 4,500.00	$ 4,500.00
Surveyors' Fees	12	$ 3,000.00	$ 36,000.00
Moderators' Fees	8	$ 5,000.00	$ 40,000.00
			$ 82,500.00
Operations and Administrative Fees			
Contingency Fund	1	$ 10,000.00	$ 10,000.00
Operations Expenses	1	$ 20,000.00	$ 20,000.00
Admin Fees	1	$ 5,000.00	$ 5,000.00
			$ 35,000.00
Sub-Total			$ 313,435.00
10% Sales Tax Rate			$ 31,343.50
Grand Total			**$ 344,778.50**

Research Project Timeline

Table 39: Project Timeline (2024)



10) Proposed Further Research

Understanding Price Sensitivity

Extending from RA2.1, we can assess customers' willingness to pay for Nespresso products. Focus groups can delve into perceptions of value and price elasticity. Statistical techniques like Conjoint analysis or price sensitivity analysis can quantify the importance of product attributes and gauge the impact of price changes on purchasing behaviour.

Exploring New Market Opportunities

Cluster analysis can also help Nespresso identify overlooked consumer segments. By understanding their needs and characteristics, Nespresso can penetrate new market and attract new customers, growing their market share.

Identifying Emerging Trends

Studying emerging coffee trends enables Nespresso to anticipate shifts in consumer behaviour, adapt strategies, and maintain competitiveness. This strengthens brand equity among existing customers and attracts new ones who value innovation.

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Technical Appendix

Wordcount Summary

Content	Word Count
1) Background	64
2) Problem Definition	43
3) Research Aims	72
4) RQs and Ros	202
5) Methodology	154
6) Data Collection Method	958
7) Statistical Analysis Techniques	1237
8) Focus Groups Techniques	160
9) Budget and Timeline	0
10) Proposed Further Research	110
Total	3000