6. RESEARCH METHODOLOGY

Research in common parlance refers to a search for knowledge. According to Clifford Woody, research comprises defining and re-defining problems, formulating hypotheses, collecting, organizing and evaluating data, making deductions and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis. (Kothari, 2004, pp1-7). Research methodology is a way to
systematically solve the research problem. It is a scientific process of defining various steps involved in study. “The scientific method encourages a rigorous, impersonal mode of procedure dictated by demands of logic and objective procedure.”\textsuperscript{63} The two terms research and scientific method, are closely related and can be termed as “an enquiry in to the nature of, the reason for, and consequences of any particular set of circumstances, whether these circumstances are experimentally controlled or recorded as they just occur. Further, research implies that the researcher is interested in more than particular results; he is interested in the repeatability of the result and in their extension to more complicated and general situations.”\textsuperscript{64} The brief information regarding the Research Methodology applied in the study is discussed below.

6.1 Research Design:

The formidable problem that follows the task of defining the research problem is the preparation of design of research project, popularly known as ‘research design’. (Kothari 2004, pp31). As per definition of research design, “It is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.”\textsuperscript{65} A descriptive study, concerned with describing the characteristics of a particular individual or group i.e. group of organized, unorganized retailers and consumers in terms of supply chain management to appropriately address the various considerations of research problem has been carried out by the researcher.

Sampling Design: It is a definite plan for obtaining a sample from a decided population. A better sampling design has a smaller sampling error for an appropriate sample size at a reasonable cost. Two costs are involved

\textsuperscript{63} Carlos L Lastrucci, The scientific Approach: Basic Principle of Scientific Method, p.7 quoted in Kothari, 2004; pp10
\textsuperscript{64} Bernard Ostle & Richard W. Mensing; Statistics in Research, p.2 as quoted in Kothari, 2004, pp9
\textsuperscript{65} Claire Seltiz and others, Research methods in social Sciences, 1962, p50 as cited in Kothari, 2004,pp31
in sampling analysis viz. cost of collecting data and cost of incorrect inferences like systematic bias and sampling error. A systematic bias results from error in sampling procedures which cannot be eliminated or reduced by increasing sample size. Natural bias of respondents in the reporting of data are often the cause of systematic bias. For instance, people in general understate their income if asked about it for tax purposes, but overstate the same if asked for social status (Kothari, 2004 pp57). By keeping this in view, the researcher decided to tag along two types of sampling procedures in this study.

The Non-probability sampling design (Purposive sampling) has been applied for organized and Unorganized retailers. In this type of sampling, particular units of the universe for constituting a sample on the basis that the small mass that they so select out of a huge one will be the typical representative of the whole.

The **stratified random sampling** method has been applied for the collection of primary data from the consumers of perishable food products. In this case, the data collected from different strata i.e. mandi / bazaar at different places and consumers of organized retail stores (like Reliance Fresh, Food Bazaar, More, Spencers etc.). To use this type of sampling, the population is divided into relatively homogeneous groups, called Strata and a specified number of elements is selected at random from each stratum. This guarantees that every element in population has a chance of being selected and more accurately reflects characteristics of different groups due to proportional allocation among population.(Lebin & Rubin, 2006, pp298-303 and Kothari, 2004, pp63)

**Sampling Unit**: In this study, there are three units i.e. **Organized retail stores** of Pune, **Unorganized retailers** in mandi / shetkari bazaars and **consumers** of perishable food products. Care has been taken during collection of data so that the respondent must have taste and knowledge of both types of retailing to avoid any biased or prejudiced comparison of organized and unorganized retail.
**Sampling Size:** This refers to the numbers of items selected from the universe to constitute a sample. An optimum sample is one which fulfills the requirements of efficiency, representativeness and reliability. Some sampling error may occur due to an inappropriate sample size which can be controlled by increase in sample size for high level of precision. (Lebin & Rubin, 2006, pp378 and Kothari, 2004, pp174).

In sampling analysis, the most ticklish question is, what should be the size of sample or how large or small should be ‘n’ i.e. sample size? If the sample size is too small, it may not serve to achieve the objectives and if it is too large, we may incur huge cost and waste resources. In general, the sample size must be optimum. Technically, the sample size should be large enough to give a confidence level of desired width and as such, the size of the sample must be chosen by some logical process before the sample is taken from universe. Therefore, the size of sample has been determined by the researcher keeping in view, the following points:

i) Nature of universe: such as homogeneous or heterogeneous.

ii) Number of classes: Groups and sub-groups among respondents of Organized, unorganized retailers and consumers.

iii) Nature of study: If the items are intensively and continuously studied, the sample should be small and vice-versa. In this case, retail is studied more frequently but study pertains to supply chains in perishable products are rarely available in literature.

iv) Type of sampling: Sampling technique plays an important role in determining the size of sample. A small random sample is apt to be much superior to a large but badly selected sample. In this study, researcher has applied Non-probability (purposive sampling) used for organized and unorganized retailers and stratified random sampling for consumers.
v) Standard of accuracy and acceptable confidence level: If the standard of accuracy or the level of precision is to be kept high, the sample size should be relatively larger.

vi) Availability of Finance: This factor has the direct implication with cost incurred on the study.

vii) Other considerations are nature of units, size of population, size of questionnaire, availability of trained investigators, the condition under which sample has been collected, the time available for the completion of study etc., are the few points to which researcher has paid attention while selecting the sample size.

6.1.1 Determination of Sample Size: There are two approaches for determining the size of sample. The first approach is "to specify the precision of the estimation desired and then to determine the sample size necessary to ensure it" and second approach uses "Bayesian statistics to weigh the cost of additional information against the expected value of additional information". The first approach is capable of giving the mathematical solution, and as such a frequently used technique of determining ‘n’. The limitation of this technique is that it does not analyze the cost of gathering information vis-à-vis the expected value of information. The second approach is theoretically optimal, but it is seldom used because of the difficulty involved in the measuring the value of information.(Kothari, 2004, page-175, para 2).

Hence the researcher mainly concentrated on the first approach.

In determination of sample size through the approach based on precision rate and confidence level, the researcher has to specify the precision that he wants in respect of his estimates concerning the population parameters.

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The formula to find out the sample size (n) of infinite population is given as under: (Kothari, 2004, page-179, para 1&2)

\[ n = \frac{z^2 \cdot p \cdot q}{e^2} \]

where, \( n \) = sample size  
\( z \) = the value of standard variate at a given confidence level and to be worked out from table showing area under normal curve.  
\( p \) = sample proportion  
\( q = 1-p \)  
\( e \) = given precision rate or acceptable error

When the population size is finite, the formula for sample size determination will be modified as under:

\[ n = \frac{z^2 \cdot p \cdot q \cdot N}{e^2(N-1)+z^2 \cdot p \cdot q} \]

where, \( N \) = population

**Justification for Sample size pertaining to Organized Retailers:**

There are almost 08 probable variables based on different parameters of supply chain management of perishable products which effect the retailers and on which questionnaire has been designed for the organized retailers’ segment. These are: 1) scale of operation, 2) SCM practices among unorganized retailers with level of integration by use of advanced technology, 3) willingness and awareness of investment to improve SCM and threats to unorganized / organized retail, 4) bullwhip effect, 5) quality, 6) cold logistics, 7) wastage and 8) disposal procedures.

This has been verified based on the outcome of the pilot study carried out before designing of final questionnaire.

Therefore, the desired precision or accuracy will be 100/08=12.5 or 13% (by rounding off towards higher value).

Therefore, in this case desired precision is ±13 i.e. we can say \( e=13 \)
We consider that the number of organized retailers in Pune is finite and it is 71.

That is, the population of organized retailers (N) = 71,

To find ‘n’, we need an estimate of population parameters ‘p’ and ‘q’. If we have a strong feeling about the actual proportion in favour of supply chain management of perishable food products practiced by organized retailers, we can use our best guess to calculate ‘n’. But if we have no idea what ‘p’ is, then our best strategy is to guess at ‘p’ in such a way that we choose ‘n’ in conservative manner (i.e. so that the sample size is large enough to supply at least the precision we require, no matter what ‘p’ actually is). (Lebin & Rubin, 2006, pp381 para2).

Therefore, the researcher has assigned the value of p= 0.5 in which case ‘n’ will be maximum for available population of organized retailers and the sample will yield at least the desired precision.

Now, the value of sample size or ‘n’ will be calculated by putting the formula of finite population is as under:

\[ n = \frac{z^2 \cdot p \cdot q \cdot N}{e^2 (N-1) + z^2 \cdot p \cdot q} \]

where, \( N = 71 \) (population of organized retailers)
\( z = 1.96 \) (desired confidence level is 95% and value obtained from table)
\( p = 0.5 \) (sample proportion).
\( q = 0.5 \{1-0.5\}\text{ i.e }1-p \}
\( e = 13\% \text{ or } 0.13 \) (precision rate or acceptable error)

By putting the value,

\[ n = \frac{(1.96)^2 \cdot (0.5) \cdot (0.5) \cdot 71}{(0.13)^2 (71-1) + (1.96)^2 \cdot (0.5) \cdot (0.5)} \]

\[ = \frac{68.188}{2.1434} \]

\[ n = 31.8 \text{ or } 32 \]

[166]
Therefore the minimum sample size required for study is 32 from organized retail. The USP (unique selling preposition) and strategies are different and unique for various retailers and also in store depending on location, area and consumer profile. Since it's a comparative study of two types of retailers which also intends to have equitable data up to required possible extent, it is desirable to increase the sample to 38, which is appropriate for study. In view of this, the appropriate sample size taken for the study is 38, which would represent the heterogeneous characteristics of organized retailers.

**Justification for Sample size pertaining to Unorganized Retailers:**

As we have discussed above, for organized retail, there are almost 08 probable variables based on different parameters of supply chain management of perishable products which effect the retailers and on which questionnaire has been designed for unorganized retailers’ segment.

This has been verified based on the outcome of pilot study carried out before the designing of final questionnaire. Therefore, the desired precision or accuracy will be 100/08=12.5 or 13% (by rounding off towards higher value).

Therefore, in this case desired precision is ±13 i.e. we can say e=13

Here also, to find ‘n’, we need an estimate of population parameters ‘p’ and ‘q’. Since, we have no idea what ‘p’ is, then our best strategy is to guess at ‘p’ in such a way that we chose ‘n’ in conservative manner (i.e. so that the sample size is large enough to supply at least the precision we require, no matter what p actually is). (Lebin & Rubin, 2006, pp381 para2).

Therefore, the researcher has assigned the value of p= 0.5 in which case ‘n’ will be maximum for infinite (very large) population of unorganized retailers and the sample will yield at least the desired precision.

Now putting the value in the formula for infinite population, we get:

\[ n = \frac{z^2 \cdot p \cdot q}{e^2} \]
where $z = 1.96$ (desired confidence level is 95% and value obtained from table)
$p = 0.5$ (sample proportion).
$q = 0.5 \{(1-0.5)\ i.e\ 1-p\}$
$e = 13\% \ or \ 0.13$ (precision rate or acceptable error)

$$n = \frac{(1.96)^2 \cdot (0.5) \cdot (0.5)}{(0.13)^2}$$

$$n = \frac{0.9604}{0.0169}$$

$$n = 57$$

Even if we consider that the number of unorganized retailers in Pune is finite and up to 5000 i.e.

Population of unorganized retailers $(N) = 5000,$

The value of sample size or ‘n’ will be calculated by putting the formula of finite population by keeping the other value constant as under:

$$n = \frac{z^2 \cdot p \cdot q \cdot N}{e^2(N-1) + z^2 \cdot p \cdot q}$$

where, $N = 5000$ (population of unorganized retailers)
$z = 1.96$ (desired confidence level is 95% and value obtained from table)
$p = 0.5$ (sample proportion).
$q = 0.5 \{(1-0.5)\ i.e\ 1-p\}$
$e = 13\% \ or \ 0.13$ (precision rate or acceptable error)

Now,

$$n = \frac{(1.96)^2 \cdot (0.5) \cdot (0.5) \cdot 5000}{(0.13)^2(5000-1)+(1.96)^2 \cdot (0.5) \cdot (0.5)}$$

$$n = \frac{4802}{85.44}$$

$$n = 56$$

[168]
Therefore, in any case, whether the population is considered as infinite or very large, the value of ‘n’ remains almost same. Hence, appropriate sample size should be 57, therefore by rounding off to upper consolidated figure, the sample size is decided to be 60 for unorganized retailers segment.

**Justification for Sample size pertaining to consumers:**

There are 15 to 16 probable variables based on different parameters of consumer’s perception which affect the retailers of perishable products and on which questionnaire has been designed for consumer segment (refer questionnaire for consumer, Qu no. B1 to B16). This has been verified based on the outcome of pilot study carried out before designing of final questionnaire.

Therefore, the desired precision or accuracy will be 100/16=6.25 or 7% (by rounding off towards higher value).

Therefore, in this case the desired precision is ±7 i.e. we can say e=7.

To find ‘n’, we again need an estimate of population parameters ‘p’ and ‘q’. If we have a strong feeling about actual proportion in favour of consumers’ perception towards organized and unorganized retail, we can use our best guess to calculate ‘n’. But if we have no idea what ‘p’ is, then our best strategy is to guess at ‘p’ in such a way that we choose ‘n’ in conservative manner (i.e. so that the sample size is large enough to supply at least the precision we require, no matter what p actually is). (Lebin & Rubin, 2006, pp381 para2).
Therefore, the researcher has assigned the value of \( p = 0.5 \) in which case 'n' will be maximum for infinite (very large) population of consumer and the sample will yield at least the desired precision.

Now putting the value in the formula for infinite population, we get:

\[
 n = \frac{z^2 \cdot p \cdot q}{e^2}
\]

where, \( z = 1.96 \) (desired confidence level is 95\% and value obtained from table),

\( p = 0.5 \) (sample proportion),

\( q = 0.5 \ (1-0.5) \ i.e \ 1-p \)

\( e = 7\% \ or \ 0.07 \) (precision rate or acceptable error)

\[
 n = \frac{(1.96)^2 \cdot (0.5) \cdot (0.5)}{(0.07)^2}
\]

\[
 n = \frac{0.9604}{0.0049}
\]

\[
 n = 196
\]

Therefore required sample size for effective result from study is 196. In view of this, by rounding off to upper consolidated figure the sample size is decided to be 200 for consumer segment which is appropriate for study.

The researcher decided to have 360 samples, which is incorporated in the research process adequately representing the population. Out of these, 45 (5 from organized, 10 from unorganized and 30 from consumers) have participated during pilot survey and 17 (01 organized, 03 unorganized & 13 consumer) samples were discarded due to various shortcomings found during tabulation. Therefore total effective sample size in final research is 298 with bifurcation in three sampling units as shown in table below, based on aforesaid approach of mathematical solution used for determination of

Table: 6.1 Sample Size

<table>
<thead>
<tr>
<th>Segment of respondents</th>
<th>Size of sample used for study</th>
<th>Sample size desired as per mathematical calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organized retailer</td>
<td>38 (reason given for increased size)</td>
<td>32</td>
</tr>
<tr>
<td>Unorganized retailer</td>
<td>60</td>
<td>57</td>
</tr>
<tr>
<td>Consumer</td>
<td>200</td>
<td>196</td>
</tr>
</tbody>
</table>

6.2 **Research Instrument**:

In order to collect primary data, a pre-tested structured questionnaire has been used as an instrument. Three types of questionnaires have been used for three different categories of respondents viz category-I for managers of
organized retail stores; category-II, for shop owner of unorganized retail store and category-III for consumers visiting organized and unorganized retail stores. The researcher has also amalgamated face to face discussions with respondents to ascertain their standpoint on various aspects of SCM, the problems faced by them which may not be covered in the structured questionnaire. Due care has been taken during designing phase so that SPSS and other statistical tools can be applied for analysis. (Attached as annexure I, II and III).

In order to design final questionnaire, a **pilot survey** has been carried out with sample size of 45, consisting of 5 from organized retail, 10 from unorganized retail and 30 from consumer segment. Few shortcomings had been noticed such as hesitation of retailer in providing itemized sales data, elimination of questionnaire for staff, amount of investment in absolute terms, inclusions of question related with SCM infrastructure, open ended questions for consumers’ preferences in selection of retailers etc. These were ratified and final questionnaire has been designed

**Format of survey questionnaire**

The survey questionnaire is based on the literature review and information collected through observation, regarding the supply chain practices adopted in retail system which plays an important role in efficiency and productiveness of the whole system.

The category-I (organized retail manager) questionnaire consists of 23 questions. It is designed for managers of organized retail stores, supply chain managers of fruits and vegetable segment in organized retail and managers of distribution /collection centres dealing with perishable products. All the main questions are closed ended with multiple response and some sub-questions are open ended to give the flexibility to respondents to express their views. Some of the main questions are associated with sub-part, to extract the optimum information which in general managers does not want to respond to, due to organizational constraint (as they feel it is confidential information). These sub questions are optional. Qu No. 1-6 are
giving information about retailers and helpful in mapping the scale of operation. The qu. No 7-9 tells about SCM practices among organized retailers with level of integration by use of advance technology. Qu. No. 10-12 deals with willingness and awareness of investment to improve SCM and threats to unorganized / organized retail. Qu. No 13-22 generates information pertaining to SCM practices concerned with bullwhip effect, lead time, stock-out, quality, cold logistics and wastage. Qu. No 23 deals with contract farming and benefit to farmer provided by organized retailers.

The category-II (Shop owner of unorganized stores) questionnaire consists of 22 questions. It is designed for shop owners of unorganized stores selling perishable products including street side vendors selling fruits and vegetables on mobile-carts or static places, registered /un-registered commission agents of various mandis / APMC market yard dealing in the fruits and vegetable segment in unorganized retail, corner and departmental stores dealing with perishable products. All the main questions are closed ended with multiple response and some sub-questions are open ended to give the flexibility to respondents to express their views. Some of the main questions are associated with sub-part, to extract the optimum information. Qu Nos. 1 to 6 give information about retailers and are helpful in mapping the scale of operation. The qu. Nos 7 to 9 tell about SCM practices among unorganized retailers with level of integration by use of advanced technology. Qu. Nos. 10 to 12 deal with willingness and awareness of investment to improve SCM and threats to unorganized / organized retail. Qu. Nos 13-22 generate information pertaining to SCM practices concerned with bullwhip effect, lead time, stock-out, quality, cold logistics, wastage and disposal procedures.

The category-III (Consumer of organized and unorganized stores) questionnaire consists of two parts. It is designed for consumers who have taste and awareness regarding both retail systems in order to plot consequential comparison of prevailing supply chain efficacy. Part A designed to gather demographic information with 10 closed ended questions (Qu.no.1-10) and one open ended question (Qu. No.11) to map
preferential parameters in the mind of consumers for purchasing of perishable products from organized and unorganized retail stores. Qu. no 8-10 deals with purchase quantum and habits which has a direct impact on supply chain practices and value creation. Part B consists of 18 closed ended questions. Qu. Nos 1 to 16 with four points 'Likert' scale generating information on four major factors of consumer satisfaction viz product, price, service and quality which are also an integrative part of supply chain performance. These major factors cover sub-factors like parking, distance, salesman behaviour, security checking, packaging, wastage etc. In Qu. number 17, different store types have been given (generally people are used to purchase perishable products from here) and respondents were requested to mark their order/rank of preference as 1.2.3…. In Qu. No 18, respondents were requested to mark the reason for citing the first preference.

**Scale Used In Questionnaire**

The combination of measurement scale is used in different category of questionnaire. In category-I & II, Question no. 1 and 2 are just the name and address of respondents are in nominal scale. Other questions are in summated Likert-type scale with variable degree as per statement regarded as most useful to compare. The small letters of alphabets (refer corresponding numbers) used in identifying the observations are called ranks. Ranks tell about the degree of the variable within the set of observations at hand, which represents the status of respondents in respect of volume of operation, staff employed and dependent on business, experience level of businessmen and their qualifications. These are the personal information inputs of respondents who are associated in the decision making process and thereby mapping these information is an idea that can be developed about the level of efficiency in supply chain

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operations. Qu. 7 to 23 are also in Likert scale which measures the SCM efficiency in descending / ascending order as per statement.

In category III pertaining to consumers a Likert-type scale has been used in qu. No 5-10 of Part A with different degree as per statement. In Part B qu. No 1-16, four point likert scales have been used with ‘strongly agree’ to ‘strongly disagree’. In Qu. No. B17, ordinal scale has been used to rank the retailers. (Kothari, 2004, page-71 para 3-4).

6.3 Data collection:

The collected data should be appropriate & adequate, hence to be collected by two methods i.e. Primary and Secondary.

Primary data: The primary data are those which are collected afresh and for the first time, which are original in character. In this research, data has been collected from direct communication with three different groups of respondents through pre-tested structured questionnaire from the sampling units as defined above. The different type of information regarding functioning of retail has been obtained by direct interview from farmers, commission agents, middlemen, government officials of APMC, municipal corporation, Agriculture college and research institutions, .

Secondary data: It is the data, already available and the researcher will utilize the information published in various research reports on relevant topics, technical journals, books, magazines, newspapers, publications and websites of trade association, academic institutions and industries etc.

6.4 Hypotheses Formulation

Hypothesis may be defined as the proposition or a set of propositions set forth as an explanation for the occurrence of some specified group of phenomena either asserted merely as a provisional conjecture to guide
some investigation or accepted as highly probable in the light of established facts. A research hypothesis is also a predictive statement, capable of being tested by scientific methods, that relates an independent variable to some dependent variable. (Kothari, 2004, pp184). Hypothesis testing is about making inferences about a population from only a small sample.

To test the validity of our assumptions, the researcher gathered sample data and determined the difference between the hypothesized value and actual value of sample mean and then judged whether the difference is significant. (Lebin & Rubin, 2006, pp402).

In this research, three hypotheses have been formulated to prove three objectives of research. The formal statement has been made as Null (Ho) and alternate(Ha) hypothesis with detail analysis in chapter seven of thesis. The level of significance is 5% as felt appropriate depending on sample size. The statistical tests like chi-square and Two-way ANOVA has been used to prove the hypotheses. The phi-Coefficient of correlation and Karl pearson’s co-efficient of contingency has been used to validate the objectives. The statistical software tools of excel and SPSS has also applied at various places to establish the correlation between various attributes and variables. The analysis part viz. cross tabulation and correlation, which has been done with help of SPSS software are marked with red colour along with question number. The question numbers marked with yellow colour are analysed on excell worksheet.

The three hypotheses of study are as follows:

H-1 SCM practices in Organized Retail are better than SCM practices in Unorganized Retail for perishable food products.
H-2 Investment for up-gradation/ integration is independent from effective SCM practices of organized and unorganized retail stores.

H-3 The product, price, quality & services *i.e. customer offering* for perishable items are similar in organized and unorganized retail stores.

6.5 **RESEARCH IMPLEMENTATION**

This chapter deals with various aspects of research implementation on the topic in Pune. In order to carry out pragmatic research, the researcher
acquainted himself with theoretical, geographical, historical and cultural orientation which helped a lot in mapping of supply chain effectiveness in retail for perishable products.

**Briefing about Pune**

Situated on the banks of Holy rivers, Mula and Mutha, Pune is one of western India’s fastest growing cities and a major industrial centre of the country. In fact, city’s industrial roots and links go back to the beginning of the last millennium. This was the period that saw the city emerge and thrive as India’s pre-eminent centre for IT, education, exports, trade, merchandise and as an out-sourcing hub. Not surprisingly, it soon acquired the soubriquet of being ‘the Oxford of East’.

During the last few decades, when Pune came on the world’s IT map, and the city’s fame as an education and out-sourcing hub grew, the city continued building its reputation in other areas and fields of activities as well. The city is recognized not only for its industrial advancement but also for its importance as a seat of culture and learning.

In recent years, Pune has witnessed developments of all kinds, and the city is now a modern and vibrant metropolis. The creation and construction of the more visible and contemporary malls, multiplexes, entertainment venues and outlets has made the city a totem of development. Not to speak of the visible growth and rise of several educational and cultural centres all over the city that make Pune the most exciting place to live in and work in this part of India. Interestingly, for the benefit of this study, it is relevant to note that the city has a strong presence of the retail sector in the form of various huge size malls and supermarkets. The mushrooming of shopping complexes is witness to the growing economy and purchasing power of Puneites, who have reciprocated warmly to the market experiments and none of the investors complain of poor business.
The city may have gained a dubious distinction for being under terror in the recent past but denizens never lost courage and have retained the city’s sheen even under adverse circumstances.

There are villages around Pune city where thousands of farmers are residing, have comparatively low agricultural incomes. It is a basic right of these farmers to benefit from the development process of this vibrant metro. Therefore, it is evident that they should get better remuneration for their produce which is ultrasonically genuine. **However, this is not exactly happening due to the absence of an efficient supply chain management system contributing to high wastage of produce, especially perishable products.**

The development process of the metro as is natural, has given birth to extreme lower class of people at the bottom of the pyramid who are also entitled to have better food security which is necessarily curtailed by high wastage due to improper supply chain in the process of reaching produce from farm to fork.

**Time Budget**

Time budget is a factor of paramount importance which bounded the whole research in definite time period to make it more pertinent in the dynamic scenario of supply chain management. Though the wastage that occurs in perishable supply chain was heating up at the back of the mind, it was a sense of social responsibility, the official process of research started in the month of December 2008 with thought development on drastic condition of supply chain management in organized and unorganized retail stores for perishable food products. After a detailed discussion in length with the honourable guide, theoretical concept development processes were started in terms of literature review. In the month of February 2009 preliminary registration has been done followed by synopsis for research proposal and presentation.
Extensive literature review with initial field work has been carried out in and around of Pune city. After preparation of draft questionnaire pilot survey was initiated wherein five organized, ten unorganized retailers and thirty consumers participated. During pilot survey, some problems were acknowledged, which were subsequently modified. Initial data was collected at different parts of the city from February to Dec 2010. During Data collection, it is experienced that a lot of myths about government policy circulating in mind of respondent from unorganized retail. Some respondents also blame the government for blindly adopting and imposing the western policy and culture in India. Further to this editing, coding, classification and tabulation of raw data has been completed with due care. The analysis of data along with hypothesis testing and cross tabulation with help of excel and SPSS statistical software has been carried out which took eight months. Preparation of draft report duly incorporated with observation, interpretation and inference with empirical findings, conclusion and recommendation has been completed in the month of Sep 2011. Final thesis is being deposited in Aug 2012 followed by pre-submission seminar and submission of synopsis in Dec/Jan 2012. All six monthly progress reports have been submitted to university through proper channel.

The time budget for this study is being presented in tabular form as follows:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extensive review of Literature on SCM</td>
<td>Three months</td>
</tr>
<tr>
<td>Status of SCM in Pune</td>
<td>Two Month</td>
</tr>
<tr>
<td>Initial Field work</td>
<td>Three months</td>
</tr>
<tr>
<td>Preparation of Questionnaire</td>
<td>Two months</td>
</tr>
<tr>
<td>Pilot Testing of Draft Questionnaire</td>
<td>Two months</td>
</tr>
<tr>
<td>Correction of draft Questionnaire &amp; preparation of Final questionnaire</td>
<td>Two months</td>
</tr>
<tr>
<td>Collection of final data</td>
<td>Six months</td>
</tr>
<tr>
<td>Processing of data</td>
<td>Four months</td>
</tr>
<tr>
<td>Analysis of Processed data</td>
<td>Four months</td>
</tr>
</tbody>
</table>

[180]
Interpretation, conclusion & recommendation : Four months
Report writing : Four months
Final Vetting/Checking and correction : Three months
Preparation of Final report for submission : Three months

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Total Time : Forty-two months

6.6 Limitation
It is possible that the respondents may hide some information due to various reasons which is beyond the control of the researcher. Some organized retailers do not want to disclose some information which they feel are strategic in nature.

During research it was revealed that some unorganized retailers thought that the researcher is himself an agent of organized retailers and the data collected may be used to portray the inefficiency of small retailers and ultimately this may create a problem for their livelihood.

In some organized retail stores, though the managers are well educated and are professionally qualified and despite assuring them of the security of information gathered, they refuse to provide data pertaining to sales, collection centres, transport and its capacity citing the reasons that they have to acquire permission from their higher authorities. These managers fear that the data may be misused by their competitors.

Financial constraint is the major limitation as this research requires extensive information gathering from different sources which also includes the information required pertaining to investment from corporate headquarters of organized retailers as the investment decision authority is vested in corporate level manager and CEOs.

Due care has been taken to collect information from the consumer segment respondents who have the experience and awareness of both types of retail but bias can’t be ruled out completely. The bias of the respondents showed up from the unproportionate levels of sales or income disclosed during the survey, due to a fear of tax evasion or false status-quo.