

**STUDY OF SELECT ISSUES OF TRANSFORMATIONAL
OUTSOURCING FOR THE INDIAN
TELECOMMUNICATION ECOSYSTEM**

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OUTSOURCING FOR THE INDIAN
TELECOMMUNICATION ECOSYSTEM**

by

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Dedicated to My Daughters...

Manya and Mahi

CERTIFICATE

The Thesis entitled '**Study of Select Issues of Transformational outsourcing for the Indian Telecommunication Ecosystem**', being submitted by Ms. Monisha Oberoi to the Indian Institute of Technology Delhi, for the award of the degree of Doctor of Philosophy (Ph.D.) is a record bona fide research work carried out by her. She has worked under my guidance and supervision, and has fulfilled the requirements for the submission of this thesis, which has attained the standard required for a Ph.D. degree from the Indian Institute of Technology Delhi. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

India is currently the second-largest telecommunication market (1072.4 million subscribers) and has the third highest number of internet users (367.48 million subscriptions) in the world. This has resulted in several new business opportunities within and outside the Indian telecommunication ecosystem. The Indian telecom service providers are on one hand, looking for additional revenue streams by venturing into new markets and on the other hand trying to manage their operational cost, speed of growth and the ability to meet market challenges. Multiple Indian telecom players like Bharti Airtel (Airtel), Vodafone and IDEA have been leveraging IT outsourcing as a transformational strategy, for many years. These telecom service providers moved from traditional outsourcing relationships to business enablement and business value realization.

This study tries to investigate the underlying gaps between the outsourcer's and the outsourcee's expectations of transformational IT outsourcing partnership, in the Indian telecommunication context. This study also attempts to address some of the issues in the adoption of transformational IT outsourcing, from two different perspectives, namely, outsourcers' and outsourcees' perspective.

The first part of the study deals with modelling the stakeholder perspectives, capturing their perceptions across three-time slices: (a) the Past: year 2004 - 2005, (b) the Present: year 2015 - 2016, and (c) the Future: year 2020-2021. Based on the output of the statistical analysis (t-test, paired t-test, one way ANOVA, Pearson's Correlation and Stepwise Regression), interesting observations are made. The most interesting observation from the industry perspective is that, as the industry matures, the role of 'government policies and legislative framework' declines with time. On

the other hand, while ‘technology enhancements’ are becoming the most important driving factor for the industry. These observations are also validated through second and third part of the studies: Total Interpretive Structural Models (TISM) and case studies.

In the second part of the study, the industry subject matter expert’s perspective is captured and critical success factors that lead to growth of the Indian telecommunication industry are studied. A longitudinal study is conducted for the three-time slices (the Past, the Present and the Future). Hierarchical structural models are developed with the help of Total Interpretive Structural Modelling (TISM). These critical success factors are then categorized into four clusters with the help of Matrice d’Impacts Crosises-Multiplication Appliquee (MICMAC) analysis. It is interesting to note the perceived change in the importance and interlinkages of the critical success factors, as time lapses.

The third part of the research is focused on two case studies. In the first case study, the Bharti Airtel (Airtel) and IBM transformational IT outsourcing partnership is studied, both in their initial 10 year contract period (2004-2014) and then post re-contracting, the 5 year extension (2014-2019). This study captures some elements that constitute a successful IT outsourcing partnership. A Strength, Weakness, Opportunity, Threat (SWOT) analysis has been done for their outsourcing partnership and Situation – Actor – Process --- Learning – Action – Performance (SAP-LAP) methodology is used to identify the learnings from this partnership. The second case study is conducted for Reliance Jio (Jio). Jio, launched in September 2016, adopted a different and disruptive strategy for market acquisition and growth. It maintained its IT in-house, leveraged latest technology (VoLTE) along with aggressive pricing to

grow exponentially. Dynamic SAP-LAP is conducted to derive the learnings from Jio's success. The study also validates the observation of survey findings and TISM modelling that technology enhancements and evolution are driving the Indian telecom industry and is expected to become even more important in the next 3-5 years.

The thesis concludes with the summary and findings derived from this research which could be helpful for the Indian telecom service providers, IT players, policy makers, practitioners and academicians. This thesis has come up with some important contributions in the area of transformational IT outsourcing and the Indian telecom industry, exploring longitudinal change in perceptions and expectations of the key stakeholders. In addition, the changes identified in the hierarchical models could be useful for the telecom service providers, IT organizations and policy makers to make/alter their strategies keeping in view the dynamic business landscape. The contribution to understanding the adoption of transformational IT outsourcing, changes in importance of the critical success factors (over 15 years) and the impact of this strategy at an organizational level helps the outsourcers and the outsourcees to plan and forge more successful partnerships. The future statements would aid the policy makers, telecom service providers and IT companies in understanding the changing business dynamics and focus on what is relevant and effective in the future. The case studies further validate the observations made in the prior sections and help stakeholders learn from real experiences.

सार

भारत दुनिया का दूसरा सबसे बड़ा दूरसंचार बाजार है, जहां 107.24 करोड़ ग्राहक हैं। भारत 36.75 करोड़ इंटरनेट उपभोक्ताओं के साथ दुनिया के तीसरे नम्बर पर है। इसके परिणामस्वरूप भारतीय दूरसंचार परिस्थिति के तंत्र के भीतर और बाहर कई नए व्यापारिक अवसर पैदा हुए हैं। भारतीय दूरसंचार सेवा प्रदाता एक तरफ अपना संचालन लागत, विकास की गति और बाजार की चुनौतियों से मुकाबला करने की क्षमता का प्रबंधन करने की कोशिश कर रहे हैं। भारती एयरटेल (एयरटेल), वोडाफोन और आईडिया जैसे कई भारतीय दूरसंचार कंपनियों ने कई वर्षों से आईटी आउटसोर्सिंग को एक परिवर्तनकारी रणनीति के तौर पर इस्तेमाल किया है। ये दूरसंचार सेवा प्रदाता परंपरागत आउटसोर्सिंग रिश्तों से व्यवसाय सक्षमता और व्यवसायिक मूल्य प्राप्ति की ओर बढ़ गये हैं।

यह अध्ययन भारतीय दूरसंचार के संदर्भ में, आउटसोर्सर और आउटसोर्सिज़ की परिवर्तनकारी आईटी आउटसोर्सिंग साझेदारी की अपेक्षाओं के बीच अंतर्निहित अंतराल की जांच करने का एक प्रयास करता है। यह अध्ययन, दो अलग-अलग दृष्टिकोणों से, अर्थात् आउटसोर्सस और आउटसोर्सिज़ के परिप्रेक्ष्य से, परिवर्तनकारी आउटसोर्सिंग को अपनाने में कुछ मुद्दों को सुलझाने का प्रयास करता है।

अध्ययन के पहले भाग में हितधारक के परिप्रेक्ष्य को मॉडलिंग करने के साथ-साथ तीन समय - खंडों में उनके विचारों को समझा गया है: (ए) अतीत: वर्ष 2004-2005, (बी) वर्तमान: वर्ष 2015-2016, और (सी) भविष्य: वर्ष 2020-2021 सांख्यिकीय विश्लेषण (टी-टेस्ट, पेयर टी-टेस्ट, वनवे एनोवा, पियर्सन कोरिलेशन और स्टेपवाइज़ रिग्रेशन) के रिजल्ट के आधार पर, दिलचस्प अवलोकन किया गया है। उद्योग के परिप्रेक्ष्य से सबसे दिलचस्प अवलोकन यह है कि, जैसे जैसे उद्योग परिपक्व होता है, सरकारी नीतियों और ढांचे की भूमिका समय के साथ घटती जाती है। दूसरी ओर प्रौद्योगिकी

संबद्धन उद्योग के लिए सबसे महत्वपूर्ण ड्राइविंग कारक बन रहे हैं। इन टिप्पणियों की पुष्टी अध्ययन के दूसरे और तीसरे भाग में भी की गई है: टोटल इंटरप्रेटिव स्ट्रक्चरल मॉडल (टीआईएसएम) और केस स्टडी द्वारा ।

अध्ययन के दूसरे भाग में, उद्योग विषयक विशेषज्ञ के तजरिए को समझा गया है और भारतीय दूरसंचार उद्योग के विकास के लिए महत्वपूर्ण सफलता कारक का अध्ययन किया गया है। तीन समय खंडों (अतीत, वर्तमान और भविष्य) के लिए एक अनुदैर्घ्य अध्ययन किया गया है। पदानुक्रमित संरचनात्मक मॉडल टोटल इंटरप्रेटिव स्ट्रक्चरल मॉडलिंग (टीआईएसएम) की मदद से विकसित किए गए हैं। इन महत्वपूर्ण सफलता कारकों को तो मैट्रिस डी इम्पैक्ट्स कॉसिज-मल्टीप्लिकेशन एप्लीकी (एमआईसीएमएसी) विश्लेषण की सहायता से चार झुण्डों में वर्गीकृत किया गया है। महत्वपूर्ण सफलता कारकों के समय के साथ आपसी रिश्तों में परिवर्तन को ध्यान में रखना दिलचस्प है।

अनुसंधान का तीसरा हिस्सा दो केस स्टडीज पर केंद्रित है। पहले मामले के अध्ययन में, भारती एयरटेल (एयरटेल) और आईबीएम ट्रांसफॉर्मेशनल आईटी आउटसोर्सिंग साझेदारी का अध्ययन उनके शुरुआती 10 साल के अनुबंध अवधि (2004-2014) में किया गया है और फिर पुनः अनुबंध 5 साल के बाद (2014-2019) का अध्ययन किया गया है। यह अध्ययन कुछ ऐसे तत्वों को समझता है जो एक सफल आईटी आउटसोर्सिंग साझेदारी और स्थिति - अभिनेता - प्रक्रिया - सीखना - एक्शन - परफॉर्मेंस (एसएपी-एलपी) पद्धति के लिए एक ताकत, कमजोरी, अवसर, धमकी (एसडब्लूओटी) विश्लेषण किया गया है जो इस साझेदारी से सीखने की पहचान करने के लिए उपयोग किया गया है। रिलायंस जियो (जियो) के लिए दूसरे मामले का अध्ययन किया गया है। जियो ने सितंबर 2016 में लॉन्च किया और बाजार अधिग्रहण और विकास के लिए एक अलग और विघटनकारी रणनीति अपनाई। इसने अपने आईटी घरों में, नवीनतम प्रौद्योगिकी (वीओएलटीई) के साथ-साथ आक्रामक मूल्य निर्धारण बनाए

स्त्रा। डायनामिक एसएपी-एलएपी जियो की सफलता से सीखने के लिए उपयोग किया गया है। अध्ययन ने सर्वेक्षण निष्कर्षों और टीआईएसएम मॉडलिंग के अवलोकन की पुष्टि की है कि प्रौद्योगिकी संवर्द्धन और विकास भारतीय दूरसंचार उद्योग को चला रहे हैं और अगले 3-5 वर्षों में इनके और भी अधिक महत्वपूर्ण होने की उम्मीद है।

शोध-प्रबन्ध, इस शोध से प्राप्त सांगंश और निष्कर्षों के साथ समाप्त होता है कि भारतीय दूरसंचार सेवा प्रदाताओं, आईटी खिलाड़ियों, नीति निर्माताओं और शिक्षाविदों के लिए सहायक हो सकता है। इस शोध-प्रबन्ध ने आईटी आउटसोर्सिंग और भारतीय दूरसंचार उद्योग के क्षेत्र में कुछ महत्वपूर्ण योगदान किए हैं, जो समय के साथ और प्रमुख हितधारकों की उम्मीदों में अनुदैर्घ्य परिवर्तन का अनवेषण करते हैं। इसके अतिरिक्त, श्रेणीबद्ध मॉडल में पहचाने जाने वाले बदलाव दूरसंचार सेवा प्रदाताओं, आईटी संगठनों और नीति निर्माताओं के लिए गतिशील व्यापार परिदृश्य को ध्यान में रखते हुए अपनी रणनीति बनाने/बदलने के लिए उपयोगी हो सकते हैं। परिवर्तनकारी आईटी आउटसोर्सिंग को अपनाने में योगदान, महत्वपूर्ण सफलता कारकों के महत्व में परिवर्तन और एक संगठनात्मक स्तर पर इस रणनीति का प्रभाव आउटसोर्स और आउटसोर्सिज को और अधिक सफल साझेदारी की योजना बनाने में मदद करता है। भविष्य के बारे में वक्तव्य नीति निर्माताओं, दूरसंचार सेवा प्रदाताओं और आईटी कंपनियों के बदलते कारोबारी गतिशीलता को समझने और भविष्य में प्रासंगिक और प्रभावी होने पर ध्यान केंद्रित करने में सहायता करेंगे। दो केस स्टडीज़ पूर्व वर्गों में किए गए टिप्पणियों की पुष्टि करती है और वास्तविक अनुभवों से सीखने में सहायता करती हैं।

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ABBREVIATIONS

2G	:	2 nd Generation
3G	:	3 rd Generation
4G	:	4 th Generation
ADC	:	Access Deficit Charge
ATM	:	Automated Teller Machines
BSNL	:	Bharat Sanchar Nigam Limited
BWA	:	Broadband Wireless Access
CCI	:	Competition Commission of India (CCI)
CDMA	:	Code Division Multiple Access
COAI	:	Cellular Operators Association of India
CPP	:	Calling Party Pays
CS	:	Circuit Switched
DoT	:	Department of Telecom
DRAM	:	Dynamic Random Access Memory
FDD	:	Frequency Division Duplex
FDI	:	Foreign Direct Investment
FSM	:	Flexible Systems Methodology
GSM	:	Global System of Mobile Communication
ILD	:	International Long Distance
IT	:	Information Technology
IUCR	:	Interconnection Usage Charge Regulations
MEI	:	Model Exchange Isomorphism
MICMAC	:	Matrice d'Impacts Crosises-Multiplication Appliquee
MoU	:	Minutes of Usage

NLD	:	The National Long Distance
PCO	:	Public Call Office
POI	:	Points of Interconnect
PS	:	Packet Switched
RComm	:	Reliance Communications
ROI	:	Return on Investment
SAP-LAP	:	Situation – Actor – Process, Learning – Action – Performance
TDD	:	Time Division Duplex
TDSAT	:	Telecom Disputes Settlement and Appellate Tribunal
TISM	:	Total Interpretive Structural Modelling
TITO	:	Transformational IT Outsourcing
TRAI	:	Telecom Regulatory Authority of India
UAL	:	The Unified Access Licensing
UASL	:	Universal Access Service License
USOF	:	The Universal Service Obligation Fund
VoLTE	:	Voice over Long Term Evolution