Critical Realism as Innovative Approach for Social Science Research : Information Governance Practices Context

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Abstract. The increasing concern over data breaches in Indonesia, particularly involving personal health information, necessitates effective solutions. Information governance (IG) has emerged as a potential remedy to address these challenges. This research paper aims to propose a critical realism approach as an alternative to traditional approaches like case study, narrative study, and ethnography in studying social phenomena within the realm of information governance. Building upon previous studies in IG and information system research that have utilized critical realism, this study explores the methodology and application of critical realism in understanding and improving information governance practices. This study synthesizes insights from previous IG and information system studies that have employed critical realism. This research contributes to a deeper understanding of the potential benefits and drawbacks of using this approach. By exploring this innovative approach, the study contributes insights into the interplay between information governance and critical realism, providing a novel lens to drive social change. The findings of this research will offer a synthesized understanding of the potential of critical realism in enhancing our comprehension and advancement of information governance practices.

Keywords: Critical Realism, Qualitative Methodology, Information Governance

1 First Section

1.1 A Subsection Sample

The occurrence of data breaches in Indonesia, particularly in the healthcare sector, is a cause for concern. These breaches have been particularly prominent during the COVID-19 pandemic, involving hundreds of thousands to millions of health data records. Several notable cases exemplify this issue. In 2020, approximately 230 thousand personal data records of COVID-19 patients were compromised (CNN Indonesia, 2020; BAPPENAS Indonesia, 2021). Additionally, an estimated 279 million data sets from the Badan Penyelenggara Jaminan Sosial (BPJS) Kesehatan, a government agency responsible for social security programs, including health insurance, for Indonesian citizens, were stolen in 2021 (Aqil, 2021; CNN Indonesia, 2021). Another case involved the compromise of 1.3 million personal health data records from the

Electronic Health Alert Card application (E-HAC) in the same year (BBC, 2021). Furthermore, in 2022, complete patient data from the Ministry of Health server, totaling 6 million records, were compromised (CNN Indonesia, 2022a). These incidents can be attributed to either hackers or the negligence of data processors and the absence of robust data protection protocols, resulting in accidental exposure to the public, as reported by the Indonesian Cyber Police (CNN Indonesia, 2022b). The lack of comprehensive personal data protection regulation lead to low implementation of information governance practices. As Indonesian researchers found a comprehensive data protection regulation like the General Data Protection Regulation (GDPR) can help to measure data breaches and improve data protection in Indonesia (Anand, Hernoko and Dharmadji, 2020; Yudiana, Rosadi and Priowirjanto, 2022) by enacting information governance practices in organization.

The implementation of Indonesia's new data protection regulation (PDP) at the organizational level is expected to drive improved information governance practices within the healthcare sector. This regulation imposes an obligation on organizations, including healthcare providers, to comply with the new requirements (Indonesia, 2022). Information governance practices aim to effectively manage sensitive and proprietary information (Tallon, Ramirez and Short, 2013; Smallwood, 2014). By governing the creation, storage, processing, and access of data, including sensitive information, both within and outside the organization, information governance ensures robust data management (Mikalef *et al.*, 2020). Additionally, data governance serves as a solution to address risks associated with handling sensitive information or data (Turner, 2022). Through the implementation of information governance, legal, compliance, and IT teams can take concrete steps to strengthen programs, policies, and cultivate a culture focused on security and compliance (Kelly, 2017). Moreover, it has been observed that information governance plays a crucial role in mitigating and preventing data breaches or incidents caused by human threats, as a strong information security culture, which is an integral part of information governance, helps minimize risks (da Veiga *et al.*, 2020).

However, due to the limited development of knowledge on information governance as Information governance field just emerge in the last two decade. There is currently a lack of theories or frameworks that can empirically explain and describe the nature of information governance practices and their impacts. Empirical research in this area is still limited, particularly in non-Western contexts. For instance, Tallon et al. proposed the Information Governance Framework, which focuses on the causal relationship between prior conditions influencing information governance practices and their impacts, based on empirical data from the United States. Another example is Tiwana et al.'s (2013) Information Governance Model Cube, which provides a framework for understanding IT governance research and aims to foster new theory development at the intersection of IT and organizational governance. However, these existing models primarily focus on data governance or IT governance aspects and do not provide a comprehensive view of information governance.

To address these limitations, the authors of this article suggest employing critical realism as a method to explain and describe information governance practices, particularly in the context of handling personal health information in healthcare settings. Critical realism can provide a valuable lens for understanding the underlying mechanisms and structures that shape information governance practices. It offers a way to go beyond existing models and explore the complexities and causal relationships involved in information governance. It is important to note that the main aim of this article is to contribute methodologically rather than draw practical conclusions. By suggesting the use of critical realism, the authors propose a new perspective that may lead to further theoretical development and a deeper understanding of information governance.

2   Methodology

The research design employed is qualitative in nature, giving a thorough description of critical realism as methodological way to understand deeper in the phenomenon of interests. Critical realism offers a unique lens through which to understand and analyze the underlying mechanisms and complexities of social phenomena. The study is grounded in the principles of critical realism, which views reality as consisting of both observable empirical phenomena and underlying causal mechanisms. This approach allows for an exploration of the deeper structures and dynamics that influence social phenomena, going beyond surface-level observations.

Several key literature on critical realism will be presented, analysed and synthesised. Along with the previous study which used critical realism in their study, how to design the critical realism research, what the advantage and disadvantage of critical realism and how to conduct critical realism research will be presented and discussed. The discussion will focuses on how critical realism as a methodology contributes to understanding and explaining social phenomena, particularly within the field of information governance.

3   Discussion

Critical realism is a philosophical framework developed by Roy Bhaskar to understand science, particularly social science. It emerged as a response to positivism, and interpretivism (Bhaskar 1979, Mingers 2013). The motivation behind critical realism was to address the limitations of those traditional approach. Positivism struggles to explain the relationship between the knower and the known, while interpretivism struggles to account for the existence of an external world. Critical realism tackles these issues by proposing an independent real world.

Critical Realism offers its own unique approach by challenges the empirical view of science and the idealist perspective, aiming to provide a comprehensive understanding

of reality. CR engages in immanent critique of alternative positions to develop its distinct methodology and theoretical framework.

Critical realism shifts our attention from data and analysis methods towards the real problems we face and their underlying causes. It emphasizes understanding the mechanisms and structures that contribute to these issues, enabling us to develop effective strategies for resolution (Mingers, Mutch and Willcocks, 2013). This perspective encourages a holistic understanding, highlighting the significance of causal explanations and considering broader social, economic, and political factors. By exploring deeper layers of reality, critical realism enables us to address problems at their source and work towards meaningful solutions.

This can be achieved through shifting the ontology, epistemology and methodology in order to understand the phenomenon, which for this example is information governance practices.

Stratification of Reality. Critical Realism has several key assumption: First, it recognizes the existence of an independent reality that exists objectively, regardless of human knowledge or perception(Mingers, 2004; Mingers, Mutch and Willcocks, 2013). This means that the world and its entities exist "out there" and are not dependent on our ability to perceive them. Second, critical realism posits a stratified ontology, which means that reality is composed of different levels or dimensions, including structures, mechanisms, events, and experiences (Bhaskar, 1998; Blaikie and Priest, 2017). These levels interact with each other, and the mechanisms within structures have the potential to trigger events in the actual domain. Third, critical realism adopts an open systems perspective, acknowledging that reality is complex and not easily reducible to our perceptions and experiences (Mingers, Mutch and Willcocks, 2013; Bygstad, Munkvold and Volkoff, 2016).

From those three, stratification of the reality is the most disctinctive feature of the critical realism. The stratification of reality in critical realism refers to the divide reality into different levels or dimensions (Bhaskar, 1979). This stratification is based on the recognition that reality is composed of various layers or domains, each with its own characteristics and interactions. According to critical realism, the stratification of reality consists of three nested domains: the **real**, the **actual**, and the **empirical** (Bhaskar, 1979; Mingers, 2004).

The **real** domain encompasses the structures and entities of reality, including both physical and social objects. It also includes the inherent causal powers or mechanisms that exist within these structures. These mechanisms have the potential to generate events in the actual domain (Archer, 2020). It is characterized by its stratified nature, encompassing different levels of reality and emergent properties (Danermark *et al.*,

2002; Mingers, Mutch and Willcocks, 2013). It recognizes that there are multiple layers of reality, from the micro-level of atomic and molecular interactions to the macro-level of social structures and institutions (Danermark *et al.*, 2002). These structures and mechanisms interact and give rise to various causal powers and tendencies, which can generate events and shape the course of phenomena (Danermark *et al.*, 2002).

The real domain is not directly observable or accessible to our senses (Bygstad, Munkvold and Volkoff, 2016; Blaikie and Priest, 2017). It exists independently of our knowledge and perceptions, and our understanding of it is limited. However, through inference and theoretical reasoning, we can make claims about the existence and operation of these underlying structures and mechanisms. By studying the real domain, researchers aim to uncover the generative mechanisms and causal processes that underlie observable events and phenomena(Mingers, 2004; Bygstad, Munkvold and Volkoff, 2016).

The **actual** domain is a subset of the real and includes the events that occur when the causal powers of structures and entities are enacted. These events can happen regardless of whether or not they are observed or experienced by humans. The actual domain represents the manifestation of the causal powers and mechanisms present in the real domain [2].

The actual includes the events or practices that happen in the world, this certain events occurs as a result of the causal powers from the things on the real domains. For example implementation of data classification; conducted regular training on data protection; information distribution within the hospital; these events are the result of certain causal powers from physical or social entities on the real domain (Bygstad et al., 2016; Wynn & Williams, 2012). Events on actual domains may or may not be observed by human, due to human observation capability. In this domain, critical realism recognize the possibility of unrealized events or practices because the causal powers does not triggered that events (Bygstad et al., 2016).

The **empirical** domain, on the other hand, is a subset of the actual and consists of the events that are observed or experienced by humans. It represents the subset of actual events that are accessible to our senses or knowledge. The empirical domain is influenced by our perceptions and interpretations, but it is not the entirety of reality [2].

The empirical includes those phenomena, events or practices that appear because it is generated from the events from the actual domain. This empirical practices can be observed directly by the researcher (Bhaskar, 1998; Williams and Karahanna, 2013). For example, user behaviour while doing IG practices, internal memo on IG training, data access log. The empirical domain is important in critical realism study, because this kind of practices are can be collected through interview, observation, and measurement (Bygstad, Munkvold and Volkoff, 2016) to generate data and evidence. However, although the data from empirical domains provides evidence of the existence

of events from the actual domain, it is not a reflect directly from the entities on the real domain (Bygstad, Munkvold and Volkoff, 2016). It needs to be further analysed using retroductive reasoning to support or refuse the hypotheses about which entities from the real domain that have most plausible explanation on why things happen on the empirical and actual domain (Wynn and Williams, 2012).

The stratification of reality in critical realism emphasizes the existence of different levels or dimensions of reality, each with its own ontological status and interactions. By recognize the critical realism's paradigm on the reality domain, it help the researcher to draw a better understanding and generate plausible explanation on why such a certain practices is occurs over others in the phenomenon, which in this study are information governance practices (Mingers, 2004; Wynn and Williams, 2012). This perspective allows for a more comprehensive understanding of the complexity and depth of reality, beyond what is directly observable or experienced by humans (Mingers, 2004).

Dividing reality into three domains in critical realism provides several benefits. First, it allows for a more comprehensive understanding of reality. By recognizing the existence of multiple domains, critical realism acknowledges that reality is complex and multifaceted. This perspective enables researchers to explore different levels of reality, including the underlying structures and mechanisms that shape events and experiences (Bhaskar, 1998).

Second, the division of reality into domains helps to overcome the limitations of subjective experiences and perceptions. The empirical domain, which represents the subset of actual events that are observable or experienced, is just one aspect of reality. By considering the actual and real domains as well, critical realism encourages researchers to go beyond what is directly observable and delve into the underlying causal powers and mechanisms that generate events (Mingers & Standing, 2017).

Third, the stratification of reality facilitates a more nuanced understanding of causality. By distinguishing between the real, actual, and empirical domains, critical realism emphasizes the importance of identifying and analyzing the generative mechanisms that underlie events. This allows researchers to move beyond mere correlation and explore the underlying causal processes and structures that shape phenomena (Danermark et al., 2002). Overall, dividing reality into three domains in critical realism provides a framework for understanding the complexity and depth of reality. It helps researchers to explore different levels of reality, overcome the limitations of subjective experiences, and analyze the underlying causal mechanisms that shape events and experiences.

Epistemology of Critical Realism. Critical realist is argued to be useful for understanding how and why things occur, as well as revealing the influence of context on the outcomes of a program (Sturgiss & Clark, 2020). Another distinctive characteristic of Critical Realist compared to other paradigm is it believe the logic of induction and deduction is not adequate enough for explanatory social science (Blaikie

& Priest, 2017; Danermark et al., 2002), it can be expanded into a combination of either inductive and retroductive approach or abductive and retroductive. The former approach is suitable for initially analyzing and drawing a generalization from current practices in the field and then understanding the mechanisms behind it (Blaikie & Priest, 2017). At the same time, the latter approach is better for understanding people's perceptions when carrying out those practices and then analyzing the mechanisms behind them with a retroductive approach (Edwards, O'Mahoney and Vincent, 2014).

The epistemology of critical realism is based on the recognition that knowledge is socially and historically conditioned, while also aiming to establish a realist view of being in the ontological domain (Bhaskar, 1998). Critical realism acknowledges that our understanding of reality is mediated and influenced by our social and cultural contexts, but it also seeks to uncover the underlying structures and mechanisms that exist independently of our knowledge and perceptions (Bhaskar, 1998).

One key aspect of the epistemology of critical realism is the focus on explanation rather than prediction or understanding. Critical realists argue that the goal of research should be to explain the underlying mechanisms and causal processes that generate events and phenomena, rather than simply describing or interpreting them (Mingers, 2004) [2]. This emphasis on explanation aligns with the realist ontology of critical realism, which posits the existence of underlying structures and mechanisms that shape observable events (Bygstad et al., 2016).

Another important aspect of the epistemology of critical realism is the recognition of the unobservability of mechanisms. Critical realists argue that while we can observe events and experiences, the mechanisms that generate these events are often unobservable (Mingers, 2004). These mechanisms operate at a deeper level and are not directly accessible to our senses. However, through inference and theoretical reasoning, we can make claims about the existence and operation of these mechanisms (Mingers, 2004) .

Critical realism also acknowledges the existence of multiple perspectives and the need for multiple methods in the pursuit of knowledge. It recognizes that different research methods and approaches can provide complementary insights into the complex nature of reality (Danermark *et al.*, 2002). This multimethodological approach allows for a more comprehensive understanding of phenomena and helps to overcome the limitations of any single method or perspective.

One of the most distinctive features of critical realism is its view of causality (Blaikie & Priest, 2017). In the social sciences, regularities or patterns always occur in particular contexts and inhibit by time and space. Hence, it is necessary to define the context in which a regularity happens and in which the mechanism works (Blaikie & Priest, 2017). When defining the context, the characteristics of the group, and the social and cultural conditions, need to be identified (Pawson 1989 on Blaikie & Priest, 2017). By critical

realist philosophers, this process is simplified statement:

Regularity=Mechanism+Context

The task is to explain interesting significant regularities(R). The explanation is formed by stating some underlying mechanism (M) which generates the regularities and thus consists of propositions about how the interplay between structure and agency has constituted the regularity. In realist view investigates how mechanisms work by looking at contingent and conditional that only can be found in a particular local, historical or institutional context (C) (Pawson and Tilley, 1997). The regularity of this research is the established model based on inductive analysis results. Then, to determine mechanisms that can influence regularities in the phenomenon of interests and subsequent consequences of Bhaskar Depth Realism. Bhaskar argued there are three ways to establish a depth of reality; he asserts that the world can be stratified into three nested domains, the empirical, the actual and the empirical (Bhaskar, 2008).

In Information Governance context, regularity are supposed to be information governance practices, while the context is in selected phenomenon or site. The aim of the research that using critical realism is usually to evidencing of possible mechanisms which can explain information governance practices on selected phenomenon. The regularity of this research is the established model based on inductive analysis results. Then, to determine mechanisms that can influence regularities in information governance practices and subsequent consequences Bhaskar Depth Realism. Bhaskar argued there are three ways to establish a depth of reality; he asserts that the world can be stratified into three nested domains, the empirical, the actual and the empirical (Bhaskar, 2008).

By providing a framework that combines a stratification of domain and it epistemology, critical realism allows for the integration of different research methods and approaches. This multimethodological approach enables researchers to gain a more holistic understanding of complex social phenomena and their potential for social change (Mingers, 2004).

Conducting Critical Realism study. In order to understand a phenomenon to solve the problem, first the researcher has to identify the initial problem. At this stage, an inductive approach can be carried out to help draw empirical evidence generalization (Danermark et al., 2002). The actual process will include describing and conceptualizing the characteristic and features that occur in the events of information governance practices. Generalizations can be made through data collection, but mostly the method is interviews and observation (Blaikie & Priest, 2017; Saxena, 2019). This process often looks similar to the grounded theory method (Saxena, 2019), but unlike grounded theory, critical realism does not aim to build a new theory but rather involves a back-and-forth analysis between data and existing theory (Danermark et al., 2002).

Danermark et al. (2002) provide several points to consider when drawing generalizations from a phenomenon, including:

- Some generalisations are supported by strong evidence while others may be influenced by unconscious biases.
- well-reasoned and well-supported methods are used to test the validity of generalizations. In this case, I try to elaborate the generalization results against the theoretical framework.

The inductive phase process ends when the regularities or patterns have been described and established. The next step is to develop an analysis from general observations into a more systematic and critical exploration to examine possible mechanisms behind it (Blaikie & Priest, 2017). This particular process is then continued in the second phase of the Critical Realism research, the retroductive phase.

Once the initial findings have been developed and established, the study will be moved to the second phase. The main objective of phase two is to look for evidence of possible mechanisms that occur in information governance practices, since it will be the point of interests (Blaikie & Priest, 2017). Phase 2 will involve a retroduction approach that seeks to ascertain what the world (in the broader context) must be like for the mechanism observed to be as it is and not otherwise. To achieve this, identifying the pattern over a period of time and creatively asking 'what if this occurs in different contests could help to identify hidden causal mechanisms or structures (Vincent and Wapshott, 2014). This research will be applied in order to explore the any aspects that play a part in the phenomenon of interests.

Retroductive analysis could be conducted after the code emerges from previous analysis and has been constructed and modelled through a process of conceptual abstraction from the inductive stage (Rees and Gatenby, 2014). Retroductive analysis requires a disciplined scientific imagination from the researcher (Blaikie, 2007). Characteristics of regularity are that have been constructed and used to develop and hypothesise a possible mechanism, the analysis working inferentially from a known regularity to an unknown explanatory mechanism (Blaikie & Priest, 2017). Several critical realist approaches will be used as guide views to support retroductive analysis.

In research design on critical realism, critical realism advocates embracing many ways of qualitative approach in order to analyse it data as it considered as flexible and innovative paradigm. Several methods for example grounded theory, ethnography (Blaikie & Priest, 2017)., or case study can be appropriate option to analyse the data depending on the research question and researcher needs. It offers an approach that help researcher to generate theory and plausible causal explanations of a phenomenon (Mingers, 2004; Mingers and Standing, 2017).

Wynn and Williams (2012) and Bygstad et al. (2016) demonstrated that critical realism uses generating theory process as the basis to describe causal explanation. In its application, critical realism study can used various inductive methods, grounded theory for example, to develop theory from the phenomenon before formulate hypotheses or discover potential causal mechanisms that explain why the practices occur (Bygstad et al., 2016). By this freedom and flexibility critical realism offers an explanation that might not able to posit by using other approaches. Fletcher (2017) added that by know the causal relationship on social phenomenon can help researcher suggest better strategic recommendations to solve social problems. All of these advantage offered by critical realism can be used to support the research aim of this study which understand current IG conditions then look for understanding why or how its developed, and the findings expected to help stakeholders to improve their IG practices.

The Critical Realist approach is criticised for combining two opposing and incompatible ontologies (Stockman, 1983 on Blaikie & Priest, 2017). In addition, finding hidden mechanisms in social contexts is considered difficult because of the complexity of the social world (King, 1999; Stockman, 1983 on Blaikie & Priest, 2017). However, the critical realist approach can be an alternative that needs to be developed in the world of social research and considered as a new approach.

4   Conclusion

In order to address the issue by changing social conditions, an appropriate approach is needed to understand the problem of interest. In this article, the growing problem of personal health information data breaches is acknowledged, highlighting the need for appropriate steps to resolve this issue. Although previous literature has indicated that information governance can be one way to tackle or mitigate such problems, limited understanding hinders its practical implementation. Therefore, a method is required to gain a better understanding of the problem.

From the discussion above, it is found that critical realism can be an innovative approach to comprehend the underlying mechanisms involved in information governance practices. Offering more than just descriptions, critical realism has the potential to generate the best explanations, providing answers regarding the appropriate steps to mitigate the risks of personal data breaches. A plausible explanation of information governance practice would undoubtedly assist stakeholders in improving and advancing their implementations.

Critical Realism is still finding their path, however, many scholars in information systems has already embrace this new paradigm. Although there are some kind obstacle in terms of practicality Critical Realism still offers a fresh way to deeply understand of a phenomenon. The deep understanding and plausible explanation definitely needed in

order to solve complex social problem, for example mitigate the risks of data breach by implementing information governance.

In summary, critical realism helps to develop knowledge and contribute to social change by providing a deeper understanding of phenomena, uncovering underlying mechanisms, and encouraging a critical examination of assumptions and biases. This understanding can inform the development of more robust theories and explanations, as well as interventions and policies aimed at bringing about social change.

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