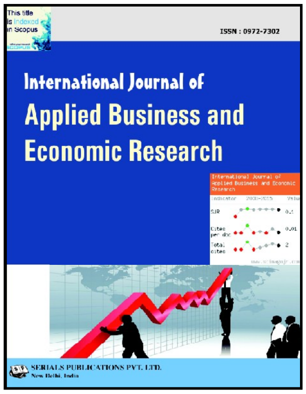

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Application of Qualitative Comparative Analysis: Telecom Regulatory Environment in Five Countries

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Abstract: This paper presents a qualitative comparative analysis (QCA) of the telecom market in five countries namely USA, UK, Australia, Malaysia and Brazil. It broadly covers two important aspects of regulatory systems (1) Institutional Framework and (2) Autonomy to the Regulator.It highlights the diversity and similarity in telecom regulatory environments across the countries. The paper brings out common variables in the regulatory framework that these five countries have, these are called as the necessary conditions. It also provides a set of alternative combination of variables in the regulatory framework that some of the countries have, this set is the sufficient conditions. The research methodology used is qualitative comparative analysis (QCA). Among the various variables selected for QCA, it is found that Clear role definitions for policy formulating body and the regulatory body (CRD), CST (Contribution of stakeholders), API (Authority for Policy Implementation, SHR (Stakeholder Representation in the Regulator's staff), O (Ombudsman/ Consumer Protection), SR (Self-Regulation), CR (Converged regulator) are the necessary preconditions for an effective regulatory environment. The paper also brings out that CRD (clear role definitions), CST (Contribution of stakeholders), API (Authority for Policy Implementation, SHR (Stakeholder Representation), O (Ombudsman/ Consumer Protection), SR (Self-Regulation), CR (Converged regulator) are the necessary preconditions for an effective regulatory environment.

Key words: Regulatory framework, Autonomy, Convergence, Institutional Framework.

1. INTRODUCTION

For India, telecom sector was liberalized in 1994 and the telecom industry in India has grown from having tele-density of 1.94 % and subscriber base of 14.8 million (TRAI Study Paper No. 2/2005) in 1997-98 to 83.04 % and 1034.23 million in 2016 (TRAI, Press Release No. 97/2016) respectively. Since liberalization, India has followed the ministerial-bureaucratic process for policy formulation and implementation. In 2007, India scored lower than other Asian countries in parameters such as independence, transparency, consistency, pro- competitiveness. (TRE, 2007). During 2012-13 , industry leaders and investors had the opinion that the telecom sector is no longer an attractive option for investment on account of policy uncertainty.

During 2008- 2012, the Supreme Court of India heard cases pertaining to the 2G spectrum allocation and in its judgement ordered cancellation of 122 licenses . This further led to uncertainty in the regulatory environment in India. All these factors led to the 85% decrease in FDI in telecom in India from US$ 2 billion in 2011 to US$ 304 million in 2012-13. (Hindu Business Line, 2013).

There is abundant statistical research involving multiple countries and their regulatory environment based on generalizing the regulatory environment in a large number of countries on the basis of certain common parameters. Literature review has brought out that although telecom regulatory initiatives across countries can be generalized, there are country-specific conditions that lead to success or failure of the regulatory initiatives. This paper aims to bring out such country-specific conditions. This study aims to help a developing country like India in redesigning its regulatory framework.

Considering all these points, the researcher felt the need to study the telecom regulatory environment of a few developed and developing countries with an aim to (1) Bring out the good practices in telecom regulatory environment in the selected countries. (2) Bring out the commonalities & diversity of the telecom regulatory frameworks in the selected countries.

2. LITERATURE REVIEW

Many researchers have brought out the strong and positive relationship between an independent regulator and investment in the ICT sector of a country. Saunders *et al.* (1994), Levy and Spiller (1994), Stern (1997), Wallsten (2003), Guitierezz (2003), McNary (2004), Lee and Levendis (2006), Li and Lyons (2008), Paleologos and Polemis (2013).

Abundant research has also been done on the attributes of an effective regulatory framework. Levy and Spiller (1994) in their paper report that the performance of the regulatory system will be satisfactory if certain complementary conditions are satisfied. Gutierrez (Gutierrez, 2003) has stressed upon four features of regulatory body. World Bank Handbook (2006) too gives a list of ten parameters such as Independence, Clarity, requisite powers etc for a regulator to be effective. Gulen *et al.* (Gülen, Makaryan, Volkov, Foss, 2007) in their paper have presented four levels of independence of a regulator.

Literature survey of statistical analyses brings out a number of econometric analyses of multiple countries that have shown the positive effects of privatization and regulation on telecommunications performance (Gutierrez and Berg, 2000) (Wallsten, 2001), (Guitierezz, 2003), (Gual and Trillas, 2006). Others have analysed the effect of sequence of liberalisation and privatisation (Wallsten, 2003), while others have brought out the that extent of telecom liberalization and establishment of independent regulators depends on the level of democracy in a country (Li and Xu, 2002), (Bertelli and Whitford, 2009). Some studies have focused on measure the degree of regulatory independence for telecommunications regulators (Montoya and Trillas, 2007). And then there are studies that have ranking or indices for effectiveness of regulatory processes and environment for countries. Bauer (2003), Gutierrez (2003), Gual and Trillas (2004), Edwards and Waverman (2006), (Samarajiva, Galpaya and Ratnadiwakara TRE 2007), (Waverman and Koutroumpis, TRGI, 2011), (Martin and Jayakar 2013).

Cross-country descriptive analyses have tried to provide the conditions for satisfactory performance of telecom regulatory system (Levy & Spiller, 1994), effect of absence of a regulator in dealing with interconnection (Spiller and Cardilli, 1997), role of institutional endowment in success of telecom reform process (Goldstein, 2002), (CUTS, 2008) , comparison of a country's process of liberalisation and privatisation with other countries, (Bartle, 2002) (Makhaya et al. 2003), (Mariscal, 2004), (Ratto-Nielsen, 2004), (Thatcher, 2005), (Wu, 2008). Other researchers have undertaken a two country comparison to analyse the similarities and diversity in the process of liberalisation, privatisation, setting up regulator and regulatory process (Young *et al.*, 2005), (Coen, 2005), (Painter and Wong, 2008), (Chun Liu & Krishna Jayakar, 2012).

So, there has been adequate research analyzing the evolution of telecom regulation policy, licensing etc. as well as criticism of the Indian Telecom Regulatory framework. The literature review above identifies two gaps in the literature. First, discussion regarding regulatory framework in general is abundant, studies based on variables discussed in World Bank Telecommunications Regulation Handbook are rare. Second, the comprehensive comparative analysis of regulatory framework of developed/developing countries bringing out policy initiatives that have contributed to transparency and autonomy in telecom regulation have been less in number . This paper attempts to fill this gap.

This paper is organized as follows. In the next section, the method used for selection of the countries, the variables to be compared and the research method are presented. The next section shows the Qualitative Comparative Analysis of the five countries and country-specific policies implemented by them. In the final section, interpretation and conclusions have been provided.

3. RESEARCH METHODOLOGY

Statistical Research involving multiple countries and their regulatory environment is based on generalizing the regulatory environment in a large number of countries on the basis of certain common parameters. However, since the attempt here is to highlight the good practices in structure & processes that each of the five countries have adopted qualitative research method is used. Qualitative research methods (Charles Ragin, 1994) help to bring forth the similarity as well as the diversity in the regulatory set-up of the various countries.

The study is based on literature review of research papers, secondary research & documents published by the regulators of the above- mentioned countries. The research methodology used is qualitative comparative analysis (QCA) (Charles Ragin,1994), (Benoit Rihoux, Charles C. Ragin, 2009) case-based research of five countries. The researcher have chosen only a few countries so as to study these countries in detail, their regulatory set-up and also highlight country specific diversity in regulation of telecom.

Considering the fact that each country is a complex entity, the researcher has recorded the conditions (independent variables) that produce the outcome in each of the cases. The summarization of the presence or absence of the conditions is done in a truth table. This is followed by Boolean minimization – that is, reducing the long Boolean expression, which consists in the long description of the truth table, to the shortest possible expression (the minimal formula, which is the list of the prime implicants) that unveils the regularities in the data. (Benoit Rihoux, Charles C. Ragin, 2009).

This shortest possible expression highlights the presence of certain conditions in all the cases, this forms the similarities in the cases. This set of common conditions is called as the **necessary condition**s and the paper brings out common variables in the regulatory framework that these five countries have. And a set of alternative combination of conditions is also obtained as an output of this process. Those are provided as a set of alternative combination of variables in the regulatory framework that some of the countries have, this set is the **sufficient conditions**. Thus different causal paths – each path being relevant, in a distinct way – may lead to the same outcome.

4. SELECTION OF THE COUNTRIES

The regulatory framework can be thought of as two parts: structures and process. Structures include the distribution of regulatory tasks among different levels of the government, the objectives and empowerment given to each of these agencies and the procedures for choosing the regulatory agents.

In the initial design of the regulatory body, structure should matter more than process. Regulation is said to improve the social outcome because regulators may supply information about providers' quality of the service or force them to provide a given minimum level of quality. Also, the regulator may set some technological standards for compatibility, improving the well-being of the society. (Gutierrez, 2003).

For selection of the countries to be studied, the authors referred to two research papers that ranked countries on the basis of regulatory effectiveness (1) Of Carts and Horses: Regulation and Privatization in Telecommunications Reforms (SCOTT WALLSTEN) and (2) Benchmarking telecoms regulation–The Telecommunications Regulatory Governance Index (TRGI) by Leonard Waverman and Pantelis Koutroumpis.

Scot Wallsten tested two hypotheses regarding sequencing of reforms: that building a separate regulator before privatization will (1) aid sector development, and (2) increase the price investors are willing to pay for the privatized firm on a panel data covering 200 countries.

Leonard Waverman and Pantelis Koutroumpis in their study produced an index of the effectiveness of the institutional design of telecommunication regulators for 142 countries that belong to the International Telecommunications Union. They classify countries on the basis of Political Transparency and Telecom Regulatory Governance (TRG) matrix and rank them accordingly.

As per the analysis presented by Leonard Waverman and Pantelis Koutroumpis and the positions of the various countries in the political transparency and regulatory transparency matrix , the US, UK and Australia are placed in the second quadrant(high political transparency & high Telecom Regulatory Governance), Malaysia has been shown to have high level of regulatory transparency combined with high level of political transparency, although the regulatory authority of the regulator is limited it shows efficient separation of policy formulation & policy implementation and Brazil finds place in the fourth quadrant (low political transparency and high Telecom Regulatory Governance).

Thus the group of countries selected can be summarized as :

US, UK & Australia: Offer oldest established regulatory practices in ICT Regulation.

Malaysia: High level of regulatory transparency combined with high level of political transparency and separation of policy formulation & policy implementation.

Brazil: A developing country with high level of regulatory transparency.

5. SELECTION OF VARIABLES

The World Bank Handbook (11) lists 10 key factors of an Infrastructure Regulatory Systems (1) Independence and accountability of the regulator (2) Relationship between the regulator and policymaker(s). (3) Autonomy of the regulator (4) Processes – formal and informal – by which decisions are made. (5) Transparency of decision-making by the regulator or other entities making regulatory decisions. (6) Predictability of regulatory decision-making. (7) Accessibility of regulatory decision-making. (8) Organizational structure and resources available to the regulator.

Brian Levy and Pablo T. Spiller in their paper "The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation" provide a snapshot of the main institutional characteristics of Argentina, Chile, Jamaica, the Philippines, and the United Kingdom, and relates them to the potential for opportunistic government behavior. And Luis Gutierrez in his paper studies the trends in the telecommunications sector in Latin America and the Caribbean with the specific emphasis on the evolution of the privatization process in the telecommunications services, its liberalization and the efforts to establish strong regulatory frameworks in the region.

Drawing from the information available in the above mentioned research documents and the fact that the aim of the authors is to compare the evolved regulatory systems with the system prevalent in India, the selection of the key variables was done.

The variables have been classified in three broad categories:

1. **Institutional Regulatory framework**
    (a) Number of constitutional bodies involved.
    (b) Division of the authority and scope of the regulator,
    (c) Role of the Ministry and bureaucracy.
    (d) Single Ministry for regulation of Telecom, Internet & Media
    (e) Office of Ombudsman/ Consumer Protection
2. **Autonomy to the regulator:** This part aims to identify the key factors that affect the functioning & outcomes of the regulatory systems.
    (a) Financial Autonomy
    (b) Process of Recruitment of officials of the Regulator.
    (c) Autonomy for recruitment.
    (d) Representation of stakeholders in the Regulator's officials.

Variables Vs Countries

Table 1
Variables for Five Country Comparison of Regulatory Framework- Institutional Regulatory framework

Variables	*USA*	*UK*	*Australia*	*Malaysia*	*Brazil*
Number of constitutional bodies involved.	Three- Federal Communication Commission, NTIA & Department of Justice	Three-Office of Communications (OFCOM), Department for Culture, Media & Sport(DCMS) Competition and Markets Authority ("CMA")from 1st April 2014).	Three- Australian Communications and Media Authority (ACMA), Department of Broadband, Communications and the Digital Economy (DBCDE) & Australian Competition & Consumer Commission	Three: Ministry of Energy Communications and Multimedia, Malaysian Communications and Multimedia Commission and Malaysia Competition Commission (MyCC)	Three- ANATEL, Ministry of Communications and the regulation of competition is done by CADE, the competition regulator in Brazil.
Division of the authority and scope of the regulator,	Policy Formulation, Policy Implementation (What we do)	Policy Formulation, Policy Implementation (Communications Act 2003) (DCMS-)	Policy formulation- DBCDE Policy Implementation- ACMA	Policy Formulation- Ministry of Communications and Implementation -MMCC POWERS AND FUNCTIONS OF MCMC	Policy formulation- Ministry of Communications Implementation- ANATEL (ITU case study)
Role Duplication	No as only one entity does the key functions	No as roles for DCMS and of Com are clearly defined.	No, as the roles are clearly defined for ACMA and DBCDE.	No, as the roles of the Ministry & MCMC are clearly defined	No, as the roles of the Ministry & ANATEL are clearly defined
Role of the Ministry and bureaucracy.	FCC reports to the US Congress	OFCOM is independent of government and is accountable to Parliament	ACMA reports to the Parliament through the Minister of Communications, Information, Technology & the Arts (ACMA Act, 2005)	MCMC reports to the Minister of Communications (MCMC Act, 1998)	ANATEL reports to Parliament through the Ministry of communications and is accountable to Parliament for all its decisions, whereas Ministry of communications the supervises it (ANATEL, Decree No. 2,338, 1997)

contd. table 1

Variables	*USA*	*UK*	*Australia*	*Malaysia*	*Brazil*
Single Ministry for regulation of Telecom, Internet & Media	Yes, FCC has been empowered to regulation the telecom, Internet & Media sectors.	Yes, OFCOM has been empowered to regulation the telecom, Internet & Media sectors.	Yes, The Ministry of Communica-tions, Information, Technology & the Arts is the single ministry that supervises the regulation of Telecom, Internet & Media in Australia.	Yes. MCMC has been empowered to regulation the telecom, Internet & Media sectors	Yes, the Ministry of communications supervises the Telecom, Broadcasting and Postal Services
Office of Ombudsman/ Consumer Protection	Consumer and Governmental Affairs Bureau of the FCC Addresses all types of consumer related matters. (Consumer Inquiries and Complaints Division (CICD), FCC)	Two organisations offer redressal services 1) Ombudsman Services for telecom subscribers 2) Communica-tions and Internet Services Adjudication Scheme (CISAS) for subscribers of Internet Service providers (ISPs).	The Telecommuni-cations Industry Ombudsman (TIO) is an independent dispute resolution forum for complaints made by residential and small business consumers of telecommunications services. Australia has implemented the concept of self-regulation to a large extent. (TIO)	Yes, Consumer can approach the Communications and Multimedia Content Forum (CMCF) for complaints related to content and Communications and Multimedia Consumer Forum (CMF) for addressing complaints related to services Malaysia has implemented the concept of self-regulation to a large extent. (CFM, 2012)	The Article 3 of Telecommunications Law, gives the consumer right to petition Anatel against a service provider. TheSelf regulation in Brazil has been adopted as a method for regulating the internet service providers (CDUST)

Table 2
Variables for Five Country Comparison of Regulatory Framework- Autonomy to the regulator

Financial Autonomy	The FCC is funded entirely by regulatory fees. The Government does not support financially although the budget is approved by the Congress. (FCC, 2013)	OFCOM is funded by fees from industry for regulating broadcasting & communication networks and through grant-in-aid from the UK Government. (OfCom, 2013)	Funding of ACMA is done through government appropriation. (OECD, 2006)	Fund known as the "MCMC Fund" to be administered and controlled by the Commission but sums may be provided by Parliament, from time to time. (MCMC Act, 1998)	ANATEL is funded by fees from industry for regulating broadcasting & communication networks and through appropriation from the Government. (ITU, 2001)

Leadership & Tenure of Chairperson of the regulator	The FCC is directed by five commissioners appointed by the president of the United States and confirmed by the U.S. Senate for five-year terms. Only three commissioners may be members of the same political party, and none can have a financial interest in any commission-related business (FCC, 2013)	The Ofcom Chairman is appointed for 5 years period . The Secretaries of State for the Department for Culture, Media and Sport (DCMS)and for the Department of Trade and Industry (DTI/ BIS) are responsible for appointing up to six Members to the Board for approving the appointment of the Chairman. (INDIREG, 2010)	The Chairman of ACMA is appointed by the Governor General for 5 years. His/ her selection is done by a panel appointed by the Government Minister with responsibility for the ACMA (INDIREG, 2010)	The minister appoints the following members of the Commission:(a) a Chairman;(b) 3 members representing the Government; and(c) Minimum 2 but not more than 5 other members. Members of the Commission shall each be appointed for a term of two years. Members of the Commission shall be eligible for reappointment but no member shall hold office for more than five terms.(MCMC Act, 1998)	The Board of Directors is comprised of fiveCounselors, including the President of the Board Counselors areappointed for five year staggered terms by the President of the Republic andapproved by the Federal Senate.About the Board(About the Board, ANATEL)
Profile of the past FCC chairmen	The current and previous Chairman and commissioners belong to very diversified areas like private sector, Public service, judiciary, Academics, Economist, etc	The past Chairmen of Ofcom/Oftel have been Professors or economists.	The current and previous Chairman and members of ACMA belong have come from diverse areas i.e. Senior position of Telecom, broadcasting companies, bureaucrats, economists, professors	The Chairmen of MCMC mainly come from the profession of, academicians , bureaucrats and industry representatives	The board of directors of ANATEL mainly comes from the profession of lawyers, economist, technocrats and diplomats and in some rare cases professor's also

6.1. Case analysis of the five countries

On the basis of the variables selected, the author has compared the countries :

The variables Vs countries table is as shown in the table below:

Table 3
Variables Vs countries

Country Variable	*USA*	*UK*	*Malaysia*	*Brazil*	*Australia*
CRD	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
CST	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
DPC	**Yes**	**Yes**	**NO**	**NO**	**Yes**
API	**Yes**	**Yes**	**Yes/Partial**	**Yes**	**Yes**
SHR	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
O/CP	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
FA	Yes	Yes	Yes	Yes	**NO**
FHR	**Yes**	**Yes**	**NO**	**Yes**	**Yes**
SR	Yes	Yes	Yes	Yes	Yes
CR	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Abbreviations used in the table: CRD- Clear role definition, CST- Contribution of stakeholders, DPC- Diverse profile of chairman of regulator, API- Authority for policy implementation, Stakeholders' Representation in the Regulator, O-Ombudsman/Consumer Protection, FA-Financial Autonomy, FHR- Freedom in terms of HR, SR- Self-Regulation & CR- Converged Regulator for Telecom & Broadcasting.

6.2. Analysis of the findings

Step-1: CRD.CST.DPC.API.SHR.O.FA.FHR. SR.CR + CRD.CST.DPC.API.SHR.O.FA. FHR.SR.CR+ CRD.CST.API.SHR.O.FA.SR.CR + CRD.CST.API.SHR.O.FA.FHR. SR.CR + CRD.CST.DPC.API.SHR.O.FHR.SR.CR—> ERE

The first two Boolean terms in the Step1 are similar and hence can be reduced to four terms according to basic rule of Boolean Algebra i.e A + A = A

Step 2:
The equation is now reduced to 4 terms

CRD.CST.DPC.API.SHR.O.FA.FHR. SR.CR + CRD.CST.API.SHR.O.FA.SR.CR + CRD.CST.API.SHR.O.FA.FHR. SR.CR + CRD.CST.DPC.API.SHR.O.FHR.SR.CR—> ERE

Step 3:
We now combine the 1st and 4th terms in step 2 with uncommon variable in the bracket. This leaves us with 3 terms.

CRD.CST.DPC.API.SHR.O.FHR. SR.CR**(FA+1)** + CRD.CST.API.SHR.O.FA.SR.CR + CRD.CST.API.SHR.O.FA.FHR. SR.CR —> ERE

The highlighted terms in Step 3 has been reduced using the basic rules of Boolean Algebra

1) 1 +A = 1 and 2) A.1 + AC = A(1+C) = A.1 = A

Step 4:

We now combine the 2nd and 3rd terms in step 3 with uncommon variable in the bracket. This leaves us with 2 terms.

CRD.CST.DPC.API.SHR.O.FHR. SR.CR+ CRD.CST.API.SHR.O.FA.SR.CR **(FHR+ 1)** —> ERE

The highlighted terms in Step 4 has been reduced using the basic rules of Boolean Algebra

1) 1 +A = 1 and 2) A.1 + AC = A(1+C) = A.1 = A

CRD.CST.DPC.API.SHR.O.FHR. SR.CR+ CRD.CST.API.SHR.O.FA.SR.CR —> ERE

Step 5:

The common variables in the two terms in above equation have written out side of the bracket and the uncommon variables have been enclosed in the bracket . This gives us just one term in the equation.

CRD.CST.API.SHR.O.FHR. SR.CR (DPC.FHR+FA) —> ERE

Observing the above equation, we see that **CRD.CST.API.SHR.O.FA.SR.CR** and **CRD.CST.DPC.API.SHR.O.FHR.SR.CR** are the two sets which are sufficient for effective regulatory environment.

We can also conclude that CRD (clear role definitions), CST (Contribution of stakeholders), API (Authority for Policy Implementation, SHR (Stakeholder Representation), O (Ombudsman/ Consumer Protection), SR (Self-Regulation), CR (Converged regulator) are the necessary preconditions for an effective regulatory environment.

7. INTERPRETATION OF THE FINDINGS

(1) **Clear Role Definition:** For all the five countries, clear role definition comes across as one of the necessary conditions for effective regulatory environment. This also means that the separation between policy formulation and policy implementation has been observed. The Ministry or Department of Communications has been entrusted with the responsibility of policy formulation with recommendations from the regulator. And its implementation is entirely left to the regulator. Although licensing is an integral part of policy implementation, Malaysia is an exception as it has been kept licensing out of the scope of the regulator with the role of the regulator being limited to providing recommendations so as to enable the Minister to take decision in connection with license allocation. (MCMC, our Commitment).

(2) **Ombudsman:** All the selected countries have an Ombudsman or Consumer Commission. In some cases, like US, it is instituted within the regulator, where Consumer and Governmental Affairs Bureau is a division of the FCC. In other cases, the regulator oversees functions of the consumer commission like in Malaysia, the Communications and Multimedia Content Forum (CMCF) and in working of CDUST is overseen by ANATEL in Brazil. UK and Australia have adopted a self-regulation approach where telecom industry associations fund and manage the Office of the Ombudsman, which is entrusted with the redressal of consumer grievances.

(3) **Funding:** All the countries have their regulators being financed either solely through Parliamentary appropriation or through contribution by Telcos and other players or by a combination of the two. Among the five countries studied, the Australian regulator, ACMA is funded as part of the departmental appropriation of the Department of Broadband, Communications and the Digital Economy (DBCDE). Hence, ACMA cannot be termed as financially autonomous.

In the case of parliamentary appropriation, the President in USA has considerable say in the budget of the regulator before it is put up for the approval of the Parliament. So, the U.S. Congress tried to reduce the discretionary interference of the Office of Management and Budget (OMB) by asking commissions to submit their budget proposals simultaneously to the OMB and to Congress. Congress has the power to change the proposal sent by OMB; submission to the President and Congress at the same time adds to this power unfiltered access to information **(**Prado, 2008).

In case of US, the regulatory fees are collected from license holders and certain other entities (e.g., cable television systems) and deposited into an FCC account. These funds remain in the FCC account and are not made available to other agencies or agency programs nor are they redirected into the Treasury's general fund. (FCC, 2013)

(4) **Single Regulator for Telecom & Broadcasting:** All the selected countries have Convergent ICT Regulatory Framework combining the Telecom & Broadcasting ministries and regulated by a Convergent Regulator.

(5) **Appointment of Directors/ Chairmen/ Freedom in selection of Human Resources:** The FCC in the US has a clear condition of selection three out of the five Commissioners to be selected by the ruling party and the rest come with the backing of the opposition. But, all of them need to be approved by the Senate. This arrangement ensures adequate representation of both the Government as well as the opposition. This system also politicises the selection as well as policy making, however, the judiciary serves as an effective deterrent as it has been empowered to review decisions of the FCC in case of unfair use of regulatory discretion.

In Presidential democracy systems like the US and Brazil, parliamentary approval for appointment of head of the regulator is mandatory. In Parliamentary democracy systems like UK, Australia, the appointment of head of the regulators is overseen by the Secretary of State and in UK select committees hold pre-appointment hearings after the selection of candidates for high profile positions such as those of governor of the Bank of England, member of the Monetary Policy Committee, and chair of an independent regulatory agency. However, the decision of the concerned Minister remains final (Christel Koop and Martin Lodge, 2013).

The tenure of the chairperson of the regulator for US, UK, Australia and Brazil is five years with option of an extension and the terms for the board members are staggered. Malaysia has a two year extendable term for the Chairman of MCMC. The longer tenure of the Chairperson is usually associated with deeper involvement in institution building.

In UK although there is no formal legislation about the representation of particular groups in the Ofcom board, however the current board is said to have representation from all the groups like Consumer groups, private sector & the opposition.

(6) **Diverse Profile of Chairman:** Although, the regulators have mandate as per the Act of their establishment to recruit competent professionals irrespective of their political affiliations, it is observed that regulatory officials in Malaysia have either been former Government officials or persons having close links with the Government (G. Sivalingam, 2008). The current and previous Chairman and members of the other four countries have come from diverse areas such as senior position in Telecom operators, broadcasting companies, bureaucrats, economists, professors.

8. CONCLUSION

Among the various variables selected for QCA, it is found that Clear role definitions for policy formulating body and the regulatory body (CRD), CST (Contribution of stakeholders), API (Authority for Policy Implementation, SHR (Stakeholder Representation in the Regulator's staff), O (Ombudsman/ Consumer Protection), SR (Self-Regulation), CR (Converged regulator) are the necessary preconditions for an effective regulatory environment.

The combination of variables like Clear Role Definition (CRD Contribution of stakeholders in rule making (CST), Diverse Profile of Chairperson(DPC), Authority for Policy Implementation (API) Stakeholder Representation(SHR) ,Ombudsman/ Consumer Protection(O), Financial Autonomy(FA). Freedom for selection of Human resources (FHR), Self-Regulation (SR), Converged Regulator for Media & Telecom (CR) are observed in the regulatory framework in USA, UK and Brazil with the only exception of the absence of Diverse Profile of Chairman variable.

Thus, for a developing country like India, significant reforms are required in the institutional regulatory framework so as to create transparent business environment in which investors and telecom operators participate leading to availability of high end yet affordable telecom services. In the presence of a transparent regulatory regime, incase most of policy making the stakeholders will not feel the need for judicial review.

Scope for further research: This paper has brought out the similarity and diversity in the ICT regulatory frameworks of the five selected countries. However, further research can focus on the political & economic factors that have influenced the ICT regulatory frameworks. Future research can also add to the findings of this paper by increasing the number of countries as well as extending the research to other sector regulators within India.

Limitations: The number of countries in this research project has been limited to five. This even in the case of comparative analysis may not be enough for generalization. As this research is based on published data about the selected countries, country-specific locally known issues may have been ignored.

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