

CHAPTER 3.

RESEARCH OBJECTIVE AND METHODOLOGY

3.1 Introduction

The preceding chapter mentioned the views, opinions and arguments of a number of authors contained in existing journals and texts on competitive intelligence, strategic management and business performance. This chapter describes the objective of the study and methodology used by the researcher to achieve the same. A key to the success of an empirical study is based on the choice of methodology, which enables the researcher to obtain optimal data to address the subject of the research properly. It also discusses the instrument design for the collection of data and the concept of validity and reliability. In the last section of the chapter, the researcher discusses, in brief, the statistical techniques used in the research to analyze the data.

3.2 Research Objectives

1. To analyze the current status of Competitive Intelligence in Indian Retail Industries.
2. To investigate the role of Competitive Intelligence in strategy formulation of Indian Retail Industries.
3. To examine the relationship between Competitive Intelligence and Business Performance of Indian retail firms.

3.3 Concept of Research

“Research is a systematic process of collecting, analyzing, and interpreting information or data in order to increase our understanding of a phenomenon about which we are interested or concerned” (Leedy & Ormrod, 2013).

3.4 The Concept of Business Research

Business Research is defined “as the systematic and objective process of gathering, recording and analyzing data for aid in making a business decision. On the basis of research output, research can be categorized into two types, basic or pure research and applied research. The basic research attempts to expand the limits of knowledge or to verify the acceptability of a given theory. Applied research answers the question about specific problems or to make a decision about a particular course of action or policy” (Zikmund, 2003).

In the present study, the researcher uses descriptive research as it aims to describe certain characteristics of Competitive Intelligence used in Indian Retail Industry. This study improves knowledge about the relation of competitive intelligence with business performance in the Indian retail industry. This research is basic research.

3.5 Research Design

The study is empirical and descriptive in nature. Primary data have been collected from Indian retail firms through a standardized questionnaire based on Calof and Dishman’s Model of CI (2008).

3.5.1 The Unit of Analysis

“The unit of analysis is the most important body that researchers analyze in their studies. For example, any of the following could be a unit of analysis: Individual, Group, Artifacts (books, photos, and newspapers), Geographical (town, census tract, and city), Social interactions (dyadic relations, divorces, arrests). The choice of the unit of analysis depends on the research questions that are being addressed and the level at which research results are to be generalized.” (Cooper, Schindler, & Sharma, 2012).

In this research, individual retail firms constitute the unit of analysis. The structured questionnaire is filled by the managers having complete knowledge of the firm. The research results are generalized at the level of the Indian retail industry.

3.5.2 Sample Design

The basic purpose of sampling is to select some of the elements from a population which can represent the population so that the researcher may draw a conclusion about the entire population (Cooper, Schindler, & Sharma, 2012). A census study is feasible with the following two conditions: population size should be small and elements are heterogeneous (Cooper, Schindler, & Sharma, 2012). “The process of sampling involves a small number of representing items or parts of the whole population to make conclusions regarding the whole population. A sample is a subset of a larger population. The sample is taken rather than a complete census because it cuts costs, reduces labor requirement and gathers vital information quickly” (Cooper, Schindler, & Sharma, 2012). Sampling is based on the following parameters.

1. Definition of the target population.

2. Existence of the sampling frame.
3. Choice of the appropriate sampling method.
4. Determination of sample size.

The elements of a sample are chosen by using probability or non-probability sampling procedure. “The probability sampling is based on the idea of random selection which means that each element has an equal chance of selection whereas non-probability sampling is an arbitrary and subjective selection of elements” (Zikmund, 2003).The research follows the process as shown in Figure 3-1.

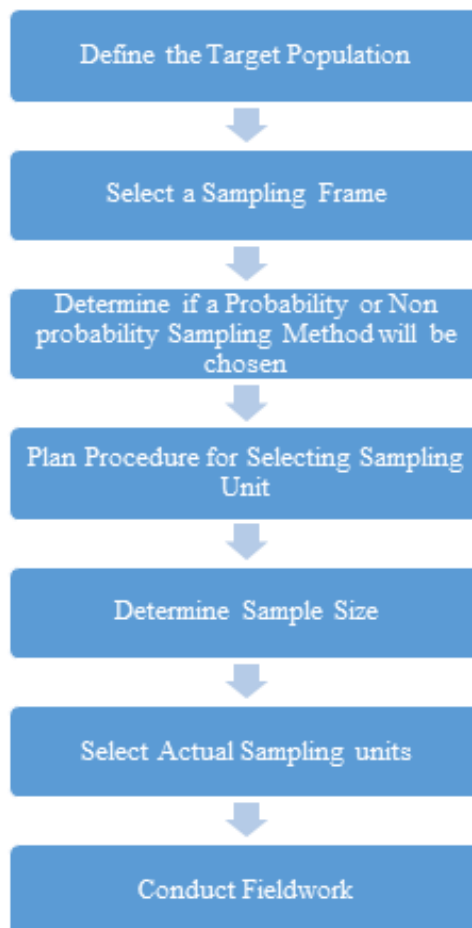


Figure 3.1: Sampling Procedure Adopted from (Zikmund, 2003)

Target Population Definition: Indian Retail firms, as well as firms which have foreign origin but their Indian operation, are handled by Indian firms.

Following are the characteristics of the target population selected for the purpose of the study

1. The firm has to be operating in brick and mortar modern organized retail sector.
2. The firm has at least three stores operating at the time of data collection.
3. Firms which have an only online retail business are not part of the target population.

3.5.2.1 Sampling Frame:

“It is the list of population elements from where the sample is actually drawn”(Zikmund, 2003). Researchers often face difficulty in locating or building a sampling frame. (Cooper, Schindler, & Sharma, 2012). There exists a difference between the available sample frame and real population which leads to a rise in sampling frame error. There is no existing list of Indian retail firms, which can be used as a sampling frame; this forced the researcher to use non probability sampling technique for data collection.

3.5.2.2 Procedure for selecting sampling unit:

The constitution of India (74th Amendment Act 1992) defines a metropolitan area in India as an area having population of ten lakhs or more, comprised in one or more districts and consisting of two or more municipalities or *panchayats* or other contiguous areas, specified by the governor by public notification to be metropolitan

area. According to the Ministry of statistics and programme implementation, the top 10 metropolitan areas of India are following.

1. National Capital Region
2. Mumbai Metropolitan Region
3. Kolkata Metropolitan Region
4. Bangalore Metropolitan Region
5. Hyderabad Metropolitan Region
6. Chennai Metropolitan Region
7. Pune Metropolitan Region
8. Kanpur Metropolitan Region
9. Visakhapatnam Metropolitan Region
10. Nagpur Metropolitan Region

The researcher selected the National Capital Region as an area of sample selection on the basis of one of the biggest metropolitan area in terms of urban population and has the highest density of brick and mortar retail stores.

According to National Capital Region Planning Board the sub areas of National Capital Region are spread across three states Haryana, Uttar Pradesh, Rajasthan, and one union territory NCT- Delhi, and 24 districts, Faridabad, Gurugram, Mewat, Rohtak, Sonapat, Rewari, Jhajjar, Panipat, Palwal, Bhiwani, Mahendergarh, Jind, Karnal, Meerut, Ghaziabad, Gautambudh Nagar, Bulandshahr, Baghpat, Hapur, Shamli, Muzzaffarnagar, Alwar, Bharatpur and Whole of NCT Delhi.

According to the report of Retailer Association of India, National Capital Region has the topmost density of brick and mortar modern retail (23 percent), followed by

Bengaluru (21 percent). Mumbai has only a 12 per cent penetration of brick and mortar modern retail. NCR will require the maximum amount of incremental space at 1.4 million square feet per annum during 2015-2019. This will be followed by Bengaluru at 0.9 million square feet (Retailers Association of India, 2015). On the basis of brick and mortar modern retail penetration Delhi-NCR region has been selected for the study. On the basis of the density of brick and mortar modern retail and profile of retail firms following four markets have been selected for study:

1. Connaught Place.
2. South Extension Market.
3. Ambience Mall Gurugram.
4. MG Road Gurugram.

The researcher collected the data from all the target retail outlets from the selected markets. The retail outlets have been chosen on the basis of judgmental sampling. The questionnaire was filled by the top management including Owner, CEO/Director, Marketing Head, Cluster Head or Store Manager. The data were collected from August 2017 to December 2017. The data was collected personally by the researcher by visiting different retail outlet at the time of business hours.

3.5.2.3 Sample Size

The sample size is defined as the number of elements required to represent the population. The sample size is influenced by the following factors:

- 1 The large heterogeneity among population elements required large sample size.
- 2 The more desired precision required the more sample size.
- 3 The thin error range required large sample size.

4 The requirement of a high confidence level in estimation required a larger sample size.

Model complexity also influenced the sample size decision of the research. In the simplest sense, higher the number of measured or latent variables larger will be the sample size (Hair, Black, Babin, & Anderson, 2015).

The recommendations for minimum sample size based on model complexity are as follows:

1. “Minimum sample size must be 100 for models containing five or less latent constructs each with more than three statements (observed variables) and with high item communalities (more than 0.6)”(Hair, Black, Babin, & Anderson, 2015).
2. “The minimum sample size must be 150 for models containing seven or fewer latent constructs and with modest item communalities (0.5) and no under identifying constructs” (Hair, Black, Babin, & Anderson, 2015).
3. “Minimum sample size must be 300 for models containing seven or fewer latent constructs and with lower item communalities (less than 0.45) and have multiple under identifying constructs” (Hair, Black, Babin, & Anderson, 2015).
4. “Minimum sample size must be 500 for models containing more than seven latent constructs and with lower item communalities (less than 0.45) and having less than three measured items” (Hair, Black, Babin, & Anderson, 2015).

The model used in the measurement of the competitive intelligence construct of the firm has a maximum of four latent constructs in competitive intelligence context

model with more than 0.5 communalities and no under-identified constructs. So the minimum sample size required is 150 firms. The researcher used a sample size of 168 firms.

3.5.3 Field Work

The data was collected between the periods of August 2017 to December 2017. The data was collected personally by the researcher by visiting the retail outlets at the time of business hours. All the target retail outlets operating in the selected markets were part of the survey.

3.6 Instrument Design

The questionnaire developed for the research purpose consists of five sections. Section A has general questions consisting of questions related to demographic characteristics of the respondents and the retail firm. Section B consists of questions related to the process of competitive Intelligence. Section C has statements related to structure, culture and awareness in the firm about competitive intelligence. Section D is related to the strategic use and importance of CI and section E is related to the impact of CI on performance as shown in Appendix-I

3.6.1 Competitive Intelligence Construct Measurement

The literature provided two prominent models for measuring competitive intelligence. The one is based on the best practice model called Wright-Pickston Best Practice Model (Wright, Pickton, & Callow, 2002). The model measures the firm's capabilities of Competitive Intelligence on four parameters, Attitude, Gathering style, Use and Location of CI department in the firm. On the basis of attitude, firms are

further categorised as “Immune, Task driven, Operational and Strategic. Gathering style is further categorized as Easy and Hunter. Use type is Joneses, Knee jerk, Tactical user or Strategic user and location of the Competitive Intelligence department is Adhoc or designated. On the basis of these four parameters, the best practice model consists of Strategic Attitude, Hunter Gathering, Strategic User and Designated Location. This model is Called Wright-Pickston Model” (Wright, Pickton, & Callow, 2002; Wright, Eid, & Fleisher, 2009).

The second model is called Calof and Dishman’s Model of CI. This model considers CI as a process which consists of four phases planning and focus, collection, analysis, and communication of intelligence, as well as the necessary processes, structures and organizational awareness and culture. Based on the above propositions, to what extent the firms follow this process needs to be measured. The above theoretical consideration was first used by Sawka, Frances & Herrin (1996) in developing the measurement tool. Calof and Dishman (2002) further refined it and proposed the model as shown in Figure 3-2. The same model is further refined and used by (Viviers W. , Saayman, Muller, & Calof, 2002) in South Africa. This model further improved and published by Dishman & Calof (2008) and Saayman, et al.(2008). According to Calof and Dishman’s Model, CI capability of a firm depends upon the Competitive Intelligence process and Competitive Intelligence context. CI process consists of the following three constructs: “Planning and Focus, Collection, Communication and Analysis. CI context consists of the following four constructs: Awareness, Internal information, Formal infrastructure and Employee involvement”(Dishman & Calof, 2008).

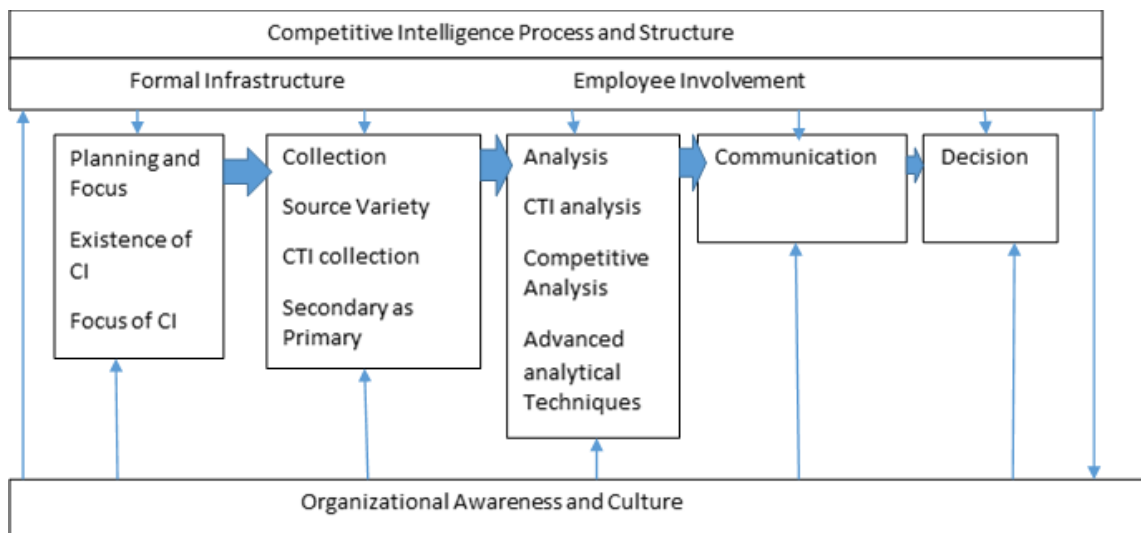


Figure 3.2: Competitive Intelligence Model Adopted from Calof and Dishman (2008)

In the research tool the final statements for competitive intelligence construct are taken from Saayman, et al., (2008). “The final questionnaire contains 37 Competitive Intelligence-related statements to be answered on Likert’s five-point scale. The Likert scale statements were divided into two sections. In the first section, the respondent has to indicate to which degree he/she agreed or disagreed with 19 statements. In the second part the respondents had to indicate to what extent (never to always) they implemented a certain action” (Saayman, et al., 2008).

These statements are further divided according to the competitive intelligence process constructs and competitive intelligence context constructs as shown in Appendix-G and Appendix-H respectively.

3.6.2 Strategic Use of Competitive Intelligence

There is no universal way of defining strategic decisions (Yap, Rashid, & Sapuan, 2013). Dess and Robinson (1984) defined strategic decisions “as having a significant impact on the future state of the firm and/or resulting in the commitment of large

amounts of organizational resources” (Dess & Robinson, 1984). “For Competitive Intelligence strategic use, respondents answered two questions based on the importance of the strategic decision in their organization, and the frequency of CI use in strategic decision making” (Yap, Rashid, & Sapuan, 2013). The following are the decisions used to measure the importance of CI in strategic: “Supporting strategic decision making, Identifying early warning for threats, Identifying blind spots and opportunities, Performing industrial benchmarking, Supporting strategic planning and implementation, Supporting competitor assessment and tracking and Performing counterintelligence” (Yap, Rashid, & Sapuan, 2013). These decisions are evaluated on the 5 points Likert scale from highly undesirable to highly desirable. The following strategic decisions are considered to measure the frequency of use of competitive intelligence in strategic decision making, “Merger & acquisition, Strategic alliance, Market entry/exit, Vertical integration, New product/service development, Capacity expansion, Diversification, Divestment, Technology adoption, Global and Organisation” (Yap, Rashid, & Sapuan, 2013). These decisions are evaluated on the 5-point scale from Never to Always.

3.6.3 Measure of Business Performance

In conceptualizing organizational performance research have to deal with two fundamental issues: the first choice of a theoretical frame work to define organizational performance and second to identify an accurate, available measure that operationalizes organizational performance (Dess & Robinson, 1984). “A high correlation was found among the objective and subjective measure of organizational performance.” (Dess & Robinson, 1984). This research used a subjective measure of

the performance of retail firms. The research selected 30 research papers in which the performance of the organization is the dependent variable and counted the variable used to measure the organisation performance. The parameters used in past researches for retail firm performance are shown in Table 3-1.

Table 3.1: Subjective Business Performance Parameter Used in Literature

Performance Parameter	No. of Times used	Author
Turnover/Total Sales	4	(Conant, Smart, & Solano-Mendez, 1993; Kara, Spillan, & DeShields, 2005; Megicks, 2005; Panigyrakis & Theodoridis, 2009)
Return on Investment	4	(Bridson, Evans, Mavondo, & Minkiewicz, 2013; Kara, Spillan, & DeShields, 2005; Megicks, 2005; Oh, Teo, & Sambamurthy, 2012)
Market Share	3	(Kara, Spillan, & DeShields, 2005; Oh, Teo, & Sambamurthy, 2012; (Panigyrakis & Theodoridis, 2009)
Return On Assets	2	(Bridson, Evans, Mavondo, & Minkiewicz, 2013); Oh, Teo, & Sambamurthy, 2012)
Gross Margin	2	(Bridson, Evans, Mavondo, & Minkiewicz, 2013; Panigyrakis & Theodoridis, 2009)
Revenue Growth	2	(Kara, Spillan, & DeShields, 2005; Oh, Teo, & Sambamurthy, 2012)
Sales per Employee	2	(Conant, Smart, & Solano-Mendez, 1993; Panigyrakis & Theodoridis, 2009)
Sales per Square Foot	2	(Conant, Smart, & Solano-Mendez, 1993; Panigyrakis & Theodoridis, 2009)
Overall Store Performance	2	(Bridson, Evans, Mavondo, & Minkiewicz, 2013; Conant, Smart, & Solano-Mendez, 1993)
Sales Growth	2	(Conant, Smart, & Solano-Mendez, 1993; Panigyrakis & Theodoridis, 2009)
Strategic Objective	1	(Bridson, Evans, Mavondo, & Minkiewicz, 2013)
Cash Flow Management	1	(Conant, Smart, & Solano-Mendez, 1993)
Customer Retention	1	(Megicks, 2005)
Effectiveness of Cost Containment	1	(Conant, Smart, & Solano-Mendez, 1993)
Financial Objective	1	(Bridson, Evans, Mavondo, & Minkiewicz, 2013)
Net income After Taxes	1	(Conant, Smart, & Solano-Mendez, 1993)
Net Profit	1	(Oh, Teo, & Sambamurthy, 2012)
Return on Sales	1	(Panigyrakis & Theodoridis, 2009)
Stock Age	1	(Panigyrakis & Theodoridis, 2009)

The parameters selected by using vote count method for the purpose of measuring the performance of retail firm include “Total Sales, Return on Investment, Market Share, Return on Assets, Gross Margin, Revenue Growth, and Sales per Employee and Sales per Square Foot”. The selected parameters are subjectively evaluated on a five point Likert scale from much worse to much better. The respondents were asked to evaluate the impact of competitive intelligence on a particular performance parameter.

Apart from these, ten questions were asked related to the demographic characteristics of the manager and organizations. The questionnaire also contains the definition of Competitive Intelligence in order to update respondents about Competitive Intelligence concept, as per the research.

3.7 Validity and Reliability

The most extensively used tool to gather the data in social sciences is a questionnaire. The most important purpose of the data collection tool is to acquire reliable and valid information. Validity means “measures what is intended to be measured” (Cooper, Schindler, & Sharma, 2012). According to Malhotra & Dash (2013), the validity of an instrument is perfect if there is no measurement error. The difference in observed scale score and the true value of characteristics is equal to zero (Malhotra & Dash, 2013).

The main types of validity are Construct Validity, Content Validity and Face Validity (Zikmund, 2003). The validity of the constructs is confirmed through subjective evaluation and statistical measures.

As mentioned in the section of instrument design, the researcher uses the scale items which were already utilized by other researches. The items used for competitive intelligence construct had been used and modified in the previous work of Dishman &

Calof (2008), Saayman, et al., (2008), Viviers, Saayman, Muller, & Calof, (2002). The items on the use of CI in strategic decisions are taken from the study of Yap, Rashid, & Sapuan (2013). The items on business performance are selected from the previous research on the bases of vote count method. The validity of business performance construct was evaluated subjectively with five academic researchers in the field of business performance and all have an agreement with the parameters used in operationalizing business performance in this research.

Reliability: “Reliability concerns the extent to which a measurement of a phenomenon provides stable and consistent result” (Zikmund, 2003). The Cronbach Alpha coefficient measures the internal consistency of the set of items. Churchill (1979) recommended this measure to be used when measuring the internal consistency of a set of items. The value of Cronbach alpha should be more than 0.7 for good internal consistency (Churchill, 1979). The value of Cronbach alpha of each factor is more than 0.7 as shown in Table 3-2.

Table 3.2: Cronbach's Alpha Value for each Factor

Factor	Cronbach's Alpha
Planning and Focus	0.867
Collection	0.836
Communication and Analysis	0.895
Awareness	0.828
Internal Information	0.892
Internal Infrastructure	0.875
Employee Involvement	0.773
Importance of CI in Strategic Decision	0.854
Frequency of CI Use in Strategic Decisions	0.792
Business Performance	0.892

3.8 Statistical Techniques Used for Analysis

The study used various statistical techniques to fulfil its objective. Following are the statistical techniques and tests used to fulfil the objective.

- Missing Completely at Random (MCAR) test.
- Chi-Square Test of Independence.
- Confirmatory Factor Analysis

The software used for data analysis is SPSS version 22 and AMOS version 21.

3.8.1 Missing Completely at Random Test

Missing data are a common problem in survey research. Missing values are either random or non-random. Random missing values may occur because the respondent unintentionally did not answer a number of questions. Random missing values may also result from data entry mistakes. Non-random missing values may occur because respondent decisively does not answer a few questions. The respondents may be reluctant to answer some questions because of social desirability concerns about the content of the question. Little's MCAR test is used to find whether the respondent's answer has some pattern of missing value or not.

“Little's MCAR test is the most common test for missing cases being missing completely at random. If the p value for Little's MCAR test is not significant, then the data may be assumed to be MCAR and missing values are assumed not to matter for the analysis. List wise deletion of observations with missing values is appropriate, provided the number of missing values is not very large” (Little, 1988).

3.8.2 Chi-Square Test

It is the extensively used non-parametric statistical test that describes the extent of difference among the observed frequency and expected frequency. The following four essential assumptions should be fulfilled to apply the chi-square test.

1. The observed statistics must be independent of each other.
2. The statistics should be recorded in original units.
3. The minimum sample size should be more than 50 observations.
4. Each cell of the contingency table must have five or more than five observations.

Thus, the chi-Square test is one of the simplest non-parametric tests in statistical work where no assumption about the population being sampled is made.

The Chi Square Test is a statistical test which consists of three different types of analysis:

1. The Goodness of Fit.
2. Test for Homogeneity.
3. Test of Independence.

“The test for goodness of fit determines if the sample under analysis was drawn from a population that follows some specified distribution”.

“The test for homogeneity answers the proposition that several populations are homogeneous with respect to some characteristic”.

“The test for independence (one of the most frequent uses of Chi Square) is for testing the null hypothesis that two criteria of classification, when applied to a population of

subjects are independent. If they are not independent then there is an association between them”(Zikmund, 2003).

The research used the Chi-Square test for independence to find out the relation between competitive intelligence capabilities of the firms with their business performance. It used the following hypothesis

H0: There exists no relationship between competitive intelligence capability and business performance of the Indian retail firms

H1: There exists a relationship between competitive intelligence capability and business performance of the Indian retail firms

The firms are categorized into the following three categories on the basis of competitive intelligence capability score.

High Capability Firms: Firms having competitive intelligence capability score more than 75% of the total possible sum score of 175.

Medium Capability Firms: Firms having competitive intelligence capability score more than 50% of the total possible sum score of 175.

Low Capability Firms: Firms having competitive intelligence capability score of less than 50% of the total possible sum score of 175.

The firms are divided into two categories on the basis of the business performance score.

High Performance Firms and Low Performance Firms: the firms having scored more than or equal to 75% of the total score are considered being high performance firms and others are low performance firms.

3.8.3 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) is a multivariate statistical procedure that is used to test how well the measured variables represent the number of constructs. Confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) are similar techniques, but in exploratory factor analysis (EFA) data are simply explored and it provides information about the numbers of factors required to represent the data. In exploratory factor analysis, all measured variables are related to every latent variable. But in confirmatory factor analysis (CFA), researchers can specify the number of factors required in the data and which measured variable is related to which latent variable. Confirmatory factor analysis (CFA) is a tool that is used to confirm or reject the measurement theory.” (Hair, Black, Babin, & Anderson, 2015). The following four step procedure is followed in confirmatory factor analysis: “Defining an individual construct, Developing the overall measurement model, Designing a study to produce empirical results, Assessing the measurement model validity.

Confirmatory Factor analysis is used to study the applicability of Calof and Dishman’s model of CI in the Indian retail industry.