Streamlining Individual Lending Evaluations at Swadhaar

Contents

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The Need for an Individual Microenterprise Loan Product – Serving the Missing Middle*

The microenterprise segment is not being served effectively by current banking OR group lending products – thus, there exists a large gap for flexible individual business loan products

Micro entrepreneurs need…	Commercial Banks offer…	Microfinance - Group Loans offer…
Flexible loan amounts between Rs 25,000 – Rs 2,00,000	Loan amounts typically starting at > Rs 5,00,000	Rigid loans based on cycle, between Rs 5,000 – Rs 30,000
Shorter loan tenure for working capital requirement	Loan terms typically 12 months or greater	Loan terms typically 12-24 months
Option to foreclose loans based on business seasonality and cash flows	Available, generally for a penalty/fee	Renewal loans only when the whole group closes, and not as per individual requirement
Fewer documentation requirements	Require several documents such as IT Returns, and often collateral	Low documentation requirement
Flexibility in payment mode – Doorstep cash collection/ PDC/ ECS	Require Post Dated Cheques or bank transfers	Need to participate in time-consuming group meetings

** For further information, please refer to APPENDIX 1 -* ***Background Note on Individual Lending***

Swadhaar's Individual Lending Process

Initiate Renewal

Promotion → Loan Evaluation → Loan Approval → Loan Disbursement → Loan Repayment

Loan Evaluation:
- Willingness to Pay
- Capacity to Pay

Loan evaluation is the most critical and difficult part of the lending process to cover individual risk – it is important to explore tools to optimize this process

Promotion	Loan Evaluation	Loan Approval	Loan Disbursement	Loan Repayment
Customer Relationship Officer (CRO)	CRO & Branch Manager (BM)	Branch Mgr/ Area Mgr	Admin Assistant	CRO
20-30 mins	2 – 2.5 hours	15-20 mins	20-30 mins	5-10 mins per collection

Objectives of the Swadhaar-Unitus Project

- **The primary objective of the Swadhaar -Unitus project was to analyze a selection of available data from Swadhaar's existing client base (across 4 years of operations) and develop tools to simplify and standardize the individual lending evaluation process with an aim to increase efficiencies and enhance risk mitigation.**

- **The key tools/processes that were explored in detail as part of this project were:**

  1. Tailoring products to suit the needs of specific business sectors
  2. Identifying a suitable methodology to implement a preliminary credit scoring model for better client selection
  3. Using standardized margins and household expenses for client's capacity evaluation
  4. Using key business indicators to track client's business growth across cycles

- **Each of these processes is discussed in greater detail in the following sections**

Analysis of Key Tools / Processes

1. Tailoring products to suit the needs of specific business sectors
2. Identifying a suitable methodology to design a preliminary credit scoring model for better client selection
3. Using standardized margins and household expenses for client's capacity evaluation
4. Using key business indicators to track client's growth across cycles

Benefits of tailored products

There are several benefits of tailoring products to the needs of specific business sectors:

- **Effective Marketing**
  - Field officers can readily identify the target segment for the product and can deliver a more focused/relevant sales speech
- **Reduced evaluation time**
  - As critical aspects of the business are already considered in the product features, evaluation processes can be shorter
- **Increased client satisfaction**
  - Products are more customized to client's business needs, thus leading to increased satisfaction levels
  - Clients are more likely to avail repeat loans, thus improving customer retention
- **Minimized Risk**
  - Specific business risks are addressed through product eligibility criteria and other loan features

Findings: Business Categories by sector and activity

Based on similarities found, businesses were categorized across six major business types.

Sector	Business Type	Example of Businesses
Trader and Service	1. Semi mobile businesses	- Selling vegetables, fish, flowers, toys, plastic - Selling ice cream, candies, juices - Food stalls (chat, samosas, Chinese, vada pav, tea etc)
Trader	2. Small businesses but at fixed location: trading	- Selling: grocery items, footwear, masala, meats (chicken, mutton, eggs, etc), cutlery items, sari
Service	3. Small businesses but at fixed location: Services related	- Services: beauty parlor, barber shops, service stations, repair shops (watches, electronics etc.), tailor, photography
Service	4. Small businesses but at fixed location: Food related	- Fixed food outlets: restaurants, tea shops, sweets
Trader	5. Wholesalers/large retailers	- Selling: clothes (cut pieces, materials, readymade garments, lingerie, socks, etc.), Kirana shops, footwear
Manufacturer	6. Home based businesses/small factory	- Manufacture of shoes, bangles, imitation jewelry, piece-rate tailors

Findings: Business Characteristics

Business Type	Monthly Sales (in INR)	Monthly Cash Flows:		Inventory rotation	Business Assets			#of employees
		on Cash	on Credit		Inventory	Furniture/Tools	Others	
1. Semi mobile businesses	30,000 - 60,000	100%	0%	3 days - 1 week	80%	10%	10%	None (mostly family members)
2. Small businesses but at fixed location: trading	50,000 - 1,00,000	~80%	<20%	1 week - 3 weeks	70%	20%	10%	One to two employee + family members
3. Small businesses but at fixed location: Services related	30,000 - 50,000	~90%	<10%	Own Inventory: negligible	10%	80%	10%	None
4. Small businesses but at fixed location: Food related	50,000 - 1,00,000	80%	<20%	1 week - 3 weeks	60%	30%	10%	None
5. Wholesalers /large retailers	1,00,000 - 3,00,000	~60%	<40%	4 weeks - 6 weeks	90%	10%	NA	One to three employees
6. Home based businesses/small factory	50,000 - 3,00,000	<10%	~90%	4 weeks - 6 weeks	80%	10%	10%	Up to 10-20 workers paid on per piece basis

Recommendations: Product Features

Based on a detailed analysis of business cash flows, and using Swadhaar's current experience in individual lending, standardized product features were developed for each category:

Business Type	Loan Requirements	Cycle	Loan Amount (in INR)	Loan Term (months)	Seasonality/ Moratorium	Repayment Frequency & Method	Document Proof	Collateral
1. Semi mobile businesses	Working capital loans and business asset loan	First	10,000 to 15,000	6-9	None	Daily or Weekly, repayment via cash	ID proof Residence proof	Co-signor required
		Second	15,000 to 20,000	9-12				
		Third	15,000 to 20,000	9-12				
2. Small businesses but at fixed location: trading	Working capital loans and business asset loan	First	15,000	6-9	None	Weekly or Fortnightly, repayment via cash	ID proof and any address proof (residence /business)	Co-signor required
		Second	20,000 to 25,000	9-12				
		Third	25,000	9-12				

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Recommendations: Product Features

Business Type	Loan Requirements	Cycle	Loan Amount (in INR)	Loan Term (months)	Seasonality/ Moratorium	Repayment Frequency & Method	Document Proof	Collateral
3. Small businesses but at fixed location: Services related	Working capital loans	First	15,000	6-9	None	Weekly or Fortnightly, repayment via cash	ID proof Residence proof	Co-signor required
		Second	20,000 to 25,000	9-12				
		Third	25,000	9-12				
	Building business assets	First	None	NA				
		Second	20,000 to 30,000	9-15				
		Third	30,000	9-18				
4. Small businesses but at fixed location: food related	Working capital loans	First	15,000	6-9	None	Weekly or Fortnightly, repayment via cash	ID proof Residence proof	Co-signor required
		Second	20,000 to 25,000	9-12				
		Third	25,000	9-12				
	Building business assets	First	None	NA				
		Second	20,000 to 30,000	9-15				
		Third	30,000	9-18				

Recommendations: Product Features

Business Type	Loan Requirements	Cycle	Loan Amount (in INR)	Loan Term (months)	Seasonality/ Moratorium	Repayment Frequency & Method	Document Proof	Collateral
5. Wholesale/ large retailers	Working capital loans	First	30,000 to 50,000	6	None	Monthly, repayment via cash/cheque /ECS. From second cycle onwards via cheque/ECS)	ID proof and any address proof (residence or business)	10% upfront margin
		Second	Upto 65,000	6-9				
		Third	Upto 80,000	6-12				
		Fourth	Up to 1 lakh	6-12				
	Building business assets	None (No significant demand for an asset loan)						
6. Manufacturing: Home based businesses/ small factory	Working capital loans	First	30,000 to 50,000	6	During lean period or at beginning of loan term: only interest has to be paid, principal to be adjusted in remaining months. Moratorium maximum of 3 months.	Monthly repayment via cash/cheque /ECS. From second cycle onwards via cheque/ECS)	ID proof and any address proof (residence or business)	10% upfront margin
		Second	Upto 65,000	6-9				
		Third	Upto 80,000	6-12				
		Fourth	Up to 1 lakh	6-12				
	Building business assets	First and Second	None	NA				
		Third	50,000 to 1 lakh	6-12				
		Fourth	50,000 to 1 lakh	9-18				

Analysis of Key Tools / Processes

1. Tailoring products to suit the needs of specific business sectors
2. **Identifying a suitable methodology to design a preliminary credit scoring model for better client selection**
3. Using standardized margins and household expenses for client's capacity evaluation
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Overview of Credit Scoring

- **Why Scoring**
  - Swadhaar is looking for ways to further streamline its credit process from the application stage to the disbursement stage to make its products/processes customer friendly and efficient, and to mitigate risk in client selection

- **Where does Scoring fit in the Credit Process**
  - Scoring of clients would enable Swadhaar to prioritize client visits for renewals and collections and to offer products based on their risk categories. Scoring can also be used to select clients at time of application

- **Swadhaar's experience with scoring**
  - Swadhaar has implemented a Renewal Score as part of the process to select clients for renewals. However, it hasn't been able to implement a score for client selection as existing clients haven't completed sufficient number of cycles with Swadhaar to build a large enough database

Benefits of Credit Scoring

A credit score would allow Swadhaar to categorize its customers as high, medium or low risk. This information could then be used to:

•Determine what products to offer

- Loan amount, term, interest rate, etc. when an applicant applies for a loan

•Prioritize visits to be made

- At the time of renewals, our credit score informs us which clients are our ‘best’ clients and hence can be renewed earlier

•Improve loan officer productivity and efficiency

- An MIS segregating our clients allows for closer monitoring of renewals and provide better service to more deserving clients

Methodology to develop a Credit Scorecard

Credit Scoring – Three types of methods may be used

1. **Expert Methodology**

   Built using the knowledge of an ‘expert’ or a group of ‘experts’. Based on their past experience/learning, experts identify variables and assign weights to these variables

2. **Combination of Expert selection and Data analysis/validation**

   Expert selection card is used to identify variables and data analysis to check, correct/adjust and validate the score

3. **Statistical Methodology**

   Using a regression model to examine how a given variable is affected by another variable(s)

Development of selection scorecard using the expert methodology

Steps followed in this process are as follows

1. **Identification of variables:** A group of experts is asked to identify variables to be considered when evaluating a client's willingness to pay
2. **Assigning weights to variables:**
   a. Each variable is given a score from 1-7, (1=insignificant, 4=neutral, 7=critical) by each expert; the weighted score from all experts gives the significance of the variable.
   b. Variables are selected and weighted based on the weighted expert scores.
   c. The attributes ("values") of each variable are then scored by the experts to identify how they affect the client score (e.g. if education is the variable, then its attributes would be illiterate, public school, private school or college); each different attribute would get a score such as -10, 0, 5, 10.
3. **Calculating client score:** Expert scores are constructed viz:
   a. For a client, the scores from all variables are added to get the final score.
   b. The higher the client's final score, the lower the risk category s/he represents

Development of the selection scorecard (1/2)

1. **Identification of variables:** 29 variables were proposed, e.g. Demographics (e.g. age, civil status, education, gender), Geo-demographic stability (e.g. business & home ownership), family stability (e.g. household size, children's education), etc.

2. **Assigning weights to variables:** Given below is an example how the final score is calculated for each variable and feature/attribute:
   a. All variables received a score from the experts; e.g. the **age** variable received the average score 4.8 by the experts (4 being neutral, meaning that age is significant)
   b. 11 variables were selected for the final score, e.g. the **age** variable was selected for the score based on the score given; variables selected included
      - Age and gender
      - Civil Status
      - Home ownership
      - Number of dependents
      - Etc.
   c. Attributes and scores were assigned for each variable; e.g. **age attributes**/scores:

Age attribute range	Score
18 – 30 yrs	10
31 – 50 yrs	50
> 50 yrs	10

Development of the selection scorecard (2/2)

3. Calculating client score:

a. Final client score is obtained by adding scores from all variables:

Variable	Attribute	Score
Age	35	50
Civil Status	Single	-40
Gender	Male	0
Home ownership	Own house	70
…	…	…
Total		105

b. Segmentation of clients into categories based on the score:

Client score range (example)	Category
>= 350	AA-Low Risk or Best Clients
150 to 349	A- Low to Medium Risk Clients
0 to 149	B- Medium Risk Clients
-500 to -1	C- High Risk Clients
<-500	D- Unable to score

Methodology to develop a Renewal Scorecard

When developing the renewal score at Swadhaar a combination of the expert methodology and data analysis was used to check and validate the expert score

Steps followed in this process were as follows

1. **Identify variables:** A number of repayment performance related variables were identified during the analysis.
2. **Analysis**:
   - Scores are assigned for each attribute (e.g. value) of a variable based on past experience and expert opinion.
   - Based on aggregate weighted scores across all the variables, the score range for segmentation of clients into categories is defined.
3. **Back-testing:** Historic client data is then used to score a sample of existing clients. This helps:
   - To validate the performance of clients post renewal (to see if client behaved the way we thought s/he would)
   - To check that the bands and variables are stable
4. **Adjustment:** Adjustment of the variables and scores assigned to them is done at this stage based on the results of the back-testing
5. **Validation:** Once the final adjusted score is arrived at, it is validated against another sample of clients from the database to ensure that the results are the stable

Methodology used to develop a Renewal Scorecard (1/2)

1. **Identify variables:** Some of the repayment performance related variables identified were:
   - Average days past due during loan term,
   - Ratio of maximum days late to loan term[1],
   - Vintage of the client with the institution,
   - Resting time between loans,
   - Etc.
2. **Data analysis (1):**

   An example of a score band for the variable "Ratio of maximum days late[1]" to loan term:

Score band for Value of Variable "Ratio Maximum Days Late[1]"	Score[2]
Equal to zero	100
Greater than 0 and less than equal to 0.6	50
Greater than 0.6 and less than equal to 1	0
Greater than 1 and less than 6	-50
Greater than 6	-100

1 Ratio Days Late is defined as the ratio of the maximum days late during the month in the term of the loan and the term of the loan given

2 A higher score means a better / lower risk client

Methodology used to develop a Renewal Scorecard (2/2)

2. **Data Analysis (2):** Based on aggregate weighted client score ranges (e.g. from ≤ -500 to ≥ +500), clients are segmented into categories with a recommendation for the type of renewal evaluation and eligibility for loan amount increases in the next cycle:

Client score range (example)	Category	Type of evaluation for renewal loan	Recommended increase in loan amount
>= 350	AA-Low Risk or Best Clients	No evaluation required	Upto 50%
150 to 349	A- Low to Medium Risk Clients	Simplified Evaluation	Upto 25%
0 to 149	B- Medium Risk Clients	Full Evaluation	Same as previous loan
-500 to -1	C- High Risk Clients	Reject	NA
<= -500	D- Unable to score on account of insufficient information	Full evaluation	Same as previous loan

Analysis of Key Tools / Processes

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Standardization of key metrics in Swadhaar's Client Capacity Evaluation

A. Issues in Current Process and Benefits of Standardization

B. Standardization Methodology

C. Swadhaar Findings

D. Standardization Review

Issues affecting loan officer productivity

- **Individual Loan officers handle multiple responsibilities – marketing/promotions, client evaluations, and installment collections**

- **A major part of the loan officer's time is spent in client's financial capacity evaluation as he/she collects detailed data on client's business and household income and expenditure items**

- **Limitations**
  - Growth to client base is limited due to excessive time spent on evaluation instead of promotions
  - Lack of experience/skill level of loan officer resulting in underestimation/ overestimation of client capacity
  - Deliberate manipulation of client evaluation to fulfill loan requirement
  - Clients are uncomfortable with detailed questioning on their income and expenses

The Loan officer markets the individual loan product, conducts client evaluations and collections – hence optimizing his/her time and resources directly enhances profitability

Benefits of moving to a more Standardized Process

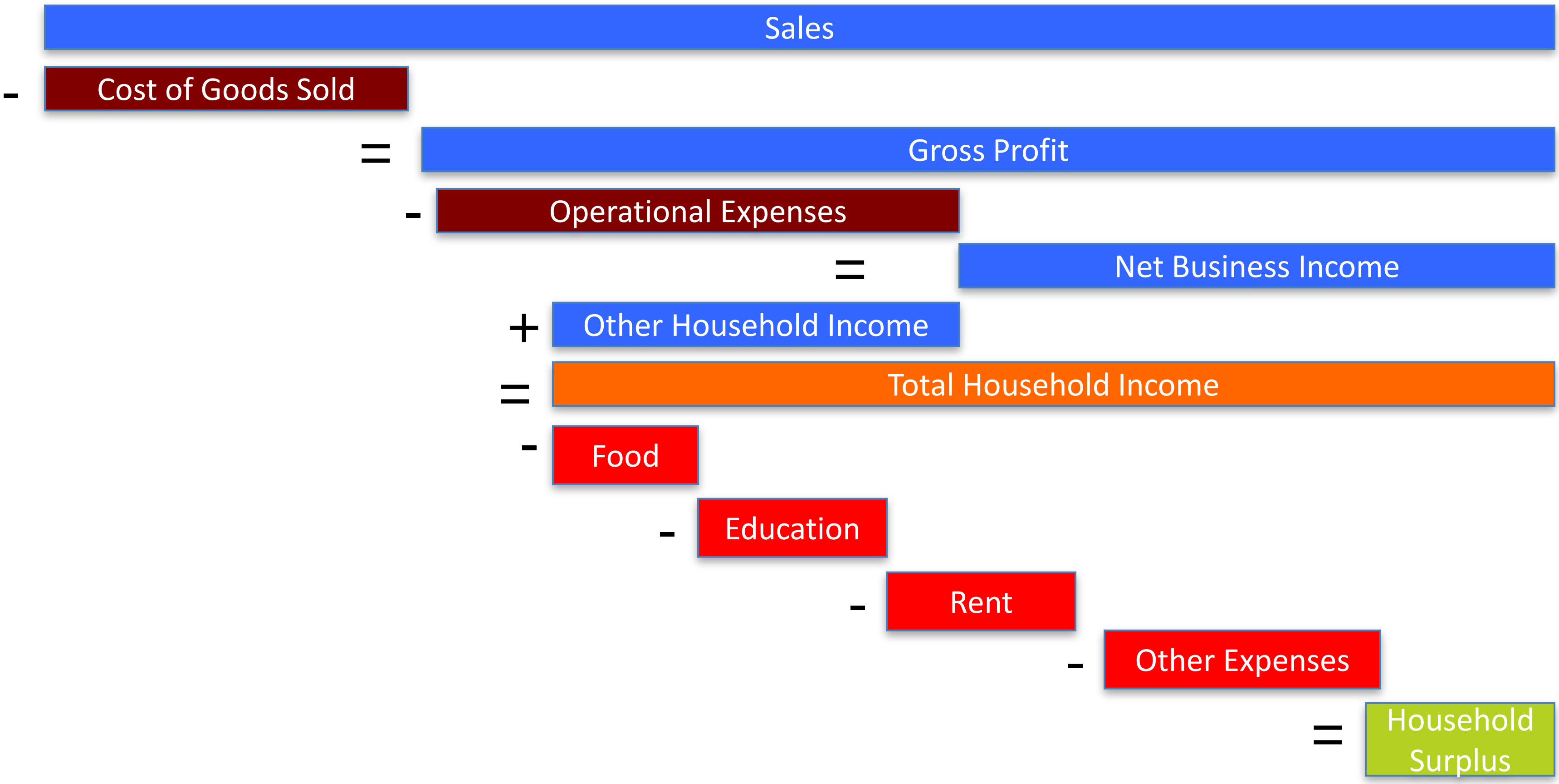
To overcome these limitations, we decided to use our existing knowledge base and experience to identify commonalities for business and household segments to create benchmarks of key metrics. This helped us in the following ways:

- Increased efficiency and consistency of evaluations, leading to reduced time (~30% lower) in client evaluation
- Ability to scale and replicate the individual lending model to different geographic regions and/or business types due to reduced training time
- Enhanced understanding of market segments and business types, leading to more tailored product offering increasing client satisfaction
- Minimize variability in loan evaluation across loan officers; from a risk perspective, this allows us to manage our portfolio risk across geographies more consistently
- Effectively evaluate client's financial capacity, thus offering optimum loan terms to the client and improving portfolio quality
- Simplify loan evaluation process could potentially result in 2-3 additional disbursements per month; this would result in an increase in portfolio by Rs 3.0 lakh per loan officer

Caution: Expected benefits from standardization depend on the organization's strategic focus and operating policies/processes – it is important to assess benefits from the organization's viewpoint before undertaking the standardization exercise.

Detailed Financial Evaluation Process

At Swadhaar, several business and household (HH) metrics are used to determine the HH surplus, which then determines clients' loan amount and monthly installment eligibility.



However, calculating each metric individually takes a large amount of the loan officers time, which adversely affects our customer acquisition rate, and our ability to monitor the accuracy of each income and expense item.

The sales margins and HH expenses at Swadhaar were standardized in the following manner..

a. Decided the metrics to be standardized

b. Decided the sample size and sampling method for data collection

c. Collected data for our samples from various geographies

d. Checked the quality of the data

e. Performed analysis on the collected data

f. Reported the findings

Each of these steps is discussed in detail in the Appendix - Standardization Methodology

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Swadhaar's Standardization Methodology

a. Decide the Metrics for Standardization

- **In order to make the evaluation process more standard and less time consuming, Swadhaar decided to standardize two key metrics in the financial evaluation process to avoid extensive item-by-item data gathering**
  - **Sales Margin (Gross Margin)**
    - Calculated as (Gross profit/Sales), gives us the gross margin on the business. It includes the cost of goods sold but excludes indirect costs such as rent, salaries, utility payments, etc
    - Swadhaar found that while sales vary vastly based on the scale of the business, sales margins themselves can be standardized based on business types
    - Manual calculation of sales margin is very time consuming and error prone as it involves collecting information on all the different products sold by the client – quantities sold, cost price, sales price, wastage.
    - Clients are not comfortable with sharing such detailed business information
  - **Household Expenses**
    - Total of the expenses on food, clothing, rent, utilities, transport, health and education
    - Swadhaar found that clients in similar income range largely follow a uniform spending pattern, thus a large part of the household expenses can be standardized
    - Clients often underestimate their household expenses, as they typically do not have full information about the household spend; clients are also not comfortable sharing their personal expenses for a business loan
    - Standardizing household expenses would give a more correct estimate of household expenses

d. Conduct data quality check

General procedure

•Remove outliers: if a data set has values that vary widely from the central value then:

- Remove the data, OR
- Determine the need to create a separate subset for standardization (see Appendix for Errors)

Swadhaar's Procedure

•Used the quartile method to determine upper and lower bound to eliminate outliers (See details of Quartile Method)

Caution!

•Do not remove statistically significant data; take extra caution in defining what constitutes an outlier.

•If it doesn't fit a dataset, it may be another subset altogether.

Appendix : Data Sampling Techniques (contd.)

- **Stratified Sampling**
  - This method is useful when the population varies greatly
  - This process involves splitting the data into non-overlapping (Mutually exclusive) sub groups or strata which are homogenous in themselves
  - The strata must be collectively exhaustive i.e. No population element can be excluded
  - A random or systematic sample is then selected from each stratum
  - The sample size of each stratum may be proportionate to the population size of the stratum (Proportionate stratification) or may vary (Disproportionate stratification) based on the variances or costs in different strata
  - Eg: To standardize sales margins, its important to get a good sample from the following strata – market shops/residential shops, different business scales, etc
  - *A stratified sample can provide greater precision than a simple random sample with a smaller sample size. However, the administrative costs are typically higher*
- **Judgment Sampling**
  - In this method, sample is obtained based on the judgment of an expert who is familiar with the characteristics of the population
  - Eg: A particular locality may be chosen to be a representative of the entire city
  - *When using this method, the researcher must be confident that the chosen sample is truly representative of the entire population*