CHAPTER 8
CONCLUSIONS AND SUGGESTIONS

This chapter presents the proposed framework for separation of carriage and content businesses in the distribution sector of Indian Power Sector. The chapter concludes the discussion on research findings as per the research problem. In addition, this chapter contains a presentation of the major contributions of the study, along with their implications on Business Problem spelled out in chapter one. These are followed by some suggestions for future research roadmap. Finally, the present chapter also outlines the limitations of the present study.

8.1 INTRODUCTION

The purpose of this study was to provide a more holistic understanding of the Indian Power Sector for introducing retail in Indian Electricity Market. The report of the present study in Chapter 1, presents an overview of the Business Problem. It also justified the Business Problem. The Business Problem is rationalized through the literature review on keywords for the present study as: '*Non-Bifurcation of Content and Carriage in Indian Power Distribution Sector is leading to opportunity Cost'*.

From Chapter 2 to 4, thematic analysis is presented. Where-in chapter 2 and chapter 3 elaborated review of the literature on Business Problem. In Chapter 3 relevant studies on existing global electricity market models are included, the fourth generation model has been reviewed specifically on the countries which introduced reforms initially and taken up retail in the electricity market. The global electricity market rationalizes researcher's choice of preferring United Kingdom and New Zealand over other global retail electricity markets. Further for the present study United Kingdom and New Zealand are chosen, owing to following three reasons: i) United Kingdom and New Zealand retail markets rank higher than other countries as shown in competitive metrics of Sioshansi, 2005 ii) The first country to introduce competition in electricity industry was United Kingdom (Woolf, 1994). New Zealand market design provides fundamental design elements, which ensure competition (Hogan, 2001) iii) Consumer switching rates are highest in the United Kingdom followed by the New Zealand (Daglish, 2016). New Zealand is the only country in the

world, which has implemented forced ownership unbundling of electricity distribution from rest of the supply activities in order to introduce retail competition (Gunn et al, 1999). Therefore, it was decided that the conceptual framework would be based on the power sector reforms in India, United Kingdom and New Zealand. For this relevant studies on United Kingdom, New Zealand and India were reviewed along with the policy documents of these countries.

The themes for the review of the literature are identified in Chapter 2 and Chapter 3. The researcher identified four research themes. These are: 1) Performance Indicators of Indian Power Sector, 2) Regulatory Framework and Reforms in Power Sector, 3) Global Power Markets and Competition, 4) Global Experience in Retail Competition. Theory of Mixed Oligopoly is identified as the underpinning theory for the present study. In chapter 4, using 'Funnel Approach' (suggested by Creswell, 1994, adapted and expanded by Miller, 2009), the researcher consolidated following as research gap: *'A comprehensive study could not be found which suggests a mechanism enabling bifurcation of carriage and content for the introduction of retail in Indian Power Distribution Sector.*'

Theoretical Premise Gap for the present study is identified as: '*There is a dearth of scholarly literature addressing the approach of restructuring in a transition scenario from monopoly to mixed oligopoly.'* The thematic research gap is addressed in managerial and policy implications while the academic and economic implications addressed theoretical premise gap.

Furthermore, the thematic and theoretical research gap helped the researcher to reach the research problem for the present study. The research problems for the present study is, '*What approach should be adopted by policymakers to enable restructuring in a transition scenario from monopoly to mixed oligopoly.'* The above research problem stated following as the Research Question for the present study, '*What should be a framework for bifurcation of carriage and content to introduce retail in Indian power sector*'. According to Closs and Cheater (1999), the Research Question states the Research Design. In line with this the Research Design for the present study is Qualitative. Under the light of relevant past studies and present trend, the framework analysis based on the conceptualization was preferred over other research strategies and methodologies

(Richie and Spencer, 1994). Chapter 5, exclusively deals with the methodology for empirical work in the present study.

In order to understand the bifurcation of carriage and content in the distribution business of Indian Power Sector, the United Kingdom and New Zealand regulations for the introduction of reforms for opening up of their electricity market in the year 1999 and 1994 respectively were referred. The conceptual lens was developed on the basis of conceptualization of documents dealing with reforms and retail electricity markets of India, United Kingdom and New Zealand.

For preparing the conceptual lens, transcripts were developed by considering the following documents: 1) **India** (Standing Committee on Energy (2014-15) Fourth Report on Electricity (Amendment) Bill, 2014; Introducing competition in retail electricity supply in India 2013, Forum of Regulators), 2) **United Kingdom** (Electricity Act 1989, Utilities Act 2000, Regulation of the UK Electricity Industry, CRI and University of Bath; UK Energy Policy 1980 – 2010 – A history and lessons to be learnt, Parliamentary Group of Energy Studies) and 3) **New Zealand** (Electricity Industry Reform Act 1998, Electricity Industry Reform Amendment Act 2008, Chronology of New Zealand Electricity Reform, Energy Markets Policy; Energy and Resources Branch, Electricity Market Regulatory Reform and Competition – Case Study of the New Zealand Electricity Market, New Zealand Institute of Economic Research documents). This is followed by the coding, categorization leading to the identification of themes for the common core concept of developing the conceptual lens to base the frame for introduction of retail in Indian Power Sector. On the basis of the conceptual lens, initial protocol was framed for which the initial coding was refined and associations between the categories were identified, leading to a conceptual framework for introducing retail in Indian Power Sector in line with the 'Theory of Conceptual Development, Vygotsky, 1986'. The protocol for the interview was framed based on the conceptual framework. The protocol was validated and checked for reliability in line with Lincoln and Guba (1986). The in-depth interviews up to saturation were conducted. The responses were transcripted and coded. Further categorization leading to the identification of themes for the common core concept of developing the framework for the introduction of retail in Indian Power Sector was conducted. The data analysis using the framework approach is carried out. The findings of data analysis are presented in correspondence to research question. The findings are discussed to address the

research objective. The summary of data analysis is concluded as per the research problem under the next heading.

8.2 CONCLUSIONS

The aim of this study is to develop the framework for introducing the retail in the electricity market in India. This part of the chapter reviews the discussion on main findings reached throughout this study as per the research problem, '*What approach should be adopted by policymakers to enable restructuring in a transition scenario from monopoly to mixed oligopoly'*. The conclusion of the present study in line with research problem is as follows:

8.2.1 The Competition in Electricity Distribution During the Transition from the Monopoly to Mixed Oligopoly as Identified by The Present Study:

Competition within Market

Distribution companies are the most critical link in the power markets. Distribution companies provide revenue to the whole value chain of the power system by establishing an interface with the end consumers hence considered as the cash register for the entire sector. In India, Power Distribution Companies christened as 'DISCOMs', came into existence upon introduction of reforms in power sector in 1991. Prior to DISCOMs State Electricity Boards were responsible for generation, transmission, and distribution. Under the provisions of Indian Constitution, electricity is a concurrent subject. State Governments are responsible for power distribution and supply of electricity to urban and rural consumers. Central Government provides assistance to State Governments through various schemes for improving the sector. Electricity Act, 2003 mandated the separation of generation, transmission and distribution activities. This Act also laid down provisions for more than one distribution license in one area. Distribution companies were allowed to - take participation in open access, power trading, and distribution franchisee. Presently, by serving around 200 million consumers through 400 GW of connected load, Indian Power Distribution System stands as the second largest consumer base. Power is distributed to this large consumer base through 73 DISCOMs. These 73 Distribution Companies include 13 Electricity Departments, 41 Corporatized DISCOMs, 17 Private DISCOMs, 2 State Electricity Boards.

Despite the efforts made by Electricity Act 2003, the Indian Power Distribution Companies are making losses in absence of competition. According to World Bank Report (2015), the losses of Distribution Companies are estimated at nearly 14 billion dollars (U.S $) which is equivalent to 5% of India's GDP. Despite the introduction of private participation in Indian power distribution sector, the Government-owned SEBs still owns about 95% of the distribution network.

Power distribution system in India serves for both network and supply. There are no parallel players hence competition in this segment is nil. Electricity Act 2003; section 14 (6) contemplated parallel licenses to undertake distribution activity in one of the areas. Development of parallel distribution network needs heavy investment. With this, now the distribution licensee need to do fresh investments for developing parallel distribution network. Various legal and regulatory challenges and conflict of interest are involved in doing so. Hence, to meet these challenges, monopoly of the distribution company should be removed by introducing parallel players in supply segment.

Competition for the Market

As justified by the Business Problem, there is an imperative need of third generation reforms in Indian Power Sector. India already has moved from vertically integrated single buyer model to wholesale competition model. It was felt that next generation – "retail competition model" will increase the competition and consequently lead to viability and sustainability of Indian power sector. For introducing retail competition model, separation of carriage and content business is required in the distribution sector. Policy makers of India have already recommended the same through Electricity (Amendment) Bill 2014.

The purpose of the amendment is to introduce third generation reforms in India for preventing commercial losses and leakages. Competition in Distribution Sector needs to be introduced through the separation of carriage and content. The separation is suggested after reviewing the performance of the sector in past 10 years. After the separation, multiple supply licensees shall be introduced based on the market principles which shall lead the competition in Content Business. The Carriage Business will remain as a regulated activity.

The foreseen competitive scenario shall remove the monopoly in Power Distribution Sector. The sector will move to Mixed Oligopoly. The State Electricity Regulatory Commission may grant supply license to more than one person whereas one supply licensee needs to be Government Company. Thus a government-owned supply company shall compete with the private supply company. All the existing Power Purchase Agreements shall be reassigned to the incumbent supply licensee. The consumers shall be able to switch the supplier based on the provisions and switching rate decided by the appropriate commission. Once the market shall be opened up for all consumers, suppliers shall perform better in fear to lose the market share. Consumer interest shall be protected by market forces. The degree of competition will be high. Price drops, increase in efficiency as well as in quality shall be seen in the power industry of India.

8.2.2 The Restructuring Process During the Transition from the Monopoly to Mixed Oligopoly as Identified by the Present Study:

Every market has monopoly conditions in the initial phase of reforms. In the monopoly, a single company has 100% market share. The degree of competition in monopoly is zero. The company usually offer poor quality of goods or services at a high price which results in consumer dissatisfaction. Price discrimination is also seen in the market. Quantity and reliability of product also suffer the market as the consumers do not have any other option and company knows that its products will be sold out surely without fail.

If a monopoly firm is getting funds from Government or from another source regularly and if the funding does not depend on the performance of the company; it may lead to serious implications. The company works with low responsibility and its accountability and service standards become low due to which it could not get enough returns. Losses and debt on company keep increasing due to which the sector and economy of the state get badly effect. To lower down the losses, the company raises the product price for consumers but the gap between cost and revenue keeps increasing due to the absence of competitive forces.

To enable competition in the market, policy makers do regulatory amendments. The regulatory amendments mandate the restructuring to ensure the function wise unbundling of a monopoly firm. This function wise unbundling of the company goes to next levels until the natural monopoly

arrives. For the unbundling of a company, a transfer scheme is drafted which ensures the fair allocation of assets, liabilities, and personnel of existing company into newly formed companies. Industry operating rules and procedures are also being made.

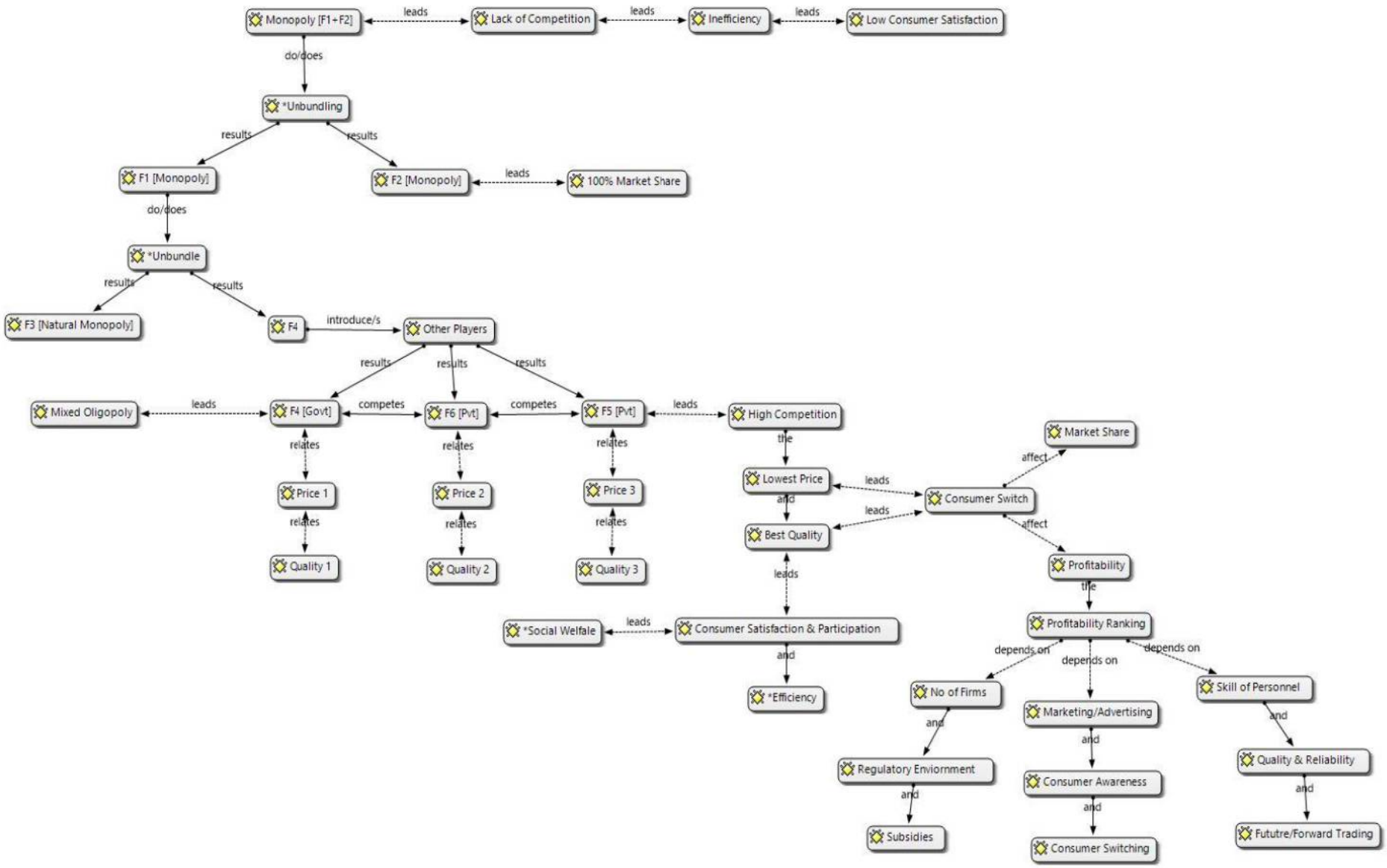

Figure 8.1: Restructuring Process During the Transition from the Monopoly to Mixed Oligopoly

Subsequent to the unbundling, new firms are introduced for a particular function wherein one firm (the older one or new one) needs to be government owned. This situation of the market is known as a mixed oligopoly. In the mixed oligopoly, a government firm competes with 'n' number of private firms for the homogeneous good or service. Private firms behave like the profit maximizers and also have symmetric objectives among them while public firm always tries to maximize the social welfare.

The base of 'Mixed Oligopoly' is 'Oligopoly Theory' in which multiple firms compete with each other for particular goods or services. Companies can lose the significant market share if the consumer switches the company in order to get quality products or services at best price. Companies concentrate on their performance and try to minimize inefficiencies. The cost comes down comparatively to low scale. Competitive forces in markets increase the product quality and consumer delight. Increased efficiency in operations and competitive forces lead to the profitable and healthy sector which gives significant benefit to the economy. In the mixed oligopoly, the profit ranking depends on the: number of firms, regulatory environment, marketing strategies, skill of personnel, subsidies, quality and reliability of products, consumer awareness and switching patterns of consumers.

8.2.3 Proposed Framework for Separation of Carriage and Content Business in Distribution Segment to Introduce Competitive Retail in Indian Power Sector:

REGULATORY PROVISIONS			
Electricity Amendment Bill 2014	Disclosure Regulations	Transfer Scheme	Responsibilities of New Bodies

TRANSFER SCHEME			
Asset, Liabilities, Personnel, PPAs	Undertakings	Effective Date of Transfer	Treatment of Claims and Losses

UNBUNDLING / SEPERATION OF DISTRIBUTION BUSINESS			
Accounting Separation	Functional Separation	Operational Separation	Ownership Separation

THE ELECTRICITY CODE			
New Supply Licensee	Central Consumer Database	Consumer Category	Tariff Control Mechanism
Elimination of Cross Subsidies	Universal Service Obligation	Automated Metering	Grievance Redressal Mechanism

OPEN ACCESS AND CONSUMER SWITCHING				
Connected Load >= 1MW	Connected Load >= 100 kW	Connected Load <= 100 kW	Choice of Supplier	Consumer Switching

Introduction of Retail Competition in Indian Power Sector

RETAIL COMPETITION IN INDIAN POWER SECTOR

Figure 8.2: Proposed Framework for Separation of Carriage and Content Business in Distribution Segment to Introduce Competitive Retail in Indian Power Sector

A brief discussion around the proposed framework is presented as below:

REGULATORY PROVISIONS

Regulatory Provisions: Enactment of the Electricity (Amendment) Bill, 2014 is a pre-requisite for the introduction of retail competition in India. The Electricity (Amendment) Bill, 2014 foresees the introduction of retail competition in Indian power sector through the separation of carriage business and content business. The Bill mandates the separation of licenses after separation for both the activities of distribution and supply from existing distribution activity. It amends section 14 of the original act to mandate the separation of licenses. The Electricity (Amendment) Bill, 2014 defines the roles and responsibilities of newly formed companies.

As per Section 2 (17A) of the Bill, after the separation of the existing distribution business, the Distribution Company shall be responsible for the conveyance of electricity to end consumer through the use of distribution system within its specified area as defined in Section 2 (2A). As per Section 2 (35A) of the Bill, Incumbent Supply Licensee shall be responsible to provide electricity to end consumer with the help of distribution network. Ownership of Incumbent Supply Company shall remain in the hands of State Government. A Supply Company shall include Incumbent Supply Company and such other supply companies who are operating in parallel in the same area. Provider of Last Resort shall be the supply licensee who shall be designated by Appropriate Commission time to time to supply power to consumers in his area of supply if the supply company chosen by the consumer, ceases to be a supply company or if his license is suspended for any reason; as the case may be. As per Section 2 (35B), Intermediary Company shall succeed the existing power purchase agreements and power procurement agreements of respective distribution companies upon separation of existing distribution companies. The company shall not require any license for its assigned functions.

The present regulatory regime does not cover regulations around Disclosure Regulations. Introduction of 'Disclosure Regulations' shall ensure the smooth transition of the industry from present structure to foreseen structure. Disclosure regulations shall identify the interest or

involvement of one electricity business into another. The regulations shall also identify an unspecified interest of the involved person in an electricity business. The disclosed information by State Electricity Boards and Distribution Companies shall help in eliminating the existing conflict of interest.

The provision of Transfer Scheme has been mentioned in Section 131 4A and 4B of the Electricity Amendment Bill 2014. As specified in the Section 131 4A, The State Government shall draft a transfer scheme for the transfers of property, functions, and assets in rights, property, and liabilities of distribution licensee to newly formed bodies. Though the Bill recommends to make transfer scheme, the draft of transfer scheme and provisions of it are not covered by the Bill.

The proposed transfer scheme allocates assets, liabilities, personnel, and proceedings based on the undertakings mentioned in the respective schedule defined for Network Company, Supply Company and Intermediary Company, as presented in chapter 7. An independent consultant nominated by the State Government shall be the responsible authority to draft the transfer scheme whereas the Secretary of State shall be the approving authority of transfer scheme. Through the scheme, all the existing recognized regulatory losses which pertain to the DISCOMs presently shall be allocated to Intermediary Company. Intermediary Company shall further amortize them through Universal Charge or from the support of State Government. On the other hand, unrecognized losses may be transferred to existing companies and help from State Government shall be sought to clear up the balance sheets. The transfer scheme shall be considered effective from 'Effective Date of Transfer'.

UNBUNDLING/ SEPARATION OF DISTRIBUTION BUSINESS

Separation of carriage and content business from the existing distribution business shall be performed in certain steps. All the existing power distribution companies shall have the mandate to undertake unbundling to separate carriage and content businesses. State Electricity boards which are not unbundled yet in separate generation, transmission and distribution companies shall also have a need to undertake the unbundling of two levels. In the first step of separation, financial

accounts of Distribution Company or State Electricity Boards shall be divided into functional activities of carriage and content or into generation, transmission, and distribution, as the case may be. After the accounting separation, functional separation will be performed. In this step of unbundling, existing staff or manpower shall be assigned to different functions of utility as per their expertise and experience. Although management of such functions and staff shall be performed by one central holding only. Once the functional separation will be completed, operational separation will be performed. In this form of separation, separate legal entities of carriage business and content business shall be created which shall be based on the manner of operation they take place. However, the holding company shall remain the same. In the last step of ownership separation, the existing function of distribution business shall be divested to remove the possibilities of any type of discrimination, conflict, and interest. In this form, distinct legal bodies or carriage business, content business or as defined in the act shall be created with separate management groups. One supply licensee shall be there in the market once the full ownership unbundling of distribution companies shall be performed. To enable full competition in the supply side, another supply licensee shall be introduced in the market. After the ownership separation, A retail supply company shall be allowed to establish a generation plant, to secure the power availability for its purpose of serving customer and meet their all-time demand for electricity. Threshold limit to establish such generation shall be set up for the conventional power plant which shall be decided the by state regulatory commission based on the power requirements of the state or connected consumers. Although no threshold limit shall be there for establishing a renewable energy generation plant.

THE ELECTRICITY CODE

The Electricity Code outlines various responsibilities and duties for the newly formed bodies and consumers to ensure proper, smooth and efficient operations. The code outlines various license conditions in line with the Electricity (Amendment) Bill 2014. The Electricity Code allows the creation of a central database of consumers i.e. KYC which shall help in the recording of billing address, usage pattern, meter number, bank account details for that consumer. Network Company

shall be given the task to create KYC. It will be useful for transferring subsidies directly into the consumer's account.

The Electricity Code shall specify the tariff regulations. Distribution Company shall have regulated tariff whereas the Supply Company shall have ceiling tariff for contestable consumer and regulated tariff for the non-contestable consumer. Tariff for Distribution Company shall include: network capital expenditure, operation, and maintenance expenditure and technical losses. Tariff for Supply Company shall include: capital asset expenditure, power purchase cost, operation and maintenance expenditure and commercial losses whereas tariff for Intermediary Company shall include: costs incurred towards PPAs and operational expenditure. Tariff of the electricity shall be based on certain consumer categories. A price restraint mechanism shall be defined by State Electricity Regulatory Commission for the Control in relation to network and supply charges for rural consumers or domestic consumers. Line Charge shall not be paid directly by an end-consumer to an electricity distributor. The consumer shall pay the same via electricity supplier.

Gradual elimination of subsidies is necessary for the success of retail competition in India. The subsidies can be managed through Year on Year tariff hikes, Universal Charge (UC) fund, limiting subsidies to wheeling charges. Although until the full elimination of subsidies, the consumer shall be charged with full price and the state government then shall transfer the subsidy amount into the account of the consumer. The transfer shall be based on the KYC details which were created for that consumer.

Universal service obligation shall be there for the distribution and supply company. The responsibility of connecting a consumer to the network shall be given to Distribution Company whereas the responsibility to supply electricity to a consumer would be given to the incumbent retail supply company initially. Both Distribution and Supplier need to provide connection and supply to the consumer within the specified time limit. Upgradation in metering infrastructure is also needed. Prepaid meters shall be installed in place of existing meters. Automated Metering Infrastructure shall be the focus. Whole distribution system shall be gradually converted into the automated system to fetch out the real-time consumer information. Automatic meters shall be able

to do the real-time calculation and accounting for the power consumed or asked for the day. Metering, Billing, and Collection shall be the responsibility of supply company or a third party; whomsoever is appointed by the appropriate commission. Accountability shall be set up between Network Provider and Power Supplier as the power outage or load shedding may have reasons related to either of both distribution network and supply functions. Both the distribution and supply company shall have the investigation powers, and if any default is found, they may issue a notice to the consumer or may disconnect the premise as the case may be. After the introduction of retail supply competition, to protect the rights and interest of consumers, a two-layered single window Consumer Redressal Mechanism shall be provided.

OPEN ACCESS AND CONSUMER SWITCHING

Phase wise introduction of open access shall be there once the subsequent supplier shall have been introduced in the market. Market shall be opened for all category of consumers. In phase 1, Consumer who has connected load greater than or equal to 1 MW shall be able to choose their supplier. In phase 2 of market opening, Consumer who has connected load greater than or equal to 100 kW shall be able to choose their supplier while in phase 3, market shall be opened up for all consumers. Introduction of these phases shall have certain time gaps, which shall be based on the ground conditions of respective state. After opening up of the market, consumers of the respective category; based on the connected load; shall be able to switch the supplier available in his area to supply.

There shall be certain pre-conditions which will be mandatory for switching the supplier by the consumer. A consumer shall be allowed to switch the supplier if he shall fulfill the mandates fixed by the Electricity Code. Recovery of past revenue gaps and past dues, recovery of security deposits and regulatory assets must be looked into before the switching. These conditions shall be based on the respective consumer categories. A frequency shall also be defined for every category of the consumer to switch the supplier as high switching rates may lead to difficulties for retail supply companies in managing their demand forecasting and power procurement. The consumer shall be

allowed to switch the supplier of certain dates/anytime during the year/or after the lock-in time with the present supplier; as the case may be.

Once the open access will in full swing, the consumers shall be able to source their electricity from any place of their choice. They will be able to purchase power from generation company, trading licensee, wholesale market place or any supplier of electricity who operates in the same area. The consumer will have the option to switch his supplier if he is not satisfied with the service of the present supplier. This scenario shall remove the existing monopoly in distribution sector and shall be known as retail competition in power sector. Suppliers shall improve their quality as they will have fear to lose the market. Full competition in the electricity shall be seen which shall subsequently result into increase in efficiency and quality.

8.3 IMPLICATIONS OF THE STUDY

This section recommends the conclusions of this study addressing the business problem, '*Non-Bifurcation of Content and Carriage in Indian Power Distribution Sector is leading to opportunity Cost*'. The result of this thesis is useful in the introduction of the retail in Indian electricity market. This becomes more important as India is in its third phase of reforms and present work has expanded knowledge of the fourth phase of reforms enabling a smooth transition from third to the fourth phase. Using a similar approach, the study can also contribute to supporting transfer scheme facilitating the bifurcation of carriage and content in existing distribution business**.** Nevertheless, the key contributions and novelty of this research are explicated to answer the business problem under the practical implications and cover the theoretical research gap under academic implications as follows:

8.3.1 ACADEMIC IMPLICATIONS

In a mixed oligopoly, Private firms behave like the profit maximizers and also have symmetric objectives among them while public firm always tries to maximize the social welfare [(Kato et al.

(2007), NET (1999)] In public firms, budget constraints are negligible to increase the social welfare. The private firm follows the cost reduction activity hence the production cost of a private firm is lower than the public firm (Matsumura et al., 2004).

Among the two classical models of Oligopoly Theory, Bertrand (1883, price based) competition fosters larger profit for a private firm and social welfare in a mixed oligopoly in comparison to Curnot (1838, quantity based) competition. Mixed oligopoly allows the participation of private firms and despite the number of private firms – competition in price fosters higher welfare. However, which model foster higher profits, depends on the number of firms present in the market. It has been found that when the numbers of firms are high, larger profits are gained by the competition. We cannot simply say that whether Cournot or Bertrand model is good; it surely depends on the number of existing firms in the market (Haraguchi, 2005).

Theoretical Contribution

In some industries, both types of competitions are not possible. In view of above, comparison of Bertrand (1883) and Curnot (1838) is not fair to those industries. For example: electricity cannot be stored and output of electricity depends on the consumption pattern, hence in power industry, quantity based competition cannot be there. Only price-based competition i.e. Bertrand competition is possible there in the power industry.

In a mixed oligopoly, the profit ranking depends on the number of private firms (Haraguchi, 2015). However, this research adds some other factors which can also affect the profit ranking of firms. Such other factors are as follows:

1. Price of Product: A consumer can switch its company to another company if he has offered to get the same product at cheaper price. A company may lose significant market share due to the switching of consumers who want to buy the product at competitive price. The loss of market share may affect the profit ranking of the firm.

2. Quality and Reliability of Product: A consumer can switch its company to another company if he is not satisfied with the quality and reliability of products and services. A company may lose significant market share due to the switching of consumers who want to avail quality service. The loss of market share may affect the profit ranking of the firm.

3. Skill Gap: After functional unbundling, power sector personnel will be positioned in new companies. During allocation, experience and skill set of personnel shall be considered. For better performance and output, these officials need to be skilled. Thus to cover such skill gaps, strategic training need analysis is a pre-requisite.

4. Regulatory Environment: Regulatory rules and regulations sometimes differ for 'Government Company' and 'Private Company'. Though the industry operates at same objective, operations of different companies and the related profits can be affected by the differences in regulatory environment.

5. Subsidies: Government company usually offers subsidies to its customer while a private company does not offer subsidies. Hence a major bunch of consumers may take its service from the Government Company in order to get the product at the low i.e. subsidized price. The same may affect the profit ranking of firms.

6. Consumer Awareness: Consumers should be aware of the fact that they can switch his supplier. The awareness becomes the mode of switching. If the consumer is aware that he can change the company, he may change to get the product at better price and quality. In view of above, it can be depicted that the degree of awareness may affect the profit ranking of the firm.

7. Marketing: A consumer should have the knowledge of companies which are serving in the area. A company which opts the aggressive marketing strategy may grab the higher consumer ratio in comparison to the other company. Hence, it can be said that profit ranking of the firm can also be affected by the marketing.

8. Future Trading: A company who offers future and forward trading, may secure its sale for certain point of time in future. Since the future contract is cheaper – consumer may avail the same and can sign a contract with the company. The same can affect the market share and profit ranking of firms in long run.

In view of the above points, the researcher can state that these suggestions contribute to bridge the research gap of the theoretical premise.

8.3.2 ECONOMIC IMPLICATIONS

Energy builds the blocks to develop an economy. A causal relationship exists between the growth of power sector and economic growth of a nation. To provide the economy no damaging impact, challenges of electricity sector like tariff structure, efficiency improvement, demand supply gap, high losses etc. needs to be addressed. Chapter 1 of this study, shows the existing challenges of Indian Power Sector. Finances of Indian power sector has been deteriorating continuously due to different reasons (increasing AT&C losses, increasing power purchase cost, the increment in per unit cost of power, increasing gap between average revenue and average cost) as stated in the Business Problem. As per result, the sectorial debt of Indian power sector was raised to Rs. 3.5 trillion (~$77 billion) in the year 2011 which was equivalent to 5% of India's GDP.

India's Power Sector is a backbone of Indian economy though the efficiency of power distribution utilities is a key issue. Inefficiencies are continuously having a detrimental effect on the economic growth of India. In view of above, state governments initiated various restructuring processes to scale up the techno-economic performance of the utilities. Vertically integrated 'State Electricity Boards' were unbundled into separate manageable generation, transmission and distribution utilities but the main concerns of the reforms, related to economy and finances, could not be addressed properly.

Based on the empirical research and best international practices, findings of this particular research advocates that introduction of retail competition through separation of carriage and content from

existing distribution sector, shall address the existing inefficiencies of Indian Power Sector. The framework suggested in chapter 7 shall facilitate the smooth implementation of retail competition in Indian Power Sector. After the implementation of retail competition, the Indian Power Sector is expected to grow with enough pace. This will have positive consequences on the growth of Indian economy. Hence economy of the country is expected to grow at a higher rate in the foreseen retail scenario.

8.3.3 POLICY IMPLICATIONS

This thesis provides certain policy suggestions to the Republic of India that is seriously considering the implementation of third-generation reforms in its electricity sector through Electricity (Amendment) Bill, 2014. Policy makers may use the results of this thesis as the guidelines for redesigning and evaluating the electricity market liberalization schemes. They may formulate and implement retail competition in Indian Power Sector as per the suggested framework.

It is clear that introduction of the Electricity Amendment Bill 2014 has raised expectations of all stakeholders of Power System in India. If passed, this bill may be the way forward to roll out next generation of reforms in Indian Power Sector which are necessary in order to enhance efficiency. Though the Electricity Amendment Bill 2014 advocates introduction of separation of carriage and content to increase competition but it is silent about various practical aspects pertaining to guidelines, mode of treatment, implementation of bifurcation and management of segregated businesses. The bill needs to envisage and formulate guidelines pertaining to level and manner of segregation, the category of supply licensees, role and work of the intermediate company, distribution licensee, and franchisee. The bill is also silent about the treatment of losses and cross-subsidies at the time of segregation, detailed responsibility of the provider of last resort and his accountability towards the distribution of power. The bill needs to take into its purview the detailed process and incentivization at all the levels of implementation. The Electricity Amendment Bill 2014 is also obscure about the management of metering and billing, collection, supplier switch, switching costs, timeline of switching frequency and other consumer-related needs.

Once the Electricity (Amendment Bill) 2014 shall be enacted there will be a need of drafting the transfer scheme. Though the bill mentions the "transfer scheme" under Section 14, 51(A), 55(4A) – it does not specify the responsibilities of different bodies in the implementation of the transfer scheme. The Bill does not describe the outline or various provisions which need to be there in transfer scheme in order to effectively allocate the current asset, liabilities, and personnel among different newly formed companies. The Bill is also silent about disclosure regulations which need to be mentioned to identify conflict of interest.

This study suggests that the above concerns regarding Electricity (Amendment) Bill, 2014 and Transfer Scheme needs to be addressed properly. This research presents a draft of transfer scheme in chapter 7 which may be considered by the policymakers and state governments for the fair allocation of assets, liabilities, and personnel.

8.3.4 MANAGERIAL IMPLICATIONS

This study raises and improves the understanding of Management of Indian Power Sector pertaining to operational, regulatory and restructuring practices. This study enriches and fills the gap in the literature of retail model through the separation of carriage and content from existing distribution companies. Moreover, this research provides a framework for the introduction of retail competition in India. It is very important that the management of different power companies play the leadership role for effectively managing the transition of Indian Power Industry from 'Wholesale Competition Model' to 'Retail Competition Model' through the suggested framework. In view of this, there are certain pointers which need to be effectively managed:

A) Strategical Implications

Non Transferrable Reform Process: Similar reform process may have altered impact in different countries. Each country has certain circumstances, which needs to be considered by policy makers. The same reform process cannot be passed to another country. In this particular study also, the

researcher studied reform process of United Kingdom and New Zealand and instead of transferring their process to India, he developed a separate reform path based on the ground condition and existing realities of the country.

Relationship between Democracy and Reform: A democracy and reform progression in that democracy has a negative relationship. Anti-reform voices may lead to certain delays or hindrances in the reform process of a democratic country. Hence a management needs to launch the public awareness campaign which can make the people understand the benefits of retail competition. It should be mentioned that retail competition shall give the choice of supplier to consumers, ultimately resulting in better service at low price.

Elimination of Conflict of Interest: Ownership separation of carriage and content business is the mandatory and last stage of structuring. Upon separation, management of carriage and content business will be in different hands to prohibit the conflict of interest. The management of Company A will not be able to able to take participation in the decisions of Company B and vice versa. On the other hand, managerial coordination will be there between the management of different companies to sign off different MOUs, agreement, and contracts; and also to formulate strategies for market development

B) Functional Implications

Electricity Tariff is a Function of Market Competition: Electricity tariff variates on power consumption, income level, industrial or residential price and so on. In the retail scenario, such policies need to be formulated by the policy makers which can mandate the discovery of tariff on competitive market forces. This shall lead to the introduction of full competition in the market. Though the creation of capacity market is a pre-requisite and require the attention of the State Governments.

Management of Losses: Introduction of retail completion shall lead to the profitability of Indian Power Sector. Though, managers of different companies should adopt the best practices for reducing technical and commercial losses. Strengthening of existing network infrastructure shall

help to lower down technical leakages. On the other hand, focus on 100% revenue collection needs to be given for addressing commercial losses.

High Debt and Economic Consequences: Upon the separation of carriage and content, the balance sheet of existing distribution companies will be cleared. By the effect of transfer scheme, all the liabilities of distribution companies shall be taken up by respective State Governments. Since high debt has negative economic consequences, management of power companies need to grab the lesson from past experiences.

C) Performance Implications

Bridging the Skill Gaps: Operational and financial unbundling of distribution utilities in order to introduce retail competition shall improve the accountability of each component in the value chain of the power sector. Although for achieving the accountability, function wise expertise is essential in the engaged human resource. This research recommends the allocation of personnel of existing distribution companies into the newly formed company, based on their experience and skill set. Though managers of respective power companies can organize skill-enhancing training programs. Such programs will be beneficial for bridging the skill gaps of personnel and will lead into the healthy operational environment.

D) Implications for Practice

There is an imperative need to do regulatory amendments in order to enable retail competition in Indian Power Sector. Present regulations do not have sufficient provisions to bifurcate carriage and content businesses hence it is strongly recommended to enact the Electricity (Amendment) Bill 2014 with immediate effect. Disclosure regulations are required to be formulated to identify a conflict of interest. In subsequent to identifying the certain involvements or specific interest, the State Government needs to draft transfer scheme which is necessary for fair allocation of assets, liabilities, personnel and proceedings amongst newly formed companies.

Existing distribution business needs to be bifurcated into carriage and content businesses. After the bifurcation, certain new bodies need to be created. Though upon separation, Distribution Company shall see network operations and Supply Company will be there for supplying electricity – intermediary company also needs to be created for succeeding existing power purchase agreement. The Government shall invite proposals for the second subsequent supply license. Entry of the same shall lead in enabling the retail competition. At this point of time, the market shall be opened up for all consumers in a phased manner where they can switch their supplier and can take power from any source. Here, to protect the interest of end consumer, it is recommended that one Supply Company should be in the hands of State Government. That government supply company needs to act as the Provider of Last Resort and should have the mandate to provide power in case the existing supplier of the distributor is ceased.

Upon transfer, the new supply licensees should be allowed to establish their own generation plant for securing the power as they will not have tied power procurement arrangements with them. Both the distribution licensee and the supply licensee are needed to apply in appropriate commission for the new license to undertake respective operations, during the defined period which shall be counted from the effective day of transfer. It is recommended to define The Electricity Code to set 'Standard Operating Procedures' under which Consumer Categories, Tariff Regulations, Loss Treatment Mechanism, Metering Billing Collection Mechanism, Universal Service Obligation and other such particulars need to be defined. It is recommended to create a capacity market. Gradual elimination of the subsidy is also needed. A KYC consumer database should be created to identify a real-time consumer load pattern. Supply Company or a third party company can be assigned with the task of metering.

Upon separation, Network Company is needed to be held accountable for all the technical and hooking losses while Supply Company is needed to be held accountable for commercial losses. The payment of network charges by consumers for the purpose of accessing electricity will be

made through the supplier only. It is recommended to establish two-layered, a single window consumer grievance redressal forum to provide a solution to the consumer grievances.

Once the retail competition will be onset in Indian Market, significant consumer switching may be seen. To facilitate the consumer switching, it is recommended to lay down proper guidelines and switching frequencies. Network Company shall have a duty to connect and Supply Company shall have Duty to Supply. It is recommended to empower both companies with investigating power for consumer-related matters.

8.4 RECOMMENDATION FOR RESEARCH

A researcher may undertake his future research on the following research areas as the extension of this study:

1. Change in consumer sensitivity to electricity prices in response to retail deregulation is an area in which research can be pursued after the introduction of retail in India.
2. State-wise analysis of reforms in order to identify the degree of separation required in the power sector of the respective Indian state may be addressed in future research.
3. Reforms is an ongoing process globally, including Indian Power Industry. There are ample opportunities for continual analysis of sector reforms. In view of above, future research may identify the determinants of reform success or failure in the Indian scenario.

8.5 LIMITATIONS OF THE STUDY

Limitations of the research undertaken for suggesting a framework for separation of carriage and content business in distribution segment to introduce competitive retail in Indian power sector, are as follows:

1. The suggested framework has been developed for India. For adoption of the same framework to any other country may require modifications based on the Reforms, Regulations, Electricity Market and Power Sector Policy of the country under study.
2. The framework has been developed with an assumption of the amendment in existing regulatory provisions.
3. Since the retail has not been introduced in power sector of any developing country, hence the retail introduction mechanism of developed countries has been referred for developing the conceptual lens to design interview protocol for conducting interviews of Indian Power Sector Experts.