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STUDY ON APPLICATIONS OF SERVICE INNOVATION BY MOBILE NETWORK OPERATORS IN INDIA

Submitted by:

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ABSTRACT

Introduction: The studies conducted in this thesis have service innovation at their core and its applications in the Indian telecommunication industry. The mobile service providers or the mobile network operators (MNOs) in the telecom industry, chosen for the research, have seen one of the most dynamic market changes since privatization. Today, in the hypercompetitive business environment of mobile services, organizations want to capture not only the customers' needs, but also the knowledge from the external environment to bring about changes in order to stay ahead in the game. They are using innovation as a tool and focusing their strategy to plan companies' policies for the future. Effective innovation strategy needs support of the internal and external knowledge and orientation of the organization to implement the strategy. The organizations also want that the innovation should bring in value for the customer as well as for the organization. Innovation in service industry is mostly incremental unlike in product innovation. Innovation affects the provision and process of delivery of service and makes it satisfactory to the customer and makes the customer loyal in the long run. In the highly turbulent environment of MNOs, innovation is the key to competitive advantage and customer loyalty.

Two studies have been conducted and detailed in chapter 4, 5, and 6, to answer the problem questions as below:

Study 1a: How does service innovation affect the relationship between strategic orientations and sustainable competitive advantage in a hypercompetitive environment?

Study 1b: How does service innovation enabled by knowledge integration influence the sustainability of competitive advantage in a hypercompetitive environment?

Study 2a: How does service innovation led customer value creation affect the customer satisfaction and customer loyalty?

Study 2b: What is the effect of creating customer value by service delivery innovation on customer satisfaction and customer loyalty?

Scope: The scope of the thesis is limited to the private mobile service providers or mobile network operators (MNO) operating in the Indian telecom market. This industry was chosen for the study mainly due to – 1) the recent disruption in the industry with consolidation leading to the number of service providers dropping to three from a whopping 10-14 in each circle; 2) the hypercompetitive nature of the industry; 3) technology facilitates innovation and the telecommunication industry has its backbone completely built on technology; 4) author's familiarity with the industry due to his past work experience. The two studies conducted were based with this magnificent industry at the backdrop.

Study 1: The first study in this thesis analyzes the strategic orientations of the service providers which are the thrust areas for the firms to organize themselves to achieve their objectives. The study considers customer orientation, competitor orientation and technology orientation as the basis of achieving competitive advantage. Applying the dynamic capabilities lens, it highlights the contribution of knowledge integration capability of an organization supporting service innovation to generate sustainable competitive advantage.

Study 2: The second study analyzes how service innovation and service delivery innovation create value for the customer which influences customer satisfaction leading to customer loyalty. The study considers service delivery as a very important event for the firm and in the life cycle of a customer and highlights the importance of innovation in service delivery, a dynamic capability to improve customer satisfaction and loyalty. The study operates in both

strategy and marketing services domain, both primarily responsible for the creation of value.

Methodology

Study 1: The study is an empirical research based on inputs from telecom professionals in order to examine the impact of knowledge integration and service innovation on strategic orientations led sustainable competitive advantage. Response received from 160 respondents on a survey was analyzed with SPSS and structured equation modeling in AMOS on a conceptual model based on theoretical constructs built on 15 hypotheses comprising of strategic orientations as in customer, competition, and technology orientation, knowledge integration capability, service innovation and sustainable competitive advantage.

Study 2: It is an empirical research based on inputs of adult users of mobile services to examine the impact of service innovation and service delivery innovation on customer value creation leading to customer satisfaction and customer loyalty. There were 351 responses received from users of mobile services on a survey based on a conceptual model based on theoretical constructs comprising of service innovation, service delivery innovation, customer value creation, customer satisfaction, and customer loyalty. Analysis was conducted on SPSS and AMOS. The results were based on tests on ten hypothesized relationships in the model. The relationships tested were both direct and mediated, based on the given constructs.

Results and conclusions

Study 1: This kind of research was conducted for the first time on the constructs chosen and there is no other research found on the strategic orientations of the Indian MNOs with knowledge integration. The results are based on fifteen hypothesized relationships which were tested in the model. The relationships tested were both direct and mediated ones based on the constructs. The relationship of strategic orientations was found to be significant with knowledge integration capability, service innovation and sustainable competitive advantage. Knowledge integration capability and service innovation was found to be mediating with the relationship between strategic orientations and sustainable competitive advantage. The relationships were also found to be serially mediated by knowledge integration capability and service innovation. found to be significant. The importance of the study lies in the result where knowledge integration is an important element while innovating in services. The firms need to prioritize between the three strategic orientations as per their thrust areas for building competitive advantage while integrating knowledge from internal and external sources.

Study 2: The findings of the study bring out a positive significant relationship between service innovation and service delivery innovation, and customer value creation. Customer value creation mediates the relationship between service innovation and service delivery innovation and customer satisfaction. Service delivery innovation was not found to have a significant relationship with customer satisfaction and customer loyalty but was successfully mediated by customer value creation. Customer satisfaction is found to have a direct significant relationship with customer loyalty. The findings are important from the managers' perspective as they empirically point towards customer value creation as significant to achieve both customer satisfaction and customer loyalty. Both service innovation and service delivery innovation need to create value in order to be effective.

In both the studies, the role of service innovation is found to be significant in the background of achieving sustainable competitive advantage and customer loyalty respectively. Dynamic capabilities like knowledge integration capability and service delivery innovation are found to be effective. In a hypercompetitive scenario, both the concepts are important to continue for the sustainability of business. Also, the results of both the studies can be applied in the firms and would help the managers to set their focus on what is important for the business.

Contents

Tables

Figures

Annexure: Tables

Table 1.1: Eleven characteristics which describe a tariff plan (Corrocher & Zirulia, 2010b)

1. pre-paid cards—subscriptions: indicates whether the tariff plan is designed for pre-paid cards or for subscriptions.
2. subscription fee: indicates whether the tariff plan includes a subscription fee.
3. price per unit/price per minute: indicates whether the price of the call is calculated on the basis of units (e.g. one unit = 30 s) or on the basis of actual minutes/seconds of the call length.
4. call connection fee: indicates whether the tariff plan includes a call connection fee.
5. time-based charges: indicates whether the tariff plan discriminates on the price according to time (e.g. morning hours or evening hours).
6. day-based charges: indicates whether the tariff plan discriminates on the price according to which day of the week.
7. location-based charges: indicates whether the tariff plan dis- criminates on the price according to the geographical location of the caller/receiver.
8. on-net vs. off-net charges: indicates whether the tariff plan discriminates on the price between on-net and off-net calls.
9. rebate mechanism: indicates whether the tariff plan includes a rebate mechanism.
10. minutes for free/price related to the total expenditure: indicates whether the tariff plan provides discounts on the basis of total monthly expenditure (e.g. 40% off on national calls if one spends more than 120 euros per two months).
11. variable prices: indicates whether the tariff plan provides variable prices during the time span of the call (e.g. 30 cents for the first 3 min, 15 cents afterwards).

Table 1.2: Service innovations in MNOs' different functions

Sales & Distribution	Activation process going digital removing a lot of hassles for the customer, retailer and distributor
	Manpower efficiency increased with data connectivity available on the move
	Suite of mobile applications ensured that all official work can be taken care of on the move
	Easier tracking of efficiency due to location-based attendance and tracking
Customer Service	Mobile based customer care ensures services even during pandemics and calamities
	Self-service - service requests are being fulfilled digitally
	24X7 availability of customer service on mobile app and chat bot
Marketing & Communication	App-based out-calling ensures that all field manpower is utilized effectively
	Real time communication through in-app promotion
	Handset notification has higher conversion ratio, better than SMS
Product:	Content delivery through app
	Entire usage and revenue (U&R) activity has moved to content promotion
Network:	Real time heat mapping giving a true picture of the customer experience
	Servicing of 3 different band helps in better service based on geographical population
	"Software-defined, self-healing networks - analytics driving network planning, building, operation, and maintenance through self-learning artificial intelligence, and automated, through predictive and preventive interventions steered with little or no human intervention" (McKinsey & Co., 2019)

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Annexure 1: Definitions of Innovation.

1. “Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, service or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.” (Baregheh et al., 2009)
2. “Innovation represents the core renewal process in any organization. Unless it changes what it offers the world (product/service innovation) and the ways in which it creates and delivers those offerings (process innovation) it risks its survival and growth prospects.” (Bessant et al., 2005)
3. “…the development and intentional introduction of new and useful ideas by individuals, teams, and organizations…” (Bledow et al., 2009)
4. “…the creation of a new product-market-technology-organization-combination.”(Boer & During, 2001)
5. “…innovation is the process that turns an idea into value for the customer and results in sustainable profit for the enterprise.” (Carlson & Wilmot, 2006)
6. “…production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome.”(Crossan & Apaydin, 2010)
7. “…adoption of an internally generated or purchased device, system, policy, program, process, product, or service that is new to the adopting organization.” (Damanpour, 1991)
8. “…the search for, and the discovery, experimentation, development, imitation, and adoption of new products, new production processes and new organisational set-ups.” (Dosi, 1988)

9. "…a product, process or service new to the firm, not only new to the world or marketplace." (Hobday, 2005)
10. "The design, invention, development and/or implementation of new or altered products, services, processes, systems, organizational structures, or business models for the purpose of creating new value for customers and financial returns for the firm." (Bloch, 2007)
11. "A new idea, method, or device. The act of creating a new product or process, which includes invention and the work required to bring an idea or concept to final form." (Kahn, 2018)
12. "…a viable offering that is new to a specific context and time, creating user and provider value" (Kumar et al., 2013)
13. "…innovation is the conversion of a new idea into revenues and profits." (Lafley & Charan, 2010)
14. "…any novel product, service, or production process that departs significantly from prior product, service, or production process architectures." (McKinley et al., 2014)
15. "…the function of an interaction among the motivation to innovate, the strength of obstacles against innovation, and the availability of resources for overcoming such obstacles." (Mohr, 1969)
16. "…any policy, structure, method or process, product or market opportunity that the manager of the innovating unit perceived to be new." (Nohria & Gulati, 1996)
17. "Innovation is the process of making changes, large and small, radical and incremental, to products, processes, and services that results in the introduction of something new for the organization that adds value to customers and contributes to the knowledge store of the organization." (O'Sullivan & Dooley, 2008)
18. "Innovation = Creativity + Exploitation" (O'Sullivan & Dooley, 2008)

19. “…is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.” (OECD. et al., 2005)
20. “…the transformation of knowledge into new products, processes, and services…” (Porter & Stern, 1999)
21. “…directed creativity implemented.” (Plsek, 2014)
22. “…a change that breaks trade-offs.” (Raynor, 2011)
23. “Innovation = Invention + Exploitation” (Roberts, 1988)
24. “…an idea, practice, or object that is perceived as new by an individual or another unit of adoption.” (Rogers, 2003)
25. “The commercialization of any new product, process, or idea, or the modification and recombination of existing ones.” (Rothaermel, 2018)
26. “…the practical implementation of an idea into a new device or process.” (Schilling & Shankar, 2019)
27. “…the act of generating more value for the customer and the business by fulfilling a job to be done better than anyone else.” (David Silverstein et al., 2013)
28. “…innovation is a process of turning opportunity into new ideas and of putting these into widely used practice.” (Tidd & Bessant, 2009)
29. “Innovation = theoretical conception + technical invention + commercial exploitation” (Trott, 2017)
30. “Innovation is the management of all the activities involved in the process of idea generation, technology development, manufacturing and marketing of a new (or improved) product or manufacturing process or equipment.” (Trott, 2017)
31. “Innovation is the successful exploitation of new ideas.” (Oke et al., 2007)

32. “…an invention which has reached market introduction in the case of a new product, or first used in a production process, in the case of a process innovation.” (Utterback, 1971)
33. “…the process of developing and implementing a new idea.” (Van de Ven et al., 1999)
34. “…is anything new that is actually used (‘enters the marketplace’) – whether major or minor.” (Von Hippel, 1989, 2007)
35. “…the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, the organization or wider society.” (West & Farr, 1990)
36. “…any idea, practice, or material artifact perceived to be new by the relevant unit of adoption.” (Zaltman et al., 1973)
37. “Innovation includes the technical, design, manufacturing, management and commercial activities involved in the marketing of a new (or improved) product or the first commercial use of a new (or improved) process or equipment” (Freeman, 1982)
38. “Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service. It is capable of being presented as a discipline, capable of being learned, capable of being practiced” (Drucker, 1985)
39. “innovation is widely considered the life blood of corporate survival and growth.” (Zahra & Covin, 1994)
40. “Innovation represents the core renewal process in any organization. Unless it changes, what it offers the world (product/service innovation) and the ways in which

it creates and delivers those offerings (process innovation) it risks its survival and growth prospects." (Bessant et al., 2005)

41. "innovation as the ideas that work." (Mulgan, 2006)

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Appendix: Tables

Table A.2.1: Classification of innovation and their explanation by Keeley et al. (2013)

Configuration	Profit model	Converting a firm's offerings into cash with a deep understanding of the requirements of customers.
	Network	Using its network with close allies and other organizations, the firm can use their resources along with capitalizing on its own strengths.
	Structure	Organizing company resources and assets in unique way to and creating value.
	Process	Involving the unique capabilities and core competencies in activities and operations that produce an enterprise's primary offerings.
Offering	Product Performance	Addressing the features and quality of the offering (product/service) that adds substantial value - can comprise of products with incremental changes as well as entirely new products. The only drawback is easy copying by competition
	Product System	Bundling of individual products and services together to create a robust and scalable system. This helps in building ecosystems that captivate and delight customers and defend against competitors.
Experience	Service	Ensuring and enhancing the utility, performance, and apparent value of an offering making it easier to try, use, and enjoy and turn them into compelling experiences that customers love.
	Channel	Encompassing all the ways to connect the firm's offerings with the customers be it online or offline to create immersive experiences
	Brand	Ensuring that customers and users prefer the firm's offerings to competition by conveying a distinct identity implementing carefully crafted strategies across touchpoints.
	Customer Engagement	Understanding the deep-seated aspirations of customers and to develop meaningful connections with them to make parts of their lives more memorable, fulfilling, delightful—even magical.

Table A.2.2: Innovation Matrix by Gaynor (2002)

	Incremental	Discontinuous	Architectural	Systems	Radical	Disruptive	Breakthrough
Service	Modifications, refinements, enhancements, simplification	Changes core design concept to new architecture	Obsoletes technologies, processes, and people	Dominated by societal and government regulations	Develops into major new business or spawns an industry	Brings the user a new value proposition	Moments in history that set the stage for the future
Process							
Product							
Component							
Material							

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Appendix: Tables & Figures

Table A.3.1: FDI Equity Inflows (2001-2019) – TRAI

Year	Total	Telecom Sector	Share of Telecom
2001	2463	178	7.21
2002	4065	873	21.48
2003	2705	192	7.08
2004	2188	86	3.95
2005	3,219	118	3.68
2006	5,540	618	11.15
2007	12,492	477	3.82
2008	24,575	1,261	5.13
2009	31,396	2,549	8.12
2010	25,834	2,539	9.83
2011	21,383	1,664	7.78
2012	35,121	1,997	5.69
2013	22,423	304	1.36
2014	24,299	1,307	5.38
2015	30,931	2,895	9.36
2016	40,001	1,324	3.31
2017	43,478	5,564	12.80
2018	44,857	6,212	13.85
2019	44,366	2,668	6.01

Source: Department of Telecommunication (DoT) FDI Inflow

Table A.3.2: Telecom circles, types and population covered – TRAI

Telecom Circle	Circle Type	Population Covered
Andhra Pradesh Telecom Circle	A	76.2
Assam Telecom Circle	C	26.7
Bihar Telecom Circle	C	109.9
Delhi Metro Telecom Circle	Metro	18.6
Gujarat Telecom Circle	A	51
Haryana Telecom Circle	B	21.1
Himachal Pradesh Telecom Circle	C	6.1
Jammu & Kashmir Telecom Circle	C	10.1
Karnataka Telecom Circle	A	52.9
Kerala Telecom Circle	B	31.9
Kolkata Metro Telecom Circle	Metro	15.4
Madhya Pradesh Telecom Circle	B	81.2
Maharashtra Telecom Circle	A	76.9
Mumbai Metro Telecom Circle	Metro	21.3
Northeast Telecom Circle	C	11.7
Orissa Telecom Circle	C	36.8
Punjab Telecom Circle	B	25.3
Rajasthan Telecom Circle	B	56.5
Tamil Nadu Telecom Circle*	A	63.4
Uttar Pradesh (East) Telecom Circle	B	101.6
Uttar Pradesh (West) Telecom Circle	B	73.1
West Bengal Telecom Circle	B	65.7

Table A.3.3: Subscriber base in Jun'20 - TRAI

Circle	Mobile Subscribers
Circle A	394,316,385.00
Circle B	466,345,555.00
Circle C	176,146,961.00
Metro	115,000,155.00
Total	1,151,809,056.00

Table A.3.4: List of Cellular Mobile (GSM, CDMA & LTE) Network Operators [2011]

S No	Name of the mobile service provider
1	Aircel/Dishnet
2	Bharti Airtel
3	Etisalat DB Telecom (Swan Telecom)
4	Hughes Telecom
5	Idea/Spice
6	Loop Mobile (formerly BPL Mobile)
7	Reliance Communications
8	S Tel
9	Sistema
10	Spice Telecom
11	Tata Teleservices
12	Uninor (Unitech)
13	Videocon
14	Vodafone Essar (formerly Hutchison Essar Telecom)

Table A.3.5: List of Cellular Mobile (GSM, CDMA & LTE) Network Operators [as on 31st December 2020]

Sl. No.	Service Providers	Area of Operation
1	Bharti Airtel	All India
2	Reliance Jio Communication Ltd	All India
3	Vodafone Idea Ltd	All India
4	BSNL	All India (Except Delhi & Mumbai)
5	MTNL	Delhi & Mumbai

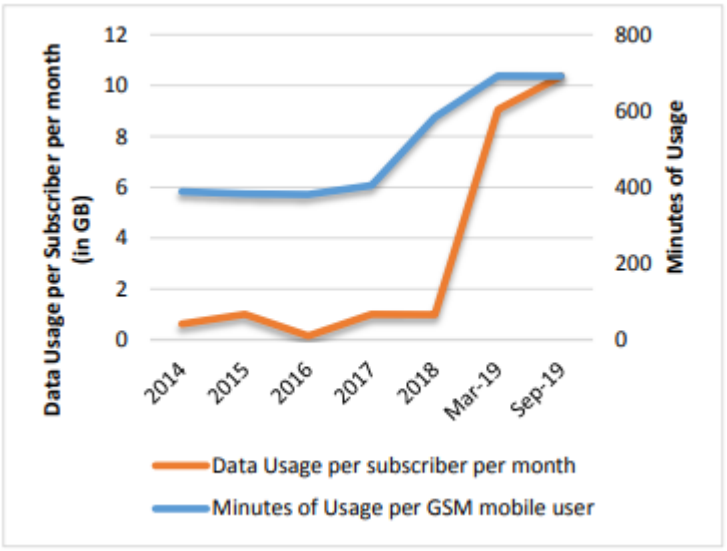
Table A.3.6: Telecom at a glance – TRAI

S.No.	Title	At the end of March					
		2014	2015	2016	2017	2018	2019
1	**Telephones and teledensity in the country**						
	i)Telephones (In Million)	**933.02**	**996.13**	**1059.33**	**1194.99**	**1211.80**	**1183.41**
	ii)Teledensity (Per 100 Inhabitants)	**75.23**	**79.36**	**83.40**	**93.01**	**93.27**	**90.10**
2	**No. of Subscribers (in Millions)**						
	i)Landline	28.50	26.59	25.22	24.40	22.81	21.70
	ii)Mobile subscribers	904.52	969.54	1034.11	1170.59	1188.99	1161.71
3	**Telephone Subscribers in India (in Millions)**	**933.02**	**996.13**	**1059.33**	**1194.99**	**1211.80**	**1183.41**
	i)Rural	377.78	416.08	447.77	501.81	525.87	514.27
	ii)Urban	555.23	580.05	611.56	693.18	685.93	669.14
	iii)Public	120.05	100.34	108.65	122.18	131.66	133.51
	iv)Priviate	812.96	895.79	950.68	1072.81	1080.14	1049.90
4	**Telephone Subscribers in India (%age share)**						
	Wireline	3.05	2.67	2.38	2.04	1.88	1.83
	Wireless	96.95	97.33	97.62	97.96	98.12	98.17
	Rural	40.49	41.77	42.27	41.99	43.40	43.46
	Urban	59.51	58.23	57.73	58.01	56.60	56.54
	Public	12.87	10.07	10.26	10.22	10.86	11.28
	Private	87.13	89.93	89.74	89.78	89.14	88.72
5	**Teledensity (Per 100 Inhabitants)**	**75.23**	**79.36**	**83.40**	**93.01**	**93.27**	**90.10**
	Wireline	2.30	2.12	1.99	1.90	1.76	1.65
	Wireless	72.94	77.24	81.41	91.11	91.51	88.45
	Rural	44.01	48.04	51.26	56.98	59.25	57.50
	Urban	145.46	149.04	154.18	171.52	166.64	159.66
	Public	9.68	7.99	8.55	9.51	10.13	10.16
	Private	65.55	71.36	74.85	83.50	83.14	79.94
6	**No. of PCOs and VPTs in India (In lakhs)**						
	PCO	9.57	7.37	5.89	4.52	3.60	2.55
	VPT	5.89	5.86	5.87	2.30	1.99	1.30

Table A.3.7: New Mobile Data Services for Different Consumer and Business Segments (Preez & Pistorius, 2002).

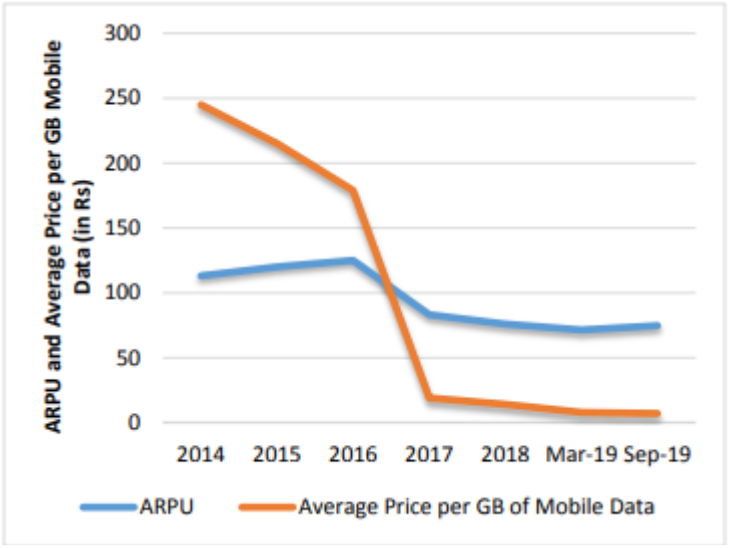
Market Segment Consumers	Service Categories	Specified Services Consumer
Consumer	Information services	News headlines; market and financial information; new movie releases; ‘‘what’s on"
	Personal Information Management (PIM)	E-mail; contact lists; shared scheduling; customized alerts for stock market prices or auction bids
	Location-based services	Directions from current positions to a specified location; queries for various facilities (e.g., hospital and restaurant) in the user’s vicinity
	Entertainment	Video and audio on demand; mobile betting and gaming
	M-commerce	Mobile banking, shopping, and stock trading; mobile auctions; e-booking and ticketing
	Interactive communications	One-to-one or multiple participant text-based chat; video telephony, and conferencing; interactive games. Remote control of appliances (e.g., alarm/VCR setting)
Business	Remote access to information	Sales force automation through access to stock, product, and customer information; remote access to intranet or other corporate repositories; e-mail; online telephone directories
	Job and information dispatches	Informing field staff of their next assignment (e.g., plumbers, electricians, and technical support staff). Sending of information to multiple recipients (e.g., notifications of meetings). Focused/personalized advertising
	Remote transactions	Remote control of processes and devices; placing and processing customer orders
	Telemetry/device-to-device (*or: machine-to-machine*)	Price changes being sent from a central controller to all vending machines; meter readings; remote vehicle diagnostics

Figure A.3.1: Evolution of Data usage and minutes of usage



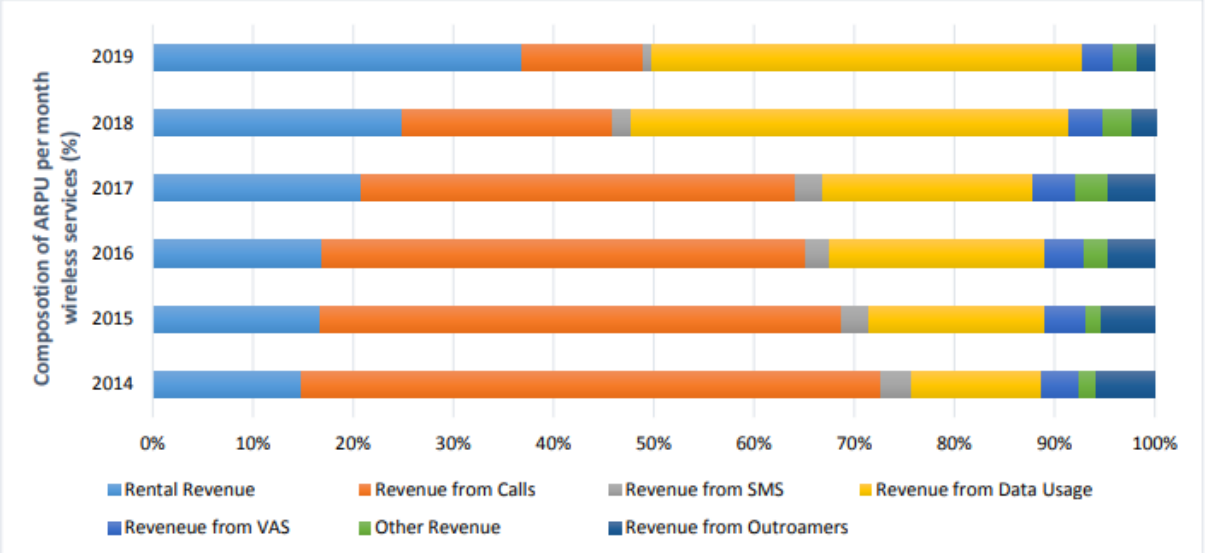
Source: ICRIER's calculation based on TRAI Performance Indicators Report

Figure A.3.2: Evolution of ARPU and Data Prices



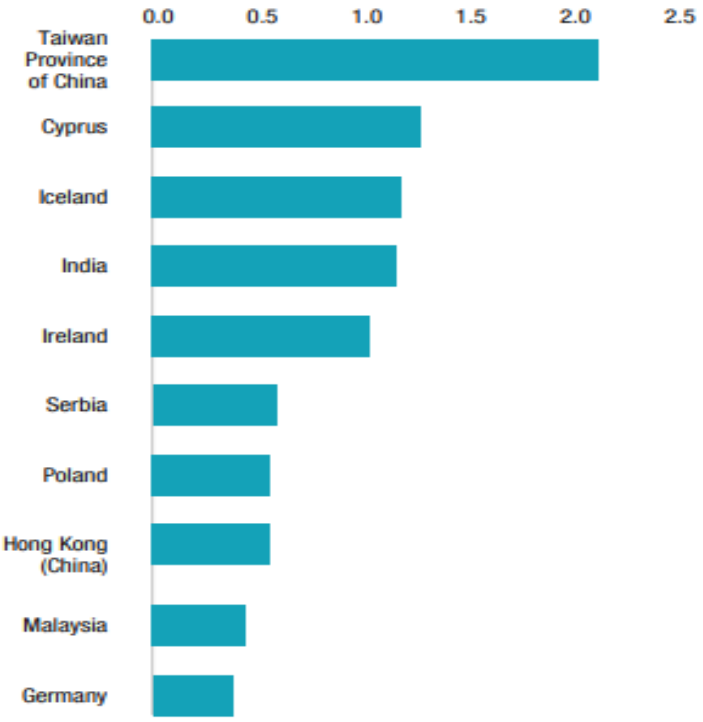
Source: ICRIER's calculation based on TRAI Performance Indicators Report

Figure A.3.3: ARPU Composition over Time



Source: TRAI Performance Indicators Report.
Note: Other revenue includes interconnect usage charges and roaming settlement charges

Figure A.3.4: Growth in the share of the ICT sector's value added in GDP: Top 10 economies, 2010–2017 (Percentage points)



Source: UNCTAD, based on international and national sources

relationships turn significant between all the strategic orientations and SCAD i) CUOR→ KICA→SEIN→ SCAD [H1d: β = 0.019 (p < 0.05)]; ii) COOR→ KICA→SEIN→ SCAD [H2d: β = 0.034 (p < 0.01)]; iii) TEOR→ KICA→ SEIN→SCAD [H3d: β = 0.07 (p < 0.01)].

Table 4.3: Test for Mediation

Relationship	Direct Effect witout Mediator#	Direct Effect with Mediator	Indirect Effect (twotailed)	Results	Hypothesis
CUOR->KICA->SCAD	0.483***	-0.035	0.073**	Full Mediation	H1b supported
CUOR->SEIN->SCAD	0.483***	-0.035	0.03	No Mediation	H1c Not supported
COOR->KICA->SCAD	0.701***	-0.088	0.133**	Full Mediation	H2b supported
COOR->SEIN->SCAD	0.701***	-0.088	-0.006	No Mediation	H2c Not supported
TEOR->KICA->SCAD	0.790***	0.281**	0.274***	Partial Mediation	H3b supported
TEOR->SEIN->SCAD	0.790***	0.281**	0.071**	Partial Mediation	H3c supported
CUOR->KICA->SEIN->SCAD	0.483***	-0.035	0.019**	Full Mediation	H1d supported
COOR->KICA->SEIN->SCAD	0.701***	-0.088	0.034***	Full Mediation	H2d supported
TEOR->KICA->SEIN->SCAD	0.790***	0.281**	0.07***	Partial Mediation	H3d supported

The discussion, implications, and conclusions are present in the 6th chapter.

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CUOR: Customer Orientation, COOR: Competition Orientation, TEOR: Technology Orientation, KICA: Knowledge Integration Capability, SEIN: Service Innovation, SCAD: Sustainable Competitive Advantage

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Appendix: Tables

Table A.4.1: Factor loading from CFA with P values

Parameter			Estimate	P	Parameter			Estimate	P
CUOR1	<---	CUOR	0.752	0.009	KICA1	<---	KICA	0.83	0.02
CUOR2	<---	CUOR	0.795	0.016	KICA2	<---	KICA	0.725	0.012
CUOR3	<---	CUOR	0.692	0.011	KICA3	<---	KICA	0.859	0.006
CUOR4	<---	CUOR	0.799	0.023	KICA4	<---	KICA	0.766	0.007
CUOR5	<---	CUOR	0.77	0.016	KICA5	<---	KICA	0.742	0.039
CUOR6	<---	CUOR	0.839	0.021	KICA6	<---	KICA	0.702	0.003
CUOR7	<---	CUOR	0.689	0.023	SEIN1	<---	SEIN	0.572	0.019
CUOR8	<---	CUOR	0.652	0.016	SEIN2	<---	SEIN	0.621	0.028
CUOR9	<---	CUOR	0.702	0.023	SEIN3	<---	SEIN	0.658	0.019
CUOR10	<---	CUOR	0.848	0.012	SEIN4	<---	SEIN	0.71	0.021
TEOR1	<---	TEOR	0.766	0.013	SEIN5	<---	SEIN	0.77	0.028
TEOR2	<---	TEOR	0.827	0.018	SEIN6	<---	SEIN	0.847	0.011
TEOR3	<---	TEOR	0.803	0.007	SEIN7	<---	SEIN	0.738	0.014
TEOR4	<---	TEOR	0.754	0.005	SEIN8	<---	SEIN	0.815	0.02
TEOR5	<---	TEOR	0.855	0.008	COOR1	<---	COOR	0.561	0.009
TEOR6	<---	TEOR	0.668	0.019	COOR2	<---	COOR	0.639	0.007
TEOR7	<---	TEOR	0.8	0.01	COOR3	<---	COOR	0.692	0.012
TEOR8	<---	TEOR	0.816	0.013	COOR4	<---	COOR	0.598	0.009
TEOR9	<---	TEOR	0.868	0.019	COOR5	<---	COOR	0.73	0.023
TEOR10	<---	TEOR	0.778	0.005	COOR6	<---	COOR	0.727	0.015
TEOR11	<---	TEOR	0.839	0.015	COOR7	<---	COOR	0.772	0.003
TEOR12	<---	TEOR	0.716	0.009	COOR8	<---	COOR	0.808	0.014
SCAD1	<---	SCAD	0.79	0.012	COOR9	<---	COOR	0.698	0.005
SCAD2	<---	SCAD	0.827	0.007	COOR10	<---	COOR	0.708	0.009
SCAD3	<---	SCAD	0.7	0.021	COOR11	<---	COOR	0.856	0.016
SCAD4	<---	SCAD	0.885	0.013					

Table A.4.2: Descriptive statistics

CUOR		COOR		TEOR	
Mean	3.766581	Mean	3.886821705	Mean	3.73385
Standard Error	0.055648	Standard Error	0.049578893	Standard Error	0.059473
Median	3.666667	Median	3.9	Median	3.666667
Mode	3.333333	Mode	4	Mode	3.583333
Standard Deviation	0.632035	Standard Deviation	0.563107983	Standard Deviation	0.675485
Sample Variance	0.399469	Sample Variance	0.317090601	Sample Variance	0.45628
Kurtosis	-0.07633	Kurtosis	0.541707527	Kurtosis	0.004107
Skewness	-0.02909	Skewness	-0.389677574	Skewness	-0.14108
Range	3.111111	Range	2.9	Range	3
Minimum	1.888889	Minimum	2.1	Minimum	2
Maximum	5	Maximum	5	Maximum	5
Sum	485.8889	Sum	501.4	Sum	481.6667
Count	129	Count	129	Count	129

KICA		SEIN		SCAD	
Mean	3.829457	Mean	3.485465	Mean	3.734496
Standard Error	0.046818	Standard Error	0.058198	Standard Error	0.061138
Median	3.833333	Median	3.5	Median	3.75
Mode	4	Mode	3.375	Mode	4
Standard Deviation	0.531746	Standard Deviation	0.661	Standard Deviation	0.694392
Sample Variance	0.282754	Sample Variance	0.436921	Sample Variance	0.48218
Kurtosis	0.481005	Kurtosis	0.933197	Kurtosis	-0.19578
Skewness	0.26485	Skewness	-0.49374	Skewness	-0.18377
Range	2.666667	Range	3.75	Range	3
Minimum	2.333333	Minimum	1.25	Minimum	2
Maximum	5	Maximum	5	Maximum	5
Sum	494	Sum	449.625	Sum	481.75
Count	129	Count	129	Count	129

Table A.4.3: Regression weights (estimates)

Parameters			Estimate	S.E.	C.R.	P
KICA	<---	CUOR	0.149	0.045	3.302	***
KICA	<---	TEOR	0.269	0.072	3.732	***
KICA	<---	TEOR	0.556	0.069	8.013	***
SEIN	<---	CUOR	0.097	0.056	1.739	0.082
SEIN	<---	TEOR	-0.019	0.082	-0.229	0.819
SEIN	<---	TEOR	0.23	0.101	2.291	0.022
SEIN	<---	KICA	0.411	0.147	2.806	0.005
SCAD	<---	CUOR	-0.035	0.057	-0.626	0.532
SCAD	<---	TEOR	-0.088	0.085	-1.024	0.306
SCAD	<---	SEIN	0.307	0.115	2.657	0.008
SCAD	<---	KICA	0.493	0.155	3.173	0.002
SCAD	<---	TEOR	0.281	0.103	2.716	0.007

Table A.4.4: Harman's Single Factor Analysis

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	21.506	42.169	42.169	21.506	42.169	42.169
2	3.822	7.495	49.664			
3	2.747	5.387	55.051			
4	2.173	4.261	59.312			
5	1.592	3.122	62.434			
6	1.267	2.485	64.918			
7	1.090	2.138	67.056			
8	.993	1.946	69.002			
9	.921	1.806	70.808			
10	.872	1.709	72.517			
11	.828	1.623	74.140			
12	.783	1.535	75.675			
13	.756	1.483	77.158			
14	.680	1.333	78.491			
15	.664	1.302	79.793			
16	.626	1.228	81.021			
17	.592	1.160	82.181			
18	.559	1.097	83.278			
19	.515	1.010	84.288			
20	.502	.985	85.273			
21	.468	.918	86.191			
22	.451	.885	87.076			
23	.444	.871	87.947			
24	.424	.832	88.779			
25	.375	.735	89.514			
26	.365	.716	90.230			
27	.343	.672	90.901			
28	.336	.659	91.560			
29	.322	.630	92.191			
30	.312	.612	92.803			
31	.310	.607	93.410			
32	.291	.571	93.981			
33	.272	.534	94.516			
34	.253	.497	95.013			
35	.237	.464	95.477			
36	.223	.437	95.914			

37	.214	.419	96.333			
38	.205	.403	96.736			
39	.187	.366	97.102			
40	.172	.337	97.440			
41	.159	.312	97.751			
42	.154	.303	98.054			
43	.148	.290	98.344			
44	.138	.270	98.614			
45	.137	.268	98.882			
46	.119	.234	99.115			
47	.115	.225	99.341			
48	.103	.201	99.542			
49	.086	.169	99.711			
50	.078	.154	99.864			
51	.069	.136	100.000			

Extraction Method: Principal Component Analysis.

References of Chapter 5

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Appendix: Tables

Table A.5.1: Factors from CFA

Construct	Item	Factor value
Service Innovation	SEIN1	
	SEIN2	
	SEIN3	0.617
	SEIN4	0.578
	SEIN5	0.642
	SEIN6	
	SEIN7	
	SEIN8	
	SEIN9	
	SEIN10	0.670
	SEIN11	0.654
	SEIN12	
Customer value creation	CVCR1	0.618
	CVCR2	
	CVCR3	0.607
	CVCR4	0.588
	CVCR5	
	CVCR6	0.767
	CVCR7	0.674
	CVCR8	0.769
	CVCR9	0.812
	CVCR10	0.730
	CVCR11	0.718
	CVCR12	0.754
	CVCR13	0.680
	CVCR14	0.695
	CVCR15	0.724
Service delivery innovation	SDIN1	0.743
	SDIN2	0.747
	SDIN3	0.841
	SDIN4	0.828
	SDIN5	0.819
	SDIN6	0.767
	SDIN7	0.797
	SDIN8	0.707
	SDIN9	0.696
	SDIN10	0.747
customer satisfaction	CUSA1	0.860
	CUSA2	0.817
	CUSA3	0.882
	CUSA4	0.892
	CUSA5	0.782
Customer loyalty	CULO1	0.726
	CULO2	0.775
	CULO3	0.859
	CULO4	0.853
	CULO5	0.714
	CULO6	0.786
	CULO7	0.790
	CULO8	0.791
	CULO9	0.693
	CULO10	0.800

Table A.5.2: Sample Composition for Study (n=351)

General information on sample	Scale details	Percentage
Gender	Male	38.7
	Female	61.3
Age	18-24	41.9
	25-34	15.1
	35-44	10.3
	45-54	26.5
	55-64	4.8
	Above 64	1.4
Income	Between INR 10,00,000 to 25,00,00(	13.7
	Between INR 25,00,000 to 50,00,00(	6.3
	Between INR 5,00,000 to 10,00,000	17.7
	Less than INR 5,00,000	21.1
	More than 50,00,000	4.6
	Not applicable	36.8
Education	Graduate	30.2
	12th grade pass	16.5
	Less than 12th grade	1.7
	Other	3.1
	Post graduate	48.4
Occupation	Business	10.3
	Government service	6.3
	Homemaker	4.3
	Other	2.8
	Private service	21.9
	Professional	13.1
	Student	41.3
City	Bhopal	7.1
	Indore	2.8
	Kolkata	60.1
	Mumbai	5.1
	New Delhi	5.4
	Others	19.4

Table A.5.3: Harman's Single Factor Analysis

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	18.400	47.179	47.179	18.400	47.179	47.179
2	3.119	7.999	55.177			
3	1.867	4.786	59.963			
4	1.572	4.030	63.994			
5	1.349	3.460	67.453			
6	1.001	2.566	70.020			
7	.872	2.236	72.255			
8	.788	2.021	74.277			
9	.676	1.734	76.011			
10	.599	1.535	77.546			
11	.553	1.418	78.964			
12	.518	1.327	80.291			
13	.493	1.265	81.556			
14	.479	1.227	82.783			
15	.452	1.159	83.942			
16	.426	1.092	85.035			
17	.408	1.045	86.080			
18	.387	.992	87.072			
19	.362	.927	87.999			
20	.354	.907	88.906			
21	.332	.851	89.757			
22	.324	.832	90.589			
23	.307	.788	91.376			
24	.299	.767	92.143			
25	.287	.735	92.879			
26	.279	.716	93.595			
27	.277	.710	94.304			
28	.251	.644	94.948			
29	.247	.634	95.582			
30	.235	.604	96.186			
31	.220	.564	96.750			
32	.213	.547	97.297			
33	.199	.511	97.808			
34	.181	.463	98.271			
35	.175	.449	98.719			
36	.143	.366	99.086			
37	.134	.343	99.429			
38	.128	.327	99.757			
39	.095	.243	100.000			

Chapter 6

Discussion, Implications, Limitations and Conclusion

Background

The thesis is built around service innovation and its applications in the telecom industry. In the chapter 2 and 3, it covers a review of service innovation and how Indian telecom has evolved since liberalization. In these chapters and that follow, that is 4th and 5th, both the terms or phrases 'service innovation' and 'innovation in services' are being used and considered. Additionally, in this thesis we are considering only the telecommunication firms in the business of providing mobile services to Indian consumers. Chapter 4 and 5 have been built on the data points from the mobile services firms which are inherently technology intensive but the results may not be limited to the telecommunication industry alone and may extend to other similar technology intensive service industries.

The first essay (study in chapter 4) explores the relationship between the elements that influence the sustainability of competitive advantage based on service innovations for the MNO (Mobile Network Operator). It establishes the importance of service innovation and knowledge integration capability in the hypercompetitive telecommunication industry. In this study, it is argued that alignment and integration with the external knowledge is significant and that having a strategic orientation and service innovation is not a sufficient condition for creation and sustaining competition advantage in a dynamic industry. Building on the relevant theoretical concepts, below two research questions have been addressed in this study by developing hypotheses and conducting empirical research:

***RQ1*:** How does service innovation affect the relationship between strategic orientations and sustainable competitive advantage in a hypercompetitive environment?

***RQ2*:** How does service innovation enabled by knowledge integration influence the sustainability of competitive advantage in a hypercompetitive environment?

The second essay (chapter 5) considers the significance of two innovation elements, service innovation and service delivery innovation, that work in a combined manner to build customer value and affect customer satisfaction and loyalty. The loyalty factor has become very fickle in the telecom industry with regulator allowing mobile number portability. The choice of the customers has reduced over the last half decade with only three operators remaining from a massive fourteen around a decade back. With a decrease in the number of operators, post consolidation in the industry, the customers choose their operators very carefully based on their prior experience and reviews of other existing customers. This has also led to commoditization in the telecommunication industry. The concept of hypercompetition is taken up in the fourth chapter and in the fifth chapter, commoditization due to hypercompetition is being taken up in the telecommunication industry. Research in the fifth chapter answers the below research questions:

RQ1: *How does service innovation led customer value creation affect customer satisfaction and customer loyalty?*

RQ2: *How does service delivery innovation led customer value creation affect customer satisfaction and customer loyalty?*

The results based on empirical analysis of the two essays have been informed in the chapter 4 and 5, and in this chapter, the discussion, implications, limitations and future research areas, and conclusion are taken up.

6.1. Discussion on essay 1

This research examines the relationship between strategic orientations - customer (CUOR), competition (COOR) and technology (TEOR) orientation, and sustainable

competitive advantage (SCAD), mediated by knowledge integration capability (KICA) and service innovation (SEIN) in the MNO space. The research was driven by the fact that the industry had gone through a tumultuous phase and had experienced consolidation and a lot of changes in the MNOs' thrust areas and ways to improve sustainability of their competitive advantage and reach increased performance. The integration of knowledge was never before studied in this industry along with its interplay with service innovation and its effect on the strategic orientation leading to competitive advantage. The telecom MNO sector has also been addressed as it was central to the research goals based on a service industry. Telecom as a service industry is very competitive and there has to be a differentiation brought in with the help of continuous culture of service innovation. For this, it is required to build a culture of improving service capability with the help of knowledge integration capability and service innovation. There was support found for Von Hippel (1989) identification of the sources of innovation as users, technology providers and suppliers, and also suggested customer retention linked to information. Achieving knowledge integration capability, as a dynamic capability, across the strategic orientations would further enhance the performance of service innovation and improve the competitive advantage.

In the first essay, the relationships were also validated with the help of sample respondents. 12 sample respondents were asked for their inputs without referring to the model with the help of semi-structured responses (Table A.6.1). First order codes were divided into second order categories with elements of the factors determined in literature. The second-order categories were combined to firm up the aggregate dimensions. The model was later shared with the respondents of the semi-structured interview and they validated the same. The limitations and areas of further research have been added with the help of the respondents.

The results of the study, while largely supporting the hypothesized relationships and answered the research questions, highlights the complexities involved with knowledge

integration activities preceding service innovation based competitive advantage. Strategic orientation is the primary driver that an MNO chooses for a service innovation based competitive strategy process. While talking to the industry participants in the study, it was found that the service innovation may not be recognized as innovations by the people who are involved in the process. They are considered small incremental steps to improve the service and its delivery to the customer. Sölvell (2018), has empirically proven that the identification of opportunities is built in the behavior of managers through observation, sharing of knowledge, discussing and decision-making in their daily lives. De Jong & Vermeulen (2003) suggest that due to the inherent nature of the service firms, the managers tend to be closer to innovation. Intra-function and inter-function sharing of information is very important and multifunctional teams facilitate new service development (Vermeulen & Dankbaar, 2002).

6.1.1. Theoretical implications

In this research, first, two very important constructs – knowledge integration capability and service innovation, are studied and their relationship developed in the service industry literature in the service industry to develop competitive advantage. Second, knowledge from external environment needs to be integrated to generate new configurations to improve the overall service innovation capability. Knowledge integration capability emerges as the mediator between strategic orientations and service innovation in all three - customer, competitor and technology orientation. Third, the relationship between strategic orientation and sustainable competitive advantage is serially mediated by knowledge integration capability and service innovation which has not been studied before. This is important from the perspective that technology orientation has a significant direct relationship with sustainable competitive advantage whereas customer and competition orientation do not. But once mediated they all operate towards achieving competitive advantage. Fourth, technology orientation has found a lot of support in this industry towards

building sustainable competitive advantage. Findings show a positive relationship between technology orientation with knowledge integration capability, service innovation and sustainable competitive advantage. Changes in the telecom industry on the technology front has brought in a lot of disruption. This can be one explanation attributed to this that technology is so highly rated compared to other strategic orientation.

Furthermore, we show for the first time the different strategic orientations that the mobile service providers use for achieving competitive advantage. In a hypercompetitive industry such as telecom, the use of knowledge integration capability and service innovation in achieving positive results gives the firms their edge to outperform competitors. Service innovation in isolation is found to be insufficiently effective and needs to be mediated by knowledge integration capability to produce the desired results. This work, for the first time, establishes the relationship empirically, and we demonstrate the need to build and cultivate a set of dynamic capabilities in knowledge integration capability to deliver solutions to create a distinctive barrier to its closest competitors.

The mobile service provider firms may use customer orientation, competition orientation, and technology orientation in different proportions but all firms work towards achieving competitive advantage with a mix of all three. The empirical results show that the relationship between customer orientation and sustainable competitive advantage, and competition orientation and sustainable competitive advantage is not mediated by service innovation. It also shows that technology orientation alone can be a facilitator in providing competitive edge and can be further mediated by knowledge integration capability and service innovation acting together. Technology orientation is found to be stronger than customer and competitor orientation in all the relationships established. It can be seen that all relationships of technology orientation are partially mediated. This can be attributed to the fact that it is a technology-intensive and a capital-intensive industry, and firms investing in

technology may prove to have a longer sustainable competitive advantage. The model establishes that technology orientation works with customer orientation and competition orientation to achieve sustainable competitive advantage. The ICT (Information and communication and technology) industry overall relies on technology as a platform to support the growth of delivery of its products.

6.1.2. Managerial implications

On empirically examining the relationship between knowledge integration capability and service innovation, the study provides some important results for managers to improve their sustainable competitive advantage. There is a strong indication and suggestion for managers to focus on developing knowledge integration capability as an important capability based on their strategic orientation. In a hypercompetitive environment of MNOs, innovations without integration of knowledge on users, technology, understanding of competition, regulators and policy making may not be enough. The competitive advantages which can be sustained for a longer period may come from technology, intangible resources like knowledge about understanding of customer requirements and manpower selection and training may prove to be fruitful. This knowledge, acquired from various sources, internal and external, needs to be combined with internally available knowledge to deliver innovative solutions for better performance. The managers should deliberate their efforts towards the synthesis on external and internal knowledge and build this dynamic capability to stay ahead of competition by building incremental innovations based on this combined knowledge.

The MNO firms may use customer, competitor and technology orientations in different ratios but all firms work towards achieving competitive advantage with a mix of all three. The empirical results prove that customer orientation and competition orientation alone do not achieve competitive advantage but need to be mediated by knowledge integration capability and service innovation to reach there. It also proves that technology orientation

alone can be a facilitator in providing competitive edge and can be further mediated with full mediation from knowledge integration capability and service innovation. This can be attributed to the fact that it is a capital-intensive industry and firms investing in technology may prove to have a longer sustaining competitive advantage. The model establishes that technology orientation works with customer and competition orientation to achieve sustainable competitive advantage. ICT overall relies on technology as a platform to support the growth of its delivery of products. Hence, the managers have shown strong inclination towards technology orientation of the mobile service firms in their experience and its relationship with competition orientation. Serial mediation was also studied in case of the relationship between the strategic orientations and sustainable competitive advantage. The relationship was mediated by knowledge integration capability and service innovation and was proved to be significant in all the three orientations, i.e., customer, competitor and technology. The Indian MNOs have gone through a major transition from voice to data and they are getting ready for new adventure with 5G. The managers need to apprise themselves with the developments in the countries which have already experienced opportunities that this new technology is going to bring to India and the requirement of the young user, who is driving change with the data revolution. It is acknowledged that the senior managers making strategic decisions are knowledgeable and would be in a better position to read, understand and implement the appropriate suggestions.

6.1.3. Limitations and future research

Though the study touches upon a lot of important areas not touched before, there are some limitations which were observed as the study progressed. The industry covered is very dynamic and underwent some further changes like policy changes and new developments while the research was being conducted. The important factors which affect the industry are: One, the policy changes by the regulator; two, the investment capacity of the operators which

can be vital in creating new solutions and expansion to reach the rural India; three, the parallel existence of data on wired and wireless. Wired, in its new data driving avatar, is again making inroads into households at an extraordinary pace and shifting consumers' preferences. All three limitations can be taken as a research project, though some research has already taken place on the effect of regulator and the price of spectrum. Further research can also extend this model into other service industries like airlines, retail, banking, hospitality among others. In this research, overall services being provided were considered, and not distinguished based on B2C or B2B. A comparison on the two would be an interesting project to understand the effect on various factors of the model. Services are inherently different from products and innovation in both may lead to different results. Future research can also target product innovation in the manufacturing sector with a combination of these constructs.

6.3. Conclusion of essay 1

There is a lot of research conducted in telecom in the customer service area and on customer switching between operators. This is the first study that looks at how strategic thrust leads to better performance in combination with knowledge and service innovation. The results are encouraging considering the changes the industry is going through. The study in a decade may produce different results as it would have produced a decade back. The interesting nature of the industry with voice and data lifecycles at different stages makes it very lucrative for a researcher. The hypercompetitive industry may lead to new players joining it in the convergence phase that it is currently undergoing. The new players may bring in different competence to lead the industry to a new tomorrow. The operators would need to look at building dynamic capabilities like knowledge integration capability, which has been demonstrated in this study. Managers and policy makers can use the findings on how knowledge integration can support innovation to develop new products and plan further expansion.

6.4. Discussion on essay 2

At the time of writing this essay, there are only three private MNOs operating in India, catering to a massive population of 1.38 billion people (The World Bank, 2021). The industry is operating in a hypercompetitive scenario, which has led commoditization of voice and data services. The options for people as customers have also become more limited after the number of operators has reduced from fourteen operators nationally to only three, after the consolidation in the industry (covered in chapter 3). There are three important findings from the research: First, the customers' choice depends on the value the operator creates while taking care of the basics of service delivery. It is found that customer satisfaction and customer loyalty is positively influenced by customer value creation. The innovations in the services like new offerings, processes and technology, and finally innovations in service delivery, support the relationship with value creation. Second, the relationship between customer satisfaction and customer loyalty was found to be positive. The repetition of the event of customer satisfaction builds loyalty. This has been theorized and measured by various scholars and this study also comes to the same inference (Ibrahim & Abdallahamed, 2014; Erjavec et al., 2016; Caruana, 2004). Third, customer satisfaction has shown a mediating effect on the relationships between service innovation and customer loyalty as well as the relationship between service delivery innovation and customer loyalty.

The first essay looked at the broader and long-term aspects like strategic orientation and how knowledge integration and service innovation can help in enhancing competitive advantage. This essay looks at the customer's perspective, like how service delivery innovation and service innovation in processes, products and technology can lead to customer value creation and support customer satisfaction and customer loyalty. It was the first time both service innovation and service delivery innovation were used together to study the customer value creation concept which is central to the existence of a firm (Slater, 1997).

A further analysis of the data received also showed that on some aspects there was no difference in the behavior of the mobile service consumers and some aspects were very different. It was found that prepaid connections were more prevalent in the age group till 34 years and beyond that the age group in the sample preferred postpaid. The mean of customer loyalty construct for all the age groups was found to be 3.43 with highest at 3.73 in the age group of over 64 years with just 6 respondents. The second highest at 3.43 in the age group 18-24 years and the lowest at 3.31 in the age group 35-44 years. Box-plots were constructed (Figure A.1) between different age groups and the loyalty construct which comprises of ten variables to visually examine if there was a difference between loyalty factors with change in age-group. Further ANOVA was conducted and it was found that statistically there is no difference between the loyalty with age at p value of 0.64. It can be inferred visually (Figure A.6.1) and analytically there is no difference in customer loyalty with change in age.

To validate the loyalty construct further, 25 respondents were approached again later to understand why they continued with the MNO, even when they didn't score high on the loyalty items and they can even retain their existing number with the help of MNP. Some of the top responses are given below:

- All operators have nearly similar service quality
- I have been with this service provider for more than 5/6/7/8/9/10 years
- I will wait for some more time before switching
- Customer service of the other operator is bad
- I do not want to get associated with that operator
- I have tried their (other operators) services before and I didn't like my experience

The above responses indicate an inherent resistance due to personal reasons and experiences of the respondents. The importance of value-addition further grows to deal with

this. The results of the empirical study, while supporting the hypothesized relationships, bring out some important characteristics of concept of service delivery innovation not so well researched hitherto. MNOs strive for customer loyalty; customer value creation & customer satisfaction are the means for attaining it. To attain customer value creation, the customers need to use the services which happens through service delivery. It is found that both service delivery innovation and service innovation are significant in creating value for the customer. Service delivery is a part of services for an MNO as it is the mechanism for the customers to access and avail the voice and data services. In the case of MNOs, the service delivery experience is based on the voice quality and data speeds, network availability, service and customer care points, availability on new platforms among other such tangible and intangible aspects.

6.4.1. Theoretical implications

For the first time, two important concepts of service innovation and service delivery innovation have been used in the research separately. Both the concepts, basically cater to innovation in services. But, in the case of MNOs, service delivery is considered to be a very important aspect from the customer perspective, as per the discussions with the telecom professionals and customers. As this study is on the antecedents of customer loyalty, it was deemed important to bring service delivery innovation in the model, considering it a dynamic capability, as a separate construct. Both, service innovation and service delivery innovation, work towards creating value for the customer by making changes that make the life of the customer easy, making him stay loyal to the MNO. Service innovation is a broader construct than service delivery. These constructs have been used in a combined manner for the first time and have yielded positive results. The results between service innovation, customer value creation, customer satisfaction and customer loyalty are in line with other results from earlier researches. That is, service innovation has a positive and a significant direct

relationship with customer value creation, customer satisfaction and customer loyalty. The study also brings out that service delivery innovation on its own may be important from the perspective of the MNO, but it needs to create value for the customer to be significant. In the structural model, the co-relation between service delivery innovation and customer value creation is found to be significant but was not found to be significant with customer satisfaction and customer loyalty. The mediation from customer value creation makes service delivery innovation significant for both customer satisfaction and customer loyalty.

6.4.2. Managerial implications

The empirical results of the study to examine the relationship between innovation constructs of service innovation and service delivery innovation and the importance of customer value creation and customer satisfaction, there are some important insights for the managers to improve customer loyalty. While commoditization of the industry takes place, customer loyalty is fickle and unstable (D'aveni, 2010; Holmes, 2016). The managers should focus on innovations that are customer centric and create value for the customer. The managers should know and appreciate that when customers buy the firm's connection, they expect the mobile voice and data services to be seamless and uninterrupted. The practice of service delivery needs to become consistent and reliable to become a capability to innovate. Only then it can add value and lead them towards satisfaction and loyalty. Service delivery is also an aspect of competition and latest developments in accessing and availing the services. The innovations in services including service delivery can keep a firm ahead of competition and enhance competitive advantage. Managers should provide proper training to the firm's employees in all frontend roles like sales, customer care and service so that all the touch points provide consistent service quality from the customers' perspective. Consistency in service quality creates value and adds to customer satisfaction leading to customer loyalty.

6.4.3. Limitations and future research

The study is important from the perspective of creation of customer value from service delivery innovation and service innovation, areas not touched before in the Indian telecom market. The limitations of the current study have also been recognized and are listed as follows. The study was conducted from the perspective of consumers of mobile services as it was meant to capture their viewpoint. The response was captured by conducting convenience sampling and in an online mode (using social media app 'Whatsapp') in the English language. 60% responses were captured from Kolkata and rest from other urban parts of India. The limitations of the study can be considered as only urban sample, educated and English-speaking sample, and sample that uses data services and social messaging app 'Whatsapp' on their phone has been considered. There can be other dimensions to the MNO business which add value from the customers' perspective that haven't been captured in detail or even in parts in the service innovation perspective. Future research can be taken up in the Indian rural landscape of the telecom market. Another dimension can be added by comparing the innovations by competing firms from the customers' value creation perspective. There can be further studies on the secondary data of customers porting from one firm to another, and different states' models can be compared and the MNOs can be compared as in which firm has lost the most customers and which firm has gained the most and why. Another aspect of knowledge management and integration which was covered in essay 1 (chapter 4) could be included for its impact on the innovations. The current research does not distinguish between retail and a corporate customer, which can also be taken up as a comparison point in the future research. These are some of the limitations of the current research and future research areas that can be taken up.

6.5. Conclusion of essay 2

Several studies have captured facets of customer service, customer satisfaction and customer loyalty in the telecom industry. Studies, separately or in parts, have been conducted

on service innovation, service delivery, customer value creation, customer switching and competitive advantage. The current research for the first time uses two innovation dimensions of service innovation to understand their impact on created value creation to generate customer satisfaction and customer loyalty. Customer value creation has been studied as a holistic concept including functional, emotional and social value. The study could empirically prove the relationship between these constructs, which were found to be in line with other individual studies covering them in parts. The Indian telecommunication industry has gone through a major shift from customers' focus on voice services to data services in the last decade. At this time when commoditization of services is at the forefront, the firms should look for rapid small incremental innovations that create value for the customers.

6.6. Overall conclusion

The two essays in combination look at the internal and external aspects of an MNO. This gives an edge to this thesis, which aims at bringing out important aspects in terms of improving the sustainable competitive advantage and customer loyalty of the MNO. MNOs have been fighting a fierce battle to garner market share and revenue share. The importance of service innovation in both the essays is established, though with a slight distinction. In the first essay, service innovation works positively with knowledge integration capability to make the strategic orientation more effective and improve sustainable competitive advantage. Whereas, in the second essay, service innovation and service delivery innovation work together to create customer value and improve customer satisfaction leading to customer loyalty. The research questions posed by the essays were answered with proper deliberation and relationship amongst the factors was established empirically. In the second essay, though customers didn't vote on customer loyalty above 4, with the mean at 3.43 out of 5, some of them have still not considered switching to another MNO due to some of the factors mentioned. The empirical study on the research question and hypotheses based on them have

yielded statistically significant results, the importance of the value addition construct has been established along with service innovation.

The knowledge integration capability in the first essay plays a similar role that is played by customer value addition in the second essay and establishes need to consider the external factors like needs of the stakeholders to build effectiveness of service innovation. The combination of the two essays establishes that in a highly technology dependent and highly competitive industry like telecom, where at one end, understanding the need of the customers is important to create value for them, it's also essential to understand what would improve the sustenance of firm's competitive advantage to stay ahead. The speed of change needs to be maintained even by the most incremental innovations and touch the customers where they see value being created. The managers in the MNOs are in a position to make this happen by integrating knowledge gained with the knowledge they create internally.

The telecommunication industry has been considered for the two studies conducted as it gives the right perspective of industries that are both technology intensive and capital intensive. It also helps in understanding industries that impact the growth of GDP and other industries in the ICT space. The phenomenon of hypercompetition and commoditization takes place in a plethora of industries and had become rampant due to availability and adoption of technology. As per GSMA (2021), "5.2 billion people subscribed to mobile services by the end of 2020, which represented 67% of the global population. Adding new subscribers is increasingly difficult, as markets are becoming saturated and the economics of reaching rural populations are becoming more difficult to justify in a challenging financial climate for mobile operators. That said, there will be nearly half a billion new subscribers by 2025, taking the total number of subscribers to 5.7 billion (70% of the global population). In 2020, mobile technologies and services generated $4.4 trillion of economic value added (5.1% of GDP) globally. This figure will grow by $480 billion by 2025 to nearly $5 trillion as

countries increasingly benefit from the improvements in productivity and efficiency brought about by the increased take-up of mobile services. 5G is expected to benefit all economic sectors of the global economy during this period, with services and manufacturing seeing the most impact."

Commoditization in telecom globally has been studied by PwC strategy& (2019). The report states that commoditization, a state of loss of differentiation and competition based on pricing alone, based on decrease in ARPU (average revenue per user) and the market share spread, is a universal phenomenon and has continued over the last decade. It states that in North America, commoditization has reduced; in Asia Pacific, in China and Indonesia, it has continued to rise with decrease in ARPU and decrease in market share; in Central Asia, in India, it has reduced, but ARPU has declined; Southern and Eastern European (SEE) region has experienced perhaps the largest move toward commoditization in the past decade; And the three other regions, Northern and Western Europe (NWE), Latin America, and the Middle East and North Africa (MENA) has been classified as "on the edge" of being fully commoditized (Figure A.6.2).

Another global phenomenon that is taking place is convergence of mobile and fixed telecom (PwC strategy&, 2019). As per the report, "In a perfectly converged market, distinctions between mobile and fixed broadband will disappear, and users will get their connectivity seamlessly, both at home and away, purchasing it as a single service from a single carrier for a single price." The convergence is stated to take place first in the market share and then in price. Bundling will take place as the first step towards convergence while fighting on price, followed by "quasi-quad plays (voice, Internet, mobile, and television) with little or no discount for bundling these services," (PwC strategy&, 2019). It is proposed that this would be followed by mergers and acquisitions, and building of capabilities organically

and by developing interim technologies that temporarily lower the cost of providing converged services, thus providing competitive advantage.

Due to hypercompetition and commoditization, the MNOs are looking at diversification. Just as technology companies have got into a variety of complementary activities such as cloud services, the auto and healthcare industries, and telecom itself, there are operators looking well beyond the provision of broadband and wireless services for new ways to bring in more revenue from existing customers and broaden their customer base. Convergence leading to mergers and acquisition may bring in more such avenues in areas like financial services, insurance, healthcare, home security and management, telematics, identity and security operations, and media and content, as it is taking place in some developed countries (PwC strategy&, 2019). For this, they would need to unlock synergies that could change the competitive dynamic in the market and have the right capabilities or business model needed to successfully disrupt the incumbents.

The Indian market is observed to behave in line with the global market on the hypercompetition and commoditization front and is also inclining towards convergence. It has already seen a spate of mergers and acquisitions covered in the 3rd chapter. The number one and number two operators in India have been building their customer base and acquiring firms in the digital space (*Airtel Acquires 10% Stake in Mumbai-Based Edtech Startup Lattu Media | Business Standard News*, 2021; *Airtel Press Release*, 2020; livemint.com, 2020). The capability to integrate knowledge with the strategic orientation to come up with the relevant and appropriate service innovations that add value to the customer will be able to provide sustainable competitive advantage and customer loyalty in the long term. The studies stay relevant in this context and will help guide the practitioners to stay on track in developing their competitive advantage and creation of value for customers.

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Appendix: Tables, figures and questionnaires

Table A.6.1.: Data structure from semi-structured discussion

First-order codes (terms close to informants' language)	Second-order categories	Aggregate dimensions
- Uniformity in services across India - Having sales and service retail outlets to improve accessibility - "setting up stores at block level"	Customer satisfaction	Customer orientation
- Quality of service is of paramount importance - "the bargaining power of the company has reduced and (for the) customer it has increased"	Customer needs	
- Quicker response to competitor's new plans (tariff, segment, etc.) - Employees/customers informing about market/competition, which is shared across multiple departments	Competition intelligence	Competition orientation
- Capturing mindshare with media presence - Network availability - "coverage in villages and cities similar to avoid attrition"	Competitive advantage	
- Uninterrupted high-speed connectivity - App based customer service - Increase in data consumption - Household appliances connected with MNO network (Internet of Things) - "it's going to be (going forward) 500 or 600 GB consumption per household on an average	Service technology enhancement	Technology orientation
- Convergence (e.g., voice over internet)2 - Electronic SIM2 - "three crore kilometers of cable has been laid by Reliance Jio which is huge"	New technology/product rollouts	
- Mobile platforms to register complaints and queries - Click and mortar presence - Use of chatbots for customer service	New touch-points	Service Innovation

- Aadhar and e-KYC (electronic know your customer) for activation - Physical recharge and electronic recharge - “technology has to be demystified for better understanding and usage”	Ease of use	

- Investment in technology - Enhancements in technology to facilitate customers - “it's a combination of both (service quality and branding), which will help you grow”	Synthesizing and implementation of information	Knowledge integration capability
- Understanding the evolving needs or customers - Employing gig workers to have the latest know-how and integrate it by training employees - “They looked at the enterprise segment very differently had a strategic approach in terms of how do they mine their enterprise customers”	Integrating knowledge	

Table A.6.2: Essay 1 Hypothesis support

	Hypotheses	Support
Customer orientation		
H1a	Customer orientation is positively related to sustainable competitive advantage	Supported
H1b	Knowledge integration capability positively mediates relationship between customer orientation and sustainable competitive advantage	Supported
H1c	Service innovation positively mediates relationship between customer orientation and sustainable competitive advantage	Not Supported
H1d	Knowledge integration capability and service innovation serially mediate customer orientation and sustainable competitive advantage relationship	Supported
Competition orientation		
H2a	Competition orientation is positively related to sustainable competitive advantage	Supported
H2b	Knowledge integration capability positively mediates relationship between competition orientation and sustainable competitive advantage	Supported
H2c	Service innovation positively mediates relationship between competition orientation and sustainable competitive advantage	Not Supported
H1d	Knowledge integration capability and service innovation serially mediate competition orientation and sustainable competitive advantage relationship	Supported
Technology orientation		
H3a	Technology orientation is positively related to sustainable competitive advantage	Supported
H3b	Knowledge integration capability positively mediates relationship between technology orientation and sustainable competitive advantage	Supported
H3c	Service innovation positively mediates relationship between technology orientation and sustainable competitive advantage	Supported
H3d	Knowledge integration capability and service innovation serially mediate technology orientation and sustainable competitive advantage relationship	Supported
Knowledge integration capability		
H4a	Knowledge integration capability is positively related to service innovation	Supported
H4b	Knowledge integration capability is positively related to sustainable competitive advantage	Supported
Service innovation		
H5.	Service innovation is positively related to sustainable competitive advantage	Supported

Table A.6.3: Essay 2 Hypothesis support

Hypotheses	Support
H1. Service innovation is positively related to customer value creation	Supported
H2. Service delivery innovation is positively related to customer value creation	Supported
H3. Customer value creation mediates the relationship between service innovation and customer satisfaction	Supported
H4. Customer satisfaction mediates the relationship between service innovation and customer loyalty	Supported
H5. Customer value creation mediates the relationship between service delivery innovation and customer satisfaction	Supported
H6. Customer satisfaction mediates the relationship between service delivery innovation and customer loyalty	Supported
H7. Customer value creation is positively related to customer satisfaction	Supported
H8. Customer value creation is positively related to customer loyalty	Supported
H9. Customer satisfaction mediates the relationship between customer value creation and customer loyalty	Supported
H10. Customer satisfaction is positively related to customer loyalty	Supported

Figure A.6.1: Age group wise customer loyalty

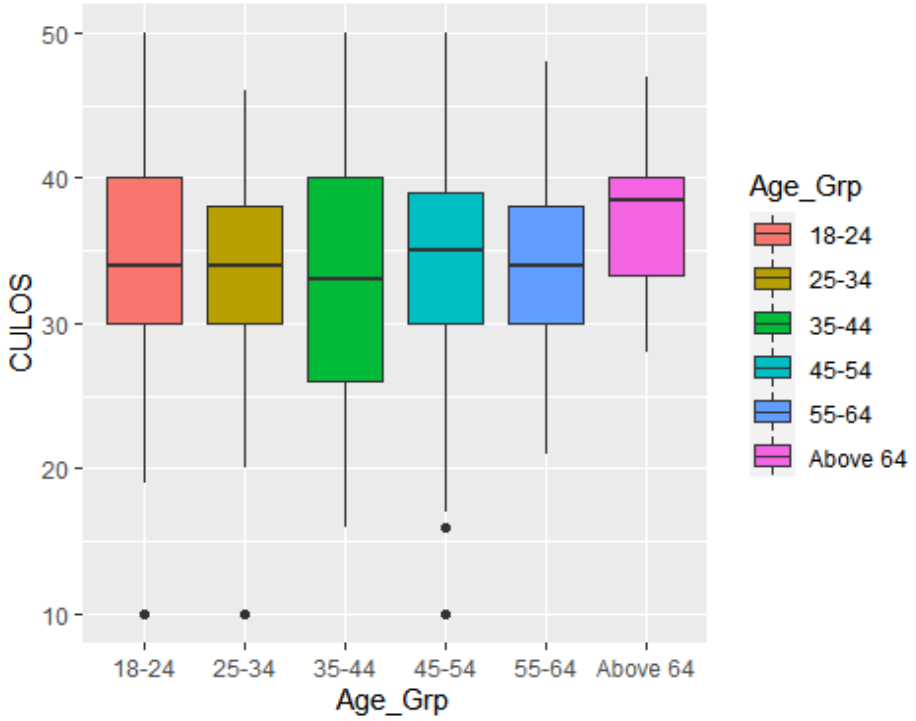
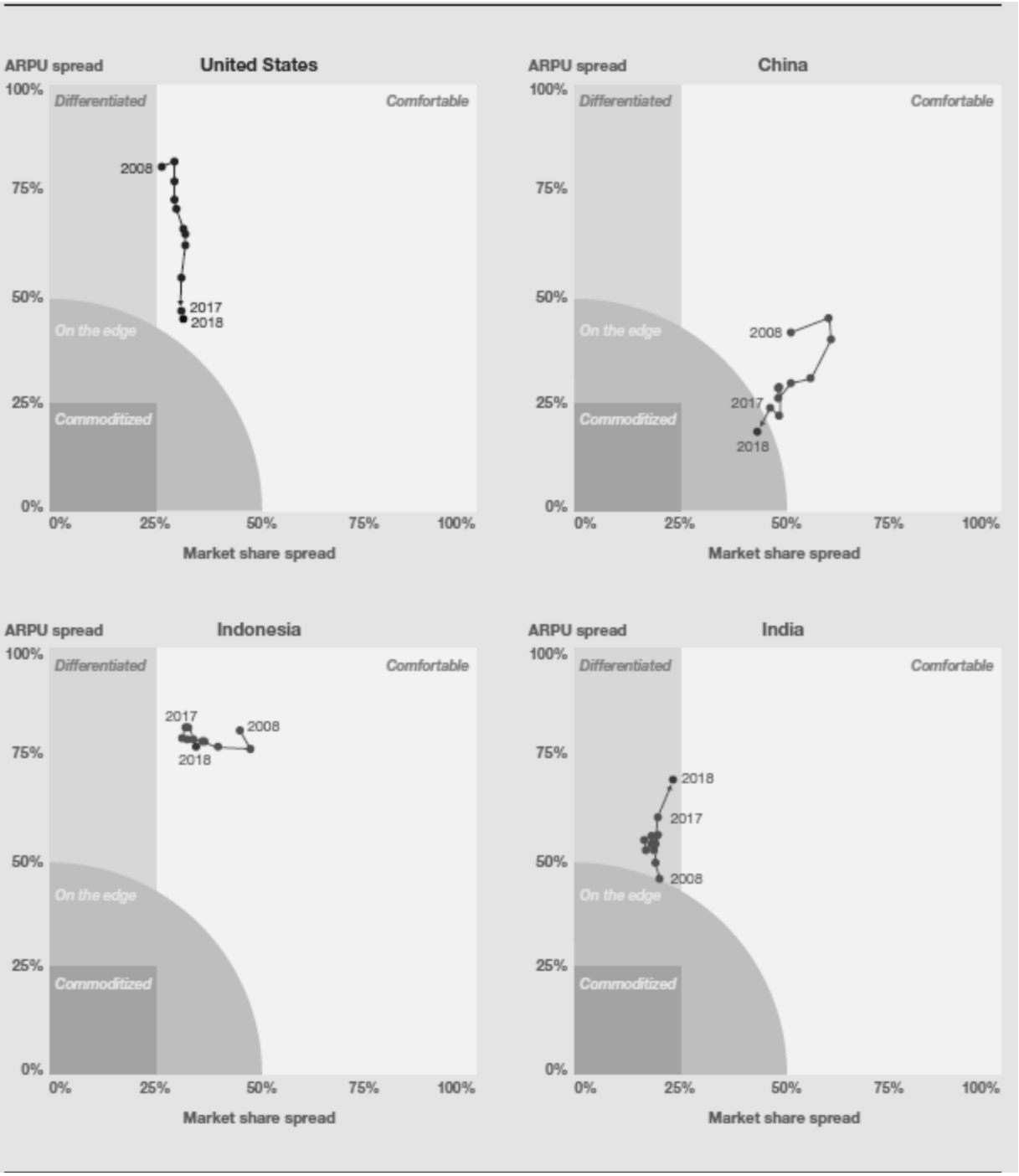


Figure A.6.2: Mobile telecom commoditization in selected territories, 2008–18



Source: PwC's Strategy& (2019)

Appendix: Survey Questionnaires

Essay1 Questionnaire:

Hello, I am a PhD student from Indian Institute of Management Indore. I am undertaking a research on mobile phone services industry. You are invited to participate in our survey "Factors for Firm Performance". In this survey we are soliciting answers to questions about various factors that improve the performance for mobile service providers. For each company you have worked for, for a period of at least one year or more, you may fill up a separate survey questionnaire. It will take approximately 8-10 minutes to complete the questionnaire. Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. We will not be sharing any of the personal details. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point. It is very important for us to learn your opinions. Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information if any will be coded and will remain confidential. If you have questions at any time about the survey or the procedures, you may contact Sundeep Singh Sondhi at 9143110019 or by email at sundeep.sondhi@gmail.com. Thank you very much for your time and support. Please start with the survey now by clicking on the Continue button below.

First Name

Last Name

Phone

Email Address

Please select your gender
1. Male
2. Female

Please select your occupation
1. Student
2. Service
3. Business
4. Professional
5. Other

Please mention your current designation

Please select your level in the current organization hierarchy
1. Lower Management
2. Middle Management
3. Higher Management
4. Other _____

Number of years of total work experience including telecom
1. Less than 2 years
2. 2 to 5 years
3. > 5 to 10 years
4. > 10 to 15 years
5. More than 15 years

Number of years of work experience in telecom
1. Less than 1 year
2. 1 to 3 years
3. > 3 to 5 years
4. > 5 to 10 years
5. > 10 to 15 years
6. More than 15 years

Number of years of work experience in different telecom companies (please select the companies that are applicable and choose 'Did not work' which are not)

	Did not work	> 0 to 1 years	> 1 to 2 years	> 2 to 3 years	> 3 to 5 years	More than 5 years
Reliance JIO Infocomm Limited	❑	❑	❑	❑	❑	❑
Bharti Airtel Limited	❑	❑	❑	❑	❑	❑
Vodafone Idea Ltd.	❑	❑	❑	❑	❑	❑
Reliance Communications Ltd	❑	❑	❑	❑	❑	❑
Reliance Telecom Limited	❑	❑	❑	❑	❑	❑
Tata Teleservices Ltd./Tata Docomo	❑	❑	❑	❑	❑	❑
MTS (Sistema Shyam Teleservices Ltd.)	❑	❑	❑	❑	❑	❑
Aircel Ltd.	❑	❑	❑	❑	❑	❑
Vodafone India	❑	❑	❑	❑	❑	❑
Idea Cellular Ltd.	❑	❑	❑	❑	❑	❑
Telenor India	❑	❑	❑	❑	❑	❑

Please select the mobile service provider (focus company) for which you would be providing the information moving forward (please note all the responses are for the focus company). If you would like to provide responses for more than one company, please respond to a new survey questionnaire for each focus company.

1. Reliance JIO Infocomm Limited
2. Bharti Airtel Limited
3. Vodafone Idea Ltd.
4. Reliance Communications Ltd
5. Reliance Telecom Limited
6. Tata Teleservices Ltd./Tata Docomo
7. MTS (Sistema Shyam Teleservices Ltd.)
8. Aircel Ltd.
9. Vodafone India
10. Idea Cellular Ltd.
11. Telenor India

Number of years of work experience in the focus company.

1. Less than 1 year
2. 1 to 2 years
3. > 2 to 3 years
4. > 3 to 5 years
5. More than 5 years

Function/Department that you represented in the focus company (Please choose the closest)

1. Operations
2. Marketing
3. Sales
4. Network
5. Finance
6. Customer Service
7. HR/Admn
8. IT
9. Security
10. Legal/Regulatory
11. Strategy
12. Other

Strategic Orientations

Customer Orientation

	Variable Name	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Our business objectives are driven primarily by customer satisfaction	CUOR1	❑	❑	❑	❑	❑
We constantly monitor our level of commitment and orientation to serving customer needs	CUOR2	❑	❑	❑	❑	❑
We freely communicate information about our successful and unsuccessful customer experiences across all business functions	CUOR3	❑	❑	❑	❑	❑
We measure customer satisfaction systematically and frequently	CUOR4	❑	❑	❑	❑	❑
Our strategy for competitive advantage is based on our understanding of customers' needs	CUOR5	❑	❑	❑	❑	❑
We are more customer focused than our competitors	CUOR6	❑	❑	❑	❑	❑
I believe this business exists primarily to serve customers	CUOR7	❑	❑	❑	❑	❑

We poll end users at least once a year to assess the quality of our products and services	CUOR8	❑	❑	❑	❑	❑
Data on customer satisfaction are disseminated at all levels in this business unit on a regular basis	CUOR9	❑	❑	❑	❑	❑
We have routine or regular measures of customer service	CUOR10	❑	❑	❑	❑	❑

The result of adding 3 and 6 is

1. 6
2. 9
3. 12
4. 18

Competition Orientation

	Variable Name	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Employees throughout the organization share information concerning competitor's activities	COOR1	❑	❑	❑	❑	❑
We rapidly respond to competitive actions that have the potential to impact us	COOR2	❑	❑	❑	❑	❑
We target customers where we have an opportunity for competitive advantage	COOR3	❑	❑	❑	❑	❑
Our salespeople regularly collect information concerning competitor's activities	COOR4	❑	❑	❑	❑	❑
We diagnose and analyze competitor's goals	COOR5	❑	❑	❑	❑	❑
We track the performance of key competitors	COOR6*	❑	❑	❑	❑	❑
We study how our key competitors have succeeded as well learn from their failures.	COOR7	❑	❑	❑	❑	❑
We evaluate the strengths and weaknesses of key competitors	COOR8*	❑	❑	❑	❑	❑
We look for market opportunities even if that may pose a threat to my competitors (opportunities to use resources tactically wherever available to gain market/revenue share)	COOR9	❑	❑	❑	❑	❑
We evaluate information received on future assumptions made by Industry players on market, customers, technology, and suppliers.	COOR10*	❑	❑	❑	❑	❑
Top management regularly discusses competitor's strengths and weaknesses	COOR11*	❑	❑	❑	❑	❑

Technology Orientation

	Variable Name	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Our Company uses sophisticated technologies in its new product development	TEOR1*	❑	❑	❑	❑	❑
Our new products and services are always state of the art and backed by the latest technology (VAS, special tariffs, specific bundles, content services, etc.)	TEOR2*	❑	❑	❑	❑	❑

Our customer services are provided by using state of the art technology (IVR, CRM, ERP and any other enterprise software)	TEOR3*	❑	❑	❑	❑	❑
Our Company has the will and the capacity to build and market innovation in technology	TEOR4*	❑	❑	❑	❑	❑
We use sophisticated technology in providing services to our customer	TEOR5*	❑	❑	❑	❑	❑
Our Company has an aggressive IP (Intellectual Property)/patent strategy	TEOR6*	❑	❑	❑	❑	❑
Our relationship with technology providers is continuously growing	TEOR7*	❑	❑	❑	❑	❑
We continuously collect technology-based knowledge (from competitors or associated industry sectors).	TEOR8*	❑	❑	❑	❑	❑
We are proactive in bringing across technological solutions to answer customer's needs	TEOR9*	❑	❑	❑	❑	❑
Relative to our competitors, we care more about technology-based research	TEOR10*	❑	❑	❑	❑	❑
We believe in staying in the forefront of new technology	TEOR11*	❑	❑	❑	❑	❑
Our firm is always the first one to use a new technology for its new product development	TEOR12*	❑	❑	❑	❑	❑

Knowledge Integration

Learning on the go

	Variable Name	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
We use existing expertise & experience in different ways to create new products and services	KICA1*	❑	❑	❑	❑	❑
Experts from different functions contribute in generating new ideas and creating new products & servicing	KICA2*	❑	❑	❑	❑	❑
We blend knowledge gained on technology front and on market front to come up with products/services/organizational/strategic changes in future	KICA3*	❑	❑	❑	❑	❑
Our firm uses information gained from different experts to inform participants in project/functional team meetings	KICA4*	❑	❑	❑	❑	❑
Based on the knowledge gathered, resource allocation is modified to improve utilization of resources	KICA5*	❑	❑	❑	❑	❑
A continuous re-evaluation of the existing resources takes place based on the knowledge acquired	KICA6*	❑	❑	❑	❑	❑

The result of multiplying 2 with 4 is

1. 7
2. 8
3. 10
4. 12

Service Innovation

Considering your tenure (time spent) in the focus company, to what extent did the following activities change while you were there.

	Variable Name	Remain unchanged	Have changed slightly	Have changed moderately	Have changed si gnificantly	Have changed completely
The areas of expertise that your firm offers (Voice and data services, content)	SEIN1*	❑	❑	❑	❑	❑
The speed of activation/delivery of services (e.g. faster activations, new plans etc.)	SEIN2*	❑	❑	❑	❑	❑
The choice provided to the customers (types of packages, customization)	SEIN3*	❑	❑	❑	❑	❑
The ways in which the services you provide are produced (includes towers & overall infrastructure and resources)	SEIN4*	❑	❑	❑	❑	❑
The ways in which the services you provide are delivered (Customer services, maintenance and availability of network in different locations, green BTS with less reliance on DG and more on solar panels)	SEIN5*	❑	❑	❑	❑	❑
The processes by which our firm procures resources to offer services (introducing new recruitment standards and upgrading technology to improve service levels)	SEIN6*	❑	❑	❑	❑	❑
The process of evaluation of the quality of services provided (call drops, network issues, trained resources etc.)	SEIN7*	❑	❑	❑	❑	❑
The nature of technology that is used to produce or deliver services (whether it is effective, customization enabled, user friendly)	SEIN8*	❑	❑	❑	❑	❑

Sustainable Competition Advantage

What was the effect on overall performance due to the changes/innovations that were introduced?

	Variable Name	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
The innovations we introduced enabled us to enjoy a superior market position for a reasonable period.	SCAD1	❑	❑	❑	❑	❑
The new changes we introduced have been appreciated by our clients/customers giving us a distinct advantage for some time now.	SCAD2	❑	❑	❑	❑	❑
Our competitors could not easily match the advantages of the new products or services that we introduced.	SCAD3	❑	❑	❑	❑	❑
The new products or services we introduced were a stepping stone for further development.	SCAD4	❑	❑	❑	❑	❑

Essay2 Questionnaire:

Hello: I am a PhD student from Indian Institute of Management Indore. I am undertaking a research on private mobile service providers. You are invited to participate in our survey "Factors of Loyalty". In this survey we are soliciting answers to questions about the factors that improve loyalty towards your mobile service provider loyalty. It will take about 10 minutes to complete the questionnaire. Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. Your identity and your answers will remain confidential. We will not be sharing any of the personal details. However, if you feel uncomfortable answering any questions, you can withdraw from the survey at any point. It is very important for us to learn your opinions. Your survey responses will be strictly confidential and data from this research will be reported only in the aggregate. Your information will be coded and will remain confidential. If you have questions at any time about the survey or the procedures, you may contact Sundeep Singh Sondhi at 9143110019 or by email sundeep.sondhi@gmail.com. Thank you very much for your time and support. Please start with the survey now by clicking on the Continue button below.

Basic Information

First Name

Last Name

Phone

Email Address

Do you use a mobile phone?
1. No
2. Yes

Age
1. 18-24
2. 25-34
3. 35-44
4. 45-54
5. 55-64
6. Above 64

Please select the name of the city/town where you using the mobile phone service.

1. Kolkata
2. Mumbai
3. New Delhi
4. Chennai
5. Bangalore
6. Hyderabad
7. Ahmedabad
8. Pune
9. Jaipur
10. Lucknow
11. Kanpur
12. Nagpur
13. Indore
14. Thane
15. Bhopal
16. Visakhapatnam
17. Pimpri & Chinchwad
18. Patna
19. Vadodara
20. Ghaziabad
21. Ludhiana
22. Agra
23. Nashik
24. Faridabad
25. Meerut
26. Rajkot
27. Kalyan & Dombivali
28. Vasai Virar
29. Varanasi
30. Srinagar
31. Aurangabad
32. Dhanbad
33. Amritsar
34. Navi Mumbai
35. Allahabad
36. Ranchi
37. Haora
38. Coimbatore
39. Jabalpur
40. Gwalior
41. Vijayawada
42. Jodhpur
43. Madurai
44. Raipur
45. Kota
46. Guwahati
47. Chandigarh
48. Solapur
49. Hubli and Dharwad
50. Bareilly
51. Moradabad
52. Mysore
53. Gurgaon
54. Aligarh
55. Jalandhar
56. Tiruchirappalli
57. Bhubaneswar
58. Salem
59. Mira and Bhayander

60. Thiruvananthapuram
61. Bhiwandi
62. Saharanpur
63. Gorakhpur
64. Guntur
65. Bikaner
66. Amravati
67. Noida
68. Jamshedpur
69. Bhilai Nagar
70. Warangal
71. Cuttack
72. Firozabad
73. Kochi
74. Bhavnagar
75. Dehradun
76. Durgapur
77. Asansol
78. Nanded Waghala
79. Kolapur
80. Ajmer
81. Gulbarga
82. Jamnagar
83. Ujjain
84. Loni
85. Siliguri
86. Jhansi
87. Ulhasnagar
88. Nellore
89. Jammu
90. Sangli Miraj Kupwad
91. Belgaum
92. Mangalore
93. Ambattur
94. Tirunelveli
95. Malegoan
96. Gaya
97. Jalgaon
98. Udaipur
99. Maheshtala
100. Other _____

Please select your gender.

1. Male
2. Female

Please select your education level.

1. < 12th grade
2. 12th grade pass
3. Graduate
4. Post graduate
5. Other _____

Please select your occupation.

1. Student
2. Private service
3. Government service
4. Business
5. Professional
6. Other _____

Please select your per annum income bracket.

1. Less than INR 5,00,000
2. Between INR 5,00,000 to 10,00,000
3. Between INR 10,00,000 to 25,00,000
4. Between INR 25,00,000 to 50,00,000
5. More than 50,00,000
6. Not applicable

Do you use more than one mobile number?

1. Yes
2. No

Please select the number of mobile numbers you use currently.

1. 2
2. 3
3. More than 3

Do you use different service providers for different mobile phone numbers?

1. Yes
2. No

Do you use different service providers for your voice and data requirement on your mobile phone?

1. Yes
2. No
3. I don't use data on my phone

Select the mobile service provider that you use the most (primary mobile service provider)?

1. Reliance JIO Infocomm Limited
2. Bharti Airtel Limited
3. Vodafone Idea Ltd.
4. BSNL

Is your primary mobile service prepaid or postpaid?

1. Prepaid
2. Postpaid

For how long have you been using your current primary mobile service?

1. Less than 1 year
2. 1 - 2 years
3. 3 - 4 years
4. More than 4 years

Is your current primary mobile service provider chosen by you or the organization you work for?

1. It's my choice and I pay the bill
2. It’s my organization’s choice but I pay the bill
3. It’s my organization’s choice and it pays the bill
4. It's my choice and the bill is paid/reimbursed by the company

Is the mobile service provider you are using your personal choice as well?

1. Yes
2. No
3. I am indifferent

Which all mobile services have you used prior to your current mobile service provider (you can choose multiple options).

1. Reliance JIO Infocomm Ltd.
2. Bharti Airtel Limited
3. Vodafone Idea Ltd.
4. Reliance Communications Ltd. (CDMA)
5. Reliance Telecom Ltd. (GSM)

6. Tata Teleservices Ltd. (CDMA).
7. Tata Docomo Ltd. (GSM)
8. MTS (Sistema Shyam Teleservices Ltd.)
9. Aircel Ltd.
10. Vodafone India
11. Idea Cellular Ltd.
12. Telenor India
13. Other _____

The sum on adding 4 and 3 is

1. 5
2. 6
3. 7
4. 8

Newness in Mobile Services by your primary mobile service provider

	Variable Name	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
My mobile service has creative service packages (postpaid & prepaid, voice, SMS, & internet data combo plans, value-added services like subscription to Amazon Prime, Hotstar, Netflix etc., among other things).	SEIN1*	❑	❑	❑	❑	❑
My mobile service has flexible service package options (I can choose add-ons like data top-ups and customization on validity as per my requirement).	SEIN2*	❑	❑	❑	❑	❑
My mobile service is noticeably different in concept and design, compared to any other / preceding mobile services used by me (includes the brand, execution, overall excitement & feel).	SEIN3*	❑	❑	❑	❑	❑
My mobile service is a totally different service experience compared to any other / preceding mobile services used by me (includes the availability of network, voice quality, customer service among other similar experiences).	SEIN4*	❑	❑	❑	❑	❑
My mobile service is noticeably different in concept and design, compared to competing services (includes the brand, execution, overall excitement & feel).	SEIN5*	❑	❑	❑	❑	❑
My mobile service has online service options to recharge, usage, payment options, plan availability, process on its own app and other recharge apps.	SEIN6*	❑	❑	❑	❑	❑
My mobile service has automated service options as well for call forwarding, voice mail, conferencing etc.	SEIN7*	❑	❑	❑	❑	❑
My mobile service provider uses modern interaction media (creative website, social media, mobile app).	SEIN8*	❑	❑	❑	❑	❑
My mobile service provider has mobile shops at special occasions or events.	SEIN9	❑	❑	❑	❑	❑
My mobile service provider is always the first on the market with the latest technology.	SEIN10	❑	❑	❑	❑	❑
My mobile service always comes up with latest technology applications and functionality.	SEIN11*	❑	❑	❑	❑	❑

My mobile service provider shows its efforts for service quality improvement	SEIN12	❑	❑	❑	❑	❑

Value Creation by your primary mobile service provider

	Variable Name	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
My mobile service is worth the price I pay.	CVCR1	❑	❑	❑	❑	❑
My mobile service is worth the technical quality it offers.	CVCR2	❑	❑	❑	❑	❑
My mobile service is worth the customer service it offers.	CVCR3	❑	❑	❑	❑	❑
My mobile service offers a fairly consistent quality of service in every interaction with me.	CVCR4	❑	❑	❑	❑	❑
Using my mobile service is not a financial burden or stress.	CVCR5	❑	❑	❑	❑	❑
My mobile service usage makes me feel good (e.g. my expectations of availability and quality of service are usually met).	CVCR6*	❑	❑	❑	❑	❑
I find my mobile network service engaging (e.g. it keeps offering new schemes/offers/tie-ups I might be interested in).	CVCR7	❑	❑	❑	❑	❑
Using my mobile service gives me pleasure (e.g. I keep getting new options to choose from as per my requirements).	CVCR8*	❑	❑	❑	❑	❑
Using my mobile service makes me feel relaxed (e.g. I know I will be informed and updated about changes if any on the tariff and quality of the services).	CVCR9*	❑	❑	❑	❑	❑
Using my mobile service is an enjoyment (e.g. there is no gap between my expectation and delivery of the services by my service provider).	CVCR10*	❑	❑	❑	❑	❑
My mobile service usage makes a good impression in my social group (e.g. I am in available and in touch as required).	CVCR11*	❑	❑	❑	❑	❑
My mobile service usage gives me a sense of belonging (e.g. I have always felt that the service provider works for my benefit).	CVCR12*	❑	❑	❑	❑	❑
My mobile service usage helps me to feel accepted by others (e.g. I am able to stay in touch with others through various means/tools/apps available).	CVCR13*	❑	❑	❑	❑	❑
Using my mobile service gives me social approval and recognition (e.g. I am never let down by my service provider which helps me to stay in the same league as my social group).	CVCR14*	❑	❑	❑	❑	❑
My mobile service usage improves the way I am perceived by other people (e.g. my image in front of others has improved also due to the mobile services used by me).	CVCR15*	❑	❑	❑	❑	❑

Service Delivery Innovation shown by your primary mobile service provider

	Variable Name	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

My mobile service provider offers new service channels to order new services (Service channels aid companies in carrying out business transactions by reaching new & existing customers and offer their services).	SDIN1*	❑	❑	❑	❑	❑
My mobile service provider offers new service channels to address customer complaints.	SDIN2	❑	❑	❑	❑	❑
My mobile service provider offers innovative approaches to deliver new services.	SDIN3	❑	❑	❑	❑	❑
My mobile service provider offers new service channels to provide after-sales service.	SDIN4	❑	❑	❑	❑	❑
My mobile service provides the standard of new service channels with existing service channels.	SDIN5	❑	❑	❑	❑	❑
My mobile service provider offers existing customer service and consultation via new service channels.	SDIN6	❑	❑	❑	❑	❑
My mobile service provider offers new service channels to deliver existing services.	SDIN7	❑	❑	❑	❑	❑
My mobile service provider offers new service platforms (offline, online, app-based) to easily introduce new services for customers.	SDIN8*	❑	❑	❑	❑	❑
My mobile service provider offers new service platforms (offline, online, app based) to easily develop and implement new services.	SDIN9*	❑	❑	❑	❑	❑
My mobile service provider offers new service platforms (offline, online, app based) to enhance service delivery capability of the firm.	SDIN10*	❑	❑	❑	❑	❑

The product on multiplying 2 and 4 is

1. 7
2. 8
3. 9
4. 10

Satisfaction towards your primary mobile service provider

	Variable Name	Very Poor	Poor	Average	Good	Excellent
What is your overall satisfaction level regarding the mobile call service (voice)?	CUSA1	❑	❑	❑	❑	❑
What is your overall satisfaction level regarding the mobile internet service (data)?	CUSA2*	❑	❑	❑	❑	❑
What is your overall satisfaction level regarding the additional mobile services (SMS, voice mail, content, internet, roaming service availability locally and while traveling)?	CUSA3*	❑	❑	❑	❑	❑
What is your overall satisfaction level regarding the total mobile service offering?	CUSA4	❑	❑	❑	❑	❑
What is your overall satisfaction level regarding the customer service?	CUSA5	❑	❑	❑	❑	❑

Loyalty towards your primary mobile service provider

	Variable Name	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

I will go on using this mobile service.	CULO1	❑	❑	❑	❑	❑
If I bought a new mobile service in future, I would prefer this mobile service operator.	CULO2	❑	❑	❑	❑	❑
I recommend this mobile service operator to people.	CULO3	❑	❑	❑	❑	❑
I encourage friends & relatives who plan to buy this mobile service.	CULO4	❑	❑	❑	❑	❑
Even if the other mobile operators' billing was cheaper, I would go on using this mobile service provider.	CULO5	❑	❑	❑	❑	❑
My mobile service provider has more benefits than others in its class.	CULO6	❑	❑	❑	❑	❑
I have grown to like my mobile service provider more than I like other brands/service providers.	CULO7	❑	❑	❑	❑	❑
I intend to continue buying my mobile service provider's services in the future.	CULO8	❑	❑	❑	❑	❑
When I have a need for a service of this type (voice or data), I buy only services from my mobile service provider.	CULO9*	❑	❑	❑	❑	❑
My mobile service provider is the only brand/company for me; I love it.	CULO10	❑	❑	❑	❑	❑