

**DEVELOPING COMMUNICATION EFFECTIVENESS
FRAMEWORK IN THE DIGITAL CONTEXT:
A SYSTEMS APPROACH**

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Context: A Systems Approach**

by

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CERTIFICATE

This is to certify that the thesis titled “**Developing Communication Effectiveness Framework in The Digital Context: A Systems Approach**” which is being submitted by **Ms. Charru Hasti** to the Bharti School of Telecommunication Technology and Management, Indian Institute of Technology Delhi, for award of the degree of **Doctor of Philosophy (Ph. D.)** is a bonafide record of research work carried out by her. She has worked under my supervision in conformity with the rules and regulations of the Indian Institute of Technology Delhi. The research reports and results presented in the thesis have not been submitted in part or full for the award of any degree or diploma in any other university or institute.

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“विद्यां ददाति विनयं, विनयाद् याति पात्रता”

(“Knowledge imparts humility and humility imparts worthiness”)

These wise words by Acharya Chanakya remind us that the deeper purpose of education is not just the pursuit of knowledge but a spiritual journey and the development of gratitude. As I reflect on my PhD journey, close to its completion, I take this opportunity to express my sincere gratitude to all those who stood by me as pillars of strength and supported me throughout this academic pursuit.

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(Charru Hasti)

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ABSTRACT

Communication has evolved as a concept over the century, both in theory and practice. It is a critical element in the agendas of all organizations, both for-profit and not-for-profit, as well as governments. Communication, for instance, plays a vital role in social change interventions and public health programs dedicated to achieving specific goals such as promoting or replacing specific behaviors, enhancing individual outcomes, and extending these outcomes to the community. Evaluation and monitoring of communication efforts are an important determinant of the effectiveness of such programs, as they enable the identification of gaps in intended and actual outcomes and thus assist in course correction. Several indicators may be selected to assess communication's effectiveness, such as exposure, reach, attention, attitude change, message comprehension, engagement, intention, behavior change, and other outcomes. An extensive literature review has been performed to study these indicators as communication outcomes and the underpinning theories. A large body of knowledge is available on communication outcomes reflecting the effectiveness of communication in terms of the elicitation of psychological and behavioral responses. Several theories have been developed, tested, and used over the last 150 years that describe how communication drives these responses and behavior change. These theoretical frameworks articulate the progression and transformation of information exposure into individual responses.

In comparison with the substantive literature available on the flows and transformations of information along the continuum from exposure to behavioral change, very few studies comprehensively provide evidence of the complexities and operational challenges in evaluating

responses to communication campaigns and interventions. Even fewer studies emphasize the reciprocal effects and recursive patterns of communication responses, which add theoretical complexity. This research uncovered and addressed these research gaps. The aim of the study was therefore to first identify the elements of communication effectiveness and the complexities in evaluating information exposure in public communication interventions and campaigns, and then to develop a framework of information response flows and feedback.

This research was conducted in six phases using a multi-method approach. The first phase involved an extensive thematic literature review to identify the taxonomy and definitions of responses to information exposure for driving some form of engagement, direction of relationships among the responses in established theories and studies, and theoretical perspectives on complex problem-solving and modeling the communication process as a system. This phase, which used a theoretically pluralist approach, identified the research gaps, provided a set of factors and responses of communication, and ended with an integrated and comprehensive framework that presented the relationships among these identified factors and responses, based on existing theories and models.

In the second phase that corresponded to the first objective of the research, a grounded theory-based exploration was conducted to uncover the responses used for evaluations by the public communication practitioners, theories and models used in practice for communication assessment, the challenges in communication and its evaluation, and expert recommendations to improve responses and thus communication effectiveness. The central phenomenon that emerged as the outcome of this phase was the perceived complexity inherent in evaluating public communication responses.

The elements contributing to this complexity included factors influencing responses, dynamic conditions, individual behavior unpredictability, gaps between measured outcomes and ground reality, variability in goals and assessments, and uncertainty and variability in defining the interrelationships of the responses.

The third phase focused on developing a hierarchical model of communication responses, utilizing the unanimous consensus of subject matter experts and employing Total Interpretive Structure Modeling to determine the inter-linkages and hierarchy among the responses. The responses used to develop the model were identified through the synthesis of the findings of the literature review and the exploratory study conducted in the previous research phases. In line with the conventional precedence among existing theories, communication exposure and message awareness were identified as the primary drivers of other responses, while action and the sustainability of action were found to be driven by all other responses.

The theoretical complexity of describing the response relationships was addressed through system dynamics modeling. Thus, in the fourth phase, a feedback system of causal loops was developed to model the behavior of the communication responses, based on expert consensus with a 70% agreement threshold. The resultant model provides deeper insights into the pathways of intended consequences, delays, and reinforcing effects of each response under study. For instance, awareness was identified as being amplified among individuals through reiterated desired behavioral practices, which are reinstated through high cognitive involvement developed over time through continuous communication and exposure. The third and fourth phases completed objective two of the research. The communication effectiveness model represents a departure from unidirectional cause-and-effect thinking, enabling us to visualize the flows of consequences, delays, and reinforcing effects of communication interventions. The model also serves to

foreground the real-world complexity and dynamic nature of public communication and public health communication as a specific context used as a test case. Through the implementation of this model, the communication practitioners will be able to anticipate how their communication efforts would unfold, what could be the leverage points for greater impact, and thus will be able to adjust strategies dynamically. The fifth phase corresponded to the third research objective. It involved validation of the resultant flow and feedback model using exposure and sentiment data of digital communication for disease prevention and mitigation of COVID-19. To verify the model's behavior against real-world data, a stock and flow diagram corresponding to the causal loop model was developed. The process involved determining flows and rates, defining assumptions, formulating the equations and setting up the model for simulation runs. Public data repositories and a social media listening tool were used to fetch real data, enabling comparison between simulated patterns and real indicators. This exercise validated the model, confirming its ability to reflect real-world communication intervention response dynamics.

This research has made some significant contributions. It theoretically explains the complexity of responses in public communication and advances knowledge in evaluating the effectiveness of communication. The unconventional outcomes also enrich the existing knowledge on the interplay between responses that reinforce information exposure driven by communication and the feedback loop involving positive attitudes and intentions. Practitioners in the public communication domain will also benefit from the findings of this research. The results reveal the intervening conditions essential for an informed communication strategy for stakeholders, and provide an advanced framework to test, simulate, and evaluate their efforts. The developed framework will enable better decision-making and alignment of activities with the program's goals.

सार

संचार एक अवधारणा के रूप में सिद्धांत और व्यवहार दोनों में एक सदी से अधिक समय से विकसित हुआ है। संचार सभी संगठनों, चाहे वे लाभकारी हों या गैर-लाभकारी, और सरकारों के एजेंडे का एक महत्वपूर्ण तत्व है। उदाहरण के लिए, संचार सामाजिक परिवर्तन हस्तक्षेपों और सार्वजनिक स्वास्थ्य कार्यक्रमों में महत्वपूर्ण भूमिका निभाता है, जैसे कि विशिष्ट व्यवहारों को बढ़ावा देना या बदलना, व्यक्तिगत परिणामों को बेहतर बनाना और इन परिणामों को समुदाय तक पहुँचाना। संचार प्रयासों का मूल्यांकन और निगरानी ऐसे कार्यक्रमों की प्रभावशीलता का एक महत्वपूर्ण निर्धारक है क्योंकि यह इच्छित और वास्तविक परिणामों में अंतर की पहचान करने में सक्षम बनाता है और इस प्रकार सुधार में सहायता करता है। संचार की प्रभावशीलता का आकलन करने के लिए कई मापदंडों का चयन किया जा सकता है जैसे कि संपर्क, पहुँच, ध्यान, दृष्टिकोण परिवर्तन, संदेश की समझ, जुड़ाव, उद्देश्य, व्यवहार परिवर्तन और अन्य परिणाम। इन परिणामों और आधारभूत सिद्धांतों का अध्ययन करने के लिए एक व्यापक साहित्य समीक्षा की गई है। मनोवैज्ञानिक और व्यवहारिक प्रतिक्रियाओं के संदर्भ में संचार के परिणामों और प्रभावशीलता पर व्यापक ज्ञान उपलब्ध है। पिछले 150 वर्षों में कई सिद्धांत विकसित, परीक्षित और प्रयुक्त किए गए हैं जो बताते हैं कि संचार इन प्रतिक्रियाओं और व्यवहार परिवर्तन को कैसे प्रेरित करता है। ये सैद्धांतिक ढाँचे सूचना के संपर्क की प्रगति और व्यक्तिगत प्रतिक्रियाओं में परिवर्तन को स्पष्ट करते हैं।

सूचना के संपर्क से व्यवहार में परिवर्तन की दिशा में प्रवाह पर उपलब्ध व्यापक साहित्य की तुलना में, ऐसे अध्ययन बहुत सीमित हैं जो जन संचार अभियानों और हस्तक्षेपों की प्रतिक्रियाओं के मूल्यांकन में आने वाली जटिलताओं और चुनौतियों का व्यापक प्रमाण प्रदान करते हैं। संचार प्रतिक्रियाओं के पारस्परिक प्रभावों और पुनरावर्ती पैटर्न पर जोर देने वाले अध्ययन और भी कम हैं, जो जटिलता को बढ़ाते हैं। इस शोध ने इन उपरोक्त शोध कमियों को उजागर और संबोधित किया। इसलिए इस अध्ययन का उद्देश्य सबसे पहले संचार प्रभावशीलता के तत्वों और सार्वजनिक संचार हस्तक्षेपों और अभियानों में सूचना के संपर्क के मूल्यांकन की जटिलताओं की पहचान करना और फिर, सूचना प्रतिक्रिया प्रवाह और प्रतिक्रिया का एक ढाँचा विकसित करना था।

यह शोध बहु-विधि दृष्टिकोण का उपयोग करते हुए छह चरणों में किया गया था। पहले चरण में निम्नलिखित की पहचान करने के लिए एक व्यापक विषयगत साहित्य समीक्षा शामिल थी: - किसी प्रकार के जुड़ाव को बढ़ावा देने के लिए सूचना के संपर्क में आने पर प्रतिक्रियाओं का विवरण और वर्गीकरण, स्थापित सिद्धांतों और अध्ययनों में प्रतिक्रियाओं के बीच संबंधों की दिशा, और जटिल समस्या-समाधान और संचार प्रक्रिया पर एक प्रणाली के रूप में सैद्धांतिक दृष्टिकोण। इस चरण में, जिसमें सैद्धांतिक रूप से बहुलवादी दृष्टिकोण का उपयोग किया गया, शोध की कमियों की पहचान की गई, संचार के कारकों और प्रतिक्रियाओं का एक समूह प्रदान किया गया, साथ ही एक एकीकृत और व्यापक ढाँचा भी प्रदान किया गया जो मौजूदा सिद्धांतों और मॉडलों के आधार पर इन कारकों और प्रतिक्रियाओं के बीच संबंधों को प्रस्तुत करता है।

दूसरे चरण में, जो शोध के पहले उद्देश्य के अनुरूप था, जन संचार पेशेवरों और विशेषज्ञों द्वारा मूल्यांकन के लिए प्रयुक्त प्रतिक्रियाओं, संचार मूल्यांकन के लिए व्यवहार में प्रयुक्त सिद्धांतों और मॉडलों, संचार और उसके मूल्यांकन में चुनौतियों, और प्रतिक्रियाओं और इस प्रकार संचार प्रभावशीलता में सुधार के लिए विशेषज्ञ सुझावों को उजागर करने के लिए एक आधारभूत सिद्धांत-आधारित अन्वेषण किया गया। इस चरण के परिणामस्वरूप उभरी केंद्रीय घटना जन संचार प्रतिक्रियाओं के मूल्यांकन में अंतर्निहित जटिलता थी।

इस जटिलता में योगदान देने वाले तत्वों में, प्रतिक्रियाओं को प्रभावित करने वाले कारक, गतिशील स्थितियाँ और व्यवहार की अप्रत्याशितता, मापे गए परिणामों और जमीनी हकीकत के बीच अंतर, लक्ष्यों और मूल्यांकन विधियों की परिवर्तनशीलता, और प्रतिक्रियाओं के अंतर्संबंधों को परिभाषित करने में अनिश्चितता और परिवर्तनशीलता सबसे प्रमुख थे।

तीसरे चरण में संचार प्रतिक्रियाओं का एक पदानुक्रमित मॉडल विकसित करने पर ध्यान केंद्रित किया गया, जिसमें विषय विशेषज्ञों की सर्वसम्मति सहमति का उपयोग किया गया और प्रतिक्रियाओं के बीच अंतर्संबंधों और पदानुक्रम को निर्धारित करने के लिए कुल व्याख्यात्मक संरचना मॉडलिंग का उपयोग किया गया। मॉडल को विकसित करने के लिए उपयोग की जाने वाली प्रतिक्रियाओं की पहचान साहित्य निष्कर्षों और खोजपूर्ण अध्ययन के संश्लेषण के माध्यम से की गई थी। मौजूदा सिद्धांतों के बीच पारंपरिक पूर्वता के अनुरूप, संचार जोखिम और संदेश जागरूकता को अन्य प्रतिक्रियाओं के लिए प्रेरक प्रतिक्रियाओं के रूप में पहचाना गया। जबकि कार्रवाई और कार्रवाई की स्थिरता अन्य सभी प्रतिक्रियाओं द्वारा संचालित पाई गई।

प्रतिक्रिया संबंधों का वर्णन करने की सैद्धांतिक जटिलता को सिस्टम डायनेमिक्स मॉडलिंग के माध्यम से संबोधित किया गया। इस प्रकार, चौथे चरण में विशेषज्ञों की सहमति की सीमा को शिथिल करने पर, संचार प्रतिक्रियाओं के जटिल व्यवहार को मॉडल करने के लिए कारण-संबंधी लूपों की एक प्रतिक्रिया प्रणाली विकसित की गई। परिणामी मॉडल अध्ययनाधीन प्रत्येक प्रतिक्रिया के इच्छित परिणामों, विलंबों और प्रबल प्रभावों के मार्गों में गहन अंतर्दृष्टि प्रदान करता है। उदाहरण के लिए, बार-बार दोहराए गए वांछित व्यवहारिक अभ्यासों द्वारा जागरूकता को बढ़ाया जाता है, जो निरंतर संचार प्रवाह और संपर्क के माध्यम से समय के साथ विकसित व्यक्तियों की उच्च संज्ञानात्मक भागीदारी के माध्यम से पुनः स्थापित होते हैं। तीसरे और चौथे चरण ने शोध के दूसरे उद्देश्य को पूरा किया। संचार-संचालित सूचना संपर्क प्रतिक्रिया मॉडल एकदिशीय कारण-और-प्रभाव चिंतन से एक प्रस्थान है और यह हमें संचार हस्तक्षेपों के इच्छित परिणामों, विलंबों और प्रबल प्रभावों के मार्गों को देखने में मदद करता है।

यह मॉडल जन संचार प्रक्रियाओं की वास्तविक दुनिया की जटिलता को भी संबोधित करने का उद्देश्य पूरा करता है। इस मॉडल के कार्यान्वयन के माध्यम से, पेशेवर और विशेषज्ञ यह अनुमान लगा सकेंगे कि उनके संचार प्रयास कैसे सामने आएंगे, अधिक प्रभाव के लिए कौन से उत्तोलन बिंदु हो सकते हैं, और रणनीतियों को गतिशील रूप से समायोजित कर सकेंगे। पाँचवाँ चरण तीसरे शोध उद्देश्य से संबंधित था। इसमें कोविड-19 की रोकथाम और न्यूनीकरण के लिए जन स्वास्थ्य डिजिटल संचार डेटा का उपयोग करके परिणामी प्रवाह और प्रतिक्रिया मॉडल का सत्यापन शामिल था। वास्तविक दुनिया के डेटा के विरुद्ध मॉडल व्यवहार के सत्यापन को सक्षम करने के लिए, कारण लूप मॉडल के अनुरूप एक स्टॉक और प्रवाह आरेख विकसित किया गया था। इस प्रक्रिया में प्रवाह और दरें निर्धारित करना, धारणाएँ परिभाषित करना, समीकरण तैयार करना और सिमुलेशन रन के लिए मॉडल तैयार करना शामिल था। वास्तविक डेटा प्राप्त करने के लिए सार्वजनिक डेटा रिपॉजिटरी और एक सोशल मीडिया लिसनिंग टूल का उपयोग किया गया, जिससे सिम्युलेटेड पैटर्न और वास्तविक संकेतकों के बीच तुलना संभव हुई। इस अभ्यास ने मॉडल को मान्य किया और वास्तविक दुनिया के संचार हस्तक्षेप प्रतिक्रिया गतिशीलता को प्रतिबिंबित करने की इसकी क्षमता की पुष्टि की।

इस शोध ने कुछ महत्वपूर्ण योगदान दिए हैं। यह न केवल सैद्धांतिक रूप से सार्वजनिक संचार में प्रतिक्रियाओं की जटिलता की व्याख्या करता है, बल्कि सार्वजनिक संचार की प्रभावशीलता के

मूल्यांकन में ज्ञान को भी बढ़ाता है। अपरंपरागत परिणाम सूचना के प्रसार को सुदृढ़ करने वाली प्रतिक्रियाओं के अंतर्क्रिया और सकारात्मक दृष्टिकोण व नीयत के बीच पारस्परिक कारण-प्रभाव संबंधों पर मौजूदा ज्ञान को भी समृद्ध करते हैं। जन संचार क्षेत्र के विशेषज्ञों को भी इस शोध के निष्कर्षों से लाभ होगा। ये निष्कर्ष न केवल एक सूचित संचार रणनीति के लिए आवश्यक स्थितियों को उजागर करते हैं, बल्कि उनके प्रयासों के परीक्षण, अनुकरण और मूल्यांकन करने के लिए एक उन्नत ढाँचा भी प्रदान करते हैं। यह ढाँचा बेहतर निर्णय लेने और कार्यक्रम के लक्ष्यों के साथ गतिविधियों के संरेखण में सहायता करेगा।

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