

# A REVIEW OF DIMENSIONS OF SAMPLING METHODOLOGY IN ASSESSING TAX COMPLIANCE BEHAVIOUR AMONG MSMEs

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### Abstract

Choosing the right sampling technique and size plays a pivotal role in ensuring precision in generalization of results to the entire target population. In this regard, studies pertaining to business taxation are particularly challenging, especially in the context of the MSME sector. The present study makes a novel effort in synthesizing the rationale behaviour by MSMEs. Primary studies are considered, after being screened for quality with respect to certain inclusion standards. An impartial discussion is made on both probability and non-probability sampling techniques used in MSME surveys on tax compliance. The study concludes by highlighting the key factors while selecting a suitable method of sampling in studying MSME tax compliance behaviour.

Keywords: MSME Tax Compliance, MSME Taxation, Sampling Techniques for MSMEs, Business Taxation.

# **1. INTRODUCTION**

In the context of developing countries, research studies that are taken up in the field of taxation are relatively in their early stages, in contrast to those undertaken in developed nations. Therefore, studies in Business taxation are limited and rare. Accessibility to the data could be seen as one of the impediments. (Kakriya & Varade, 2021).

A major weakness of the survey approach, is inherent to the nature of the studies undertaken, and this includes issues of non-response bias, the degree to which the sample respondents can be confidently concluded to represent the population, and the interpretation of the questions (Belay & Viswanadham, 2016).

Secondly, survey instruments and questionnaires pertaining to taxation, may not always meet the right response, due to a perceived anxiety of the probability of facing some action from tax authorities, irrespective of their identity being kept confidential (Gebretsadik & Babu, 2017).

Despite the best efforts by researchers, it may be possible that what is stated as responses to survey instruments, and what is actually perceived as reality may be subject to certain to certain differences, due to the element of bias (Sekhon & Radae, 2017).

It can be observed that in general, researchers are wary of two kinds of errors, in trying to generalize the results of their specific studies to the population as a whole. They are called sampling and non-sampling errors.





The source of sampling error lies in the fact that any sample does not exhibit the same behaviour as a larger population from which it has been drawn. This is the fundamental worry of the statistician, who asserts that the sample is merely one among the many alternative samples from the target population (Altman & Bland, 2014).

All data elicited through surveys are subject to errors arising from different sources. Although it is impossible to entirely eliminate errors, both 'sampling and non-sampling errors' are to be kept within those limits at which their existence does not affect the utility of the final sample results (Banda, 2003). Choosing the right sampling method and sample size plays a critical role in minimizing sampling error. Sampling techniques can be broadly classified into probability and non-probability sampling techniques (C. R. Kothari, 2019).

A sampling frame becomes critical for probability sampling to be adopted, since this involves selecting respondents from a list of all potential respondents in the target population (Saunders & Townsend, 2018). Even in case of non-probability sampling, although the sample need not serve as a representative, or random, there is a need for a clear logic behind inclusion of a given set of individuals rather than others (Taherdoost, 2016).

In cases where the constituent elements of the target population are widely spread over, or are very large or infinite in number, capturing the probability may not be practical, and hence non-probability sampling may be preferred. (Alvi, 2016) Hence, it can be gathered that surveys pertaining to tax compliance behaviour can be challenging, especially when the target population constitutes micro, small and medium enterprises, and poses the potential for sampling and non-sampling errors.

There are no specific studies conducted with reference to the sampling methodologies used by researchers in studying this aspect. In light of the above discussion, the present study makes a novel effort with an aim to analyze studies (literature) undertaken on tax compliance behaviour among small business (MSME sector in context of specific countries), with special reference to the sampling methods and the associated sample size used.

The study also attempts to decipher and synthesize the rationale behind the adoption, application, pros and cons of these techniques in studying tax compliance behaviour among small businesses.

# 2. DATA DESCRIPTIONS

For the purpose of understanding and synthesizing the varied sampling methods used by past researchers, the present study has identified the database as "empirical studies conducted across countries on tax compliance by small businesses/MSMEs".

The studies include both empirical studies from open access journals, and doctoral theses. Suitable databases such as Google scholar, EBSCOhost, and Shodhganga, have been used to source and sort studies.





### DOI: 10.5281/zenodo.13828273

SI No	Origin	Title of the paper	Population size/samplin g frame (if defined)	Sample size(rationale, if specified))	Sampling technique
1	Ma'ruf & Supatminingsih (2020)	The effect of tax rate perception, tax understanding, and tax sanctions on tax compliance with small and medium enterprises (MSME) in Sukoharjo.	4693	100 (Slovin)	Convenience
2	Nurlis & Ariani (2020). Tax awareness moderates knowledge and modernization of tax administration on tax compliance, survey on MSME taxpayers in South Tangerang City, Indonesia.		750	100 (thumb rule of indicators)	Convenience
3	Pertiwi et al. (2020).	Effect of fairness and knowledge on tax compliance for Micro, Small, and Medium Enterprises (MSMEs).	Frame not defined	100 (thumb rule of minimum sample)	Cluster random
4	Dewi et al. (2021).	The effect of taxation socialization, understanding taxation, tax rates, and tax sanction on tax compliance in Msme Padang city	344	77 (Slovin)	Purposive
5	Albab & Suwardi (2021).	The Effect of Tax Knowledge on Voluntary Tax Compliance with Trust as a Mediating Variable: A study on micro, small, and medium enterprises (MSMEs).	Frame not defined	108	Purposive
6	Wijayanti et al.,(2020).	The improvement strategy of tax compliance from MSME sector in Indonesia.	Frame not defined	100	Convenience
7	Putra & bin Osman (2019).	Tax compliance of MSME's taxpayer: Implementation of theory of planned behavior.	27139	100 (Slovin)	Stratified
8	Amalia et al. (2023).	Tax Knowledge and Gender: The Impact in Improving Tax Compliance of MSME Actors.	17232	100 (Slovin)	Incidental
9	Peprah et al.,(2020).	Compliance with income tax administration among micro, small and medium enterprises in Ghana.	398	210 (based on level of confidence and margin of error)	Stratified
10	Rianti & Hidayat (2021).	The Influence Of Tax Knowledge, Tax Justice, And Tax Sanctions On The Tax Compliance In Msme Taxpayers In West Bandung District.	40000	106 (Slovin)	Simple random sampling
11	Wijaya & Effendi (2020).	Analysis of determinants of MSMES tax compliance in Indonesia (Case-study in working areas of Pondok aren tax office).	Frame not defined	60 (10 times indicators)	Convenience
12	Hanifah & Yudianto (2019).	The Influence of Religiosity, Nationalism, and Tax Corruption Perception on Tax Compliance.	36582	100 (Slovin)	Incidental

# Table 2.1: lays down the list of journal articles that have been considered for the present study.





### DOI: 10.5281/zenodo.13828273

13	Lasmono & Urumsah	Investigating the Factors Influencing Tax Compliance in Online	Frame not	180 (5 times indicators)	Convenience
15	(2022).	Transaction: An Empirical Study on MSMEs.	defined		
	Lestary, et al. (2021).	The effect of tax fairness, tax socialization and tax understanding on	Frame not	283	Purposive
14		tax compliance: a study on micro, small and medium enterprises	defined		
		(MSMEs).			
15	Amah, et al. (2021).	Tax compliance option during the pandemic: Moral, sanction, and tax	Frame not	95	Purposive
15		relaxation (case study of indonesian msmes taxpayers).	defined		
	Nurhayati & Witono	The Effect Of Tax Understanding, Tax Rates, Tax Incentives And Tax	Frame not	84	Convenience
16	(2022).	Sanctions On Tax Payers Compliance Of MSME In Ngawi During The	defined		
		Covid-19 Pandemic.			
17	Utomo et al., (2022).	Determination of Taxpayer Compliance In Micro Small and Medium	Frame not	91 (5 times indicators)	Convenience
17		Enterprise (MSME) Center Batik.	defined		
10	Rachmawan et al.,	The effect of tax knowledge on relationship of procedural justice	31383	395 (Slovin)	Convenience
10	(2020).	perception towards voluntary tax compliance mediated by trust.			
10	Lo et al., (2023).	Determinants of MSME Taxpayer Compliance with Moderating	Frame not	98 (Slovin)	Convenience
19		Variables of Tax Incentive Utilization in Manado City.	defined		
20	Aladejebi (2018).	Measuring tax compliance among small and medium enterprises in	Frame not	223	Judgment and
20	-	Nigeria.	defined		random
21	Irawan & Khoirunurrofik	Understanding Tax Morale of Micro, Small, and Medium Enterprises	21.67 million	217	Cluster and
21	(2021)	in Jabodetabek			quota
	Kleventura & Hama	THE EFFECT OF MSME TAX REDUCTION AND TAX	133	40 (Slovin)	Incidental
22	(2022).	SANCTIONS ON TAXPAYER COMPLIANCE FOR MSMES IN			
		SHOES CAMPOENG IN SIDOARJO.			
	RAHAYU &	THE INFLUENCE OF ACCOUNTING KNOWLEDGE IN	84,415	100 (Slovin)	Stratified
23	SUDIBYO(2020)	MODERATING RELATIONSHIP BETWEEN UNDERSTANDING			cluster
		AND SOCIALIZATION OF TAX TO MSMES TAX COMPLIANCE.			
	Musa (2021).	DETERMINANTS OF TAX COMPLIANCE OF RELATED SMEs IN	37067416	400 (Morgan at 5%	stratified /
24		NIGERIA.		margin of error and 95%	geographical
				confidence level)	
	Gichuru & Wahome	INFLUENCE OF TAX COMPLIANCE COST ON HOSTEL	605	68	Snowball and
25	(2022).	OWNERS' COMPLIANCE TO RENTAL INCOME TAX IN			purposive
		LAIKIPIA WEST SUB COUNTY, KENYA.			_

Source: Author





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# Table 2.2 lays down the particulars of the list of doctoral theses considered for the present study:

Sl No	Origin	Title of the thesis	Population size	Sample size(rationale)	Sampling technique
1	Belay & Vishwanadham (2016)	"Tax fairness perceptions and compliance behaviour evidence from the Amhara regional state of Ethiopia"	35899	400 (Based on population size and error limit) Yamane(1967)/(Slovin)	Stratified random sampling
2	Gebretsadik & Babu (2017)	Determinant factors of tax compliance with reference to select business income earners in Tigray region Ethiopia	21400	393 (Based on population size and error limit) Yamane(1967)/(Slovin)	Random sampling
3	Redae & Sekhon (2017)	Business income taxpayers attitude and tax compliance behaviour in Ethiopia a study of Tigray State	85100	398 (Based on population size and error limit) (Slovin)	Stratified sampling
4	Chariye & Babu(2015)	Assessing the impact of tax morale on tax compliance	409077	400 (Slovin)	Stratified random
5	Kakriya & Varadhe (2021)	A Critical Study of Attitude and Behavior on Tax Compliance by Small and Medium Scale Enterprises from Pune Revenue Region	250	73	Simple random
6	Nimkar & Gopalakrishnan(2 021)	An Analysis of Non-Compliances under Indirect Taxes with Special Reference to Erstwhile Central Excise Service tax and Presently Goods and Services Act and Measures to Improve the Compliances	Frame not defined	138	Convenience
7	Kawatwar & Lokhande (2023)	A Study on impact of indirect tax system on micro small and medium enterprises with the special reference to Palghar taluka of Maharashtra	10753	450	Convenience
8	Mijena & Kaur(2020)	Perception and tax compliance behavior in Ethiopia evidence from business profit taxpayers in Western Oromia	2420	300	Stratified

Source: Author



### **3. METHODOLOGY**

The study is based on the research question, "What are the perceptions of extant literature on the applicability of various sampling methods and techniques in conducting small business surveys pertaining to tax compliance?"

In order to answer the research question, an extensive analysis of the extant literature on "tax compliance behaviour pertaining to MSMEs" was undertaken, using suitable databases like google scholar, web of science, scopus and directory of open access journals. Suitable search terms such as, "Tax compliance", "MSME taxation", "Tax compliance by MSMEs", "determinants of tax compliance", were employed.

As regards doctoral theses, the repository Shodhganga was considered. Out of the records retrieved, after eliminating duplicate documents, only empirical studies based on primary surveys through questionnaires authored in English were considered for the study. The methodology section of the research papers and the methodology chapter in the doctoral theses were considered to be the basis for selection of papers. Studies with ambiguous sample sizes and sample techniques were eliminated. Studies pertaining to tax compliance by industries, individuals and large corporations were eliminated.

The empirical studies were tabulated with reference to the sample frame if constructed in case of probability sampling, the sample size along with the rationale, and the sampling technique. The discussion section synthesizes the pros and cons of each of the sampling techniques used. The study concludes by having a look at the most commonly used techniques to determine sampling method to be chosen and the appropriate sample size. The methodology is summarized in Table 3.1

Sl No	Stage	Particulars
1	Research question	"What are the perceptions of extant literature on the applicability of various sampling methods and techniques in conducting small business surveys pertaining to tax compliance?"
2	Databases searched for	Google scholar, web of science, scopus and directory of open access journals.
3	Search terms	"Tax compliance", "MSME taxation", "Tax compliance by MSMEs", "determinants of tax compliance"
4	Screening articles(inclusion criteria)	Primary studies;language-English;clear sample size and technique; target population as MSMEs
5	Subject matter elicited from articles	Target population, (if defined), Sampling technique, sample size
6	Discussion	The pros and cons of different sampling techniques and the sample size employed in studies
6	Conclusion/outcome Most commonly preferred methods of sampling, and sample size pertaining to tax compliance behaviour among MSMEs	

Table 3.1: Methodology steps employed in assessing the sampling dimensions of extant
literature on "tax compliance by MSMEs"





# 4. DISCUSSIONS

Based on the different articles and doctoral theses reviewed, this discussion section contains an elaboration on various probability and non-probability sampling techniques that have been employed in studying tax compliance behaviour among small businesses (MSMEs) in different countries along with their suitability for application. This study also highlights the sample size and the rationale of the methodology employed behind each of these studies, while also emphasizing specific challenges that each of these methods have posed the researchers in the course of their study. The discussion section is based on the conventional classification of the studies as those based on probability and non-probability sampling. In additional, studies adopting methodologies based on number of path indicators through SEM are also discussed.

### **Probability sampling:**

With respect to sampling size, Slovin's formula has been employed by many researchers. Ma'ruf & Supatminingsih(2020) in a study on the effect of "tax rate perception, tax understanding, and tax sanctions on tax compliance with MSMEs in Sukoharjo" used the Slovin formula to determine a sample size of 100 respondents out of a target population of 4693 taxpayers.

Kakriya & Varadhe (2021) observe that there are multiple challenges associated with conducting surveys on business firms, which include a sense of hesitation, especially with respect to answering questions on accounting and taxation. , fear pertaining to breach of confidentiality despite the necessary assurance. Since the population size was 250, and was finite in the chosen Area, that is, Pune revenue region, simple random sampling was chosen, where each MSME of the target population had equal chance of being included in the sample. The sample size was taken at 20% of the population, thus arriving at 73. However, Rianti & Hidayat (2021), in their study pertaining to the effect of tax knowledge, tax justice, and tax sanctions on compliance in West Bandung district, use, simple random sampling for a population of 15000 MSMEs, but have applied Slovin's formula to arrive at 106 as the sample size.

However, it is noteworthy that while the total number of MSMEs had exceeded 40000 units, the number of MSMEs recorded by the Government was only 15000. Belay & Vishwanadham (2016), in a study aimed at understanding the tax fairness perceptions, and its associated impact on compliance behaviour, defined a target population consisting of three metropolitan cities, Bahirdar, Gonder and Dessie. The sampling frame of business income tax payers was thus 35,899. After arriving at the standard sample size of 400, at 5% margin of error and at 95% confidence level,based on Yamane(1967), the study recommended adding anywhere between 10% and 40% to the sample size to compensate for non-respondents. Further, the total sample size was classified into different strata based on the proportionate population in different cities.

A similar methodology with stratified random sampling and Yamane (1967), was adopted by Babu & Gebretsadik(2017), while studying the critical determinants of tax compliance in Tigray Region, Ethiopia. Only category C business income tax payers were considered, with annual income less than 100000 ETB, since they were considered 'hard to tax'. For a target





population of 21400, at 5% margin of error, and 95% confidence level, the sample size was arrived at as 400. There was also an observation made by the study that as the population increases over 100000, "the sample size increases at a diminishing rate, and eventually remains constant at slightly more than 380". 100 responses were added to the sample size to compensate for non-responses. The business sectors were further divided into 20 strata of different business types. For the same region, when a broader study was conducted by Redae & Sekhon (2017), with all the three categories of taxpayers, "A", "B" and "C", while also aiming to elicit responses from tax officials. In this case, the total sample size of 398, was stratified using Yamane (1967), among these four classes of respondents, without being specific about the type of business activity being performed. Chariye & Babu (2015) assert that while a sample size of 400 is statistically sufficient to serve as a representative of 409077 business tax payers in Addis Ababa, there is no precise way for determining the sample size, especially while it is represented as a fraction of the population. Also, the inclusion criteria here are specified as industrial, vocational, professional, or any other commercial activity.

Mijena & Kaur (2020) used a multistage proportionate stratified sampling method to study perception and tax compliance behaviour in Western Oromia, since this method guarantees that all the features of the population are represented. The multistage sampling involved zonal classification followed by city classification, and then on the nature of activity (manufacturing, trading/merchandising and service oriented). The final classification of each sector is based on whether it is Category "A" or Category "B".

This was advantageous because the relative chance of a unit being selected was proportionate to the size of the stratum. The clustered random sampling adopted by Peritwi et al., (2020) was based on a simple classification on whether the enterprises were micro, small or medium. Putra & Bin Osman(2019), in their study on the theory of planned behaviour on taxpayer's compliance, divided the MSMEs into eight different business sectors, which include "culinary, fashion, education, automotive, agrobusiness, information technology, trading, service and others". Slovin's formula was used to derive an approximate sample size of 100 for a population size of 27139 MSMEs. Musa (2021) applied the Morgan's table for a population size of 37067416, for which the sample size was determined at 400. This was stratified across 10 states, 5 top revenue generating and 5 lowest revenue generating states.

Peprah etal. (2020) followed a similar classification, but with a two-way criteria with the sample consisting of "dressmakers, hairdressers, storekeepers, food vendors, and local industries" The strata was also based on whether the enterprises were micro, small or medium, the ratio being 6:3:1. Rahayu & Sudibyo (2020), applied stratified cluster sampling technique, where from all selected regions, namely 27 districts, MSMEs engaged in "trade, hotel, and restaurant sectors" were included. For a population of 42355 MSMEs, the sample size was 100. The rationale behind choosing this method was the enormity of the population size, and the diversity of the MSME background, that make varying knowledge levels indistinguishable, and reduction of heterogeneity becomes crucial.





## **Non-Probability Sampling Techniques**

There are also non-probability sampling techniques adopted by several studies on tax compliance by MSMEs. In a study of tax compliance in Padang City, undertaken by Dewi et al., (2021), with a sample frame of 344 units, based on Slovin's formula, the sample size arrived at 77. The study followed purposive or deliberate sampling. A similar technique was adopted by Albab & Suwardi, (2021), which uses criteria as "being self-employed taxpayer, domiciled in the Special Region of Yogyakarta, and having a Taxpayer Identification number, with a turnover below 4.8 billion annually". Lestary et al., (2021) also employ a composite criteria as registered MSMEs, and MSMEs that utilize final taxes as per Government regulations", thus qualifying the sampling technique to be purposive in nature. In a case study approach, being qualitative in nature, Amah et al., again employed a purposive sampling method. A modification is made to purposive or judgmental sampling by combining it with random sampling, in studying tax compliance by MSMEs in Nigeria, undertaken by Aladejebi (2018). On the other hand, Gichuru & Wahome (2022) have combined snowball and judgmental sampling, since references from known samples were essential for gathering greater respondents.

Due to the absence of a sampling frame, which was typically non-availability of MSME data for every village or subdistrict, the non-probability sampling form used by Irawan & Khoirunurrofik(2021) is quota sampling, supplemented with cluster sampling. The sample size used was 217. This is relevant especially when there are some practical or theoretical constraints that do not permit random sampling.

Amaila et al., (2023); Hanifah & Yudianto(2019); Kleventura(2022) use incidental sampling in their studies on tax compliance behaviour among MSMEs, which is defined as, "a technique where anyone whom the researcher chances upon, and can be treated as a data source, can be included in the sample".

Nurhayati & Witono(2022); Wijayanti et al., (2020); Rachmawan et al., (2020) have adopted convenience sampling, depending upon the feasibility of obtaining data from the respondents, and the ease with which data can be elicited from them. Considering the sensitivity of the data to be elicited, Nimkar & Gopalakrishnan (2021), also used convenience sampling method with the help of references given by professionals. Although the initial number of respondents targeted was 400, the final sample size towards which responses were elicited was 138. Kawatwar & Lokhande(2023) conducted a research on MSME tax compliance in Palghar Taluka of Maharashtra, using convenience sampling method, which was however, taken care with due diligence by being supplemented with a stratification based on the size of the MSMEs as micro, small and medium enterprises. Therefore the overall sample size of 450 for a population of 10753, based on a fraction of around 4.18% of population.

# Sample size based on SEM:

In case of data analysis performed using Structured Equation Modeling (SEM), the sample size is considered purely based on the number of indicators or items. Since Lasmono & Urumsah (2022) had scrutinized tax compliance on MSMEs in Indonesia through 36 items, the rule of





thumb at 5 times the number of items arrived at 180. Nurlis & Ariani (2020), refer to the calculation of employing the number of indicators multiplied by anywhere between 5-10, and thus arrived at 100 as the sample size. Wijaya & Effendi (2020) selected 4 independent, 1 mediator and 1 dependent variable, amounting to 6 indicators. 10 times the indicators required a minimum of 60 samples.

# 5. CONCLUSION

The outcomes of the present study are arrived at after synthesizing the rationale behind the methods used in different studies pertaining to the sampling methods and size of the sample used. With respect to the population, since MSMEs essentially constitute the informal sector, the sampling frame is not always defined across all studies. In case of a defined target population (sampling frame), the reference sources are usually registration databases, offices of income tax authorities, and other Government bodies. There is seen to be an extensive use of both probability and non-probability sampling techniques in studying tax compliance among MSMEs. Resorting probability sampling techniques is usually in cases where the sampling frame is well defined, and often, quite limited in number. When the frame is limited to a one or a few districts, or cities, it is quite feasible to adopt simple random sampling without replacement, such as in Kakriya & Varadhe(2021). In case of adoption of stratified sampling, there have been multiple criteria adopted in classifying the MSMEs into specific strata. The strata may include type of businesses (Redae & Sekhon, 2017), or size of the businesses (Peprah etal., 2020), or across different geographical regions (Belay & Vishwanadham, 2016). Rahayu & Sudibyo (2020) assert that stratified sampling becomes crucial to reduce heterogeneity in data.

On the other hand, non-probability sampling is chosen when it is not possible to construct an exhaustive sampling frame, added to certain other conditions.

In certain cases, purposive or judgmental sampling is employed(Dewi et al., 2021; Albab & Suwardi, 2021; Lestary et al., 2021; Amah et al., 2021) when the researchers have solely relied upon their own perception on the capability of the samples to respond to the survey instruments.

However, precise generalization to the entire population is generally difficult when nonprobability sampling is employed. However, convenience sampling outweighs this limitation, and has been the most commonly used method sampling is convenience sampling in the reviewed studies, since it saves the time, cost and resources involved in conducting research, and as observed by Kakriya & Varadhe (2021), ":there is a lot of inhibition" among MSME owners to participate in surveys pertaining to taxation.

As regards the sampling size, many small studies rely upon a thumb rule of a minimum of 100 samples. Certain studies also take up the sample size based on a given proportion of population, which ranges between 4% and 20%.

Statistically, Morgan's table has been taken as a handy tool, which gives out desired sample size based on confidence level, margin of error, and population size, such as in the study carried out by Musa(2021). Other standard models used for determining the sample size include the





Slovan's model, or the formula employed by Yamane (1967). Slovin's formula is given by  $n = N / (1 + Ne^2)$ , is essentially based on population, and margin of error. As the population increases (over 100,000), the sample increases at a diminishing rate and the sample size eventually remain constant at slightly more than 380 (Gebretsadik & Babu, 2017).

There is a disagreement among different studies using structured equation modeling (SEM), on the thumb rule to be used based on the number of indicators, and studies have either employed 5 times or 10 times the number of indicators.

Therefore, the above synthesis reaches a consensus that the sample size and technique for MSME specific surveys are largely dependent on the following factors:

- Size of the population(finite, or very large beyond 100000)
- Feasibility of constructing a sampling frame(extent of formalization of the sector)
- Availability of cost, time and resources
- Feasibility of approaching the respondents(whether snowball sampling is required), and
- Criteria for stratification(type of business or business size or geographical areas)

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