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Visualizing Instructional Communication of Risk During Prolonged Crises: Developing Theory for Research and Practice

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Developing Theory for Research and Practice

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In Christ I live, and move, and have my being. I am grateful for God's amazing grace.

Abstract

Despite the many existing risk and crisis communication theories, none of them specifically integrate visuals or guide on how to use them to support the public during prolonged crises. There's a missing link conceptually connecting prolonged crises with instructional risk communication and visual framing. Addressing this glaring scholarship gap is, therefore, the main focus of this PhD project. I do this by making a key contribution to theory-building by proposing the VIM conceptual framework (Visual Simplicty, Infodemic Management, and Instructional Communication of Risk) to guide the design of visual strategies during prolonged crises and offer insights for why this matters.

The project applies the theoretical frameworks of prolonged crises, instructional risk communication, and visual framing and conceptually combines them to get insights for how to design visuals to meet the public's information needs for self-protection during prolonged crises. In a world that is crisis-prone and inherently visual, the urgency to rethink visual strategies for prolonged crisis contexts was overdue. How governments and organizations integrate visuals into public-facing instructional risk communication is not a question of *if*, but *how*.

The project uses mixed methods and is based on four publications designed to provide a coherent flow that leads to the conceptualization of VIM – review of literature to identify the specific scholarship gaps (I), synthesis of exisiting risk and crisis communication and visual framing literature to propose an initial version of the framework (VISTA) (II), empirically validating VISTA contructs to create VIM (III), and, finally, testing VIM's applicability in different prolonged crises and geographical context (IV).

The originality of VIM is that it offers a critical redirection of existing risk and crisis communication scholarship and provides guidance for applied theory. By proposing an

entirely new conceptual framework arguing for the integration of visuals during prolonged crises, the application of VIM has the potential to shape risk perception, enhance sensemaking, mitigate the impact of infodemics, and promote positive behavior which are crucial for the public's self-protection during prolonged crises.

Sammendrag

Til tross for de mange eksisterende teoriene om risiko- og krisekommunikasjon, integrerer ingen av dem spesifikt visuelle virkemidler eller veiledning i hvordan man bruker dem for å støtte publikum under langvarige kriser. Det mangler en konseptuell lenke som forbinder langvarige kriser med pedagogisk risikokommunikasjon og visuell innramming. Å adressere dette åpenbare akademiske gapet er derfor hovedfokuset for dette doktorgradsprosjektet. Jeg gjør dette ved å gi et sentralt bidrag til teoribygging ved å foreslå det konseptuelle rammeverket VIM (Visual Simplicity, Infodemic Management, and Instructional Communication of Risk) for å veilede utformingen av visuelle strategier under langvarige kriser og gi innsikt i hvorfor dette er viktig.

Prosjektet anvender de teoretiske rammeverkene for langvarige kriser, pedagogisk risikokommunikasjon og visuell innramming, og kombinerer dem konseptuelt for å få innsikt i utformingen av visuelle elementer for å møte publikums informasjonsbehov for selvbeskyttelse under langvarige kriser. I en verden som er kriseutsatt i et iboende svært visuelt medie- og informasjonsmiljø, var det på høy tid at visuelle strategier for langvarige krisesammenhenger måtte revurderes. Hvordan myndigheter og organisasjoner integrerer visuelle elementer i offentlig rettet risikokommunikasjon i pedagogisk sektor er ikke et spørsmål om *om*, men *hvordan*.

Prosjektet bruker blandede metoder og er basert på fire publikasjoner som er utformet for å gi en sammenhengende flyt som fører til konseptualiseringen av VIM – litteraturgjennomgang for å identifisere de spesifikke vitenskapelige hullene (I), syntese av eksisterende litteratur om risiko- og krisekommunikasjon og visuell innramming for å foreslå en første versjon av rammeverket (VISTA) (II), empirisk validering av VISTA-konstruksjoner for å lage VIM (III), og, til slutt, testing av VIMs anvendelighet for en annen langvarig krise i en annen geografisk kontekst (IV).

Originaliteten til VIM er at den tilbyr en kritisk omdirigering av eksisterende forskning på risiko- og krisekommunikasjon og gir veiledning for anvendt teori. Ved å foreslå et helt nytt konseptuelt rammeverk som argumenterer for integrering av visuelle elementer

under langvarige kriser, har anvendelsen av VIM potensial til å forme risikopersepsjon, forbedre meningsdannelse, redusere virkningen av infodemikk og fremme positiv atferd, noe som er avgjørende for publikums selvbeskyttelse under langvarige kriser.

List of Publications

Omondi, G. (2024). Visual framing during crisis: a 10-year systematic review. Corporate Communications: An International Journal. https://doi.org/10.1108/CCIJ-04-2024-0065

Diers-Lawson, A., Omondi, G., & Hillier, S. L. (2023). Shooting from the hip or taking careful aim? Developing the VISTA analytic framework comparing English and Scottish visual campaigns for self-protective behavior throughout the COVID-19 pandemic. Journal of Visual Political Communication, 9(1), 59-97. https://doi.org/10.1386/jvpc_00017_1

Omondi, G., & Diers-Lawson, A. (Expected 2026). The VIM Turn in Multimodal Strategy During Prolonged Crisis: Theory-building for risk and crisis communication. In A. Diers-Lawson & A. Björck (Eds.), Research Handbook on the Management of Risk and Crisis Communication. Edward Elgar Publishing Ltd

Omondi, G, & Nyambura, S. (2026 – In Press). Politics, Platforms, and Players: A cross platform visual analysis of Kenya's Gen-Z-led #RejectFinanceBill2024 protests. In Thatelo, T.M (ed) Visual Political Communication from an Afrocentric Perspective. Routledge.

Additional Publications Testing VIM's Applicability
Omondi, G., & Nilsen, A. (2025 – In Press). Fibs, Fiction, and Facts: The Visual Construction of Ocean Sustainability Within the Context of the Climate Crisis. In M. Topić & G. Zeman (Eds.), Food and Sustainability: Communication, PR, and the Culture of Responsibility (pp. 223–243). Emerald Publishing Limited. https://doi.org/10.1108/978-1-83708-038-020261012

Omondi, G., & Diers-Lawson, A. (2025 – In Press). Visual frames of resilience: Crisis history's influence in the visual representation of post-conflict Somalia. Journal of African Media Studies, 17(2). https://doi.org/10.1386/jams_00140_1

Abbreviations

EFA	Exploratory factor analysis
Gen-Z	People born between 1995 and 2010
IDEA	Internalization, Distribution, Explanation, Action
MM	Mixed Methods
OAP	Old-age pensioner
SMIs	Social Media Influencers
SMPPM	Social Media Political Participation Model
SPSS	Statistical Product and Service Solutions
RCCE-IM	Rick Communication, Community Engagement, and Infodemic Management
RQs	Research Questions
UK	United Kingdom
US	United States (of America)
VIM	Visual Simplicity, Infodemic Management, Instructional Communication of Risk
VISTA	Visual Complexity, Symbolism and Iconography, Text Accompanying Visual
WHO	World Health Organization

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1. Introduction

A critical observation of the world today points to increasingly more prolonged crises in a complex, unpredictable, and interconnected political, environmental, economic, and technological environment (Coombs & Holladay, 2012; Audra Diers-Lawson & Grace Omondi, 2024; World Economic Forum, 2023). Lawrence et al. (2024) describe the situation as a 'global polycrisis', to illustrate how people are negatively impacted by the complex intertwining of today's crises in multiple global systems. While globalization has created a society that is interconnected for benefits such as technological innovation and economic integration, it has also exacerbated systemic risks that have in the recent past resulted in prolonged crises with societal impact such as the COVID-19 pandemic, the 2008 global financial crisis, and the ongoing climate crisis (Beck, 2014; Wernli et al., 2023). Risks entail the projection of the probability of a known or unknown harm or hazard beyond what the public considers normal, creating panic and uncertainty, and spurring information-seeking behavior for self-protection (Seeger, 2020; Wang et al., 2021). Crises on the other hand can be conceptualized as unmitigated risks. They are unwanted and unpleasant calamities that have an element of surprise, threat, panic, increased information-seeking behavior, and uncertainty. Crises require prompt responses from organizations (Hubner & Hovick, 2020; Rosenthal et al., 2001; Seeger et al., 2002; Ulmer et al., 2022). Therefore, if risks are well managed, the argument is that there is potential to mitigate the impact or even totally avoid crises and save lives. With the understanding that it is risks that often evovle into crises, we can see a link between risks and crises and an unending loop, because the crisis communication process begins long before a crisis plays out. This means that the approach for information dissemination during prolonged crises can be considered as a concurrent ongoing process of risk and crisis communication (Diers-Lawson, 2025).

Risks and crises impact both the public and organizations, but in two distinct ways. For the public, they threaten the very life of people, but also impact on their well-being and health, livelihoods, reduce resilience to poverty, and add pressure for competition of natural resources. For example, there is evidence that the risks associated with the COVID-19 pandemic resulted in infections and death, income losses, household

discord, emphasized inequalities towards underprivilliged populations, and was a stressor for healthcare systems (Mathieu et al., 2020; Singh & Singh, 2020; Venkatesh, 2020). Separately, the climate crisis has increased episodes of drought, population displacement, increased conflict due to competition for scarce resources, and led to loss of livelihoods (ICPAC, 2022; IPCC, 2022). Additionally, communities living in regions experiencing protracted conflict such as Ukraine and Sudan experience mental health and phychological challenges (Africa, 2025; Chaaya et al., 2022; Sasidharan & Dhillon, 2022). This perspective on how the public is impacted by risks and crises requires a stakeholder-centric communication approach, which means that the information needs of community protection for the public through effective public engagement should be prioritized (Diers-Lawson, 2019; Reynolds & Quinn, 2008; Reynolds & Seeger, 2005). For organizations, on the other hand, risks and crises threaten their viability, trust, and reputation. Research highlights that during risk and crisis contexts, governments and corporations prioritize reputation repair over instructional communication to support the public's information needs, and therefore, the information focus is centered around managing organizational and institutional reputation and trust management (Coombs, 2007b; Kim et al., 2011). However, when considering the public's self protection during prolonged crises, the emphasis should be on risk communication to protect lives and livelihoods. Ndlela (2018) argues that this can be achieved through the organization maintaining an intrinsic connection with their stakeholders to understand their mindset.

Having set the stage to explore how the public is impacted during prolonged crisis situations, it it is equally important to understand this in the context of today's increasingly visual media and information environment. The term 'visual turn' articulated in the 90s by Mitchell & Mitchell (1995), arguing that visuals are pervasive and central to all levels of culture, still holds true. The concept is even more pronounced in today's world that is highly saturated by visuals owing to advancements in new media technology such as artifical intelligence (AI), virtual reality, augmented reality, and social media applications such as Instagram and TikTok increasingly designed with an image-first logic, prioritizing the visual over text. This means that the quantity of visuals produced and shared in the current media and information

environment has grown exponentially. At least 3.2 billion photos and 720,000 hours of video are created daily, and an additional 34 million visuals generated daily using AI (Everypixel Journal, 2023; Thomson et al., 2022).

And herein lies the profound paradox. Despite this visual turn, a visualized society, and the pervasiveness and ubiquity of visuals in the current media and information landscape, risk and crisis communication theories are yet to fully integrate visuals as part of public engagement (Guenther et al., 2021; Omondi, 2024; Rodríguez Estrada & Davis, 2015; Trumbo, 1999; Zhang & Hellmueller, 2017). Data proves that the public is constantly engaging with visuals on multiple platforms. Furthermore, it has been a decade since scholars recommended that visual messaging and risk communication focus on more theoretically oriented work (King, 2015). Therefore, in line with this and with other existing literature, this PhD project demonstrates why and how risk and crisis communication scholarship should be expanded to develop complementing frameworks, theories, and paradigms in the context of emerging perspectives on prolonged crises and the role of visuals in instructional risk communication. Certainly, if governments and organizations want to effectively engage with the public during prolonged crises, visuals form an important consideration in the design of risk communication messages – it is not a question of *if*, but *how*.

Therefore, this chapter establishes why it is critical to rethink risk and crisis communication scholarship for a visual media and information environment and provide arguments for how this may be actualized. I then highlight the objectives of this PhD project and provide a summary of how the rest of this *kappe* is organized.

1.1 Rethinking risk and crisis communication for a visual information environment

The pervasiveness of prolonged crises in an inherently visual world requires an urgent rethink of effective risk and crisis communication strategies for the public's self-protection. This rethink is critical due to the enduring nature of prolonged crises, in which the information needs of the public must be considered, and justifies why more scholarship and expansion of risk communication theory is overdue.

The previous section set up the diffrentiation between risk and crisis communication – explaining that risk communication has a focus on community protection through effective public engagement while crisis communication is essentially about enhancing the viability, trust, and reputation of an organization when a crisis occurs. This diffrentiation is useful for guiding how risk communication messages should be designed – with a stakeholder-centric lens. Therefore, the literature presented here suggests that this rethinking of risk and crisis communication theories can be actualized in the following three ways:

1 First, instructional communication should be incorporated into risk and crisis communication strategies for prolonged crises.
2 Second, risk and crisis communication theories should be expanded to intergrate the use of visuals.
3 Finally, multimodal message design for public-facing communication during prolonged crises must be further explored.

The following section expounds on these three arguments.

1.1.1 Instructional Communication for Prolonged Crises

In a prolonged crisis the public not only needs, but also expects clear actionable instructions for their self-protection (Hasselström & Larsson, 2025; Reynolds & Seeger, 2005; Sellnow et al., 2017). Indeed, increased information seeking behavior is common in risk contexts as people look to close knowledge gaps to understand the risk and their susceptibility (Cmeciu et al., 2022; Hubner & Hovick, 2020). This complements seminal studies on information utility which describe how people look for information from mass media to identify where the risk is (surveillance) and how they can protect themselves (performance) (Knobloch-Westerwick et al., 2005). This information-seeking behavior and the public's perspective on information utility grounds the critical role of instructional communication.

Instructional communication is central to increasing accessibility of self-efficacy messages and persuading the public to adopt self-protective behavior (Sellnow et al., 2017). It also helps the public attach meaning to the information being communicated, highlights susceptibility and risk factors, and explains why self-protective measures are

necessary (Han & and Baird, 2024; Mileti & Peek, 2000). When their well-being is at stake, the public expects clear instructions from authorities (Hasselström & Larsson, 2025; Sellnow et al., 2017). However, during prolonged crises, people often get tired of hearing and seeing the same risk messages from different authorities and different platforms which typically results in message fatigue and apathy (So et al., 2017), presenting a challenge of sustaining public engagement for the enduring nature of prolonged crises.

Despite apathy and message fatigue creeping in during prolonged crises, authorities must not let up on instructional communication as this is important for the public's self-protection (Yusri et al., 2024). Instead, they must find meaningful strategies to sustain public engagement in a manner that does not lower the public's perception of risk. This is because the probability of exposure and increased vulnerability is comparatively more when people become apathetic and when their risk perception is lowered (Yusri et al., 2024). Yet, to date, instructional communication in crisis and risk contexts is heavily skewed on organization-centric event-based crises and unfortunately overlooks stakeholder-centric information management challenges during prolonged crises. The public cannot act on what they do not understand and need instructional communication to attach meaning to the information being communicated, for which visuals play a critical role.

1.1.2 Integrate Visuals into Risk and Crisis Communication Theories

Risk and crisis communication theories must be expanded to integrate the use of visuals. There is overwhelming evidence which demonstrates that visuals enhance risk and crisis communication strategies during prolonged crises supports this claim. For example, during the COVID-19 pandemic, visuals improved the quality of health communication and mitigated the negative impact of infodemic conditions (King & Lazard, 2020). Separately, the simplification, schematic representation, and metaphors in comics has been found to be useful in public health communication compared to purely data-driven arguments (Kearns & Kearns, 2020). Concerning the climate crisis, how visuals are framed has a direct relationship with the uptake of climate knowledge and how the public interprets it (Wardekker & Lorenz, 2019). The reason is that visuals influence how knowledge is interpreted and how attitudes are formed, which in turn

influences behavior (D'Angelo et al., 2019). Furthermore, they are useful for optimizing cognition and comprehension, enhancing memorability, and prioritizing critical information over complex data in, for example, health and climate communication (Barry, 1997; Harvard & Hyvönen, 2023; Mouly et al., 2023; Sleigh et al., 2021). In addition, visuals, compared to text, counter emotional arousal and stigma, enhance comprehension of scientific arguments and large pieces of information, and have comparably higher persuasion (Chapman et al., 2016; Petty et al., 1986; Powell et al., 2019; Smiciklas, 2012; Verma et al., 2024). These characteristics of visuals are especially critical for supporting the public's information needs during prolonged crises. This means that in today's visual media and information environment, visual strategies can no longer be in the periphery in public-facing communication.

There is certainly no dearth of risk and crisis communication theories for textual and verbal narratives such as crisis and emergency risk communication (CERC) (Reynolds & Seeger, 2005), social media crisis communication (SMCC) (Austin et al., 2012), Fink model (Fink, 1986), IDEA model (Sellnow et al., 2017), social amplification of risk (Kasperson, 1992), image repair theory (Benoit, 2020), integrated crisis mapping model (Pang et al., 2009), and situational crisis communication theory (SCCT) (Coombs, 2004), just to name a few. However, none of them provide specific guidance on *how* visuals should be designed for instructional risk communication during prolonged crises. This glaring gap in scholarship in today's inherently visual culture and media landscape is what I set out to address, particularly with the goal of the public's self-protection in mind.

Furthermore, recommendations from other scholars make a good reflection point for addressing this gap. Xu (2025) proposes that multimodal research should consider framing beyond only texts. Additionally, a study on COVID-19 (Xu et al., 2024) advocates for the advancing of research to increase understanding on how multimodal frames shape perceptions and influence behaviorial actions. Referring to news framing, D'Angelo et al. (2019) encourage upcoming research be centered around adapting, extending, and integrating theories to get deeper insights into public-facing communication, which can be applied in the context of theorizing the integration of

visuals into public communication during prolonged crises. Evidently, there is a strong case for advancing the theoretical approaches risk and crisis communication theories and framworks to expand the understudied area of visual instructional risk communication.

1.1.3 Emphasize Multimodal Messages for Public-Facing Risk and Crisis Communication

Communication often contains both visual and textual modalities. And while both are simultaneously processed for sense-making and interpretation, they serve different communicative goals – visuals support the organization of central ideas for potential persuasion while texts support cognitive evaluation of information (Geise & Baden, 2015), an interplay which enhances meaning (Xu, 2025). In explaining multimodal framing, Lee et al (2024) also highlight this aspect of the complementarity of the visual and accompanying text – the text serves the function of emphasizing the problem's definition, moral evaluations, causal interpretations, and/or treatment recommendations as outlined by Entman (1993); while visuals complement the text by depicting denotive characteristics (i.e. the presence of an expert source), connotative features (i.e. stereotypical depictions of doctors), and/or symbolic-semiotic characteristics (i.e. the camera angle used to depict an expert). As demonstrated by Powell et al. (2015) when textual and visual information were presented together, the text frame influences opinions regardless of the visual frame. This point is critical in emphasizing why visual-text congruence is important in multimodal communication – essentially presenting strong arguments for why text must match the visual and not be contradictory or ambiguous.

Furthermore, multimodality is context-specific and supports the construction of meaning for the public from a localized perspective. This means that factors such as the cultural and historical use of different modes, national stance, cultural or historical traditions, societal norms, religious beliefs, or political ideology contribute to meaning-making (Entman, 1993; Guenther et al., 2024; Jewitt, 2009; Jewitt et al., 2016; Xu, 2025). For example, the phrase 'Mind the Gap', an audio-visual safety caution in London's train system is familiar to the public, and easily resonated with intepreting physical

distancing guidelines in England during the COVID-19 pandemic (Criddle, 2020). Using the same phrase in a different geographical setting is unlikely to resonate in the same way. To conclude, multimodality in message design should consider the complex interrelationships between the different modes in a message and how they interact with and complement each other (Highfield & Leaver, 2016; Xu, 2025). When only one mode is considered in message strategies for prolonged crises, there is a higher probability of negative impact on people's issue attitudes, cognitive responses, and message acceptance (Coleman, 2010; Dan, 2018).

So far, this introductory chapter identifies three gaps – the poor prioritization the public's information needs during prolonged crises, the low emphasis on community focus for the public's self-protection and engagement, and the lack of integration of multimodal aspects to prioritize the visual in instructional risk communication. Failing to address these gaps essentially compromises attitudinal and behavioral compliance and fails to persuade the public to adopt and to sustain self protective behaviors during prolonged crises. To save lives and to mitigate the negative impact of crises, risk and crisis communication scholarship must explore multimodal message strategies for effective public-facing communication. Therefore, in this PhD project will expand these theoretical perspectives and provide evidence-based arguments to make meaningful conceptual connections between instructive risk communication and visual strategies, and propose best practice for public engagement during prolonged crises.

1.2 Objectives of the PhD Project

The previous section highlighted three fundamental arguments that form the basis of the rationale for this PhD project – we live in a crisis-prone global context in which we are witnessing more frequent, complex, unpredictable and prolonged crises; instructional risk communication strategies should be adapted for prolonged crises; and the theoretical gaps in risk and crisis communication scholarship excluding the visual should be addressed. Therefore, the overarching research aim of this project is to increase understanding about how the principles of visual framing and instructional risk communication be combined to create to a conceptual framework to guide the design of effective visuals strategies during prolonged crisis in this under-developed area of

research. There are four specific objectives that form this article-based project as summarized in the table below.

Table 1.1: Publications that make up this PhD project

No.	Publication	Publication Aim	Research Question	Material	Method
1	**Omondi, G. (2024).** Visual framing during crisis: a 10-year systematic review. Corporate Communications: An International Journal. https://doi.org/10.1108/CCIJ-04-2024-0065	To examine the state of research on visual framing during crises by identifying the priorities, theories applied, trends, and gaps in scholarship	What is the state of research on visual framing during crises?	269 Peer-reviewed journal articles	Quantitative content analysis
2	**Diers-Lawson, A., Omondi, G., & Hillier, S. L. (2023).** Shooting from the hip or taking careful aim? Developing the VISTA analytic framework comparing English and Scottish visual campaigns for self-protective behaviour throughout the COVID-19 pandemic. Journal of Visual Political Communication, 9(1), 59-97. https://doi.org/10.1386/jvpc_00017_1	To determine the role(s) of visual framing in community engagement during a prolonged health crisis and to propose the VISTA framework to guide how visual strategies should be designed.	What role(s) do(es) visual strategy play in community engagement during a prolonged crisis?	2044 visual posts by Scotland's @Scotgov and 1572 from England's @10DowningStreet on Twitter (now X)	Qualitative thematic analysis
3	**Omondi, G., & Diers-Lawson, A. (Expected 2026).** The VIM Turn in Multimodal Strategy During Prolonged Crisis: Theory-building for risk and crisis communication. In A. Diers-Lawson & A. Björck (Eds.), Research Handbook on the Management of Risk and Crisis Communication. Edward Elgar Publishing Ltd	To validate the VISTA framework and propose the VIM conceptual framework for visual instructional communication of risk during prolonged crises	To what extent can data be used to validate the VIM conceptual framework to guide the design of visual strategies during prolonged crises?	2400 visual posts by Scotland's @Scotgov and England's @10DowningStreet	Quantitative content analysis
4	**Omondi, G, & Nyambura, S. (2026 – In Press).** Politics, Platforms, and Players: A cross platform visual analysis of Kenya's Gen-Z-led #RejectFinanceBill2024 protests. In Thatelo, T.M (ed) Visual Political Communication from an Afrocentric Perspective. Routledge.	To test the applicability of the VIM concpetual framework in a different type of prolonged crisis (political) and a differrent geographical context (Kenya)	To what extent can the principles of the VIM conceptual framework be applied in a different prolonged crisis?	243 visual posts on Instagram, TikTok, and Twitter (now X)	Qualitative thematic analysis

Table 1.1 provides the logic for the choice of publications in this specific order. The idea was to ensure a robust foundation and argument that would result in theory building and development of the VIM conceptual framework. Publication one (Omondi, 2024) explored the state of scholarship connecting risk and crisis communication with visual framing in order to identify the gaps to articulate a succinct research agenda. Publication two (Diers-Lawson et al., 2023) sought to address these scholarship gaps by synthesizing existing literature in risk and crisis communication and visual framing and proposed the VISTA analytic framework (Visual Complexity, Symbolism and Iconography, and Text Accompanying Visual), recommending how visual strategies should be designed by governments for effective public engagement. Building on VISTA and considering the need for the public's self-protection during prolonged crises, publication three (Omondi & Diers-Lawson, 2026) included additional theoretical perspectives in prolonged crises and instructional risk communication, which led to the refining and validation of VISTA to VIM conceptual framework (Visual Simplicity, Infodemic Management, and Instructional Communication of Risk). Finally, in publication four (Omondi & Nyambura, 2026) tested the applicability of VIM in a different prolonged crisis (political) and geographical context (Kenya).

This rest of the *kappe* is organized as follows – chapter 2 discusses and connects risk and crisis communication, instructional risk communication, and visual framing literature and proposes VIM, a conceptual framework for visual instructional risk communication. Chapter 3 discusses the method while chapter 4 presents the core findings from the four publications forming the project. Finally, chapter 5 discusses the theoretical, methodological, leadership, and applied contributions of VIM, discusses its applicability in other crisis contexts, and makes recommendations for future research

2 Literature Review

Chapter one established why it is critical to rethink risk and crisis communication scholarship for a visual media and information environment. To build on this, chapter two explores literature on prolonged crises, risk communication, and instructional communication. This multidisciplinary approach is important for generating deeper insights in order to inform the design for more effective public-facing instructive visual risk communication messages. This chapter also synthesize these diverse fields to identify factors that might influence the viability of visual strategies for governments and organizations during prolonged crises.

2.1 Differentiating the Strategic Implications of Event-Based versus Prolonged Crises

Distinguishing event-based crises from prolonged ones is important because this has strategic implications on the communication emphasis – it determines whether risk communication interventions will meet or fail to match up to specific information management needs. What the public needs to know and engage with in the long term and how this is communicated beyond a typical 24-hour news cycle for prolonged crises is markedly different from event-based crises. This is due to the differences between the two crisis types in relation to the public's information needs (risk communication for prolonged crises) or the organizations' needs (crisis communication for event-based crises). To provide more clarity, this section explains the differences between event-based and prolonged crises.

Previous literature has conceptualized event-based crises as having particular stages or a life cycle. Risk and crisis comunication theories explain the concepts depending on the different stages of a crisis. For example, Coombs (2007a) proposes the pre-crisis, crisis, and post-crisis three-stage approach to crisis management while Mitroff's (1987) model for crisis management has five phases – signal detection, prevention/ preparedness (both as risk management), containment, recovery, and learning. Cornelissen's (2008) crisis continuum has four stages – latent, active, intense, and crisis phases. For Fink (1986) the crisis life cycle involves four stages – risk cue to signal crisis emergence (prodromal), triggering event leading to a crisis breakout, the chronic lingering effects of the crisis, and finally resolution; while Seeger, Sellnow, and Ulmer

(2003) propose three stages – precrisis, crisis, and postcrisis. While these risk and crisis communication theories and models certainly provide great utility for understanding how crises play out, the common thread across them exposes two critical gaps. First, they prioritize stages instead of communities – how people can be protected and how they can be effectively engaged. Second, they are premised on the idea that unmitigated risks, crises, are a linear process with an identifiable defined start and clearcut end yet research shows that crises can be prolonged, not be event based, nor have a certain end, as witnessed with the COVID-19 pandemic, the ongoing climate crisis, and protracted wars/conflicts (Audra Diers-Lawson & Grace Omondi, 2024). What happens when a crisis does not seem to end, when the recovery phase is extended, or when it extends beyond the anticipated timeframe? These questions call for more critical reflection about prolonged crises.

Emerging literature in risk and crisis communication distinguishes the traditional definition of event-based crises from prolonged crises (Audra Diers-Lawson & Grace Omondi, 2024). Event-based crises are the type that organizations typically have to deal with such as illegal corporate behavior, scandals, technical breakdown, product recalls, and human error (Diers-Lawson, 2019). They are often organization-oriented, episodic, geographically confined, and usually play out in the news cycle. The communication response and focus during and after these types of crises is on organizational learning and institutional reputation management because the cause and response of the crisis can be attributed the organization. On the other hand, prolonged crises such as the climate crisis, pandemics, wars, and global financial crises are transboundary, enduring in nature, outlive a typical 24-hour news cycle, have blame attribution for response, and have societal-level impact. For example, some of the societal-level impact of COVID-19 resulted in policy changes around education, the supply chain sector, and the mobility sector (Kiers et al., 2022; Marsden & Docherty, 2021; Tilak & Kumar, 2022). But more importantly in the context of this PhD project, public-facing risk communication for prolonged crises must consider how to promote sensemaking and shape risk perception in the long term. To account for these differences, this means that from a strategic point of view, the information management approach and even content of risk communication for event-based and prolonged crises cannot be the same.

Separately, prolonged crises often have wide-ranging implications that require effective leadership and governance for cross-sectoral collaboration and a whole-of-society approach to respond to these societal-level impacts. As authorities often enjoy favourable public opinion at the beginning of a crisis (Johansson et al., 2021), it is important that they demonstrate coordinated action and empathy towards resolving the issues and, for prolonged crises contexts, prioritize effective leadership strategies to sustain this public goodwill. For Riggio & Newstead (2023), a crisis-prone world emphasizes the importance of effective leadership, and argue that sensemaking, decision-making, communicating, coordinating teamwork, and facilitating learning are the key competencies required for crisis leadership. Leadership failures such as poor uncertainty management tactics, projecting the illusion of control, and ignoring the precautionary principle (prioritizing economic prosperity at the expense of public safety) costs lives and livelihoods (Okoli et al., 2022). For example, government leaders downplaying the hazard is known to lower risk perception among the public, as was the case in Brazil when the president referred to the coronavirus as a "little flu" and implying that infection was more likely to affect only older people or those with preexisting diseases (Marques & de Almeida, 2021; Ricard & Medeiros, 2020). In addition, a 'commanding' approach in public-facing messaging and using a top-down approach during prolonged crisis contexts such as pandemics is known to foster message resistance and compromise self-protective behavioral compliance (Marston et al., 2020). Leadership is also linked to institutional trust which is important for mitigating the spread of conspiracy theories, misinformation, and disinformation, and improving the likelihood of the public's acceptance of behavioral recommendations (Islam et al., 2020; Marks et al., 2000; Siegrist, 2000). This essentially means that when the public has confidence in the leadership from their track record, and when they trust public institutions and experts, there is an increased likelihood of risk message acceptance.

In summary, when event-based crises are not distinguished from prolonged ones, two key dangers arise from failing to account for the critical differences in communication emphasis. The first stems from overlooking the communication implications for prolonged crises versus event-based ones as a result of the differences in societal-level

impact, geographical scope, the enduring nature, information management strategies, and blame and cause attribution. The second danger is the potential of not sustaining public engagement of prolonged crises by either ill-aligning communication with a 24-hour news cycle or failing to plan for long-term public engagement amid infodemics and message fatigue. To conclude, acknowledging these differences is crucial for efficient public-facing communication strategies to contribute to positive instructional risk communication outcomes during prolonged crisis situations.

2.2 Differentiating Between Risk and Crisis Communication in Prolonged Crises

While the terms 'risk communication' and 'crisis communication' are often used interchangeably, it is important to distinguish them. One key difference is the focus of risk communication on the public's self-protection, while crisis communication prioritizes institutional viability and reputation. In fact, global organizations such as the World Health Organization (WHO) do not use crisis communication for prolonged crises such as COVID-19. Instead, they regard it as risk communication during a prolonged crisis (WHO, 2021, 2022). This section goes further to offer differentiation between the two.

Sellnow & Sellnow (2024) apply the risk systems state and argue that the three constructs that define risks are potential threat, uncertainty, and dialogue. Potential threat is about issues management and strategies to avert or mitigate the severity of a crisis, uncertainty is about dealing with information gaps from known unknowns and unknown unknowns (as was the case with the COVID-19 pandemic), and dialogue is the window in which there is opportunity for consultation and information exchange between a risk and the risk manifested (before a risk escalates into a crisis). Risks and crises are intertwined but it is crucial to operationalize risk as an event, which if well managed can potentially avert a crisis. Sellnow and Sellnow (2010) therefore argue that crisis communication is distinctly different from risk communication, which projects the risk of future harm and known probabilities to encourage people to take self-protective preventative behavior to minimize future threat. Because risks often precede crises and can be avoided by (in)action, risk communication is central to mitigating crises or reducing this projected harm and negative impact. Risks precede crises and

scholars argue that it is gaps in risk management that ultimately often result in crisis situations (Heath, 2002; Heath & O'Hair, 2020) while crises can be conceptualized as unmitigated risk. Risks can also be distinguished from crises as risks relate to issues management (Heath, 2004). Regardless of the operationalization of risk by different scholars, the common thread in these perspectives is the aspect of surprise and potential hazard which can be mitigated by (in)action and must be considered in risk communication approaches.

Risk communication is the two-way exchange of information between and among authorities and the public about the type of risk, its potential impact and severity, and/or risk mitigation strategies, with the overall objective of sensemaking, mitigating panic, uncertainty, and fear, and (re)building public trust (Diers-Lawson, 2025; Hooker & Leask, 2020; Lowbridge & Leask, 2011; Sellnow & Sellnow, 2024). Risk communication is anchored on sharing information about potential threats to the public's health, safety, and well-being, ultimately with the aim of influencing their likelihood to adopt self-protective behaviors (Reynolds & Quinn, 2008). Effective risk communication considers the context of the intended audience based on their perception of institutional trust, uncertainty, and understanding of the reversibility, catastrophic potential, or familiarity with the risk (Diers-Lawson, 2019; Hampel, 2006). Poor strategies in risk messaging compromise the effectiveness of risk communication and lower the perception of risk. Therefore, risk communication should be stakeholder-centric and promote sense making, shape risk perception, encourage dialogue and public engagement, reduce uncertainty, and minimize future threat to the public (Diers-Lawson, 2019; Sellnow & Sellnow, 2024).

Furthermore, risk communication is not linear because risks are constructed and reconstructed depending on new information that becomes available especially during prolonged crises. This evolving and dynamic nature of a typical prolonged crisis context also places responsibility on authorities to amplify or attenuate the right risk and the right time. The explanation of the type of risk, its impact and severity, mitigation strategies, promoting sensemaking, and amplifying the right risk at the right time is all about supporting the public to enhance their perception of risk. For example, the risks

communicated at the start of the COVID-19 pandemic were primarily about reducing unnecessary travel, wearing masks, and washing hands. As the crisis endured, additional risk messages highlighted testing, taking care of the vulnerable, and vaccination efforts. In this sense, information disseminators can predetermine what apsects in risk communication will be made salient, what will be excluded, and what will be included, in essence placing emphasis on the most urgent instructions at different times. Indeed, delineating different risk messages depending on the stages of the risk or crisis is equally important for reducing information overload from the public's perspective.

In contrast, crisis communication is organization-centric for the specific purpose of building trust, repairing reputations and relationships, and post-crisis reflection and learning. This perspective of the field is drawn from the public relations discipline which means that during risk and crisis contexts, organizations tend to focus on image building for a favourable public perception. Over time, however, scholarship in health and organizational communication has created a shift in the differentiation between public relations and risk communication and organizations must also adopt this outward orientation. Because risk communication is stakeholder-centric, it projects the risk of future harm and known probabilities to persuade people to adopt self-protective attitudes and behavior to minimize future threat. Therefore, it has more focus on community engagement and risk perception compared to crisis communication.

2.2.1 Risk Communication and Community Engagement

The central objective of community engagement is to ensure the involvement of the publics (stakeholders) at risk, to share information about potential threats to the public's health, safety, and well-being, ultimately with the aim of influencing their likelihood to adopt self-protective behaviors to avert a crisis, and to mitigate the impact of infodemics (Kutalek et al., 2025; Reynolds & Quinn, 2008; WHO, 2022). It is about consulting and engaging with communities who are at risk (risk bearers) or whose practices affect risk (risk generators) (FAO, 2020; Napakol et al., 2022; Sellnow, 2025; WHO, 2021) in order to enhance community protection and build infodemic resilience.

Risk communication and community engagement (RCCE) has been typically applied in the context of health emergencies and was particularly visible through the work of the World Health Organisation (WHO) globally during the management of Zika, Ebola, and Severe Acute Respiratory Syndrome (SARS) outbreaks (Smith, 2006; Toppenberg-Pejcic et al., 2019; WHO, 2018, 2021). The WHO (2024) envisions RCCE as information sharing between experts and authorities at one level, and between experts and authorities with risk bearers and risk generators, while ensuring the agency and involvement of communities as equal partners for inclusivity and equity for any intervention. For the Food and Agricultural Organization (FAO) (2020), RCCE encapsulates systematic consultations and communication with communities exposed to risk or whose behavior contributes to increased risk. Both definitions place emphasis on information availability and dissemination, shaping risk perception, and community engagement.

There is evidence which demonstrates the benefits of community-centred engagement in areas such as health interventions. For example, Vietnam's successful management of the COVID-19 pandemic is credited to the country's whole-of-community approach, multi-sectoral collaboration, encouraging local capacity resilience, and not leaving vulnerable groups behind (Ha et al., 2021). In Burkina Faso, local Muslim community faith-based organizations supported the uptake of COVID-19 public health advice among their members by collaborating with health authorities to frame and explain COVID-19 self-protection measures (Zongo, 2020). Elsewhere, the success of controlling the Ebola outbreak between 2014 and 2018 emphasizes the benefit of community engagement because local youth and women complemented response structures which encouraged response acceptance and subsequently promoted message efficacy (Anoko et al., 2020).

Community engagement becomes even more fundamental when we consider the social amplification of risk theory which argues that the interpretation of risk information is determined by social and individual factors (Kasperson, 1992). These factors include age, gender identity, civil status, education levels, and people in communities with high power-distance dynamics which can predispose individuals within these groups to be marginalized and therefore exacerbate their vulnerabilities.

Therefore, risk communication with a whole-of-community approach which considers these social and individual factors is crucial for promoting community engagement and ensures that all groups within any particular demographic are included. For example, while several European governments excluded migrants from their COVID-19 response, Portugal did well in their community engagement strategies and was the first country in Europe to update its policies to grant healthcare to immigrants and asylum seekers (Kumar et al., 2021; Nezafat Maldonado et al., 2020), which resulted in comparably better health outcomes for the country during the pandemic. In Islamic communities such as Somalia, governments enhanced community engagement by collaborating with faith leaders to combat misinformation around the use of alcohol-based sanitizers and co-created local solutions to accommodate communal Ramadhan practices in the context of physical distancing during the COVID-19 pandemic.

Separately, advances in technology today open more possibilities for digital community engagement. Community engagement in a digital context usually takes place on social media platforms that remain a key source of information for audiences during risk and crisis contexts (Austin et al., 2012). Just as risk communication integrates the principles of community engagement face-to-face, these should be matched online to the extent that it is possible. This is done by capitalizing on the affordances of social media platforms to meet the information needs of the community and to incorporate messaging that considers the cultural context and encourages community co-creation and ownership. On platforms such as Instagram, TikTok, and X (formerly Twitter), authorities can provide feedback forms, signpost to credible institutional information, share risk messages that address the community's concerns, and monitor and respond to replies and messages. For example providing visual myth busters in local languages on social media was successful in countering mis- and disinformation during the COVID-19 pandemic (WHO, 2021). The overarching idea is to maintain a two-way dialogue in which the public can have their say. Whether online or offline, literature underscores the importance of mobilizing community assets such as inherent local knowledge and capacity, history, language, and skills for better community engagement, and providing opportunities for receiving feedback from the community.

The inclusion of infodemic management (IM) to the RCCE approach created RCCE-IM, which became a standard for public health in the Eurpoean context and codified as the pubic health approach by the WHO just as the COVID-19 pandemic broke at the end of 2019. The current media and information environment warrants the inclusion of infodemic management when designing RCCE approaches. This is because while the multiplicity of actors, messages, and channels provides a variety of information, it also opens up possibilities for mis- and disinformation. Infodemic management is important for shaping risk perception amid an avalanche of both true and untrue information. RCCE-IM is also theoretically grounded with a focus on self-efficacy, response efficacy, awareness of the community context, stakeholder collaboration, non-discrimination and non-stigmatization approaches, and the use of trusted communication channels (Gonah, 2020; Kutalek et al., 2025; McComas et al., 2020). RCCE-IM as a stakeholder approach provides useful principles for community engagement during prolonged crises. RCCE-IM serves three functions (1) ensures that the public has the information they crave during risk and crisis situations, (2) is necessary for managing infodemics, and (3) helps to shape risk perception and reinforce desirable attitudes and behavior (Dick et al., 2022; Tam & Peh, 2025; WHO, 2023).

From a public health perspective, it is crucial that RCCE-IM theories and frameworks are designed with a stakeholder-centric approach to increase community protection and engagement in order to reduce harm. For example, a study comparing Poland, Serbia, and Spain demonstrates how crucial RCCE-IM is for supporting social listening systems to curb misinformation and promote message acceptance through localization of risk communications (Kutalek et al., 2025). The value of government risk and crisis responses that combine RCCE-led evidence-led decision-making and leadership during a prolonged crisis such as the COVID-19 global pandemic is that it can save lives by reducing morbidities, mortalities, societal polarization, mitigate stigma, and lessen pressure on governments' critical resources (Diers-Lawson et al., 2023; Freimuth et al., 2000). In contrast, failing to apply the principles of effective RCCE-IM costs lives as was witnessed in Brazil and the United Kingdom (UK) at the height of the COVID-19 pandemic. For example, a nation-wide uncoordinated response and denial of the risks associated with COVID-19 resulted in comparatively high mortality rates in Brazil while

lack of unclear self-protection guidance contributed to poor COVID-19 outcomes in the UK (Ricard & Medeiros, 2020; Yoo et al., 2020). Considering the value of a stakeholder-centric approach in RCCE-IM it is important to explore current perspectives in the field.

The majority of RCCE-oriented theories, models, and frameworks often have one of three perspectives of risk and crisis communication – the risk, the message, and the crisis. For example, Smillie & Blissett's model for risk communication (2010) outlines three phases which involve risk appraisal, while the social amplification of risk theory (Kasperson, 1992) argues that social and individual factors play a combined role in the interpretation of and response to risk. For a message focus, the IDEA model (internalization, distribution, explanation, action) (Sellnow & Sellnow, 2014) provides a good example. The IDEA model recommends that effective instructional communication messages should include personal relevance (*internalization),* be *distributed* on the most accessible channels for target audience, use non-technical language (*explanation)*, and provide actionable directions (*action).* Finally, the integrated crisis mapping (ICM) model articulates that emotions and the level of attribution of blame to an orgainization has an influence on the audience's interpretation and response to a crisis (Jin et al., 2007). Even though some RCCE-IM literature focuses on the crisis message, they prioritize text and verbal messages – none have a visual orientation for sustaining public engagement and community protection. Finally, risk communication should prioritize sustaining community engagement to enhance co-creation of solutions. Risk communication efforts become comparatively more effective when community engagement is integrated in a way that prioritizes the information needs of the community, considers cultural context and history, and encourages community co-creation and ownership.

In summary, therefore, the function of risk communication is to increase risk perception, provide instructions for self-protection, show empathy, demonstrate coordination between stakeholders such as technical experts, industry, and government, be inclusive of all demographics in the public, and promote community engagement (Schwarz et al., 2024). As risk communication is often embedded within

community engagement and information management, it inherently connects it to risk perception.

2.2.2 Risk Communication and Risk Perception

Risk communication shapes risk perception which influences sensemaking and subsequently message acceptance (Heydari et al., 2021). Risk perception is one of the factors that influences risk communication message response and acceptance. How people respond to a crisis is based on their understanding and perceptions of the risk (Goyal, 2023). Risk perception is the public's assessment and estimation of the probability of a hazard. It is people's judgment of future outcomes which are dependent on their action or inaction on a particular issue, and is critical for its implications on risk exposure, risk communication, and risk management (Hoorens, 2020; Siegrist & Árvai, 2020). While experts and authorities communicate the actual risk (hazard potential), the public's perception of impact is not always related to the actual risk and neither is it necessarily deviant from scientific facts (Dickmann et al., 2016; Fischhoff et al., 1993; Hampel, 2006) – it can simply stem from a lack of technical knowledge.

Risk perception is compromised if people have previously experienced a similar hazard or consider the negative impacts of risk hazards to be within their control or reversible. A higher risk perception positively influences the adoption of self-protection behaviors in risk and crisis situations (Seidl et al., 2022; Siegrist & Árvai, 2020; Slovic, 1987; Smith, 2006). Conversely, poor risk communication diminishes risk perception and the public is subsequently likely to underestimate their exposure and vulnerability to a hazard. Indeed, risk communication should enhance risk perception so that the public understands their responsibility in taking self-protection measures and risk-mitigation actions (Heydari et al., 2021).

Risk perception is also multidimensional and can influenced by factors such as the environment, cognitive bias, or an individual's risk tolerance – people with a high risk tolerance and low risk perception may inadvertently expose themselves to risk and increase their vulnerability to hazards (Simon et al., 2000). This means that from a risk communication perspective, and to encourage self-protective behavior, it is important

that risk messages not only strike a balance between overestimating (which causes fear and panic) and underestimating the risk (which causes apathy and indifference), they must also close any technical knowledge gaps, for example by translating scientific facts for non-technical audiences.

Finally, how risk communication influences risk perception is important for contextualizing the social construction of risk, in which the public progressively have a common shared understanding of the risky pheneomena (Sellnow & Sellnow, 2024). This aspect of a collective understanding of risk contributes to dialogue between and among experts, stakeholders, and the public, with the end goal of supporting the public to make sense of the hazard, exposure, risk, probability, their vulnerability, and consequences of (in)action for their own protection (Sellnow & Sellnow, 2024). The role of dialogue in risk communication should ideally bridge the gap between expert opinion and public knowledge and contribute to increasing the perception of risk (Morgan, 2002).

In summary, risk perception can be understood around four aspects: 1) providing an explanation of the actual risk; 2) supporting the public's collective understanding of what is at stake; 3) promoting the interpretation of risk despite social and individual factors (Kasperson, 1992); and 4) providing attitudinal and behavioral recommendations to reduce risk vulnerability and exposure.

2.2.3 Risk Communication and Infodemic Management

Risk communication is central to building the public's resilience to infodemics during prolonged crises. Therefore, risk communication should support the public in sensemaking during infodemic situations, which are an increasingly common feature of prolonged crises. Rothkopf (2003) first used the term 'infodemic' to describe an endless flow of information which he saw as an 'epidemic of information' due to the amplification effect of news media. Infodemics stem from the current media and information environment which provides an endless flow of information, some true, some misleading, available round-the-clock from multiple actors and platforms

(Ghebreyesus, 2020). This can cause the public to experience information ambiguity and complexity.

Indeed, infodemics are situated within an ecosystem of an online dynamic process of constant information production, consumption, and amplification that can easily create social contagions (Briand et al., 2021) which hamper risk perception and risk communication outcomes. This is because infodemics are more than just an avalanche of information, they are also about how mis- and disinformation spreads especially on social media platforms (Zarocostas, 2020). While propaganda and fake news have always existed in mass communication, the internet has created a media environment in which there is an endless flow of information in excessive amounts which requires sensemaking skills on the public's part. Furthermore, the overabundance of information and emerging new types of mis- and disinformation from multiple actors and platforms means that the public must sift through and separate credible information from propaganda and conspiracy theories in order to find legitimate information for their decision-making during prolonged crises.

Additionally, infodemics can contribute to a trust deficit with authorities and often lead to confusion, lower risk perception, and lower behavioral compliance for self-protection. For example, a study published (later retracted) in one of the most impactful scientific journals, Lancet, contributed to public skepticism, misinformation spreading, and lowered institutional trust for claiming hydroxychloroquine as a treatment for the coronavirus (Mehra et al., 2020). And while it is possible to apply media literacy skills to critically evaluate and avoid infodemics in the form of mis- and disinformation, conspiracy theories, and fake news shared on social and traditional media, most people either lack this skill or the mental energy to do so (Devine, 1989). Indeed, during prolonged crises, there is evidence that the public can get overwhelmed with the information overload and feel powerless to do anything about the risk (low efficacy) (de Bruin et al., 2021). It is ideally in this context that the utility of instructional risk communication becomes more pronounced for its potential to mitigate infodemics and promote sensemaking during prolonged crises.

The concept of sensemaking was originally proposed within the field of organizational communication. Seminal studies conceptualized it as the studying of peoples' everyday practices and interpreting their experience of reality (Garfinkel, 1967) and the process by which people make unconscious and conscious assumptions to understand the future (Louis, 1980). Sensemaking happens when people extract cues from their environment in order to construct meaning and guide their actions (Weick, 2006; Weick & Weick, 1995). More recently, sensemaking has been applied outside of organizational contexts such as in risk management and risk communication (Haas & Yorio, 2018) and is understood as a cognitive process of understanding issues that violate expectations and are unexpected or confusing (Maitlis & Christianson, 2014). The violation of expectations and occurrence of events that are unexpected or confusing and have uncertain outcomes aptly describes prolonged crisis situations.

Prolonged crises create a cognitive discrepancy between expectation and reality and are known to provide powerful sensemaking triggers which lead to increased information seeking behavior as the public looks for more information to inform their (in)action (Austin et al., 2012; Hubner & Hovick, 2020; Maitlis & Christianson, 2014). Maitlis & Sonenshein (2010) conceptualize this increased information seeking behavior during risk and crisis situations as 'interpretive indeterminacy', as the public, in a digital media environment, looks for information from multiple sources to try and make sense of what is happening, unpack the complexity of the risk, and seek recommendations on what they can do to reduce the probability of exposure and vulnerability (Weick & Weick, 1995). Indeed, in risk contexts plagued with infodemics, uncertainty, fear, and panic, the public is likely to experience information ambiguity and complexity which requires sensemaking. Yet, scholars argue that sensemaking in risks and crisis contexts is difficult because the public engages in a process of negotiating meaning with often limited information (Maitlis & Sonenshein, 2010; Nowling & Seeger, 2020). In such instances risk communication becomes crucial for sensemaking by closing information gaps and promoting credible information (Han et al., 2011; Williamsberg & Eosco, 2024).

To conclude, in a complex media environment with an avalanche of information from infodemics that is typical of prolonged crisis contexts, sensemaking by the public becomes an issue about connecting cues and frames from the environment in order to understand what is going on to inform their decision making (Maitlis & Sonenshein, 2010). Risk communication then plays an important role in this process by ensuring the availability of credible information to contribute to shaping risk perception and promoting sensemaking to explain to the public the probability (exposure and vulnerability) and consequences (severity and emotion) of their (in)action in adopting self-protective behaviors.

2.3 Differentiating Between Risk Communication and Instructional Risk Communication

Risk communication is about warning the public of a potential hazard particularly when there is still opportunity for dialogue and implementing risk mitigation behavior. For example, the public has a sense of what to expect during a flood situation when weather services share a projection of the imminent danger. For this known risk, some of the actions needed are to secure windows and doors and stock up on supplies. In essence, while risk communication might include some type of instruction, the focus is more on warning and alerts.

On the other hand, instructional risk communication is about supporting the public in sensemaking to ensure informed decision-making on the *why* and *how* of their self-protection. Risk messages that are informational, instructional, and compassionate are known to increase engagement and promote better behavioral compliance (Han & and Baird, 2024). Instructional risk communication places emphasis on the 'doing' or 'acting' based on recommendations' and typically applies when the risk is novel and unknown, and people do not know what to do as is the case with terror attacks or the spread of a new disease strain, for example. It is also about ensuring message accesibility for informed decision-making by the intended audience (Morgan, 2002) and message efficacy – the audience needs to know that the actionable recommendations given are within their scope to act (Covello et al., 1988). Without making sense and meaning of the risk it is impossible for the public to act on risk messages. If the instructional risk communication does not enhance risk perception, provide actionable

recommendations, or encourage the social construction of risk, it has failed in aligning with the principles of public engagement for adoption of self-protection behaviors. Instructional risk communication is inclusive and promotes positive behaviors and attitudes for self-protection that are crucial during simultaneously risk and crisis situations such as in prolonged crises. Ultimately, the goal of instructional risk communication is to support the public's learning outcomes from an affective, behavioral, and cognitive perspective (Sellnow & Sellnow, 2024).

Literature emphasizes that instructional risk communication focuses on strategies to enhance learning, provide actionable recommendations, and ensure message accesibility and efficacy for informed decision-making (Sellnow & Sellnow, 2024). The IDEA model (Sellnow et al., 2017) is an example of an instructional communication model that informs the design and dissemination of textual messages in risk contexts. The assertion of the IDEA model is that effective messages for instructional risk communication should demonstrate personal relevance (internalization), be distributed on channels that are accessible to the intended audience (distribution), co-opt credible voices and explain the crisis and recommended actions without jargon (explanation), and provide specific actionable recommendations for self-protection and risk mitigation (action). *Internalization* (highlighting probability of exposure and vulnerability) and *explanation* (highlighting severity and consequences of (in)action) are particularly central to sensemaking. While there is emerging research on prolonged crises (Audra Diers-Lawson & Grace Omondi, 2024), there is relatively less scholarship connecting long term instructional engagement and learning with risk perception and sensemaking in the context of addressing infodemics, message fatigue, and mis- and disinformation during prolonged crises. In prolonged crisis contexts, instructions are central to supporting the public's self-protection because of their potential to provide context-specific explanation and action in a multimodal media and information environment.

Instructional risk communication is especially important for prolonged crises which are characterized by message fatigue, annoyance, desensitization, and dissonance (Cho & Salmon, 2006; So et al., 2017). However, three criticisms exist regarding instructional communication theories. The first is that the instructions can be generic and therefore

fail to reflect people's actual behavior in a particular context. Second, instructional risk communication can often assume that audiences are homogenous and fail to take into account the different characteristics that exist within an audience such as age, gender identity, risk tolerance, occupation, political ideology, level of vulnerability to the impact of the crisis, information consumption preferences, and civil status such as immigrants (Adams et al., 2017; Bartolucci et al., 2023; Sellnow & Sellnow, 2024). For example, young people are generally known to be more concerned about the environment while older people worry about health and safety risks (Fischer et al., 1991). Sellnow & Sellnow (2010) argue that instructional communication in risk contexts should consider these characteristics in order to enhance risk perception and message acceptance. The third criticism is the underdeveloped visual theoretical lens integrated into instructional risk communication, emphasizing the need for a visual strategy in risk communication strategies (Omondi, 2024). If we do not pause to reflect on the integration of visuals in risk and crisis communication, there is a potential of diminished effectiveness by failing to understand how visuals can improve communication outcomes and message efficacy for the public's self protection during prolonged crises.

2.4 Establishing the Need for Visual Strategy in Risk Communication

The narrow focus and a lack of the integration of visuals in risk, crisis, and instructional communication theories and frameworks is a misfit for a visualized media environment in a world that is characterized by prolonged crises. Instructional communication during prolonged crisis contexts can indeed benefit from the integration of visuals. Understanding that the public has to make sense of risk messages before they can act on them, visuals can specifically improve instructional risk communication outcomes by optimizing cognition and comprehension, enhancing memorability, and prioritizing critical information over complex data (Verma et al., 2024).

Visuals also help to overcome barriers in technical literacy (by using simple representations to explain technical/scientific arguments) to support sense-making abilities (Dhanesh & Rahman, 2021; King, 2015; Rabello et al., 2022), which is a critical function that offers great utility for instructional risk communication. Additionally, when we consider mis- and disinformation and infodemics that are prevalent during

prolonged crises and how visual disinformation is more powerful than text-only disinformation, the use of visuals becomes even more critical (Lee et al., 2024). Indeed, because of the vividness and salience of visuals, multimodal disinformation is considered slightly more credible than textual disinformation (Hameleers, 2025; Hameleers et al., 2020; Lee & Suk, 2025). On the flip side, this challenge presents authorities with opportunities to use visuals to counter mis- and disinformation.

Furthermore, given the panic, uncertainty, and fear that characterizes prolonged crisis contexts, it is important that credible information is quicky disseminated in a manner that promotes sensemaking, shapes the perception of risk, and enhances message efficacy, a role that visuals can play. Visuals increase persuasion (Seo, 2020) and comprehension and retention of scientific arguments and 'large pieces of information' which subsequently supports message interpretation and counters uncertainty, emotional arousal, and stigma (Houts et al., 2006; Levin, 1987; Massoumian, 1989; Negrete & Lartigue, 2004; Shaner & Sanders, 1982). To mitigate message fatigue and infodemics, visuals are preferred because they are received through a parallel processing system which summarizes abstract and technical information such as scientific recommendations and government guidelines for higher recall (Green & Brock, 2000; Lipkus & Hollands, 1999; Schneider, 1998; Sleigh et al., 2021). Authorities such as government officials and experts disseminating information during prolonged crises can capitalize on these affordances of visuals to influence the public's issue interpretation which can result in actionable effects (Miller & Roberts, 2010).

Visuals provide all these benefits because the human brain can process images up to 60,000 times faster than text from dedicating about 50% of resources for vision and visuals (Li et al., 2024; Liu et al., 2022; MIT, 1996). Additionally, visuals provide cognitive shortcuts, often bypassing reason-based cognition (Barry, 1997). Sweller's (1988) cognitive load theory highlights how visuals can reduce the public's cognitive load because they present information in formats that complement how the human brain functions. This reduction in cognitive load potentially frees up the brain to use resources for message comprehension, which supports the rationale of multimodality in message design. Reducing this cognitive load helps to ease information overload and

provides up to 30% more information retention compared to textual and verbal messages (Paivio, 1991).

To conclude, the role of visuals in shaping risk perception and promoting sensemaking for sustained public engagement during prolonged crisis cannot be overlooked. This section has provided scientific evidence for why visuals are superior to purely text or verbal public-facing communication, and how these characteristics unique to visuals have great utility for shaping risk perception, promoting sensemaking, mitigating infodemics, and sustaining public engagement during prolonged crises. An inherently visual media and information landscape and a public that is constantly engaging with visuals on multiple platforms is precisely why risk and crisis communication scholarship be expanded to include visual strategies. There is theoretical justification and scientific evidence for the integration of visuals in public-facing communication during prolonged crises.

2.4.1. Visual Instructional Risk Communication

Sensemaking and issue interpretation is central to visual instructional risk communication. The public cannot act on what they do not know (Hasselström & Larsson, 2025; Sellnow et al., 2017). Therefore, sensemaking and issue interpretation is important so that the public can make sense of the risk and interpret its nature, and their exposure and vulnerability to inform their decision making. One of the communication strategies for sensemaking and issue interpretation is framing, as argued by Goffman's (1974) seminal scholarship on the topic. The rationale of framing is that how information is presented has a direct influence on how audiences interpret it, connecting the concept of framing to psychology literature. In other words, two identical pieces of information will have two interpretation outcomes depending on how that information is presented (Ali & Kinsey, 2023; Kahneman & Tversky, 1984; Kahnemann & Tversky, 1979).

Framing theory has typically been applied to text and verbal messages as demonstrated by Entman's (1993) idea of salience. More recently, scholarship has grown to include visuals, with visual framing now being conceptualized as the selection and

accentuation of certain visual aspects of a perceived reality in a communicative context (Bock, 2020; Christiansen, 2018; Geise & Lobinger, 2017; Glück, 2018; Rodriguez & Dimitrova, 2011). To improve the depth and application of visual communication research to prolonged crises, focusing on visual framing provides value because it advances theory and methods beyond semiotics. Furthermore, when we consider multimodality, Scheufele & Iyengar (2014) emphasize that in framing, the *how* of information presentation supersedes the *what* type of information in respect to intended communication outcomes, especially in instances where there is a likelihood of multiple intepretations or when there are competing frames or modalities. While effective visual framing positively influences perceptions and actions (Xu et al., 2024), poor visual framing can contribute to uncertainty, emotional arousal, stigma, message fatigue and infodemics during crises (Diers-Lawson et al., 2023; Zhang & Hellmueller, 2017).

In summary, when applied to visual instructional risk communication, frames are important for what they include (salience) and for what they exclude ((de)selection) (Entman, 1993). Indeed, frames can influence audience focus by defining comprehension boundaries to guide interpretation of information (Entman, 1993; Goffman, 1974; Huang & Fahmy, 2013; Reese & Ballinger, 2001). Therefore, the strategic decision of what to exclude or include in a visual can stifle or encourage message acceptance and behavioral compliance, including during prolonged crises (Bock, 2020; Christiansen, 2018; Diers-Lawson et al., 2023; Geise & Lobinger, 2017).

2.4.2. Visual Infodemic Management

Visual infodemic management ought to be a central consideration during prolonged crisis contexts. Just like mis- and disinformation spreads verbally and textually, visual misinformation is increasingly a challenge in today's inherently visual media and information environment (Dan et al., 2021; Hemsley & Snyder, 2018). As governments and organizations engage in public-facing multimodal communication during prolonged crises, they have to consider that visual misinformation is typically perceived to be more credible irrespective of the source and is comparatively difficult to undo

compared to text or verbal mis- and disinformation (Eriksson & Göthlund, 2023; Hameleers et al., 2020; Lee et al., 2024). Furthermore, studies have shown that the 'truthiness effect' of visuals makes people believe wrong information even when claims lack veracity (Newman & Zhang, 2020). Weikmann & Lecheler (2023) explain that the reason for this is that visuals offer diffrerent processing and effects which amplify the impact of misinformation, based on how the brain decodes information in the context of picture superiority effect (Childers & Houston, 1984; MIT, 1996).

While the goal of instructional communication is to share credible information that enhances the social amplification of risk and persuades the public to take self-protective actions, multimodal mis- and disinformation (de-contextualizing, doctoring, or fabricating) negatively impacts credibility, issue agreement, or even behavioral intention (Dan et al., 2021). Therefore, public-facing communication strategies during prolonged crises must consider strategies for visual infodemic management such as visual debunking. For example, authorities can use visual myth busters to counter mis- and disinformation (WHO, 2021) or games for prebunking to enhance the public's confidence and ability to spot visual misinformation during infodemic contexts (Dan et al., 2021).

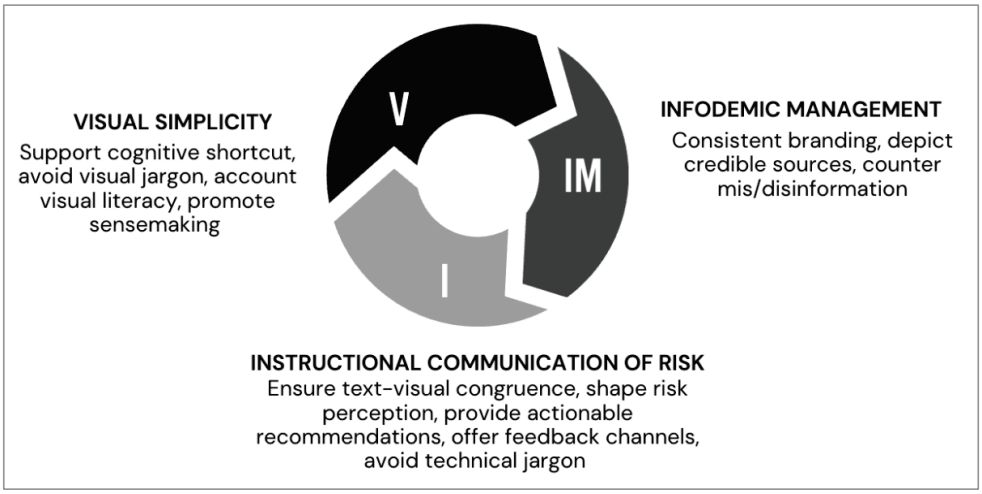
In summary, visual framing moves visual communication from the generic to the specifics to ensure effective visual strategies. During prolonged crises, authorities have to make strategic decisions for what type of visuals will be used, what aspect of the visual will be highlighted, which aspects will be cropped out, and in thinking about modality, what text frames will complement the visual frame in order to support the public's decision-making during prolonged crises.

2.5 The VIM Framework for Integrating Visual Strategy in Risk Communication

So far, this dissertation asserts that the undertheorization and narrow focus and a lack of the integration of visuals in risk and crisis communication theories and frameworks is a misfit for a visualized media environment in a world that is marked with prolonged crises. While there is unquestionably no dearth of risk and crisis communication

theories for textual and verbal narratives, the question that remains is: how can visuals be intergrated into risk and crisis communication theories to contribute increased sensemaking and a higher risk perception for the public's self protection during prolonged crises? This chapter, therefore, advances instructional risk communication theory and scholarship and propose the Visual Instructional Communication of Risk (VIM) conceptual framework.

Figure 2.1: Visual Instructional Communication of Risk (VIM) conceptual framework



VIM contributes to theory-building by emphasizing the need for a rethink of existing risk and crisis communication scholarship, arguing for how visuals should be integrated in public-facing communication during prolonged crises. VIM makes this theoretical contribution in three ways. First, it demonstrates a multidisciplinary approach and demonstrates why a single theory is insufficient, second, it considers the missing visual arguments in risk and crisis theories; and third, it advances knowledge about how we should think about visual framing during prolonged crises. Three constructs make up the VIM conceptual framework – visual simplicity, infodemic management, and instrcutional communication of risk. These are explained in detail below.

2.5.1 Visual Simplicity

Visual instructional risk communication should be simple and reduce visual complexity to promote sensemaking for the public's self-protection. While visual complexity is

dependent on age, gender, and literacy levels (Harrison et al., 2015), graphic design principles show that visual clutter, poor symmetry, uncoordinated colour variability, and poor contrast increases complexity (Miniukovich & De Angeli, 2014). As people can only pay attention to one part of the visuals at a time (Desimone & Duncan, 1995), visual clutter is not recommended on public-facing communication as it generally increases mental noise which compromises message comprehension and retention. Bae & Watson (2014) propose that one strategy for reducing visual clutter and complexity is through visual hierarchy in messaging, as this provides structure to text and imagery for comprehension. How the brain processes visual infornation can be optimized through visual hierarchy which reduces cognitive load and mental effort (Smiciklas, 2012; Sweller, 1988).

In addition, visual jargon found in images such as complex scientific graphs or technical infographics reduces information processing fluency, lowers risk perception, and leads to message resistance (Bullock et al., 2019). On the other hand, using simple schematic representations such as cartoons attracts more public engagement compared to purely data-driven arguments (e.g. graphs) during health crises (Kearns & Kearns, 2020).

Visual simplicity in an infodemic-laden media environment is a crucial first step for the visibility, attention, and signposting of credible information. When visual instructional risk messages use coordinated colour schemes, apply visual hierarchy, and avoid technical complex images and clutter, they are more likely to support visual attention that potentially leads to public engagement.

2.5.2 Infodemic Management

Prolonged crisis contexts often expose the public to infodemics, described as an overabundance of information from legitimate official sources but also from bad actors perpetuating misinformation and disinformation (Ghebreyesus, 2020; Rothkopf, 2003). Van der Meer et al. (2024) describe this situation as the crisis of trust occasioned by a polarized media and information system with an avalanche of both credible and untrustworthy information. Encountering infodemic situations happens as the public's

heightened information-seeking to fill knowledge gaps about the complexity of a given risk exposes them to this murky information environment.

With this context, navigating content overload to identify trusted information sources becomes even more critical. Often times the public seeks for and looks to apply social trust to experts and governments for credible risk and crisis communication and guidance (Siegrist & Cvetkovich, 2000). Therefore, organizational logos can act as one of the primary visual cues for source credibility and is a first step in signalling credibility in a trust deficient society. Indeed, with the pervasiveness of mis- and disinformation, the inclusion of an institutional logo serves to demonstrate credibility, competence, and trust (Lowry et al., 2014; Shah & Wei, 2022). As highlighted in the elaboration likelihood model, the peripheral route of message interpretation is enhanced when communication material is branded with the organization's logo (Chaiken & Maheswaran, 1994; Li & See-To, 2023; Petty et al., 1986).

This means that organizations and authorities conducting public communication can use logo branding on communication materials to signal their expertise and trustworthiness and to shape risk perception (Ohanian, 1990; Sellnow & Sellnow, 2024). Although branding through logo use on communication materials stems from marketing and advertising disciplines, it can also be appplied to prolonged crises for visual identity. This type of identification through logos and aligned with the organization's brand colours (Miniukovich & De Angeli, 2014) is connected to trust and source credibility which influences if and how the intended audience receives a message. Trust and expertise are important dimensions of credibility which is crucial for message believability and persuasion to take self-protective actions during prolonged crisis situations (Berlo et al., 1969; Seeger, 2020; Slovic, 1987).

Separately, using culturally relevant and familiar icons promotes a single idea or concept and is useful in public-facing health communication especially among audiences with low literacy (Lazard et al., 2017). Furthermore, because of their similarity to what they represent, symbols and icons are visual cues for visual attention and message comprehension. Indeed, Xu et al. (2024) share evidence that the use of

iconic visuals (such as the coronavirus image) during a global pandemic supports audience comprehension.

While logos and brand colours are one of the cues for source credibility, there is also value in depicting government officials and subject matter experts and highlighting their opinion of the risk. The public often trusts information from government and subject-matter experts, especially when this is communicated on official government communication channels, and is particularly true when issues are not politicized and when there is high institutional trust (Ahn & Noh, 2020; Krastev et al., 2023; van der Meer et al., 2024). Research shows that the public assumes that information is likely reliable if they can attribute it to a credible person or organization (Sundar, 2008). For example, to manage infodemics during the COVID-19 pandemic, the public looked to political figures, scientists, doctors, and the WHO for credible information (Mellado et al., 2021; Nielsen et al., 2020).

In conclusion, identification through logo branding and depicting credible sources is critical for infodemic management during prolonged crises as it supports the public with separating the credible from untrustworthy sources. Indeed, there is a relationship between the public's willingness to adopt self-protection recommendations and their perception of the credibility of the message source (Abu-Akel et al., 2021; Heath et al., 2009).

2.5.3 Instructional Communication of Risk

Instructional communication is about ensuring message accesibility and message efficacy (Covello et al., 1988; Morgan, 2002; Sellnow et al., 2017). For public-facing communication during prolonged crises, this means that the text accompanying the visual should be clear so that the public can understand the probability of the hazard, their vulnerability and exposure, and the level of severity from the hazard depending on their action or inaction. This text clarity in the instructions accompanying the visual is important so that the public can understand the risk, why they should do something about it, what they can do about it, and when they can carry out the recommended actions. When considering multimodality, the text and the visual should complement

each other to enhance interpretation and learning (Powell et al., 2015, 2019) even though each modality offers different functions and limitations. Multimodal framing is central to constructing mediated reality in contexts such as during the prolonged COVID-19 pandemic (Xu et al., 2024) and scholars recommend that framing studies should consider all modes (Coleman, 2010; Dan, 2018; Geise & Maubach, 2024; Xu, 2025).

Indeed, visual messages are typically multimodal and often contain both descriptive elements (text and/or numbers) and depictive elements (such as graphics, illustrations, videos, cartoons) (Dan, 2018; Geise & Baden, 2015; Verma et al., 2024). Text reinforces the arguments while visuals complement the text to support interpretation and sensemaking (Xu, 2025). Furthermore, when the meaning is contested, the text guides the interpretation of the visual (Diers-Lawson et al., 2023; Hall, 1973). This means that there should be visual-text congruence in instructional risk communication. Visual-text congruence, similar to multimodal cohesion, complements learning and instruction theories which explain that incidental processing can be reduced using integrated presentation styles that reduce misalignment by matching the text to the visual (Dan, 2018; Mayer & Moreno, 2003). In prolonged crisis contexts, this allows the public to use more cognitive capacity to process the message and saves up cognitive resources required to mentally match text to the image.

Used in combination, the text and visual should provide clear actionable recommendations, contribute to shaping risk perception, and enhance sensemaking. Drawing from the literature discussed here so far, this means that there are six key message characteristics that the text accompanying the visual should have. First, the textual message should steer clear of technical language or jargon such 'anthropogenic' impact of climate change (which simply means 'the impact of human activity' in the context of the climate crisis). Simple clear language is more accessible than technical non-everyday words and reduces cognitive barriers (Bullock et al., 2019; Sharon & Baram-Tsabari, 2014). Second, the instructions should provide actionable recommendations and support message efficacy (Covello et al., 1988; Morgan, 2002; Sellnow et al., 2017). Third, the text should connect cues to the visual frames for

message intepretation and decision making (Maitlis & Sonenshein, 2010), and, fourth, shape risk perception by providing known facts which is useful for the public to assess their vulnerability and exposure (Malecki et al., 2020). Fifth, it is important that the accompanying text acknowledges the fear and uncertainty that the public is facing in risk and crisis situations and provide recommendations for uncertainty reduction (Malecki et al., 2020). Finally, risk communication messages should be apolitical and avoid discriminatory, stigmatizing, or manipulative frames as this leads to reduced message acceptance and can ultimately cost lives (Kutalek et al., 2025; Schwarz et al., 2024).

In summary, the significant contribution from this chapter is VIM, a new conceptual framework proposed for the design of visual instructional risk messages. By applying a multidisciplinary approach, the chapter has provided deeper insights for rethinking the design of public-facing visual instructive risk communication messages during prolonged crises. To further explore the connection between prolonged crises, instructional risk communication, and visual framing, the following four research questions (RQs) are set to achieve the research agenda of this PhD project.

1. What is the state of research on visual framing during crises?
2. What role(s) do(es) visual strategy play in community engagement during a prolonged crisis?
3. To what extent can data be used to validate the VIM conceptual framework to guide the design of visual strategies during prolonged crises?
4. To what extent can the principles of the VIM conceptual framework be applied in a different prolonged crisis and different geographical context?

In line with these RQs, it is important to understand how the four publications (Table 1.1) build on and connect with each other as summarized in Figure 2.2. Publication one was a general gap analysis of the state of scholarship connecting visuals to risk and crisis communication. Publications two and three used the COVID-19 pandemic context to conceptually and empirically build the framework from VISTA to VIM, while publication four explored the applicability of the VIM conceptual framework in a different prolonged crisis and geographical context.

Figure 2.2: Connection of Publications Forming this PhD project

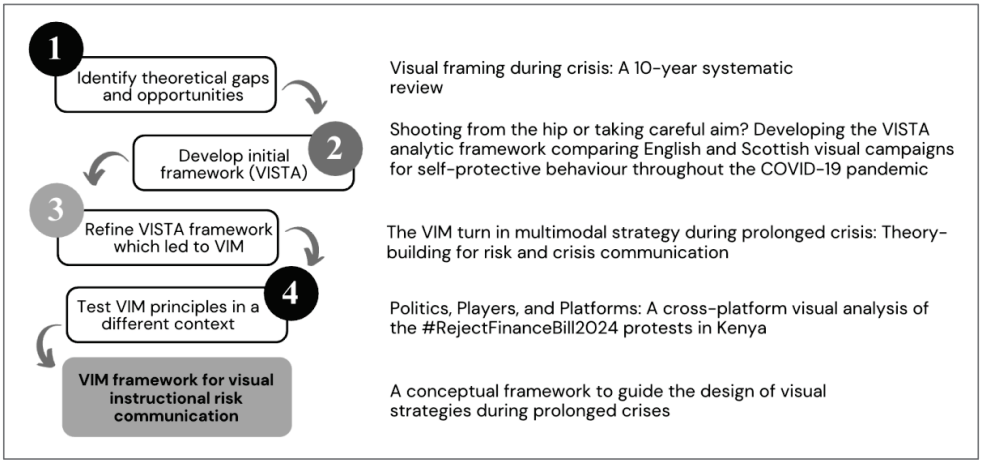


Figure 2.2 highlights that two of the four publications were based on the COVID-19 pandemic. The rationale for this is that beyond theory, it was important to explore VIM's applicability in applied settings. However, one of the challenges of understanding applied communication strategy is identifying comparable contexts where fundamentally similar material responses to the crisis have been used, but different communicative responses with vastly different health outcomes observed (Diers-Lawson et al., 2023). Therefore, the following section discusses why COVID-19 provides a comparable context for study for this project.

2.6 A Comparable Context for Investigating Visual Strategies During a Prolonged Crisis

Investigating the use of visuals by the English and Scottish governments for public communication during the COVID-19 pandemic is informed by two arguments. First, it provides a comparable context for research. Looking at England and Scotland, these two nations are a part of the United Kingdom's political system, share a three-century national history, culture, speak the same language, and implemented similar devolved policy approaches to the COVID-19 pandemic. Yet, when differences in population are taken into account, England had significantly higher mortality rates in the UK (Our World in Data, 2024; Paton, 2021). Second, the pandemic warrants a deeper investigation as one of the most high-consequence prolonged crisis of modern history. COVID-19

provides the biggest and most recent case study example of a prolonged crisis – characterized by its transboundary enduring nature, novelty, and unknowns such as previously not being seen in humans (ISRRT, n.d.; Ndlela, 2023; WHO, 2020), high mortality and morbidity rates, and non-linearity apsects with new information constantly being made available about the genetic of the virus, how it was being spread, and the race by scientists and governments to find a vaccine. Given the complexity of the pandemic, it was important that the public understands their vulnerability, exposure, and probability of infection and what they could do to protect themselves. Therefore, governments quickly became key information disseminators through public communication activities such as press briefings and providing information and updates on social media.

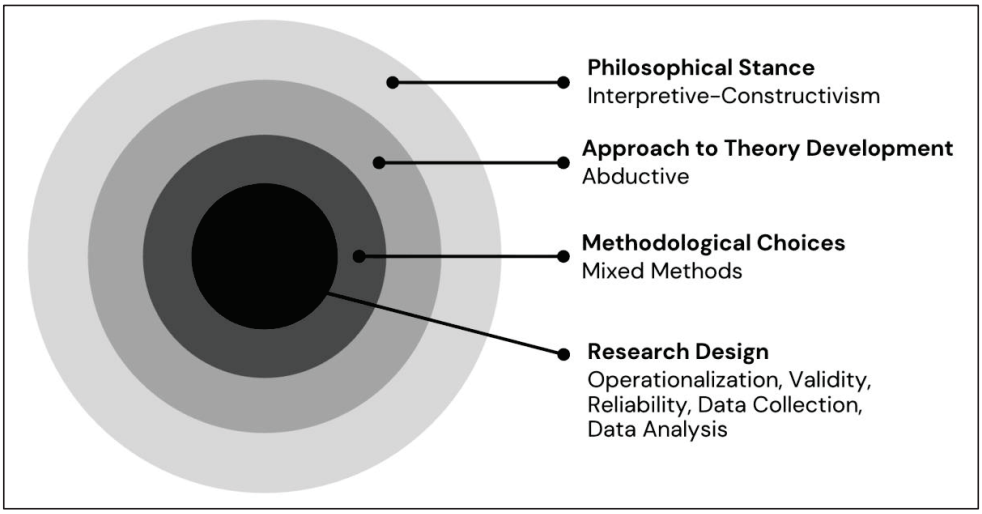
Indeed, COVID-19 was unique in its challenges of geography, virology, and severity, and provided data for real time research in multiple disciplines (Berg et al., 2021), including scholarship on how visuals were used in pandemic communication (Brennen et al., 2021; Delicado & Rowland, 2021; Kearns & Kearns, 2020; Sleigh et al., 2021; Xu et al., 2024). These studies investigated different aspects of the use of visuals in public health communication during the COVID-19 pandemic – what type of visuals were used, the most common themes in the visuals, and what type of visuals attract the highest public engagement. Collectively, the studies are restricted to the *what* and *why* particular visuals are used on social media during the pandemic. However, they fall short in exploring *how* visuals should be designed for effective public engagement during a crisis that requires both crisis communication and risk communication strategies (Omondi, 2024). This is the departure of this PhD project – making the connection between instructive risk communication and visuals during a prolonged crisis in this under-developed area of research and increasing understanding about reducing risks using instructive visual risk communication strategies. This prohect argues that the public's interpretation of visual risk messages is important if they are going to be persuaded to adopt self-protective behaviors. Therefore, it is important for scholars to explore different contexts, make sense of the public's experiences, interprete meaning, and finally construct and propose solutions for how visual instrcutional risk messages should be better designed for prolonged crises. This idea of intepretation and

construction leads to the next chapter which discusses the discusses the philosophical approach and justifies the methodological choices applied.

3. Method

Chapter two synthesized the diverse conceptual foundations of the proposed VIM conceptual framework including risk communication, instructional communication, and visual framing to identify factors that might influence the viability of visual strategies for governments and organizations during prolonged crises and proposed the VIM conceptual framework. This chapter establishes the methodological grounding for operationalizing, applying, and validating VIM by grounding it in an interpretivist-constructivist philosophical tradition, justifies the mixed method approaches taken, and demonstrates the alignment between conceptualization, ontology, and epistemology in this PhD. The chapter is structured in four sections as summarized in Figure 3.1: philosophical stance, approach to theory development, methodological choices, and research design.

Figure 3.1: Map of Methodological Choices



3.1 Philosophical Stance and Approach: Interpretive-Constructivism

In hindsight, we know how the COVID-19 story ended for England and Scotland despite a shared history, culture, language, and similar devolved policy approaches – England had significantly higher mortality rates (Our World in Data, 2024). This project seeks to make sense of the way that instructive communication, particularly visually instructive communication may have influenced England and Scotland's story by taking on an

interpretive-constructive ontology. This PhD's aim is to build theory based on a process logic for theory building by integrating multiple constructs – visual framing, risk communication, and instructional communication – to establish conceptual linkages among these domains by beginning with an abductive approach (Post et al., 2020; Sætre & Van de Ven, 2021). Sætre and Van de Ven (2021) explain that abduction begins with the observation of anomaly – in this case – in countries with so many similarities that the outcomes of COVID-19 were so fundamentally different is not easily explained by existing literature. They define abduction as a cyclical process of identifying and confirming anomalies, generating and evaluating hunches, and then re-examining the case(s). At the heart of it, this approach to theory building is a sensemaking process (Weick, 1995). Åsvoll (2014) argues that such a process is well-aligned with both an interpretive approach as well as a case study design. Indeed, this PhD uses a multiple case comparison by examining the case of England's and Scotland's approach to communicating across social media during the COVID-19 pandemic to support the adoption of self-protective behaviors.

In such a process logic, why an interpretivist constructivist paradigm? Though the particular dominant paradigms can be known as different names in different periods and research traditions, in communication the most common approaches are post-positivist, interpretive, and critical (Deetz, 2001; Putnam & Banghart, 2017). Interpretive approaches differ from other paradigms in its core definition of 'reality.' For example, interpretivist scholarship rejects the notion of material reality; favoring the social construction of reality as a negotiated process wherein our understanding and meaning does not emerge from discovering the 'true' nature of organizations and people, but in how we make sense of and negotiate that reality (Conrad & Haynes, 2001; Deetz, 2001; Mumby & Stohl, 1996; Putnam & Banghart, 2017). Putnam and Banghart (2017) argue that in an interpretive perspective, concepts are transformed by the research process as problems grounded in applied or local circumstance. Concepts and theories function as guides for improving translation rather than as directives. The interpretive constructivist approach, therefore, allows researchers to more effectively begin an abductive process by noticing anomalies, looking to the literature for possible translations, and comparing those translations to applied contexts to generate

improved interpretations of those local circumstances thereby helping to build theory using the process logic (Åsvoll, 2014; Sætre & Van de Ven, 2021; Taylor & Trujillo, 2001; Weick, 1995).

If we apply this understanding of the interpretive constructive approach, then its application makes sense in the context of this PhD. If we think of the possible explanations for the differences between England's and Scotland's COVID-19 outcomes we have to begin with the anomalies. One of the most logical explanations for the different outcomes could be the differences in communication. In Diers-Lawson's (2022) analysis of crisis leadership in Scotland during the pandemic, one of the critical factors – from Scottish residents' perspective – emerging in interview and social media data was communication strategy. This conclusion follows given the literature base for the importance of communication and research connecting risk and instructive communication. Yet, it does not consider the role of visual strategy, which has long been verified as influencing attitudes and behavior, despite the centrality of social media – an inherently visual medium – to modern instructive risk communication. Therefore, using the anomaly of the English and Scottish COVID-19 outcomes, the apparent connection to communication, and the dearth of research making the visual turn in instructive risk communication presents an ideal context to employ an interpretive constructivist paradigm to retrospectively make sense of what was done differently and use a process approach to build theory for the future from the lessons learned from the past (Åsvoll, 2014). This process orientation, however, is not limited to qualitative studies. Though interpretive constructivist perspectives are often associated with qualitative research, as Labaree (1998) posits, sensemaking is still involved in interpreting quantitative methods, like content analysis, because the anomalies are constantly compared against previous knowledge and interpretations to verify the veracity of the conclusions. Using methods, like quantitative content analysis, likewise rely on this abductive process of identifying anomalies, using literature and theory to explain them, investigating them, and building theory from the findings. This is probably why researchers like Thanh and Thanh (2015) as well as Sutton and Austin (2015) link interpretivist constructivism to the process of sensemaking through the research

process rather than through the particular methodology(ies) chosen by any particular researcher.

This philosophical assumption was important as it supports the alignment between the project's research problem and the overall research aim (Starks & Brown Trinidad, 2007). The scholarly inquiry posture of interpretive-constructivism is that the researcher is a facilitator of the construction and reconstruction process and the hegemony is that the voice and recognition of the subject (in this case the public) is important (Lincoln et al., 2011). This means that the self-protection of the public during prolonged crisis situations is central to this project, and therefore it is important to understand how risk messages might be accepted or rejected based not the organization's perspective, but the public's (Ndlela, 2018). Therefore, I take these interpretations, evaluate them, and construct meaning out of them. For example, I initially reviewed a random diverse set of visual posts from the dataset to make sense of and evaluate what visual types (photographs, videos, text-based graphics) received high first level engagement (likes, comments, retweets) (Bossetta & Schmøkel, 2023). While the evaluation of public engegement with visuals is out of the scope of this PhD project, there is something to be said about the relationship between visual simplicty, clarity of instructions, and source credibility and the public's engagement (intepretation), and therefore understanding this engagement is important as it feeds back to inform how governments should design (construction) their visual strategies to persuade the public to take self-protetctive measures during prolonged crises.

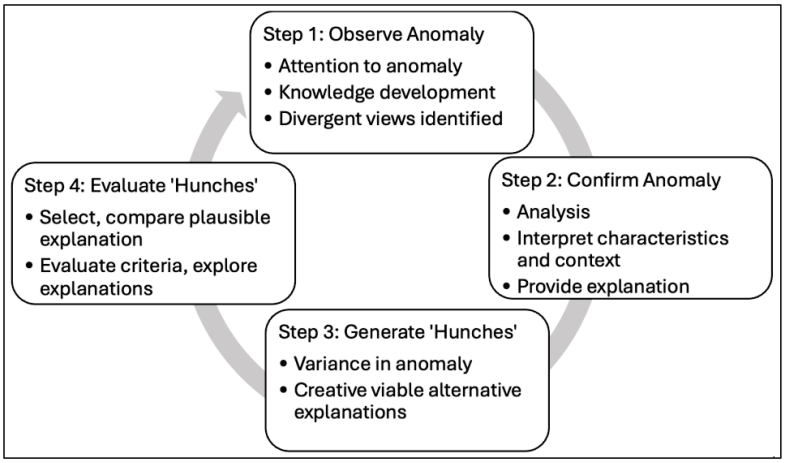
This example provides a clear rationale for the combined use of the interpretive constructivism with an abductive approach to research design. Indeed, interpretive constructivism is a research philosophy viewing reality as multiple, subjective worlds constructed by individuals through social interaction, focusing on understanding human experiences, meanings, and interpretations rather than objective facts (Goldkuhl, 2012; Thanh & Thanh, 2015), emphasizing how people make sense of their lives through language, culture, and shared understandings, often used in qualitative research to explore complex phenomena (Croucher & Cronn-Mills, 2014). It combines Interpretivism (understanding subjective meanings) with Constructivism (knowledge is

built) (Van der Walt, 2020; William, 2024), recognizing reality as co-created and context-dependent, requiring researchers to deeply engage with participants' perspective. However, an independent warrant for the use of interpretive constructivism is that it is difficult to deduce 'objective reality' from visual communication because of the inherent symbolism of visualizations – meaning they *must* be interpreted and different groups will interpret meaning differently suggesting that visual strategy also inherently requires interpretivism and a core assumption that meaning is socially constructed (Kenney, 2010). This paradigm ultimately guides this project and hopefully informs the design of visual instructional risk messages to support the public during prolonged crises.

3.1.1 The Abductive Approach in an Interpretive-Constructivist Paradigm

The cyclical process (see Figure 3.2) of identifying and confirming anomalies, sensemaking, and re-analyzing research problems with new insights that makes up the abductive approach to research design (Sætre & Van de Ven, 2021; Weick, 1995) is well-aligned with interpretive-constructive paradigm (Åsvoll, 2014). The PhD's aim to understand instructive visual risk communication, construct a conceptual framework to guide visual instructional risk communication message design, and support sustained public engagement in future prolonged crises links abductive approaches an interpretive constructivism.

Figure 3.2 Summary of the Abductive Approach



**Note: Adaptation from Sætre and Van de Ven (2021)*

It is important to be clear that this PhD's objective is framework development and validation, which is the precursor to theory development. To begin with, it is important to distinguish a framework from a model or a theory. A framework's objective is to provide categories to fit phenomena into (Fried, 2020; Nilsen, 2015; Rycroft-Malone & Bucknall, 2010). This stands in contrast to theories, which are abstract but structured principles with variables and predictions to guide understanding and models, which are narrower scope and typically linked to a specific theory to offer a simplified explanation of the theory's predictions. More specifically Jabareen (2009) defined conceptual frameworks as interlinked concepts that together provide a comprehensive understanding of phenomena. This best reflects my core objective with VIM – to make a meaningful contribution to the development of theory in visual instructive risk communication by defining the 'field of play' for applied models and theories to evolve. The interlinked concepts (visual simplicity, infodemic management, and instructional communication of risk) are drawn from the convergence of risk and crisis communication, instructional communication, and visual framing literature bases. While VIM does contribute to theory-building, it is not in and of itself a theory or a model. It is a conceptual framework with interlinked concepts offering deeper insights and arguments for rethinking visual strategies in instructional communication. From these validated principles, it should be possible to develop models and frameworks that contribute to instructional risk communication theory and practice by incorporating visual strategy and connecting these principles to best practice. Overtime, the models emerging should produce predictive, generalizable theory. This requires sensemaking and understanding that is grounded in ever evolving and expanding local circumstances each time that anomalies are observed,

3.1.2 Aligning Interpretive-Constructivism with Mixed Methods Research Design

While many assume that interpretive-constructivist paradigms only lead to qualitative research designs, that those assumptions are flawed (see e.g., Labaree, 1988; Thanh & Thanh 2015; Sutton & Ashton, 2015), Both qualitative and quantitative methods can be applied interpretive-constructivist research designs. This PhD project takes a mixed methods (MM) approach. MM is defined as the collection of different data types and

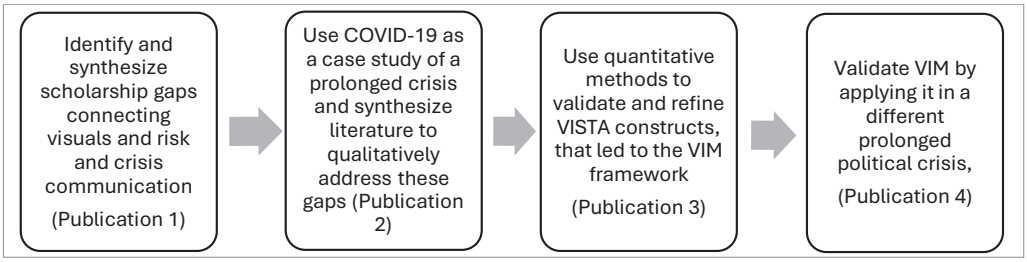
combining elements of qualitative and quantitative methods for data analysis and interpretation (Hesse-Biber & Johnson, 2013; Johnson et al., 2007), which is evident across the four publications comprising this PhD. Using quantitative methods to validate qualitative studies is not new. Campbell and Fiske (1959) are credited for introducing this triangulation approach in mixed methods in research when they used quantitative methods to improve the validity of psychological scales. In the field of risk and crisis communication, observing qualitative research early in the development of new constructs followed by quantitative research to refine and validate theory follows how the field has developed over the last several decades (Diers-Lawson, 2017).

While many scholars argue that interpretivism is typically considered for quantitative methods, Babones' (2016) perspective is that it can be applied to both qualitative and qualitative research methods. Specifically, he points out that qualitative sociologists should attenuate more about the societies in which their data are embedded and less about the 'statistics' and highlights three benefits of doing this, which are appropriate for this study. First, the iterative interpretation of data and constructing and reconstructing of meaning play a central role in grounding theory in data and vice versa. This philosophical approach was most relevant based on the output that the project aimed to achieve – a conceptual framework grounded in theory but also quantitatively validated. Without the interpretation of data in publications one and two, it would not have been possible to conceptualize VIM. VIM represents a comprehensive combination of data and theory developed out of the iterative interpretive, constructing, and deconstructing process. Second, interpretive constructivism is flexible as it allows variables to emerge from expected and unexpected results. This argument fits how the variables in the codebooks for analysis were developed from theoretical grounding. Third, this philosophical approach is qualitatively useful for the identification of relationships and quantitatively for testing latent concepts using MM. In this context, the constructs that constitute the VIM conceptual framework were based on how each construct complements the others, in essence emphasizing that none has more priority than the other – visual simplicity, infodemic management through branding and credible sources, and the instructional communication of risk – all work in concert.

However, the strongest argument for applying MM is because its exploratory-confirmatory design compensates for limitations in purely mono-methods, which is critical for the overarching aim of theory building and theory testing for this project (Kelle, 2015). As this PhD project seeks to contribute applied theory in the field of visual instructional communication of risk, using mixed methods for interpretive-constructivism reflects the benefits of potentially yielding results that are more meaningful to address societal challenges compared to purely conventional positivist approaches (Babones, 2016; Goldkuhl, 2012). MM designs also aligns with Van der Walt's (2020) perspective of the upward interpretive process in this paradigm which is useful for creating new theoretical constructs as a result of specific perspectives synthesized from literature and/or empirical studies, a process that led to the development of VIM.

Thus, this research design adapts Post et al.'s (2020) iterative process of both integrative (evaluations and interpretation) and generative (construction) approaches for developing theoretical contributions was the first step. This was followed by applying Sætre & Van de Ven's (2021) aspects of the abduction process of the theory building – in which anomalies are observed, which then resulted in construction to resolve these anomalies identified in the process logic (Varpio et al., 2020). Collectively, the four publications in this project align with this interpretive-constrictivism approach to contribute to the end goal as summarized in the following Figure 3.3 and discussed in detail below.

Figure 3.3: The Logic process of VIM Theory-Building



At their heart, MM research designs are recognized for increasing the breadth and depth of interpretation and validation (Johnson et al., 2007); enhancing the validity of the findings (Hurmerinta-Peltomaki & Nummela, 2006); providing a more in-depth understandings of phenomena that cannot be achieved with single methods designs; and for its utility for multidisciplinary studies (Schwandt & Lichty, 2015). Capitalizing on these MM benefits for this PhD project, there were two qualitative and two quantitative papers with multiple approaches to the research design. For example, paper one was a quantitative systemic review of visual framing literature to better understand the importance and potential utility of considering risk communication and visual communication strategy together. From this analysis an initial framework emerged – VISTA – that sought to explain the connections between visual and textual risk communication. Then a two-part multiple-case study was used in publications two and three. Publication two used a qualitative grounded theory approach to apply VISTA and better understand the convergence of visual strategy and risk communication in an applied context using the multiple case study design with England and Scotland to attempt to explain the anomaly of COVID-19's outcomes in the two countries. Emerging from publication two, it became clear that anomaly could be attributed – at least in part – to communication (Sætre and Van de Ven, 2021). However, it also became clear that the VISTA framework needed additional development, so in part three of the abductive process, as a follow-up to publication two and for triangulation, publication three investigated and refined the prevalence and relationships between the VISTA constructs which ultimately led to the conceptualization of VIM (Plano Clark, 2017). Building from paper two's findings, it became clear that one of the critical differences between Scottish and English risk communication was how much Scotland leaned into instructional communication – explaining what people should do and why they should do it.

Thus, in VIM's conceptualization instructional risk communication seemed essential to explain the anomalies. Moreover, lessons from prolonged crises in the literature (A Diers-Lawson & Grace Omondi, 2024; Kutalek et al., 2025; Renshaw et al., 2021) also suggest that infodemic management is a critical concern during prolonged crises. Therefore, while retaining the valuable elements of VISTA but also adding infodemic

management and instructional risk communication in the abductive approach, the research design for paper three focused on a quantitative content coding approach; however, instead of using a different data set, it was applied to the England and Scotland data to maintain the multiple case comparison for improved validity and repeat the abductive process with the new conceptual material for improved sensemaking. Finally, paper four sought to validate the process in a completely new context by focusing on visual instructive risk communication in a different crisis (i.e., political activism) and cultural context (i.e., non-Western). Using observations from specific prolonged crises, prioritizing grounding in literature, and identifying patterns to make broad generalizations (Croucher & Cronn-Mills, 2014). This iterative process was critical for grounding theory in data to propose how visuals can be meaningfully integrated into instructional risk communication theories.

3.1.3 Applying the Interpretive-Constructivist Paradigm

Van der Walt (2020), like many other scholars (Conrad & Haynes, 2001; Deetz, 2001; Mumby & Stohl, 1996; Putnam & Banghart, 2017), argues interpretivism and constructivism should be considered complementary and not as two separate lenses, arguing that they are essentially two sides of the same coin. This view aligns with Butler (1998), who positions constructivism as a form of interpretivism, implying that interpretation is followed by construction. Importantly, construction need not wait for a fully formed interpretation; rather, the paradigms operate iteratively in a continuous loop. Goldkuhl (2012) argues that interpretivism is particularly suited to interpreting subjective meanings, reconstructing them, and using them as building blocks for theorizing, which aligns with this project's aim of making a theoretical contribution. Similarly, Willis et al. (2007) emphasize interpretivism's value in understanding how reality is socially constructed within specific contexts, while William (2024) highlights its integration of cultural, historical, and social dimensions, all of which are central to this study.

The interpretive-constructivist approach is cyclical and iterative in its process of evaluation and interpretation and results in a continuous construction and reconstruction of ideas as needed. This research paradigm is applicable when we

consider the non-linear and enduring characteristics and fluctuations, adjustments, and transformations that occur during prolonged crises (Audra Diers-Lawson & Grace Omondi, 2024; Van der Walt, 2020). In a prolonged crisis, typically both authorities and the public adjust as new information comes in that could impact the nature of the risk and the public's vulnerability and probability of exposure. For example, during the novel coronavirus global pandemic that had never previously infected humans, risk communicators updated risk messages according to new scientific data regarding testing, transmission, risk factors, and prevention strategies, and provided additional guidance on vaccination when this became available.

In addition to this cyclical and iterative process, three considerations are central to the interpretive-constructivism stance. First, the paradigm encourages researchers to observe the experiences of participants and use the data coming from this observation to construct meaning and to make their own interpretation (Thanh & Thanh, 2015). Second, theoretical constructions resulting from the researcher's own interpretation process are understood as valuable, including through combining empirical data with theoretical perspectives from existing literature (Van der Walt, 2020). Third, the interpretivist-constructivism approach emphasizes that the interpretation and construction should happen within the boundaries of appropriate theories that inform the overall arguments (William, 2024). Indeed, interpretivist-constructivism does not happen in a vacuum, the evaluation and interpretation after observation of data is informed by theoretical perspectives that guide the research. Based on these definitions, and on the objectives of the PhD project, interpretivist-constructivism was the appropriate philosophical choice for this thesis.

Specifically, interpretivists are concerned with understanding meanings and experiences. Interpretivists are inclusive and acknowledge multiple perspectives in their viewpoint (Thanh & Thanh, 2015), which is useful when we consider how the reality of risk is socially constructed during prolonged crises. Indeed, any 'public' audience can be segmented along social and individual factors (Kasperson, 1992) such as age, gender identity, civil status, and education levels, which can influence the perception of risk and sensemaking or predispose individuals within these groups to be marginalized

and therefore exacerbate their vulnerabilities during risk and crisis contexts. Interpretivists seek not to predict how the public behaves, but instead to understand (Croucher & Cronn-Mills, 2014) how these diverse social and individual factors might influence the public's experiences during risk and crisis situations. The rationale is that when risk communicators understand what stifles or promotes message acceptance from the public's perspective, this knowledge can be applied to design effective risk messages to shape risk perception, promote sensemaking, and encourage the adoption of self-protective behaviors and therefore influence risk communication outcomes.

From a constructivist stance, this PhD project also considers the role of risk messages in the cognitive construction of risk perception and promotion of sensemaking among the public during prolonged crises. I argue that in a mediatized information environment, risk messages contribute to the public's construction of risk. The argument is that if the risk messages are ineffective, how the public constructs the risk and the subsequent interpretation will be compromised. This can be further understood from the perspective of the social construction of risk (Sellnow & Sellnow, 2024) – that risk communication should promote the public's collective and shared interpretation of the risk in order to counter mis- and disinformation. Indeed, constructivism as a philosophical underpinning looks into how findings are drawn from data and knowledge constructed and how this challenges or affirms our worldview or theories (Leutwyler et al., 2012). For example, if the public constructs their perception of risk from uncredible information sources or if they do not have sufficient information to counter mis- and disinformation, there is a higher probability of poor construction that exacerbates message resistance, apathy, dissonance, and even annoyance (So et al., 2017; Yusri et al., 2024). Constructivism also assumes that reality is shaped by human experience, social interaction, and culture. Therefore, in this project I aim to explore what type of visuals strategies support community engagement and decision-making in a way that mitigates uncertainty, fear, and infodemics during prolonged crises.

3.2 Methodology

The mixed methods approach applied in this project capitalizes on the complementarity of in-depth systemic literature reviews along with thematic qualitative analysis and quantitative content analysis, which was important both the framework's validation and unpacking insights that would have been achieved thorough a mono-methodological approach (McKim, 2017).

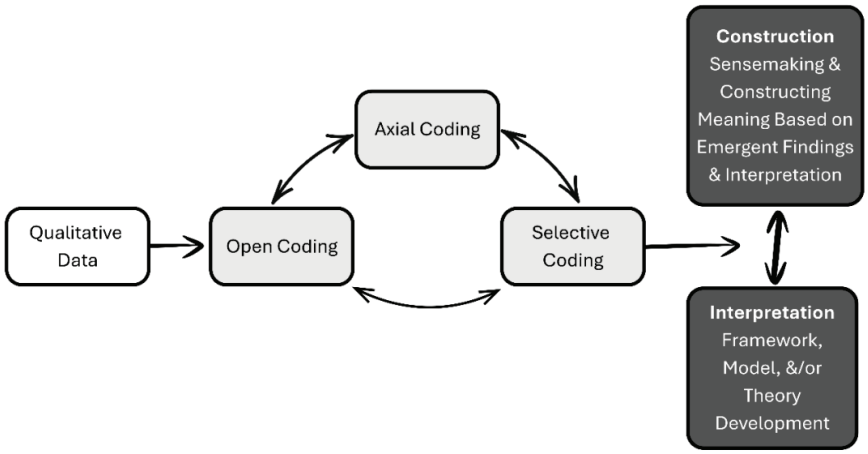
3.2.1 Qualitative Thematic Analysis

Publications two and four applied grounded theory constant comparison for analysis. Seminal studies of this grounded theory approach by Glaser and Strauss (1967) explain that constant comparison is important for developing theory that is grounded in the data. They further argue that while the constant comparison method does not generate theories, it unpacks the conditions, dimensions, consequences, and processes that surround the data.

This aligns well with the abductive approach and interpretive constructivism paradigm because the constant comparative method's approach to data analysis focuses on interpreting the data throughout – adapting the emergent categories based on identifying patterns and constantly questioning the pattern's face validity throughout the analysis (Richards & Morse, 2012b; Strauss & Corbin, 1990).

This approach also suits both the paradigm and process because the data analysis is conducted using three distinctive coding processes to analyze the data – open, axial, and selective or theoretical coding (Richards & Morse, 2012b). Williams and Moser (2019) describe the process as a recursive process of sensemaking and interpretation (see Figure 3.4).

Figure 3.4 Qualitative Thematic Analysis



Note. Figure adapted from Williams and Moser (2019).

The open coding process begins with no direct theoretical assumptions or specific research questions. In open coding, researchers identify specific concepts and themes for categorization emerging from patterns in the data (Richards & Morse, 2012a; Williams & Moser, 2019). Williams and Moser (2019) point out that the open coding process adapts the concept-indicator model for textual analysis by looking for indicators of known concepts. Clearly, this approach is adapted to the combination of visual and textual material marking an evolution of the approach; however, the objectives are the same – an ongoing coding process of themes that provide indicators of the presence of a concept "always comparing it to previous indicators…" (p. 48). By the end of the open coding process, a list of themes emerges that allows the researcher to parse and organize thematically similar data so that each category that emerges is unique.

The second step in the process is axial coding (Richards & Morse, 2012; Williams & Moser, 2019). The objective in this second level of coding is data reduction. Whereas, open coding looks for an exhaustive list of emergent themes, axial coding is designed to refine, align, and categorize the themes more effectively. Specifically, Strauss and Corbin (1990) argue that distinctive thematic categories – or dimensions – of concepts

emerge from the open coding as an aggregation of the most closely interrelated themes for which there is clear supporting evidence. LaRossa (2005) described this process as looking for the 'six C's' of categorization: causes, contexts, contingencies, consequences, covariance, and conditions. This process again uses an abductive approach looking for anomalies, connections, and continually analyzes, references, and refines the thematic dimensions. However, as Åsvoll (2014) notes, abductive research often engages with inductive and deductive reasoning as well as part of the process. Therefore, this stage also incorporates inductive reasoning as part of the aggregative process. What remains clear is that in deducing the emergent dimensions and aggregating the data, this approach both requires sensemaking that is both interpretive and constructivist as it will always be culturally, temporally, and socially bounded.

As an aggregation process, once the dimensions emerge, the final step in the process is selective coding, which is an analytic and highly interpretive step. Selective coding uses an interpretive process similar to axial coding; however, at a higher level of abstraction (Williams & Moser, 2019), so incorporates the abductive, deductive, and inductive reasoning processes by using the constant comparative method to compare the findings to known theory and research and by using the anomalies to contribute to new theory, model, and/or framework construction. By design, this stage of the process may also revisit both the open and axial processes to try to account for conceptually anomalous conclusions – that is, using construct, content, criterion, and face validity (Croucher & Cronn-Mills, 2014) – to ensure that the findings align with what is known, is exhaustive, how well-aligned the findings are to previous research, and critically reflect on the emergent dimensions.

However, what helps research using open, axial, and selective coding processes go beyond mere description and make meaningful contributions to theoretical and applied practice is the final step – using interpretation and construction to draw conclusions (see Figure 3.4). The transition from selective coding to meaning making can be a uniquely challenging part of the process because it emphasizes the selection and telling of stories that the researcher(s) believe are the most important (LaRossa, 2005;

Williams & Moser, 2019). Williams and Morse (2019) argue that it is this part of the process that facilitates meaning making in qualitative research.

This grounded theory abductive approach offers two important advantages related to this project. First, compared to more constrained and structured approaches, the abduction and the process for evaluating novel ideas is what facilitated the evolution of the VISTA model from paper two to the VIM model in paper three by focusing on the Twitter (now X) visual communication strategy from the English and Scottish governments during COVID-19. It also facilitated the design for paper four by critically reflecting on whether the insights produced in an interpretive constructivist paradigm and abductive approach would be relevant in different crisis and cultural contexts (LaRossa, 2005; Sætre & Van de Ven, 2021). In papers two and four, using a qualitative thematic analysis allowed findings to emerge from the raw data, a process facilitating grounded interpretations emergent concepts and dimensions. Second, while abduction was the primary approach used, aligned with Åsvoll's (2014) conclusions – interpretive comparative case studies benefit from using abduction processes along with inductive and deductive reasoning applied at later stages of the analyses.

To conclude, qualitative thematic content analysis for publications two and four was appropriate for exploring and understanding how governments use visual risk communication messages during a prolonged crisis because it affords the opportunity to better understand visual instructional risk communication as a tool used to encourage publics to act – for self-protective behavior enactment in the context of prolonged public health crises or for political change in the wake of political crises as in Kenya (Creswell, 2009; Willis et al., 2007).

3.2.2 Quantitative Content Analysis

In Williams and Morse's (2019) discussion of thematic analysis, they point out that while the process is well-aligned with qualitative research, at the axial and selective coding stages, it is quite possible to use quantitative approaches to achieve the same kinds of objectives in the overall interpretive constructive research design that are possible with qualitative approaches. In short, while scholars often assume that

quantitative approaches require a post-positivist paradigm (Putnam & Banghart, 2017), this assumption is flawed; research methods are not inherently linked to paradigms. For example, in their analysis of food waste in the UK, Topić et al. (2021) used quantitative methods to evaluate critical theory. Research paradigms and approaches influence how questions are asked and how data is evaluated, not how data is measured and analyzed. This is why, in the nested approach to research summarized in Figure 3.1 that methodological choices are nested within paradigms and approaches; they must be aligned, not prescribed. In the context of quantitative content analysis Croucher and Cronn-Mills (2014) define the process as a tool allowing researchers to make replicable and valid inferences from data to a specific context. They point out that quantitative content analysis begins with content categories and then analyze data to determine whether or not those categories are present (and in what manner) in the data. If we think in terms of the process for abduction (see Figures 3.2 & 3.4), then it becomes clear that quantitative content analysis is aligned with interpretive approaches to research using an abductive process.

This also depends on the codebooks used. The codes and definitions in codebooks provide a formalized operationalization of concepts for consistency in data analysis (DeCuir-Gunby et al., 2011). The systematic and structured approach of codebooks provide easy-to-follow guides for assigning data to categories which connects the theory, research questions and the data for initial direction for theorization (McLellan-Lemal & MacQueen, 2008; Oliveira, 2023). Publications one and three used codebooks to align with the interpretive constructivist paradigm and abductive approach of the project. The codebooks (See Appendices I and II) were developed through a process that involved operationalizing conceptual and theoretical dimensions so that they aligned with previous research (as in the aforementioned process moving from paper two to paper three and applying previous research and theories as in the aforementioned papers one and three), are conceptually meaningful and concise for reliable data analysis (Boyatzis, 1998; DeCuir-Gunby et al., 2011). If we think of the abductive process as Sætre and Van de Ven (2021) conceptualized it (see Figure 3.2), codebooks formalize step one – observing the anomaly (i.e., emergent factors unique to the situation, framework, and/or theories) by tracking and recording specifically when

the factors emerge, confirming it across the data set (step two), and try to identify variance in when the factors emerge (step 3). This highly scheduled quantitative process then lets the researcher engage in step 4 – evaluating the findings with a different lens compared to qualitative research because the nature of the evidence of the observations can be queried differently than in qualitative research. In this case, the interpretation comes both in whether researchers will observe the factors in the same way and frequency (*reliability*) and at stage four where the findings are evaluated to consider the most plausible explanations for the findings – interpretation and construction – and a critical reflection on the implications of the interpretations and constructions for framework and theory building.

While the codebooks will be explained in more detail in section 3.3, to summarize the abductive approach, the codebook for paper one (Omondi, 2024) was developed for quantitative coding based on 11 variables facilitating the analysis of journal articles for systemic literature reviews applied in Diers-Lawson's (2017) review of five decades of crisis communication research. Variables coded included the year of publication, crisis type, field of study, journal, journal field, geographical focus, unit of analysis, source of unit of analysis, theoretical framework applied, and method. Three categories were added to account for the anomalies emerging in visual communication research including the visual framing model/framework, not crisis research related, and more than one crisis type to evaluate the degree to which visual communication was applied to crisis contexts. These categories were aligned with the article's aim – to understand the trends, gaps, priorities, and theories used in visual framing research and determine its connection to crisis contexts. This afforded the opportunity to emphasize at least five of Larossa's (2005) six C's of thematic analysis - contexts, contingencies, consequences, covariance, and conditions.

In the discussion of the evolution of VISTA to VIM from publications two to three, I pointed out that the data had clearly demonstrated a need to expand the literature to incorporate instructional risk communication and connect infodemic management given the context of prolonged crisis. This reflects step four in Sætre and Van de Ven's (2021) abductive process (see Figure 3.2). Therefore, in publication three, the codebook

was developed based first on the observed VISTA factors and dimensions emerging as useful from paper two. This affords the ability to validate those dimensions in steps one through three of the abduction process. However, it also allowed for the introduction of principles relevant to instructional risk communication and infodemic management based on the qualitative thematic analysis. This approach for paper three afforded two contributions – refining the VISTA framework, leading to VIM and validating VIM focusing on external, construct, content, and criterion validity evaluations (Croucher & Cronn-Mills, 2014). By applying the interpretive constructivism principles in this multimethod abductive approach, a useful methodological and theoretical innovation has been created for incorporating visual strategy into risk and crisis communication research.

3.2.3 Ethical Considerations

As with all research, there are ethical considerations relevant to this PhD. However, these ethical considerations are limited because this research does not directly involve human participants – only public governmental actors. Suri (2020) argued that when there is no sensitive or confidential information collected, there is limited ethical risk in research. All four publications were based on publicly available non-sensitive data. Certainly, the ethical responsibility for literature reviews – and all publications using previously published research is accurately and fairly representing the literature cited. This ethical litmus test has been met in publications one, two, and four by going through the double-blind review for publication. For publication three, the publication has been accepted for publication by editors and will be subject to further publisher review as well. For publications two and three, data were collected from publicly accessible government Twitter accounts. While there are arguments for what constitutes consent and permissions when researching and using social media data, ethical issues such as whether all social media data that are available are also public and therefore fair to use have been raised (EU, 2021; Winter & Gundur, 2024). From an ethical and legal standpoint, these papers use social media data from non-private groups and publicly visible government accounts are not subject to the same expectations of consent and confidentiality that social media data from private citizens can expect. In those cases, where publicly available social media data for private citizens is used, ethical and legal

guidance on platforms like Instagram, TikTok, and Twitter indicate that account handles, owners, or creatives who designed the visuals must not be disclosed, especially considering the sensitivity around anti-government protests. This was the case for paper four and so these ethical guidelines were applied in that peer reviewed journal article as well. Overall, there is no harm anticipated to any research subject(s), the research environment, future research, or any institution through reputational harm or legal consequences (Bruckman, 2014).

3.3 Research Design

This section applies the paradigmatic and approach discussed in the previous two sections directly to the project's research design focusing on the study's operationalization and instrumentation, data collection, validity and reliability, and data analysis strategy.

3.3.1 Operationalization and Instrumentation

Operationalization of concepts involves moving from the abstract to the empirical level (Croucher & Cronn-Mills, 2014; Mueller, 2004) and is cannot do without operational definitions of theoretical concepts for the research process and for theory building (Roskam, 1989). As theories can be abstract, it is crucial that they are translated to reduce abstractions so that they are measurable (Ogden, 2013). Operationalization is central for demarcating boundaries and separating what is relevant and what is out of scope for each publication and for the overall project study. This was important for reducing fuzziness to ensure conceptual clarity. Throughout the project, risk communication is conceptualized as stakeholder-centric for the public's self-protection; instructional communication as guidance for message efficacy and shaping risk perception; prolonged crises as enduring, transboundary crises with societal-level impact; and multimodality as the use of visuals and text for issue interpretation and sensemaking. Understanding that concepts can be understood differently in different contexts (Mueller, 2004; Petticrew & Roberts, 2008), this PhD project customized operationalizations based on the aim of each publication, which will be discussed in this section.

Publication one operationalized the prevalence of visual framing in risk or crisis contexts by applying a previous operationalization of crisis communication literature (see Diers-Lawson, 2017) and then operationally expanded the research framework to incorporate new visual framing theory, model, or framework, whether it was crisis relevant or not, and the inclusion of multiple crisis types to adapt it to meet this study's aims (see Appendix I).

At the selective stage for qualitative content analysis, publication two operationalized the VISTA framework emerging from publication one and through the axial process also abductively added in visual branding to account for variances between Scotland and England. Table 3.1 summarizes the selective coding analysis applied in publication two.

Table 3.1 Operationalization of VISTA

VISTA Dimensions	Operationalization
Visual Complexity	• Visual clutter • Visual hierarchy • Multiple images used at once • Coordinated colour schemes • Visual branding
Iconography and Symbolism	• Use of visual icons • Use of visual symbols
Text Accompanying Visual	• Visual-text congruence

Additionally, publication two operationalized the waves as 1 (12 March to 11 September 2020), wave 2 (12 September 2020 to 20 June 2021), and wave 3 (21 June 2021 to 8 February 2022) based on observable data of the distinctive waves of infection and death in the UK (Our World in Data, 2024).

Publication three represented a highly scheduled exploratory quantitative content coding. Therefore, the operationalization of the variables was relatively precise (see Appendix II). The operationalization was based both on publication two (Diers-Lawson et al., 2022) and the understanding that prolonged crises may fundamentally change risk communication (A Diers-Lawson & Grace Omondi, 2024). Therefore, new

conceptual literature focusing on instructive risk communication grounded by the IDEA model (Sellnow et al., 2023) and factors or dimensions emerging from previous evaluations of COVID-19 risk communication (Jacob et al., 2023) used by the EU's COVI sub-committee to evaluate practice and infodemic risk was used to operationalize key constructs for paper three. A brief summary of the operationalization is summarized in Table 3.2.

Table 3.2: Variables Coded for Each VIM Construct

VIM Construct	**Source**	**Matching Construct with Conceptual Framework Definition**	**Operationalization**
Visual Simplicity	(Diers-Lawson et al., 2022)	VIM seeks to generate new interpretations	• Visual Simplicity • Recognizability • Visual Message Unintelligibility •
Infodemic Management using Branding and Credible Sources	(Diers-Lawson et al., 2022 ; Jacob et al., 2023)	VIM has no "hard facts" but, rather, "soft interpretation of intentions"	• Visual Representation • Branding • Source Credibility • Situational Literacy
Instructional Communication of Risk	(Diers-Lawson et al., 2022 ; Jacob et al., 2023; Sellnow et al., 2017)	Provides an understanding of why multimodality is critical for public engagement during prolonged crises	• Content • Visual Experience • Priming People for Action • Reducing Resistance to Recommendations • Actionable Recommendations

Publication four applied the principles of visual simplicity, IDEA model (Internalization, Distribution, Explanation, and Action) (Sellnow et al., 2017), and the social media political participation model (SMPPM) (Knoll et al., 2020) to apply to the axial and selective coding processes. Therefore, the open coding was constantly compared to the concepts in Figure 3.3.

Table 3.3 Operationalization of IDEA and SMPPM

Theoretical framework	**Source**	**Operationalization**
Visual Simplicity	(Diers-Lawson et al., 2022)	• Coordinated color schemes • Visual branding • Use of visual icons • Use of visual symbols
IDEA	(Sellnow et al., 2017)	• Internalization (explaining why the public should care about the Bill and how it would specifically impact them) • Distribution (social media platforms used) • Explanation (explaining the Bill in non-technical terms, no financial jargon) • Action (what the public needed to specifically do and how it would be done to ensure that the Bill is not passed)
SMPPM	(Knoll et al., 2020)	• High-effort participatory actions recommended

Overall, the operationalization served to provide suitable representations of the concepts being investigated in each publication, and how each builds onto the subsequent publication. This was important for two reasons – to reduce theoretical abstractions and ensure that the variables are measurable, and, second, to avoid ambiguity and redudancy because concepts and indicators can be interpreted differently depending on context. The operationalization process for all four publications was an iterative process bringing together the integrative and generative approaches for developing theoretical contributions (Post et al., 2020) and aspects of the abduction process of the theory building (Sætre & Van de Ven, 2021), which connects with the interpretive-constructivism philosophical approach.

The first step, the integrative approach, involved the synthesis of existing peer-reviewed research connecting visual framing and crises and proposing a research agenda (Omondi, 2024). Additionally, the four stages of the abduction process (observe anomaly, confirm anomaly, develop hunches, evaluate hunches) involved making an initial observation of the scholarship gaps in risk communication theories failing to include the visual. The anomaly in this case was the lack of theoretical frameworks and theories connecting crises to visuals. This was followed by confirming the anomaly through a literature review (Torraco, 2016) to build an understanding of existing scholarship in both the field of crises and the field of visual framing. The next stage entailed developing and evaluating the idea and utility of a conceptual framework for the design of visuals for instructional risk communication to propose the VISTA analytic framework (Diers-Lawson et al., 2023). This process did not end here because as is the case with interpretive-constructivism's iterative approach, VISTA was reassessed through the additional lenses of literature in prolonged crisis and instructional risk communication that were missing in VISTA, yet critical for the public's decision making and self-protection. This interpretation, therefore, led to the construction of VIM. Collectively these four stages can be summarized as the integrative approach. In the generative stage, the synthesis of results from the publications one and two, and additional literature on prolonged crisis and instructional risk communication helped to develop VIM.

3.3.2 Methods of Data Collection

Different data collection methods were used depending on the research questions for each publication. Publication one was a literature review to examine the state of scholarship linking visual framing and crises. Using the keyword "visual framing," journal articles were sampled from Taylor and Francis, the publisher of journals affiliated with three major academic communication associations: the National Communication Association, International Communication Association, and World Communication Association., for peer-reviewed articles published from January 2014 to December 2023. 269 articles were analyzed after the exclusion of book reviews, reports, conference proceedings, forums, and editorials.

Publications two and three capitalized on the contemporary digital and visual media environment, in which the expansion of data sources has positioned social media analysis as a rapidly growing area of social science scholarship (Chen et al., 2023). Visual data were manually collected from Twitter (now X), specifically from England's @10DowningStreet and Scotland's @ScotGov government accounts, covering posts published between 12 March 2020 and 23 February 2022. Twitter was selected because, during this period, pandemic-related information—including content from government websites and official documents—was disseminated through the platform, making it central to both governmental and journalistic communication. Additionally, Twitter offered a multimodal balance relative to Facebook, which tends to prioritize text, and Instagram, which places greater emphasis on visuals. In total, 1,572 tweets containing visual messages were collected from @10DowningStreet and 2,044 from @ScotGov for publication two.

For publication three, approximately 70% of COVID-19–related visual posts were randomly sampled from a population of 1,572 English and 1,857 Scottish posts published published between 12 March 2020 and 23 February 2022 on England's @10DowningStreet and Scotland's @ScotGov government accounts.

For publication four, data were manually collected from Instagram, TikTok, and Twitter for all visuals tagged with the correct spelling of the hashtag #RejectFinanceBill2024, posted on these three platforms between 1 June and 1 July 2024. This timeframe was important because it was the peak of the protests about the controversial finance bill in Kenya. Only static visuals that turned up with the correct hashtag spelling were included. Videos were excluded as they require a different type of analysis to account for features such as audio and editing styles. Throughout this time frame the same visuals were used over and over again. Therefore, even if a visual was used several times, it was only counted once. Duplicates of similar protest visuals were eliminated. These criteria yielded 243 images.

3.4.2 Validity and Reliability

While validity is fundamental for assessing research rigor, Wolming and Wikström (2010) argue that it is particularly critical to link validation in theory with validation in practice—a principle this project explicitly advances. This perspective guides the examination of how VIM meets both levels of validation, ensuring that the framework meaningfully reflects empirical data while remaining theoretically robust. Accordingly, four validity measures—construct validity, criterion validity, content validity, and their combined contribution to external validity—were considered in this theory-building process.

Construct validity, evaluates the degree to which the operationalizations meaningfully assess the theoretical constructs is especially critical in the development of new conceptual frameworks (Tavakol & Wetzel, 2020). In this project, construct validity is used to assess the theoretical coherence between VIM's dimensions and the relationships among constructs within the conceptual framework. To establish this, VIM relies on purely theoretical arguments to define its three constructs—visual simplicity, infodemic management, and instructional communication of risk. The first step in establishing construct validity involved operationalizing these constructs into measurable variables (see Table 3.2), ensuring conceptual clarity and analytical rigor(Croucher & Cronn-Mills, 2014; Kirk & Miller, 1986).

Criterion validity evaluates the extent to which findings relate to relevant outcomes, encompassing both concurrent validity—alignment among measures of a concept—and predictive validity, which concerns future outcomes. In this project, criterion validity was assessed using exploratory factor analysis with varimax rotation to examine whether empirically derived factor structures aligned with the theoretically specified constructs. Exploratory factor analysis identifies latent dimensions by examining patterns of shared variance, thereby assessing whether variables group together in ways consistent with concurrent measures of each construct and testing the internal structure of VIM. This analysis ensured that an optimal number of factors corresponded to each construct and that variables loaded strongly and distinctly within them.

Predictive validity was not emphasized, as VIM is a conceptual framework not intended to predict outcomes(Indu et al., 2025; Jabareen, 2009).

Content validity concerns the extent to which measures exhaustively capture all relevant aspects of a concept and align with the existing literature (Croucher & Cronn-Mills, 2014). In this project, content validity was established through the abductive research process, wherein Paper Two employed open coding to explore visual risk communication, while Papers Three and Four evaluated instructional risk communication and visual communication's role in infodemic management within VIM's constructs, thereby clarifying what each construct entails and how it is constituted (Brod et al., 2009). In Paper Three, content validity was directly assessed using paired-sample t-tests comparing the mean use of emergent factors to determine whether constructs were employed distinctively. Additionally, the project adopted Almanasreh et al.'s (2019) framework for content validity—domain definition, domain representation, domain relevance, and appropriateness of test construction procedure. Accordingly, instructional risk communication, prolonged crises, and visual framing theories were operationalized (domain definition) (see Tables 3.1, 3.2, and 3.3); factor analyses were conducted to ensure relevant measures of VIM's constructs (domain representation); theoretical justification guided inclusion and exclusion decisions (domain relevance); and the interpretive-constructivist logic underpinning VIM's development was demonstrated (appropriateness of test construction procedure).

Collectively, construct validity, criterion validity, and content validity contributed to this project's external validity, concluding that it is possible to arrive at the same findings for other research investigating visual strategies for public-facing communication during a different type of prolonged crisis (Croucher & Cronn-Mills, 2014). Furthermore, given that external validity can be assessed through determining the extent to which empirical measures accurately reflect VIM's theoretical constructs and whether findings support the theory being tested (Lucas, 2003), this project demonstrates that the research design and multi-stage validation strategy provide a systematic and replicable approach for developing and evaluating conceptual frameworks, thereby supporting the robustness and transferability of empirical findings across studies of visual public-

facing communication in prolonged crisis contexts. Specifically, the process logic which first began with a literature review using quantitative methods, followed by the design of the VISTA framework from qualitative methods, and finally the refining of VISTA to create VIM shows how each different stages acted as building blocks for the next publication. Furthermore, the use of quantitative methods to validate VIM adds rigor for transferability in other prolonged crises.

Separately, different strategies were used across the four publications to ensure reliability. For publication one, two trained coders coded 20% of the same articles from the dataset of 269 articles as recommended for content analysis (Krippendorff, 2018; Riffe et al., 2019) with Cohen's kappa intercoder reliability at 0.92 with a range of 0.88 and 0.98 for each of the variables coded; therefore, the coding similarity check was reliable. A similar process was done for publication three in which the data was coded by two independent coders with a 10% overlap, yielding strong intercoder reliability (Cohen's kappa = .89 overall). Publications two and four are qualitative studies that used codebooks, which means that reliability tests are different compared to quantitative methods. As Oliveira (2023) and McLellan-Lemal & MacQueen (2008) argue, codebooks meet the criteria for providing reliability as they are easy-to-follow guides that provide consistency for assigning categories. For these publications, two coders were separately assigned the same visual posts to code into different categories, and then any variations were discussed, clarity provided, and refining of categories done where this was required.

3.4.4 Data Analysis Strategy

The data analysis strategy for publication one, the literature review, was first a thematic analysis using open and axial processes to identify and classify emergent themes (Strauss & Corbin, 1990) followed by quantitative analysis in SPSS using descriptive statistics and chi-square tests to answer the research questions. This data analysis strategy aligned with the research questions and objectives of identifying the scholarship trends and priorities in the visual framing of crises. Furthermore, it was important to classify the emergent themes and explore the connections across geographies, theoretical positions, crisis typologies, and visual source and type for

more nuanced conclusions. Manual coding for publication one was useful for capturing deeper insights into the article in order to include details that might not have been comprehensively in the abstracts and/or keywords (Zamith & Lewis, 2015).

Publication two applied a grounded theory analysis using a constant comparative method (Strauss and Corbin 1990). This iterative method focused on analyzing data using three coding processes together – open, axial, and theoretical. The open and axial coding followed by selective coding was important for investigating how the categories the align with theory (Corbin & Strauss, 2008; Glaser & Strauss, 1967; Vollstedt & Rezat, 2019). It followed the procedures discussed in section 3.2.1.

Publication three applied quantitative methods for data analysis to validate the qualitative results from publication two. In applying an interpretive constructive paradigm to quantitative analysis, manual coding using coders familiar with the sociocultural context of study was judged to be the best approach because it was more sensitive to the contextual connotations of coding (Larossa, 2005). This also limited the risk of algorithmic coding, which can overlook importance nuance in quantitative content analysis (Zamith & Lewis, 2015). Data were analyzed in SPSS using several tests such as exploratory factor analysis and paired-sample *t*-Tests.

Publication four also took a grounded theory constant comparison approach to analyze the visual data using open and axial coding processes (Strauss & Corbin, 1990; Vollstedt & Rezat, 2019). In open coding, each visual was analyzed to identify the latent content and then conceptualized the core idea to make sense of the underlying meaning being communicated in each visual. The guiding questions in this step were – what grievance about the Bill is being communicated, who is being addressed or being accused, how is the street protest being mobilized, and which locations are mentioned (Vollstedt & Rezat, 2019). During axial coding, core ideas were compared with relationships between them being identified and then classified into more coherent themes. Finally, the third step, theoretical coding, compared the factors emerging as being important against the theoretical approaches discussed in the literature review, checking for alignment to SMPPM, the IDEA model, and visual framing.

In conclusion, when considered in combination, the overall strength of these data analysis strategies in all the publications was that it allowed for a coherent flow and direction to address the research aim and to achieve the main contribution of this project, the VIM framework. For example, without knowledge of the scholarship gaps in risk and crisis communication (publication one), how these fields can be conceptually connected to crisis communication and visual framing (publication two), and how data can be used to validate data for theory development (publication three), there would have been no clarity and transparency in the construction of the VIM conceptual framework.

4. Findings

This chapter discusses the findings from the four publications that make up this PhD project and shows how each publication connects with and builds on the previous one (see Figure 2.2). In summary, findings from each publication act as a building block for the next publication, that eventually proposes the VIM conceptual framework and tests its applicability, demonstrating how visuals can be meaningfully integrated into risk and crisis communication theories. First, publication one identified literature gaps connecting visuals to crisis communication and proposed a research agenda that was important for a rethink to broaden scholarship in the field (Omondi, 2024). Publication two synthesized literature in prolonged crises, risk communication, instructional communication, and visual framing to propose the VISTA framework which was refined and subsequently developed into the VIM conceptual framework (Diers-Lawson et al., 2023; Omondi & Diers-Lawson, 2026). Finally, VIM principles are applied beyond a health context to test its applicability in a different prolonged crisis (Omondi & Nyambura, 2026). This chapter also highlights how the findings from each publication connect to the overall aim of the PhD project.

4.1 Visual framing during crisis: A 10-year systematic review

Publication one (Omondi, 2024) presents a decade-long review of academic literature exploring how crises are visually framed within risk and crisis communication scholarship. 269 peer-reviewed journal articles are analyzed to identify the priorities, applied theories, prevailing trends, theoretical applications, and research gaps in the field, with four RQs guiding this study:

- RQ 1: What are the critical trends in visual framing research during crises?
- RQ 2: How has time influenced the study of visual framing?
- RQ 3: How does discipline influence the study of visual framing?
- RQ 4: To what degree is visual framing research in crisis theoretically driven versus descriptive/exploratory?

The rationale of this publication was that given the duality of an inherently visual current media and information environment and the increasing frequency of crises, there should be a stronger connection between the fields of visual framing and risk and crisis communication. However, the findings suggest that while the world is increasingly visual and crisis-prone, scholarly attention remains heavily skewed toward text-based narratives, non-crisis contexts, and have a geographical bias toward North America, all of which indicate that the field has not sufficiently evolved to reflect the ubiquity of crises and the use of visuals in crisis communication in the last decade. Specifically, there is significantly more research on visual framing in non-crisis contexts compared to visual framing during crises and a higher likelihood of finding research on the visual framing of crises in a non-visual journal compared to a visual-focused journal. Results also show that there is no significant relationship between time and the amount of research on the visual framing of crises or time and crisis types – these remained the same in the 10 years analyzed. Time did not influence the theoretical framework applied or the geographical focus of research, which remained disproportionately North American-centric. The most common theoretical framework applied in studying the visual framing of crisis is media framing and the most common crisis typology investigated is disasters. There is also significantly more research on visual framing of crises in the field of environmental sciences and engineering. Finally, qualitative content analysis was the most applied method and most studies are exploratory or descriptive rather than theory-driven.

This publication provides four recommendations to advance research and practice in visual crisis communication:

a) Increase internationalization and geographical diversity: Visual framing and crisis communication research must have more cross-country, cross-platform and longitudinal studies, and move beyond the current North American bias to include underrepresented regions like Africa, Asia, and Latin America. This shift is vital for developing visual framing strategies tailored to understudied regions and cultures, socially vulnerable groups such as displaced communities, and populations with low reading literacy.

b) Adopt theory-driven and experimental methods: Scholarly work needs to transition from being largely descriptive/exploratory to a theory-building agenda. Additionally, the increased use of experimental methods is necessary to test existing models and analyze specific audience effects and impacts of visual content on factors such as risk perception.
c) Diversify crisis typologies and visual formats: Visual framing and crisis communication research needs to expand beyond disasters to address organizational transgressions, reputational attacks, misinformation, and prolonged crises. Furthermore, scholars should investigate understudied visual formats such as videos, cartoons, and data visualizations particularly on official government and institutional websites to build insights on how governments and organizations apply public-facing visual communication strategies.
d) Determine audience effects: More experimental methods would be critical in understanding the most effective visual framing strategies during crises. Therefore, research should investigate how different audiences respond to different visual frames and if this has any impact on attitudinal and behavioral responses.

Overall, this publication argues for a shift of visual framing from a peripheral strategy to a core component of crisis communication, offering insights into how visuals can mitigate public uncertainty, panic, and message fatigue typical of crisis contexts. In terms of aligning with this PhD project's theory building agenda, publication one identifies the specific scholarship gaps which subsequently informs publication two that aims to address these gaps.

4.2 Shooting from the hip or taking careful aim? Developing the VISTA analytic framework comparing English and Scottish visual campaigns for self-protective behavior throughout the COVID-19 pandemic

The main contribution of publication two is the VISTA analytic framework – Visual complexity, Iconography/Symbolism, and Text Accompanying the visual– which addresses one of the gaps identified in publication one – a lack of theory connecting visual framing with risk and crisis communication. This publication is co-authored with

Audra Diers-Lawson and Sophie Johnson (Diers-Lawson et al., 2023), in which a prolonged crisis type, the COVID-19 pandemic is investigated. Publication two proposeds the VISTA analytical framework to make sense of how English and Scottish pandemic communication campaigns aligned with VISTA. The article had four RQs:

- RQ 1: How did visual style emerge for the English and Scottish governments across the pandemic?
- RQ 2: In what ways did the official pandemic response evolve across the pandemic for the English and Scottish governments?
- RQ 3: What communication strategies have emerged in the visual pandemic response in England and Scotland across the pandemic?
- RQ 4: Does the visual pandemic response help to explain differences in English and Scottish outcomes across the pandemic?

Overall, the findings suggest that England and Scotland both aimed to provide self-protective guidance, but their approaches differed significantly. England performed well on individual message design; many posts met VISTA criteria for low visual complexity and effective iconography. Specific campaigns, such as "Hands, Face, Space," were initially simple and visually impactful. However, England's undoing was the "shotgun" approach, launching numerous unrelated visuals without repetition or a cohesive brand. Unlike Scotland's consistent templates, England's frequent changes likely caused visual clutter and added mental noise. Messaging was often organization-centric, prioritizing government "excellence" and Boris Johnson over the public's needs. Furthermore, English tweets often lacked accompanying text for clarification or direct links for elaboration. Separately, England's tone turned toward fear-based messaging and punishment in Wave 2, which is known to erode trust and reduce behavioral compliance compared to Scotland's positive, empathetic approach. Overall, England's campaign appeared to be disconnected rather than tell a coherent story, making it difficult for the public to follow a clear, consistent path.

On the other hand, Scotland did well in visual consistency and clear visual branding throughout the pandemic. Unlike England's "shotgun" approach, Scotland utilized

twelve consistent templates that minimized visual complexity and built cultural memory. Scotland effectively used experts as credible sources, such as Professor Jason Leitch, to establish trust and to translate complex pandemic science. Furthermore, Scottish tweets had accompanying text that provided context and gave specific actionable instructions. In terms of tone, Scotland prioritized positive, empathetic, and pro-social messaging, focusing on "what to do and why" through their FACTS campaign which contributed to message efficacy. The gaps in Scotland's strategy was a comparatively "less interesting" visual style compared to the diverse graphics used in England, evidenced by improved visual quality over time, suggesting an initial lack of polish. However, while England's approach was organization-centric, Scotland remained stakeholder-centric, leading to significantly better health outcomes. Ultimately, Scotland's campaign succeeded in telling a coherent story rather than disconnected snapshots.

VISTA's three constructs interrelate by combining visuals and text to support sensemaking, information processing, and recall – a combination that has the potential to reduce mental noise and promote message interpretation. In terms of aligning with this PhD project's theory building agenda, publication two proposes the VISTA analytical framework as a good starting point to further proceed with theory building.

4.3 The VIM turn for multimodality strategy during prolonged crisis: Theory-building for risk and crisis communication

Publication three is co-authored with Audra Diers-Lawson (Omondi & Diers-Lawson, 2026). Because the overarching aim of this PhD project was to contribute to theory-building to move risk and crisis communication from a skewed textual and verbal lens to more visual integration, this publication refines the VISTA analytic framework to become the VIM conceptual framework and validates it. VIM has three interrelated constructs (see Figure 2.1) – visual simplicity, infodemic management, and instructional risk communication. Designed for public-facing communication during prolonged crises, VIM emphasizes visual simplicity to reduce cognitive load and promote sensemaking, strategic visual branding and credible sources to mitigate infodemics and maintain institutional trust, and clarity in instructional communication

to shape risk perception and to encourage self-protective behaviors. Four validity types are used to offer an initial validation of the VIM conceptual framework – external, construct, criterion, and content.

External validity considered the extent to which VIM can be generalized to real-world settings. This was established through an applied quantitative content analysis of COVID-19-related Twitter visual posts from England's @10DowningStreet and Scotland's @ScotGov to ensure the framework was tested using data from real-world evidence. To further strengthen external validity, this publication used a comparative case design to investigate how the principles of VIM were applied by the two nations. Furthermore, two independent coders coded the visual posts with a 10% overlap and achieved a high intercoder reliability score (Cohen's kappa = .89). Ultimately, external validity confirmed that the VIM conceptual framework is a practical tool for designing visual communication strategies during prolonged crises.

Construct validity demonstrated VIM's conceptual coherence by ensuring clear connections between theoretical definitions and operationalization of the variables. Construct validity is important for confirming that the specific factors being measured actually represent the underlying ideas. To achieve this, the VIM conceptual framework is grounded in a literature review and through the synthesis of instructional communication, prolonged crisis, and visual framing literature. For example, the visual simplicity construct is operationalized into measurable factors such as the "number of images" and "simplified visual primacy". Similarly, instructional risk communication was defined by five key conceptual characteristics such as avoiding technical jargon and promoting sensemaking, which were then translated into 16 operational factors such as "risk clarity" and "self-efficacy". By mapping these theoretical concepts to observable indicators (such as the presence of a government logo for "source credibility"), this publication demonstrates a transparent bridge between abstract theory and empirical data. This rigorous alignment ensured that VIM accurately captures the specific multimodal processes that influence how the public interprets and act upon instructional risk communication messages.

The third type of validity was criterion validity. Criterion validity ensures that when the VIM framework is used, the three constructs work as independent yet interrelated dimensions for explaining how people interpret visual instructional risk messages. Therefore, the publication assessed how well VIM's constructs (visual simplicity, infodemic management, and instructional risk communication) relate to the variables and the extent to which they can be statistically distinguished from one another. Exploratory factor analysis (EFA) with varimax rotation is used to identify emergent factors and verify that they are truly distinct and not overlapping redundantly. For visual simplicity, the EFA supported criterion validity by successfully grouping factors into three distinct categories: simplicity, recognizability, and complexity. Similarly, for infodemic management, the analysis identified four distinct dimensions comprising 14 separate factors. By statistically confirming that these factors "hang together" in logical, data-driven groups, criterion validity demonstrated that the VIM framework is structurally sound. This validity type was essential because it provided the empirical evidence needed to show that the framework can effectively categorize the diverse choices made by the two nations to communicate during the pandemic.

Finally, content validity was tested by conducting paired-sample T-tests to compare the mean use of different emergent factors. The goal for this validity type was to examine whether VIM exhaustively represents all aspects of the concept it aims to cover across the constructs. For example, 120 tests were done for instructional factors alone and found that nearly all comparisons reached statistical significance, indicating meaningful variability and confirming that the framework captures a wide range of communication approaches. The results demonstrated that the framework could distinguish between highly frequent strategies, like visual-text complementarity, and rarely used ones, such as intimidation-based appeals. For the infodemic management construct, content validity tests showed that governments prioritized indirectly countering infodemics through visual branding and institutional logos rather than direct debunking. This exhaustive testing ensured that VIM doesn't just focus on a few message types but that it provides a comprehensive map for diverse visual instructional communication of risk choices. By showing that VIM is sensitive to the nuances of both

widely used and niche strategies, this publication suggests that VIM offers a multidimensional perspective necessary for addressing prolonged crises.

In terms of aligning with this project's theory building agenda, publication three provides a visual turn to advance and initially validate the VIM framework which contributes to theory building for visual instructional risk communication during prolonged crises. VIM offers a multimodal lens which demonstates how theory development can move beyond text- and verbal-centric lenses. By doing this, it provides a foundation for this shift and a platform for future theory-driven research that positions visuals as central to effective risk and crisis communication.

4.4 Politics, Platforms, and Players: A cross platform visual analysis of Kenya's Gen-Z-led #RejectFinanceBill2024 protests

To further contribute to understanding multimodal strategies used during a prolonged crisis such as a political crisis, publication four is co-authored with Dr Simon Nyambura (Omondi & Nyambura, 2026) and explores how Kenyan Gen-Z activists used visual branding and instructional communication to successfully mobilize the #RejectFinanceBill2024 protests. By analyzing visuals posted on Instagram, TikTok, and Twitter at the height of the protests, the findings suggest that visuals of the clenched fist symbol and use of national colors for branding contributed to a unified identity and protest objectives, while specific instructions accompanying the visuals were useful in offline mobilization. Triggered by a controversial finance bill that was considered callous with retrogressive budget allocations, this publication offers an explanation for how protesters applied the IDEA model (Sellnow et al., 2017) and the Social Media Political Participation Model (SMPPM) (Knoll et al., 2020) to achieve the activism goals. The RQs were:

1. RQ1: What are the key visual elements used in the instructional communication of the #RejectFinanceBill2024 graphics that supported online and offline activism efforts?
    a. RQ1A - To what extent are elements of SMPPM incorporated into the visual design of messages?

    b. RQ1B - To what extent are elements of the IDEA model incorporated into the visual design of messages?
2. RQ2: What key elements of effective textual messaging are incorporated into the text that accompanies the visual messages across platforms?
    a. RQ2A: To what extent are elements of SMPPM incorporated into the text accompanying the visuals?
    b. RQ2B: To what extent are elements of the IDEA model incorporated into the text accompanying the visuals?

The overarching aim of this study was to make sense of what visual aspects used during the protests contributed to achieving the activism goals and to increase scholarship about the visuality of political protests led by the Gen-Z in Kenya. The findings suggest two key visual and two instructional communication strategies that positively contributed to the protest objectives. Visually, the coherent branding of the protest materials using colors of the Kenyan national flag promoted nationhood and patriotism beyond ethnic, generational, and political party affiliations. Furthermore, the symbolic raised clenched fist was a visual marker for solidarity and collective identity against the political class. Textually, the messages in the visuals or accompanying the visual posts articulated the grievances with constitutional backing, provided specific actions such as exact meeting locations, specific dates and times, and even prescribed dress codes. In summary, the findings demonstrate that providing clear instructions, using consistent branded visuals, translating complex financial jargon into accessible language, and even code phrases like "afande please" were central to the campaign's effectiveness that moved online outrage into a coordinated offline movement that ultimately led to the president declining to assent to the Finance Bill 2024.

The significance of this study is that it provides insights for how modern, youth-led movements bridge the gap between digital outrage and offline political activism. While some critics dismiss online activism as low-effort keyboard clicks, slacktvism, (Morozov, 2009; Smith et al., 2019) this research identifies the specific visual instructional strategies that translate online engagement into high-effort participatory actions like mass street protests and direct lobbying of politicians. This study also

demonstrates that young people are politically engaged in their own way and challenges the assumption that they are apolitical (Rainsford, 2017).

Beyond expanding global south scholarship, the main contribution of this publication is the proposed new framework for Visual Instructional Communication for Political Activism. This framework, aligned with the principles of VIM, shows how visual simplicity, branding, and actionable instructions are a model for how political activists can use consistent branding, national symbols, and the translation of technical jargon to build solidarity and action across traditional ethnic or political divisions. In terms of aligning with this project's theory building agenda, publication four tests the applicability of the VIM conceptual framework in a different context. We conclude that VIM principles of visual simplicty , infodemic management, and instructional communication apply in a prolonged political conflict in Kenya.

5. Discussion and Conclusions

This PhD project set out to expand risk and crisis communication theories through the integration of visual strategies during prolonged crisis contexts. Separate from the findings from each of the four publications (Diers-Lawson et al., 2023; Omondi, 2024; Omondi & Diers-Lawson, 2026; Omondi & Nyambura, 2026), this section discusses four disctinct contributions of the overall project – theoretical, methodological, communication and leadership theme, and applied contributions, discussed as follows.

5.1 Theoretical Contributions

The VIM conceptual framework (Omondi & Diers-Lawson, 2026) makes a substantial theoretical contribution to the field of instructional risk and crisis communication. Pfeffer (1993) argues that the idea of theory building is first to investigate issues that matter, which alludes to research relevance and face validity. Bacharach's (1989) perspective is that theoretical contributions should connect and bridge gaps between different domains and disciplines and in the process reveal something that we previously did not know, make us rethink something we thought we knew, and address scholarship and applied world problems (Corley & Gioia, 2011; Pfeffer, 1993). Based on these perspectives, the process of developing VIM explored a critical theoretical gap, connected the fields of risk and crisis communication with visual framing and instructional communication, and made us rethink visual strategies for prolonged crises.

Furthermore, in emphasizing what constitues a theoretical contribution, Whetten (1989) asserts that a theoretical contribution must go beyond simply rewriting or adding a new variable to a theory or framework and that the contribution should be multidimensional. VIM achieves this by proposing a completely new conceptual framework that did not previously exist using literature and data from this project's four publications to expand the notion of what counts as an effective visual instructional risk communication message. The argument is that before VIM, there was no framework specifically guiding the design of visual strategies for the public's self-protection during prolonged crises. VIM considered this missing perspective of visual arguments in

instructional risk communication and advanced knowledge about how we should think about visual strategies during prolonged crisis contexts.

Additionally, various scholars have set out dimensions to quantify and qualify theoretical contributions. For example, Corley & Gioia's (2011) four dimensions of theoretical contribution to explain that contributions can either be scientifically useful with revelatory originality; scientifically useful with incremental originality; practically useful with incremental originality; and practically useful with revelatory originality. However, a critical gap in this model is the assumption that theory can either scientifically useful or practically useful, and not both. However, VIM has demonstrated that it is possible that conceptual frameworks contribute to both scholarship and applied settings and offers a practical applied visual strategy framework for governments and organizations wanting to effectively engage with the public during prolonged crises.

5. 2 Methodological Contributions

This PhD project has demonstrated the viability of using mixed methods in an interpretivism-constructivist approach for theory building and theory testing (Babones, 2016; Kelle, 2015). Publication one (Omondi, 2024) used quantitative coding to identify scholarship gaps connecting visuals to crises and was the theorizing trigger for the overall project (Shepherd & Suddaby, 2017). Publication two (Diers-Lawson et al., 2023) used qualitative content analysis to address these gaps and to propose the VISTA framework while publication three (Omondi & Diers-Lawson, 2026) used quantitative methods to validate and refine VISTA, which led to VIM. Finally, publication four (Omondi & Nyambura, 2026) applied qualitative content analysis to test VIM in a different type of prolonged crisis, and in a different geographical context.

As VIM is a comprehensive combination of data and theory developed out of the iterative interpretive, constructing, and deconstructing process, the project has shown how mixed methods play a central role in grounding theory in data and vice versa. The overall process of applying the integrative and generative phases combined with the abduction process make important methodological contributions. Specifically, the

process has demonstrated how abduction theory-building in the context of the interpretive-constructivist approach can contribute to theory building. Additionally, the use of mixed methods as opposed to mono methods has provided insights on how a the approach is qualitatively useful for the development of a conceptual framework and quantitatively important for validating and testing the variables that make up the constructs within VIM.

5.3 Contributions to Communication and Leadership Theme

Leadership should act as change enablers to support their organizations to adapt to the interconnected social, technological, and political risks in today's crisis-prone visual-first media and information environment that has resulted in a higher probability of organizations experiencing more prolonged crises. The impact of crises that would normally be localized can now spread widely and quickly due to this digital media information landscape (Lawrence et al., 2024; World Economic Forum, 2025). Therefore, leadership plays a critical role in managing risks and crises, which is about concept of organizational adaptation. Through horizon scanning, agility, adaptability, and flexibility, leaders should support their organizations to change, adapt, or completely change their strategies to match the evolving digital visual environment.

Chakravarthy proposes a strategic management framework which argues that organizational adaptability is the *raison détre* of leadership (1982). Denison & Mishra (1995) explain adaptability as the capacity of organizations to redefine themselves in response to large-scale change. Organizational adaptation is also viewed as intentional strategies by an organization to reduce the gap between its *modus operandi* and the prevailing external environment (Sarta et al., 2021). Today's prevailing external media and information environment is highly visual and the world is more crisis-prone. This requires leaders to adapt accordingly for their very survival. A contingency approach to leadership is therefore useful for organizational adaptability to external-oriented situational factors by adopting mindsets, culture, and identity to successfully navigate prolonged crises in a visual environment (Avolio et al., 2014; Heinz et al., 2006; Horner-Long & Schoenberg, 2002; Schwarzmüller et al., 2018; Tannenbaum & Schmidt, 1973).

Furthermore, how leadership frames and communicates risk messages to the public, including visually, influences risk perception, message efficacy, and the extent to which the publics feel empowered to take self-protective actions (Wilson, 2020). It is also crucial that leaders are visible, show empathy, and lead by example (Okoli et al., 2022; Tomkins, 2020). For example, one of the criticisms of Boris Johnson's leadership style during the prolonged COVID-19 pandemic is that besides a populist cavalier attitude that demonstrated poor leadership, he also led an incoherent strategy that resulted in avoidable death and illness (Bonnet, 2025; Lee et al., 2020; Paton, 2021). This demonstrates that in addition to organizational adaptation, the accessibility, availability, and reliability of leadership is important during for prolonged crisis management.

5.4 Applied Contributions

While this PhD project has demonstrated the application of VIM in the English-Scottish COVID-19 context, it was important to test the applicability of the conceptual framework and its principles in other prolonged crisis situations. To achieve this, VIM is applied in the following climate crisis and post-conflict contexts.

Indeed, there is evidence suggesting that the principles of VIM are applicable in other contexts. For example, Omondi and Nilsen's (2025) research on how ocean sustainability is visually framed and how scientific arguments are presented highlights valuable lessons in visual simplicity and visual-text congruence in the context of the prolonged climate crisis. This research explores how the media often overlook the ocean sustainability crisis by focusing primarily on climate impacts on land. Considering that stock image platforms are a source of media images, it was important to explore ocean sustianability visual narratives on Getty Images. The findings reveal two important points – the highly aestheticized images fail to enhance sensemaking of ongoing ocean destruction; and the accompanying text does little to promote ocean literacy to shape risk perception. Presenting a no-crisis state of the ocean contributes to public apathy and takes away the potential for sustainable ocean action.

Separately, research examines the role of visual framing of Somalia in a post-crisis era by comparing the visual strategies of international news, local media, and social media influencers (Omondi & Diers-Lawson, 2025). While global outlets like the BBC often maintain a conflict-centered or paternalistic visual narrative, local media and influencers focus on peace journalism by highlighting a stable pre-war history and everyday life. Specifically, social media influencers prioritize renewal and resilience, using nostalgic and hopeful imagery to counter traditional Western biases that depict the nation as a failed state. The study demonstrates that multimodal messages that promote sensemaking by telling Somalia's complete story and avoid stereotypes allow for more diverse storytelling that can foster renewal, healing, and recovery. Overall, the findings emphasizes a direct relationship between how post-conflict societies are framed in the media and how they are perceived – through a visual stereotypical lens of past trauma or its future potential.

Based on findings from these two applied examples and from the four main publications forming this PhD project, this section concludes by offering four principles for applied visual instructional communication based on the principles of VIM.

5.4.1 Multimodality is central to visual instructional risk communication

Visual strategies for public-facing communication during prolonged crisis situations must account for the complex interrelationships and complementarity between different modalities. Visuals are useful for attention-grabbing while texts often support the coherent organization of ideas for cognitive evaluation. Therefore, relying on only one mode can negatively impact message intepretation and message acceptance while poor multimodal cohesion or visual-text incongruence leads to ambiguity which negatively impacts cognitive evaluation of information.

5.4.2 Visual simplicity promotes sensemaking during prolonged crises

Instructional risk messages with clear visual hierarchy and visual primacy provide cognitive shortcuts for information processing. In addition, accessible visuals such as simple illustrations and photographs enhance information retention and overall comprehension while complex scientific graphs and infographics are not recommended as they reduce information processing fluency, lower risk perception, and lead to

message resistance. Ultimately, avoiding visual clutter is an important first step in visual attention for the public's self-protection during prolonged crises.

5.4.3 Branding and credible sources mitigate the impact of infodemics

Visual branding through institutional logos, brand colors, and depicting experts not only act as visual cues to signal message credibility, they also enable credible information to stand out in a crowded media and information environment which is especially important in today's infodemic situations. Credible sources are useful for shaping risk perception and building infodemic resilience which can mitigate the impact of mis- and disinformation.

5.4.4 Clear instructional risk communication promotes adoption of self-protective behavior

Effective instructional communication during a crisis relies on multimodal cohesion, where text and visuals work together to ensure information is accessible and useful. To maximize the effectiveness of visual instructional risk messages, visual-text congruence should be prioritized to reduce the mental effort required to process risk information. In addition to complementing the visual, the text accompanying the visual should avoid technical jargon and instead provide actionable recommendations that guide decision-making and sensemaking. Risk messages should also acknowledge public uncertainty and vulnerability while remaining non-discriminatory and apolitical. Indeed, clear instructional risk messages are important for persuading the public to adopt self-protective behaviors during prolonged crises.

5.5 Final Critical Reflections

Before VIM, there was no conceptual framework specifically guiding the design of visual strategies for the public's self-protection during prolonged crises. This PhD project problematized the scholarship gap of the lack of visual integration into risk and crisis communication theories and used mixed methods to develop a new conceptual framework for how visuals strategies should be designed for prolonged crisis situations. VIM's originality is that it offers a critical redirection of existing risk and crisis communication scholarship by proposing an entirely new point of the integration of visuals during prolonged crises. As the main theoretical contribution, VIM addresses face validity (Gaber & Gaber, 2010) about the relevance, usefulness, and sensibility of

this PhD project. I argue that the very idea of developing from bottom up a conceptual framework that did not previously exist emphatically confirms the overall project's face validity.

VIM has laid a strong foundation for resolving this previously stark problem of the lack of integration of visuals into risk and crisis communication theories. This theoretical contribution was long overdue for a society with interconnected risks resulting in more prolonged crises, a visualized society, and a public that is constantly engaging with multimodal messages on multiple platforms. By demonstrating the potential of visuals to support the public's self-protection goals during prolonged crises, the argument to conceptually combine the principles of visual simplicity, infodemic management, and instructional communication when designing visual material shows that VIM has advanced knowledge for what was previously undertheorized in how to integrate visuals into risk and crisis communication theories (Jabareen, 2009; Whetten, 1989). Ultimately, VIM has contributed to how we should begin to think about multimodal public-facing communication. Beyond scholarly contributions, the applied value of VIM is that it offers a guide for how governments and organizations can more effectively engage with the public during prolonged crises in a multimodal context.

The timing of the proposed VIM conceptual framework is also significant. We live in a crisis-prone world, are experiencing more prolonged complex crises, and there is a visual turn that has resulted in a visualized society. This pervasiveness and ubiquity of visuals, and the fact that the public is constantly engaging with visuals on multiple platforms warranted an expansion of risk and crisis communication theories to match the current societal shift and media and information landscape.

Through four publications, I have demonstrated how to synthesize literature to identify a scholarship gap, how to use literature to develop an analytical framework, how to refine constructs within the analytical fremwork that results in a conceptual framework, how to validate the conceptual framework, and, finally, how to test its applicability in different contexts. VIM lays the foundation for future scholarship inquiry integrating visuals into risk and crisis communication theories. Despite VIM's potential strength

and in reflecting on the overall PhD project, it is important to acknowledge limitations and suggest recommendations for future research.

5.5.1 Limitations and Recommendations for Future Research

This PhD project had one overarching goal – theory building by connecting visuals with instrictional risk communication. While the project makes a viable contribution, I discuss the limitations of the project and offer recommendations to extend this line of research.

First, conceptually, while VIM has presented novel theoretical interpretations, the framework does not enable the prediction of communication outcomes during a prolonged crises. Future studies could use experimental methods to investigate the role of emotions and affective outcomes in visual strategies that contribute to public engagement in the context of VIM. In line with this, VIM could be further tested to understand the extent to which cultural differences (collectivistic v individualistic) and political ideology play a role in persuading the public to adopt self-protective behavior. In addition, VIM's validation focused on two high-income Western democracies. Future research should consider cross-cultural validation to ensure the framework remains robust across contexts.

Methodologically, the conceptualization of terms and their operationalization into variables within the three VIM constructs was not without limitation. While these were useful for setting boundaries for the scope of this project, it is possible that there could be alternative ways of overall conceptualization and operationalization. That said, various strategies in construct validity were valuable for reducing ambiguity and overlap. In terms of data collection for publication one, the use of one primary database may not have been exhaustive enough to represent the full population of articles in the field of crisis visual communication. Still, it is unlikely that there would be significant differences in the results beyond the Taylor and Francis database. However, future research could systematically expand the sample to include additional research in Web of Science database, for example. Finally, publications two, three, and four analyzed

only static visuals, which means there might be varied conclusions if videos and other types of visuals are analyzed.

Regarding data analysis, publications two, three, and four brought to the fore the challenges of studying visual social media data, especially in the typically manual labor-intensive process of data collection and data analysis (Murthy et al., 2016). This is due to the lack of a methodological alternative for visual analysis to match automated sophisticated textual analysis offered by big data without abstracting the visual (D'angelo, 2002; Murthy et al., 2016). Separately, while a codebook was used in the analysis, there could be potential differences in analysis and interpretation by other researchers. Future studies could consider contributions for more efficient data collection and analysis for multimodal data.

Despite these limitations, the PhD project successfully makes a key theoretical contribution. Certainly, the framework needs continued development, testing and refinement, but it has provided valuable insights into factors that influence the viability of visual instructional risk communication during prolonged crises and proposed an evidence-based conceptual framework for designing these messages.

Appendices

I. Codebook for Publication One

Year of publication: Enter as 20xx

Crisis type

1= Organizational transgression (illegal corporate behavior, technical breakdown accident, technical breakdown product recall, megadamage, human breakdown accident, human breakdown recall, organizational misdeed with no injuries, organizational misdeed with injuries)	**2=** Organizational event (mergers and failed mergers, strikes, economic downturns resulting in organizational action, workplace violence)
3= Disaster (global health emergencies, climate change, malevolence/product tampering, natural disasters, terrorist attack)	**4=** Political events (war/conflict, migration/refugees, genocide)
5= Technological impact (misinformation, disinformation, fake news)	**6=** Reputational attacks (paracrisis, rumour challenge, shifting political attitudes, scandals)
7= Not crisis research	**8=** More than one crisis type

Source: Table by Author

Field of study

1= Politics/political communication	**2=** Humanitarian (refugees, migration, internal displacement)	**3=** Climate/environment	**4=** War/conflict
5= Technology	**6=** Sport	**7=** Health	**8=** Terrorism
9= No particular theme but advancing visual studies theory	**10=** Other	**11=** More than one field	

Source: Table by Author

Journal
See Table I

Journal Field

1= Social Sciences	**2=** Health Professions	**3=** Nursing	**4=** Medicine
5= Business Management and Accounting	**6=** Chemical Engineering	**7=** Environmental Science	**8=** Arts and Humanities
9= Medicine	**10=** Psychology	**11=** Engineering	**12=**Earth and Planetary Sciences
13= Agricultural and Biological Sciences	**14=** Computer Science		

Source: Table by Author

Geographical focus

1= Africa	**2=** Asia	**3=** Europe	**4=** North America (US and Canada)
5= Oceania (Australia, New Zealand, Pacific)	**6=** South America/ Latin America	**7=** Middle East	**8=** Multi-region/multi-country

Source: Table by Author

Unit of analysis

1= Photograph	**2=** Video	**3=** Illustration (cartoons, comics, sketches)	**4=** Infographic	**5=** More than one visual type
6= Visualization	**7=** Not visual	**8=** Multimodal	**9=** Other (e.g. photovoice, mural, visual arts, bookplate, furniture)	**8=** Journal Articles

Source: Table by Author

Source of unit of analysis

1= Newspapers (printed and digital)	**2=** Twitter	**3=** Instagram	**4=** Facebook
5= TikTok	**6=** A combination of social media	**7=** TV/Film/Documentary/ Drones/Cinema	**8=** Books, magazines, comics
9= Institutional website	**10=** Government website	**11=** Informational material (brochures, posters)	**12=** Stock images (Getty, Shutterstock, Flickr, etc)
13= YouTube	**14=** Other (e.g. dramatized play, architecture, interviews, policy papers, Google street view, music)	**15=** Journal articles	**16=** Combination of one or more of the above

Source: Table by Author

Visual framing theoretical framework applied

1= Entmann's Framing theory	**2=** Goffman's Framing Theory	**3=** Rodriguez and Dimitrova's Four Levels of Visual Framing	**4=** Visual Framing Analysis
5= Mentions framing but doesn't specify theory	**6=** (Visual) Semiotic Analysis	**7=** Semantic Field Analysis	**8=** Social Semiotics - Kress
9= Framing and another non-framing theory	**10=** A combination of two framing theories	**11=** Visual rhetoric	**12=** Other non-framing theory (e.g. journalism, media ecology, rhetoric, branding)
13= No specific theory used	**14=** Combination of two non-framing theories	**15=** Media frames, media systems	

Source: Table by Author

Methods

1= Quantitative content analysis	**2=** Qualitative content analysis	**3=** Mixed (more than one method e.g. interviews and content analysis)	**4=** Experimental
5= Reviews and Essays	**6=** Other (observation, (auto)ethnography, critique e.g. for visual arts, urban design, participatory action research, etc)		**7=** None

Source: Table by Author

New visual framing framework proposed
1=No; 2=Yes

II. Codebook for Publication Three

Data about the tweet

Source

1. UK Government (i.e., England)
2. Scottish Government

Date

Enter as yymmdd

Page number

Enter as listed on Word document

Tweet number on page

Enter 1 or 2 from top to bottom, the top tweet should be 1, the bottom tweet should be 2

Type of Visual

1. Static image
2. GIF
3. Video

Length of Video

Enter as mmss
9999 = Not a video

Video Views

Enter as number
999999 = Not a video

Tweet Comments

Enter number of comments

Tweet Re-tweets

Enter number of re-tweets

Tweet Likes

Enter number of likes

Type of Message

1. Self-protection information (i.e., FACTS or Protect NHS campaign)
2. COVID numbers update
3. Announcement of COVID policy/rules
4. Other COVID

IF THE MESSAGE IS NOT ABOUT THE SELF-PROTECTION INFORMATION CAMPAIGN, DO NOT CODE ANYMORE

Visual Complexity and Symbolism/ Iconography

Using visuals to improve retention and understanding.

Creates a Visual Experience

Visual message directly reinforces the text.

1. No
2. Yes

Visual message focuses on a single theme.

1. No
2. Yes

Brand (i.e., Campaign Name) Used In Visual

1. No
2. Yes

National Identity (e.g., flag) Used in Visual

1. No
2. Yes

Government Logo Used in Visual

1. No
2. Yes

NHS Logo Used in Visual

1. No
2. Yes

Whole Campaign Slogan Used in Visual

1. No
2. Yes

Abbreviated Campaign Slogan Used in Visual

1. No
2. Yes

Campaign Logo Used in Visual

1. No
2. Yes

Consistent Look and Feel in the Visual With Other Campaign Messages

1. No
2. Yes

Icons Used to Improve Message Clarity

1. No
2. Yes

Simplified Graphics Used to Translate Complex Information

1. No
2. Yes

Gender Represented In Visual

1. No people present
2. Male
3. Female
4. Both
5. Other

Age Represented in Visual

1. No people present
2. Children
3. Teens/Students/Young Adults
4. Working-Age Adults
5. OAPs
6. Combination of multiple ages

Ethnicities Represented in Visual

1. No people present

2. White
3. Asian
4. Black
5. Other
6. Multiple Ethnicities Represented

Leader Represented in Visual

1. No people present
2. 'Ordinary' people
3. Doctors or nurses
4. Boris Johnson
5. Nicola Sturgeon
6. Other government official (indicate who in column)

Accompanying Text and Message Content

Text (beyond brand/campaign slogans) in the Visual

1. No
2. Yes

Text in the Tweet

1. No
2. Yes

Scientific/Medical Information Communicated

1. No
2. Yes

Transmission Information Communicated

1. No
2. Yes

Prevention/Risk Mitigation Information Communicated

1. No
2. Yes

Persuasive or Instructive Information Communicated

1. No
2. Yes

Inclusion of Hashtag

1. No
2. Yes

Inclusion of Link for More Information/Support

1. No
2. Yes

Inclusion of Contact Information for Support

1. No
2. Yes

Self-Efficacy (i.e., highlighting ease of performing action)

1. No
2. Yes

Response Efficacy (i.e., highlighting action leads to positive outcome)

1. No
2. Yes

Negative Affect: Anxiety (i.e., message designed to influence anxiety about COVID/related)

1. No
2. Yes

Negative Affect: Fear (i.e., message designed to influence fear about COVID/related)

1. No
2. Yes

Negative Affect: Uncertainty (i.e., message designed to influence uncertainty about COVID/related)

1. No
2. Yes

Negative Affect: Anger (i.e., messaged designed to influence anger towards COVID/related)

1. No
2. Yes

Perceived Risk/ Threat Appraisal – message designed to influence combo of problem recognition, susceptibility, and severity regarding COVID behaviors or issues

1. No
2. Yes

Social Support – message designed to communicate social ties, support, and emotion to audience

1. No
2. Yes

Self-Other Gap – message designed to make COVID-related issues more personal

1. No
2. Yes

Institutional Trust – message designed to emphasize trustworthiness of official institutions or information

1. No
2. Yes

Epistemic Mistrust – message designed to address violations of trust, threat, uncertainty, trauma, xenophobia, and/or suspiciousness

1. No
2. Yes

Subjective Knowledge – Message designed to address what people think or believe they know

1. No
2. Yes

Cognitive Elaboration – Message designed to address emotional arousal AND prior knowledge about health crises… objective to manage threat

1. No
2. Yes

Source Accessibility – message designed to demonstrate ease of access of info by info seekers

1. No
2. Yes

Information Insufficiency – message designed to improve information needed about COVID

1. No
2. Yes

Information Equivocality – message designed to allow multiple conclusions to be reasonably drawn from information presented

1. No
2. Yes

Misinformation Processing – message designed to directly address misinformation, to improve analytic skills, or improve scientific literacy for decision-making

1. No
2. Yes

Open-Coding of Communication Strategy – Either within the Visual OR Tweet

Positive Affect: Hope/Optimism (i.e., message designed to communicate hope about COVID)

1. No
2. Yes

Positive Affect: Support (i.e., message designed to communicate support about COVID/related)

1. No
2. Yes

Legal Requirements (i.e. message designed to inform about COVID-rules/laws)

1. No
2. Yes

Law Enforcement (i.e., message designed to warn about negative repercussions about violating COVID rules/laws)

1. No
2. Yes

Legal Compliance (i.e., message designed to ask for compliance w/o mentioning negative consequences for violations)

1. No
2. Yes

Social Responsibility (i.e., appeal to pro-social behaviors to protect/support each other)

1. No
2. Yes

Public Blame (i.e., message designed to attribute negative COVID outcomes to public non-compliance with guidelines/rules/laws)

1. No

2. Yes

Inoculation – Message designed to present two-sided argument to inoculate against mis-information

1. No
2. Yes

Appeal to authority made as argument for compliance

1. No
2. Yes

Communication Best Practices Evaluation – Either within the Visual OR Tweet

Fear vs. Efficacy. Message emphasizes a fear based message more than efficacy-based message.

1. No
2. Yes

Manage Uncertainty. Message is designed to reduce citizen uncertainty about COVID (e.g., it supports citizens feeling empowered to control their own fate).

1. No
2. Yes

Encourage Citizen Engagement. Message invites citizen follow up directly or indirectly (e.g., provides contact information, provides additional information, and/or directly asks for feedback).

1. No
2. Yes

Builds Public Trust.

Message avoids politicizing the crisis (e.g., does not talk about political supporters or opponents).

1. No
2. Yes

Message avoids defensive strategies (e.g., does not blame citizens, does not try to excuse poor government performance, etc.).

1. No
2. Yes

Message focuses on pro-social messaging (e.g., accommodating people's concerns, provides explanation).

1. No
2. Yes

Tailoring the Message. Message demonstrates adaptation to diverse audiences, especially vulnerable populations.

1. No
2. Yes

Coordinating Communication. Message demonstrates alignment between multiple layers of government and/or agency response, coordination, and/or cooperation.

1. No
2. Yes

Attachments - Co-Author Declarations

Publication Two

Co-author declaration

Describing the independent research contribution of the candidate and each co-author

With reference to the Regulations for the degree of Philosophiae Doctor (PhD) at Kristiania University College § 11-3: "Med doktorgradsarbeid hvor det inngår bidrag fra flere, skal det følge en underskrevet erklæring som beskriver kandidatens innsats i hvert enkelt arbeid. Både kandidat og bidragsyter skal skrive under."

The co-author declaration must be filled in electronically and signed by the candidate and co-author. Only the five most important co-authors of an article have to sign the declaration. Each co-author must complete one co-author declaration. The candidate must sign each co-author declaration and must make sure that the declaration and signatures are on the same page.

NB! *The candidate must enclose the co-author declaration(s) with his/her application for thesis evaluation.*

Article no. 2

Title of article:_ Shooting from the Hip or Taking Careful Aim? Developing the VISTA analytic framework comparing English and Scottish visual campaigns for self-protective behaviour throughout the COVID-19 pandemic

Name of candidate:_Grace Omondi

First author:___ Shared first authorship:___Second author:_**X** Senior author:___ Other:___

The independent contribution of the candidate:__Contributed to the conceptualization of the VISTA analytic framework

To the best of your knowledge, has this article been part of a previously evaluated doctoral thesis? Yes:___ **/ No**:_**X**

If yes, please elaborate:_____

Do you know if one of your co-authors is going to use this article in his/her doctoral thesis? Yes:___ **/ No**:_**X**

If yes, please name the co-author:_____

Co-author:_Sophie Loiuse Hillier

First author:___ Shared first authorship:___Second author:___ Senior author:_ **X** Other:___

The independent contribution of the co-author:_Data collection and analysis

Must be signed by the candidate and co-author		
		
Handwritten signature of candidate	Handwritten signature of first author	Handwritten signature of co-author

Publication Three

Co-author declaration

Describing the independent research contribution of the candidate and each co-author

With reference to the Regulations for the degree of Philosophiae Doctor (PhD) at Kristiania University College § 11-3: "Med doktorgradsarbeid hvor det inngår bidrag fra flere, skal det følge en underskrevet erklæring som beskriver kandidatens innsats i hvert enkelt arbeid. Både kandidat og bidragsyter skal skrive under."

The co-author declaration must be filled in electronically and signed by the candidate and co-author. Only the five most important co-authors of an article have to sign the declaration. Each co-author must complete one co-author declaration. The candidate must sign each co-author declaration and must make sure that the declaration and signatures are on the same page.

NB! *The candidate must enclose the co-author declaration(s) with his/her application for thesis evaluation.*

Article no. 3

Title of article:_The VIM Turn in Multimodal Strategy During Prolonged Crisis: Theory-building for risk and crisis communication.

Name of candidate:_Grace Omondi

First author:_ Shared first authorship: **X** _Second author:_ Senior author:___ Other:___

The independent contribution of the candidate:__Writing, data collection, editing

To the best of your knowledge, has this article been part of a previously evaluated doctoral thesis? Yes:___ **/ No**:_**X**

If yes, please elaborate:_____

Do you know if one of your co-authors is going to use this article in his/her doctoral thesis? Yes:___ **/ No**:_**X**

If yes, please name the co-author:_____

Co-author:_Audra Diers-Lawson

First author:___ Shared first authorship:_**X** Second author: Senior author:_ Other:___

The independent contribution of the co-author: Writing, data collection, data analysis

Must be signed by the candidate and co-author		
		
Handwritten signature of candidate	Handwritten signature of first author	Handwritten signature of co-author

Publication Four

Co-author declaration

Describing the independent research contribution of the candidate and each co-author

With reference to the Regulations for the degree of Philosophiae Doctor (PhD) at Kristiania University College § 11-3: "Med doktorgradsarbeid hvor det inngår bidrag fra flere, skal det følge en underskrevet erklæring som beskriver kandidatens innsats i hvert enkelt arbeid. Både kandidat og bidragsyter skal skrive under."

The co-author declaration must be filled in electronically and signed by the candidate and co-author. Only the five most important co-authors of an article have to sign the declaration. Each co-author must complete one co-author declaration. The candidate must sign each co-author declaration and must make sure that the declaration and signatures are on the same page.

NB! *The candidate must enclose the co-author declaration(s) with his/her application for thesis evaluation.*

Article no. 4

Title of article:_ Politics, Players, and Platforms: A cross-platform visual analysis of the #RejectFinanceBill2024 protests in Kenya

Name of candidate:_Grace Omondi

First author: **X** Shared first authorship:___Second author:_ Senior author:___ Other:___

The independent contribution of the candidate:_Idea conceptualization, writing, editing, data collection, data analysis

To the best of your knowledge, has this article been part of a previously evaluated doctoral thesis? Yes:___ / No:_X

If yes, please elaborate:_____

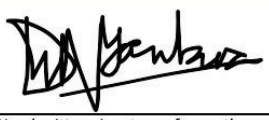
Do you know if one of your co-authors is going to use this article in his/her doctoral thesis? Yes:___ / No:_X

If yes, please name the co-author:_____

Co-author:_Dr Simon Nyambura

First author:___ Shared first authorship:___Second author:_ **X** Senior author:_ Other:___

The independent contribution of the co-author:_Writing, background research, conclusions

Must be signed by the candidate and co-author		
		
Handwritten signature of candidate	Handwritten signature of first author	Handwritten signature of co-author

Publications Forming this PhD project

Article I

Visual Framing During Crisis: A 10-year systemic literature review

Publication status: Published in Corporate Communications: An International Journal.

VOL. 30, Issue 1

Article I: Visual Framing During Crisis: A 10-year systemic literature review

DOI: https://doi.org/10.1108/CCIJ-04-2024-0065

Article II

Shooting from the hip or taking careful aim? Developing the VISTA analytic framework comparing English and Scottish visual campaigns for self-protective behavior throughout the COVID-19 pandemic.

Publication status: Published in Journal of Visual Political Communication

VOL. 9, Issue 1

Article II: Shooting from the hip or taking careful aim? Developing the VISTA analytic framework comparing English and Scottish visual campaigns for self-protective behaviour throughout the COVID-19 pandemic

DOI: https://doi.org/10.1386/jvpc_00017_1

Article III

The VIM Turn in Multimodal Strategy During Prolonged Crisis: Theory-building for risk and crisis communication

Publication status: Under review, details as follows: Omondi, G., & Diers-Lawson, A. (Expected 2026). In A. Diers-Lawson & A. Björck (Eds.), Research Handbook on the Management of Risk and Crisis Communication. Edward Elgar Publishing Ltd

Article IV

Politics, Platforms, and Players: A cross platform visual analysis of Kenya's Gen-Z-led #RejectFinanceBill2024 protests

Publication status: Accepted, in Press, details as follows: Omondi, G, & Nyambura, S. (2026 – In Press). In Thatelo, T.M (ed) Visual Political Communication from an Afrocentric Perspective. Routledge.

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