6th Society for Risk Analysis Europe Nordic Chapter conference

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"Risk Analysis: from Perception to Prediction"

ABSTRACTS

Contents

Society for Risk Analysis Europe Nordic Chapter invites to the yearly meeting of risk researchers and practitioners. Conference provides interdisciplinary forum to discuss current research on risk assessment, risk perception, risk communication, risk management, and policy relating to risk.
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KEYNOTES

GOVERNING RISK AND UNCERTAINTY IN THE POST COVID-19 ENVIRONMENT

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Despite the existence of international and national pandemic surveillance mechanisms, management standards and contingency plans, it seems fair to say that the COVID19 pandemic has taken the world by surprise. The assessment and management of the Coronavirus risks have been full of unexpected outcomes, surprises and, to a degree, even U-turns and confusion. We have witnessed evolving claims about transmission channels and severity, hesitated about the best medicines, heard competing views about the appropriate steps to control and manage the pandemic. Some of these steps – such as the dramatic "lockdowns" – are likely to have lasting consequences. Objectives themselves have been unclear – e.g. should we tolerate, contain or eradicate the disease?- As well as prospects of resolution: will the pandemic exhaust itself? Is a vaccine in sight? Faced with these unprecedented challenges, government have resorted to different strategies and mechanisms to channel evidence into policy and support their actions. One year after the first outbreak in Wuhan, China, it is now time to look critically at the governance of the Coronavirus risk. Does the response to Covid-19 follow traditional Risk Analysis or does it depart from it? Do we see the emergence of a "new normal" in the way major risks are tackled? Can risk scientists help to shape the post-Covid19 environment? Answering these puzzling questions will be the aim of this plenary talk.

RISK COMMUNICATION IN TIMES OF CRISIS

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This presentation addresses the challenges of communicating risk in times of crisis and uses the Swedish management of the current Covid-19 pandemic as an empirical example. Compared to other Northern European countries and countries around the world, Sweden has managed the Covid-19 pandemic in a different manner with no lock downs, less regulation and more voluntary action expected of citizens and organizations. This kind of governing of conduct targets the self-regulating individual in terms of not only trust but also solidarity. The questions posed in the presentation are: How was this communicated and with what consequences? Because, crises do not strike equally across populations and that is true also for the Covid-19 pandemic. In Sweden, and particularly the capital region Stockholm, it is not only the elderly that has suffered the consequences of the pandemic but also the inhabitants of segregated and economically vulnerable suburbs.

INNOVATIVE GEOSPATIAL TOOLS FOR INTELLIGENT RISK MANAGEMENT

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Location intelligence and Geographic Information Systems (GIS) significantly increase a scope and value of risk data analysis. The presentation briefs on available data sources and a range of geospatial applications in Lithuania and worldwide, supporting risk analysis related topics: emergency management, risk prediction, risk mitigation, situation awareness, etc. Step into the "World of GIS" and find-out new prospects and ideas applying innovative Geospatial methods in research and practical implementation of intelligent Risk Management solutions.

APPLYING A GENDER PERSPECTIVE IN RISK AND SOCIETAL SAFETY: ON THE SEARCH FOR NUANCES AND NEW KNOWLEDGE

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The European Commission encourages all its funded research projects to apply a gender perspective wherever relevant. The anticipation is that an integrated gender dimension will help "improve the scientific quality and societal relevance of the produced knowledge, technology and/or innovation" (European Commission, 2019). Disasters, for instance, "are social and political events that are linked to who we are, how we live, and how we structure and maintain our society" (Fothergill, 1996: 33). Yet, very little research has incorporated whether and how men and women experience and handle disasters differently, nor the theoretical and practical consequences gendered differences may entail. We have conducted a literature review to establish how and to what extent a gender perspective has been implemented in existing research on organising risk and societal safety. We have also attempted to capture how gender perspectives can generate better insights and new knowledge within risk and societal safety research. Applying gender and risk search criteria within high-ranked journals in the field, we have identified 297 possible relevant articles published in high-ranked peer-reviewed journals between 1994 and 2019. Each article has been categorised and analysed in relation to the techno-scientific, the cognitive, the socio-cultural and the constructionist perspectives on risk. Our findings suggest that gender is addressed and/or applied in different ways within these four perspectives. A common denominator, however, is that marginal efforts have hitherto been made to understand the operationalisation of gender in research on risk and societal safety, and specifically how gender can be applied as a variable within the various theoretical analyses. Still an underused factor in terms of cohort composition, questions asked and data analysis, gender may indeed represent a blind side in our current understanding of risk and societal safety.

ANTHROPOCENE, RISKS AND ENVIRONMENTAL CONFLICTS: AN ATTEMPT AT CONCEPTUAL CLARIFICATION

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Intensification of human environmental imprint and expanding scale of exploitation of natural resources aggravate the interest competition. Geoscientists lead the discussion on whether we, humanity and the planet, have entered into a new era they call Anthropocene. It refers to the idea that we are living in a completely new geological epoch characterized by enormous human impact on Earth's geology, ecosystems and climate. Intensified use of natural resources creates environmental conflicts. For instance, Global Atlas of Environmental Justice by Barcelona group of Environmental Justice had over 3000 ongoing conflicts recorded worldwide. At the same time, environmental conflicts are intensifying. There is a lot of discussion in the conflict studies on how environmental change, scarcity and violent conflicts are connected to each other and how resource scarcity is in many cases the cause of violent conflicts. Then again, in the countries with the worst corruption and weakest laws the killings of environmental defenders have increased over the past 15 years to reach levels usually associated with war zones.

This paper aims to elaborate various dimensions of environmental conflict and to offer conceptual clarifications. As it is known, the concepts are context dependent and altering circumstances create pressure every now and then to re-examine the definitions we use. We also know that definitions are by no means neutral or value free. For instance, definitions of environmental conflict have much to do with power relations and they can easily stabilize social and political orders leaving more space for some actors in the conflict and limiting the opportunities for others. Therefore, if we accept the idea of Anthropocene also the concept of environmental conflict deserve reconsideration.

SEEKING THE HOLY GRAIL OF RISK ANALYSIS – NOT IDENTIFYING AND QUANTIFYING THE RISK, BUT PREDICTING THE RESPONSE

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Risk analysis is often seen as wholly about assessing the degree of risk posed by an identified hazard; the assumption being that once an individual is aware of its magnitude and imminence they will always attempt to reduce the risk in any way open to them.

Several factors, however, suggest that the process is rarely as simple as this implies. This paper argues that action in response to a perceived threat may not necessarily depend on assessment of the degree of risk it poses; it offers examples ranging from research into how nursing staff respond to a specific patient safety issue, to how populations act when faced with major health threats such as HIV/AIDS or Covid-19.

Specifically it is argued that:

a) People are usually faced with multiple threats and may differ in what they choose to prioritise as the most urgent, depending on personal characteristics and their immediate circumstances.

b) Response to the threat selected as offering the greatest and most imminent risk is modified by what individuals perceive to be possible for them personally.

c) An individual's assessment of the risk posed by any specific threat may vary at different times and under different circumstances.

d) Further, even if an individual's cognitive assessment of the risk remains the same, response may be modified by an emotional reaction which may or may not be related to the threat itself.

The influence of all these factors can be demonstrated in the examples presented. They point to the importance of considering individual and contextual variation in cognitive and emotional decision-making processes, particularly when making predictions about how people will respond to threats.

SESSION 2 Risk analysis methods and methodologies

IS STANDARDIZATION OF RISK DESIRABLE?

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Risk analyses are often used as a basis for making decisions in land-use planning. Different countries have chosen different regulatory approaches ranging from highly prescriptive regulations with explicit requirements on methodology, assumptions, modelling tools, input data, risk criteria, etc. (representing a high level of standardization) to less standardized regulatory regimes where risk analyses are required without regulating how this is done in practice. Which of these approaches is the most appropriate?

A recent study mapped the experiences and practices from Sweden, Norway, Denmark and the Netherlands, all representing different levels of standardization of risk regulations for land-use planning. The study reveals that no systematic evaluations of the effect of adopting a certain regular regime have been performed. However, there is consensus among practitioners that a high(er) level of standardization is desirable. The literature review included in the study indicates that the effect of applying a specific risk management approach (high or low level of standardization) is not a topic well covered in scientific literature. Lately, however, critical voices have been raised from academia that problematize standardization of risk.

The study indicates that opinions are equally strong with proponents and opponents of increased standardization of risk, but the positioning seems to be based on practical considerations and intellectual reasoning rather than empirical data. With limited empirical data available and ambiguous perspectives on how risk can or should be standardized, the basis for deciding the appropriate level of standardization of risk is incomplete. More knowledge of the effects from different risk regulatory approaches is required. To address this, a research project has been launched at Lund University that will further elaborate the concepts of "standardization", "risk" and "standardization of risk" and explore the effects of standardization of risk in a land-use planning context.

PROBABILISTIC UNCERTAINTY AND SENSITIVITY ANALYSIS FOR RISK ASSESSMENT OF NATURAL GAS PIPELINE EXPLOSION

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Nowadays in the world, more and more special attention is paid to risk analysis of so-called critical infrastructure (e.g. gas pipelines, fuel storages). The risk, in a general sense, is defined as the likelihood of the occurrence of an undesirable event with severe adverse effects. Since natural gas is flammable and explosive fuel, it is hazardous, and its transportation has inherited risks associated with potential damage. The rupture of a high-pressure natural gas pipeline can lead to consequences that can pose a significant threat to people and property in the close vicinity to the pipeline fault location. The dominant hazard is combustion and thermal radiation from the sustained fire. As risk depends on what has happened or not happened, what is known and not known, this can lead to the ideas of quantitative risk under uncertainty. The main purpose of the relevant research is to present the risk assessment dealing with gas pipeline combustion effects and with the application of probabilistic uncertainty and sensitivity analysis. In terms of the risk assessment process, the uncertainty in the risk can be thought of as being manifested as a spread or probabilistic distribution in the value of the risk estimate. Important components of such uncertainty and sensitivity analysis are qualitative and quantitative analysis that identifies the most uncertain parameters of the combustion model, assessment of uncertainty, analysis of the impact of uncertain parameters on the modeling results, and communication of the results' uncertainty. As the outcome of uncertainty analysis, the tolerance limits and distribution function of thermal radiation intensity is given. As the final part of the uncertainty analysis, the probabilistic sensitivity analysis is used to identify the uncertain parameters, which mainly contribute to the variations of the results and to see the combined influence of uncertain input on the heat flux caused by gas pipeline explosion.

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APPLYING RESILIENCE THINKING IN THE DESIGN OF INNOVATIVE SYSTEMS FOR BORDER CHECKS – A REVIEW OF RECENT RESEARCH

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Before the ascent of the global corona epidemic, travel volumes at EU's external borders were forecast to grow extensively and reach almost 900 million annual border crossings by 2025. Besides facilitating cross border mobility, the objective of EU's research and innovation actions and projects in border security has been to provide law enforcement authorities with new tools and measures to combat emerging security threats, like morphing attacks. Evolving risks, threats and demands for increased operational performance challenge the capabilities and capacities of border authorities to manage novel situations securely and efficiently. A long-standing approach to meet the arising performance and functionality requirements has been the development of biometrics-based border checks systems. However, the flexibility of these systems in responding to new pressures has received lesser attention. This paper explores how resilience thinking manifests in the research and development of border checks systems. The paper focuses on the initial stages of systems engineering and analyses how the attributes of resilience (resistance, resilience, adaptability, transformability) are acknowledged in the user requirements elicitation phase of the design process. Participation and engagement of key end-users in system definition and development has been a major emphasis in border security research projects throughout Horizon 2020 and across preceding R&I framework programmes. First, the paper contextualizes border checks systems as part of critical infrastructure and addresses their critical functionalities from the perspective of societal resilience. Next, the paper reviews openly accessible outputs of relevant EU projects and analyses how resilience is conceptually conveyed in the specified set of user requirements. Finally, the paper draws conclusions on the role of user requirements elicitation in supporting the development of resilient systems that are better prepared for, recover and adapt to new operational conditions and enjoy high acceptance among law enforcement practitioners in EU member states in different contexts.

HOW INDEPENDENT IS EXPERT ADVICE? SYNTHETIC BIOLOGY UNDER THE CONVENTION ON BIOLOGICAL DIVERSITY

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Effective international policy-making for emerging risk technologies depends on the availability of expert advice. The credibility and legitimacy of such advice in turn depends on experts being autonomous from national governments. We assess the linkage between expert advice and state interests for the case of synthetic biology under the Convention on Biological Diversity (CBD). Synthetic biology refers to a variety of disruptive innovations in the life sciences that are presently at different stages of the R&D pipeline and carry enormous implications for biological diversity, presenting both novel opportunities for conservation and sustainable use, as well as potentially unprecedented biosafety risks. We estimate a Structural Topic Model for expert deliberations on synthetic biology under the CBD's Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA). Such models can uncover the latent semantic structure of large bodies of text while using document metadata as a predictor for the frequencies with which topics are being discussed. We use biotechnology patent grants and state membership in the Cartagena Biosafety Protocol as proxies for state interests in international biotechnology regulation. We link SBSTTA records to experts and experts to nominating governments in order to assess the extent to which state interests predict experts' priority issues. We identify several statistically significant alignments between expert priorities and state interests, suggesting that the autonomy of expert advice within SBSTTA is limited. Our results imply deficiencies with the science-policy interface due to the influence of governments over procedural aspects of institutionalized expert advice. This raises broader questions regarding the credibility and legitimacy of such advice in the adaptation of international institutions to novel technological challenges. Research for this paper is supported by Lithuanian Science Council (LMT) grant no. P-MIP-19-513, "Institutional Adaptation to Technological Change (ADAPT)".

SESSION 3 Perception and communication of COVID-19 risks

COMMUNICATING UNCERTAINTY IN THE COVID-19 CRISIS

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Risk assessments and risk communication go hand-in-hand. Risk communication is at the core of governing and managing risk, and rely on detailed risk assessments to craft messages and ensure audience response. Risk assessments require drawing on available knowledge to develop an estimate of the harm a risk may create. This can include considering the likely impact/damage, probability of occurrence, uncertainty, geographical dispersion, duration, etc. However, knowledge of risk is incomplete and selective; disasters happen because we either don't see or choose not to see where risks and hazards outweigh our capacity to respond. This results in uncertain assumptions and predictions. These challenges have been exacerbated by COVID-19. It has revealed a level of complexity, uncertainty and ambiguity that is dynamic, shifting, where lessons from one country or region do not always apply to others. While risk assessments help determine what risks, decisions and stakeholders can and should be included in the risk communication process, the limited knowledge, complexity, uncertainty and ambiguity characterising COVID-19 is posing a challenge to the design of effective risk communication. In the case of COVID-19, communication is happening in a broader context, where publics and responders both -- learning about these risks, how their governments are assessing them, and trying to balance societal, community, and individual risk assessments and impacts – are audiences to a wide-ranging global media. When knowledge about the impact/damage, probability of occurrence, and duration are unclear resulting in increased uncertainty, and there are different global speculations of the risk, how can effective risk communication be designed? This presentation will draw on the IRGC risk governance framework and Beck's arguments about risk, knowledge and unawareness to discuss the challenges of communicating the COVID-19 risk amid a lack of knowledge and uncertainty and a global audience.

COMPARING RISK PERCEPTIONS OF CLIMATE CHANGE AND PANDEMIC INFLUENZA

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With the coronavirus pandemic, the world faces a global risk issue many describe as unexpected and unprecedented. Many scholars compare pandemic coronavirus with climate change—the focus of much risk research in the past decades—to inform risk management. Yet, however, these comparisons have been mostly speculative, since an empirical basis for them was lacking. This paper presents comparative empirical data on risk perceptions of pandemic influenzas and climate change.

Adapting methods from the psychometric paradigm in risk research, we administered a survey with 12 psychometric scales to an international sample (N = 664) of students from six countries: Austria, Bangladesh, Finland, Germany, Norway, and the USA. The students evaluated two risk issues, climate change and pandemic influenza, on the psychometric scales. Principal component analyses of responses on these scales allow us to map the structure of students' risk perceptions of the two risk issues.

In accordance with prior research, we find that there are structural similarities in how people think about different risk issues. Four dimensions of perceived risk emerged for both climate change and pandemic influenza: the two classic dimensions dread and known risk plus moral responsibility and benefits. Differences between the two risk issues exist mainly with respect to moral concerns, which are evoked more strongly by climate change than by pandemic influenza.

The results have implications for risk communication and specifically for the question of whether risk perceptions of climate change and pandemic influenzas resemble each other sufficiently to justify the current practice of many scholars to use knowledge about climate change to inform risk management of the coronavirus pandemic. Moral concerns in particular deserve attention as a feature where the two risk issues diverge and thus may require different approaches.

COVID-19 AND THE RISK OF DISPLACEMENT OF MIGRANT WORKERS: AN ANALYSIS OF MEDIA FRAMING IN THE INDIAN STATE OF KERALA

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Migration and migrant movement are a global scenario, in which one of the main drivers, which facilitates migrant movement is the search for better living conditions. One of the most vulnerable communities in this regard is migrant workers, especially in the developing world who conduct cross-country migration. Labor migration is a significant national phenomenon in India in which the workers migrate across the states, which were facilitated by interstate movement. The recent outbreak of pandemic COVID 19 possess the greatest challenge to the migrant workers who face the challenge of displacement due to the restriction of movement and public perception. One of the significant actors facilitating public discourse is the media, which explores the migrant scenario through the lens of framing. This article analyzes how the Indian newspaper portrays the plight of the migrant workers in Kerala through media framing using the qualitative case analysis. By analyzing the media frames of the Indian newspaper, The Times of India, from March-September 2020, the paper aims to find out how the media uses the aspect of framing to portray the plight of the migrant workers during the pandemic situation, which acts in facilitating public perception.

Keywords: migrant workers, pandemic, media policy, media framing, public policy.

ARE THEY DOING ENOUGH? A SURVEY ON TRUST IN THE SWEDISH GOVERNMENT'S ACTION TO HANDLE THE CORONAVIRUS PANDEMIC

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While lockdowns were imposed in many other countries in the world to prevent the transmission of the novel coronavirus, Sweden remained relatively open. The public was expected to follow a set of recommendations issued by the Public Health Authority in order to prevent virus transmission. Meanwhile, calls for stricter measures were made in public debate. Sweden is among the countries in the world where the public holds the highest levels of trust in the government. In this situation, it was interesting to know whether these high levels of trust would remain during the corona virus pandemic, and if the levels of trust varied in different groups in society.

This presentation focuses trust in the government and expert authorities' abilities to handle the coronavirus pandemic in Sweden. I draw on data from a survey conducted during the end of March and early April. The survey was distributed electronically through convenience sampling and the result was analyzed using SPSS. The respondents could choose to answer the survey either in Swedish or in English, French, German, Russian, Turkish or Arabic. With a total of 1920 respondents, 84.5 percent, or 1622 responded in Swedish, and 298 chose to answer in any of the other languages. The results show that language appeared to be an important factor concerning trust in the governments and the expert authorities' ability to manage the coronavirus pandemic. Compared to the respondents who answered the survey in any other language than Swedish (grouped together), those who answered in Swedish showed significantly higher trust in both the government and expert authorities. There were furthermore significant differences between the extent of trust in the government between women and men, with women answering in another language in Sweden displaying the lowest levels of trust for the government.

SESSION 4 Risk management – innovative methods and inter–sectorial cooperation

COMMERCIAL RISK ASSESSMENT AND MANAGEMENT APPLYING ARTIFICIAL INTELLIGENCE AND BIG DATA

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Risk management in commercial or trade processes is among the most important procedures affecting the competitiveness of enterprises, their innovativeness, and potential contribution to the global commercial ecosystem. The ecosystem of commercial processes is the prerequisite to manage risk faced by any enterprise. Commercial risk assessment and management using elements of artificial intelligence, big data, and machine learning technologies could be developed and maintained as external services for a group of enterprises allowing sharing costs and benefits.

At first, the considered research aims to provide a framework of commercial risk assessment and management solution based on elements of artificial intelligence. This conceptualization is done on the background of scientific literature, policy documents, and risk management standards. The main building blocks of the framework in terms of risk categories, data sources, and workflow phases are presented. Business companies, state policy, and academic research focused recommendations on the further development of the framework and its investigation and implementation are elaborated.

The essence of the research is to develop a model for risk assessment and management of processes that will help enterprises identify and manage risks related to customer reputation, solvency, tax avoidance through artificial intelligence and big data management systems. Research and development of the necessary data collection and assessment algorithms would also result in creating an IT tool prototype, which will integrate data from different sources, different data formats, and high-speed external data.

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RISK AND EMERGENCE

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Emergence is a perennial philosophical problem. In the nineties and the beginning of zeros, the notion received renewed attention because of attempts to model complex biological and psychological systems by the use of neural networks, dynamical system theory, and agent-based models. Today, we can observe renewed interest again, but now it comes from designers of complex socio-technical systems and engineers. In part, this is because of the integration of new information and communication technologies into industrial, manufacturing, transportation, etc., systems; and, as a consequence, their growing complexity. Accumulated experience shows that cyber-physical systems exhibit emergent hazardous behaviors and their consequences can be tremendous.

The talk will draw attention and try to answer the following questions:

What types of emergence exist? Is there a link between causality and emergence? Can emergent behaviors be predicted? Why identification of emergent phenomena is important in risk analyses? Are there approaches to their identification? Are "black swans" and emergent phenomena synonymous?

INSTITUTIONAL ADAPTATION TO TECHNOLOGICAL CHANGE

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Emerging technologies frequently pose a variety of environmental risks. Simultaneously, they also commonly fall into regulatory gaps of broader global governance frameworks, meaning that they are either partially or completely unregulated under international law. This paper assesses when, why and how international institutions adapt to technological changes in their respective issue areas. We develop a theoretical framework that distinguishes between adaptation processes and adaptation outcomes. Processes vary between marginal adjustments to an existing institutional core (institutional layering) and the repurposing of existing institutions for having them regulate issues outside of their original mandate (institutional conversion). Outcomes vary between rules that are specific, legally binding and / or enforceable (deep legalization), and rules that are unspecific, non-binding and / or non-enforceable (shallow legalization). We draw on interest- and knowledge-based approaches for explaining variation in processes and outcomes across institutions and technologies, focusing on changes in international governance arrangements for biotechnology, climate engineering, mineral extraction in Areas Beyond National Jurisdiction, as well as HFC gas emissions. Our results suggest a primacy of interest-related factors: adverse interest constellations are associated with marginal adaptation processes through institutional layering and weakly legalized outcomes, whereas benign interest constellations enable transformative adaptation processes through institutional conversion as well as outcomes with significant depth of legalization. However, we only find limited evidence to suggest that the state of scientific knowledge has a significant impact on institutional adaptation processes and outcomes. Research for this paper is supported by Lithuanian Science Council (LMT) grant no. P-MIP-19-513, "Institutional Adaptation to Technological Change (ADAPT)".

SENSEMAKING: MAPPING OF CURRENT KNOWLEDGE FROM RISK MANAGEMENT PERSPECTIVE

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Sensemaking is a relatively new organizational concept that is gaining visibility in the area of management. We are also seeing very intensive development of research on risk management. Currently, many researchers indicate that risk management, especially in the context of ERM, is a key factor in creating a competitive advantage. Including thinking of sense making in risk management discourse is therefore a natural consequence of this process. The links between the two areas will be explored. The aim research question is how a perspective of academic research have changed in sense making, especially in risk management context, over the past years and what are the leading research trends. The domain of mapping knowledge was used as a useful method in bibliometrics. We analyze 6315 records from Scopus database to sense making in the context of enterprise risk management using the VOSviewer software tool. In particular, an analysis of the co-occurrence of keywords for visual examination of the knowledge base, distribution of topics, research fronts, and research trends in the field of sense making research in the context of company risk management was adopted.

Keywords: sense making, risk management, knowledge maps, network analysis, complexity

SESSION 5 Analysis of the risks and impacts of COVID-19

ASSESSING RISKS AND IMPACT IN THE CONTEXT OF COVID-19

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A range of impact assessment methodologies – such as those that consider ethical and gender issues -- have been created to help anticipate and mitigate risks. They are a particularly valuable technique when managing uncertainty or implementing a novel technology to help identify where there is risk of harms or what kinds of information, actions, or decisions might be needed to provide the greatest benefit or security. COVID-19, however, challenges the reach of these impact assessments. The pandemic has repeatedly revealed nuanced, yet unexpectedly acute, risks that have previously been considered too out of scope to be relevant for such methods. In particular, the pandemic has highlighted how it is no longer possible to predict and manage risks unless these assessments consider the ways in which vulnerability, inequalities, and uneven distributions of risks unfold and draw upon multi-disciplinary, multi-regional perspectives. Engaging the impacts of the pandemic through a variety of cases, this paper revisits the question of "impact on who and to what harms?" to consider how socio-economics, gender, race, and geography matter to risk preparedness and mitigation. What seemed too distant a risk to be considered an impact of policy or plans – like the increased exposure faced by grocery delivery workers so the rest of a community can lockdown – can readily be seen as creating major and uneven impacts on segments of society least able to absorb such risks. Drawing on literature in disaster studies, communication studies, and science and technology studies, we argue that assessments need to start asking different styles of risk impact questions that push beyond fairness and accountability to consider differential contexts, histories, justices, and responsibilities that make for sustainable and equitable resilience.

SOCIAL MULTIPLIERS OF COVID-19 RISK: ASSOCIATIONS BETWEEN DIVERSE SPATIALLY-BASED SOCIAL PHENOMENA AND THE VIRUS OUTBREAK IN LITHUANIA

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The presentation will employ the coronavirus outbreak map and analyze the virus spread across Lithuanian municipalities in relation to underlying and spatially-based social phenomena. We expect that certain socio-demographic structures, e.g. gender distribution, age structure, household size, that show the profiles of social vulnerability, are significantly associated with the case counts of COVID-19 infection and the rate of its fatal outcomes.

As of October 3rd, there were 5081 total COVID-19 cases and a total of 94 deaths in Lithuania (population of 2.7 mln). The presentation will employ the coronavirus outbreak data as presented by the Health ministry of Lithuania and the pilot 2020 Lithuanian census data as presented by The Lithuanian Department of Statistics. The census data contains spatially-based variables on gender, age, household size etc. of Lithuanian inhabitants, on a 1km grid. The ArcGIS Pro software will be employed for conducting spatial analysis.

Existing studies prove that socially vulnerable populations are at an increased risk of health challenges during disasters (Karaye and Horney, 2020). The pandemic has exacerbated the inequalities within societies and the most economically disadvantaged were left particularly vulnerable to COVID-19 (Patel et al, 2020). Coelho et al (2020) found that areas of Brazil that showed the highest risk of COVID-19 outbreak where also highly socially vulnerable. The same was found by Acharya and Porwal (2020) for India. Minority status, language, household composition, transportation, housing and disability have been found to predict the spread of COVID-19 in USA (Karaye and Horney, 2020; Khazanchi et al, 2020).

Using available social vulnerability indicators, we will apply regression to assess the relation between the COVID-19 case counts, coronavirus mortality and spatially distributed social vulnerability in Lithuania.

Presentation is based on a research project "Mapping of Risk Perception in Lithuania: Spatial and Socio-psychological Dimensions" (Risk-Space), funded by Research Council of Lithuania (S-MIP-19-28).

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CONTINUITY AND CATASTROPHIC RISK

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Many people have the intuition that expected utility theory is unsuitable for managing "catastrophic risk"—for instance, risk due to climate change or global pandemics. The axiom of expected utility theory that would seem least plausible when managing catastrophic risk is the Continuity axiom, which implies that no outcome is so bad that one should not risk it for the sake of a sufficiently great chance of a marginal improvement on the status quo. The aim of this paper is to examine whether we can plausibly weaken the Continuity axiom, given that our aim, under certainty, is to maximize some continuous value, such as lifetime income or continuous social welfare. In particular, I examine whether we could plausibly replace the axiom with what some call "Continuity for easy cases", or alternatively with what others have called "Continuity for adjacent outcomes", while at the same time satisfying the aforementioned intuition against Continuity in situations of catastrophic risk. I start by showing that given Transitivity and two weak trade-off principles, Continuity for easy cases (and similarly Continuity for adjacent outcomes) entails the stronger Continuity axiom. I next explore an even weaker continuity condition, "Weak Continuity for adjacent outcomes", which appeals to a threshold between catastrophic and non-catastrophic outcomes, and which does not entail the stronger Continuity axiom, even in the presence of Transitivity and the aforementioned trade-off principles. I conclude by suggesting that those who think that expected utility theory is inappropriate when managing catastrophic risk should replace the strong Continuity axiom with Weak Continuity for adjacent outcomes.

THE IMPACT OF COVID- 19 ON TRANSGENDER COMMUNITY IN KERALA: AN ANALYSIS OF SOCIO-CULTURAL CHALLENGES

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The transgender community is highly marginalized in India, especially regarding access to various social and cultural indicators. A total of 490 thousand transgender people is there in India, and 4,000 registered are in the south Indian state of Kerala (Ministry of Social Justice Government of India, 2019). In 2014, the Supreme Court of India ruled to recognize the third gender and affirm their right to equality and freedom from discrimination. In 2015, Kerala became the first state in India, which introduced a transgender policy for having reservations at higher educational institutions. In addition, the state government introduced separate gender columns for transgender people in all applications for government jobs (The Indian Express, November 12, 2015). However, due to the COVID-19 pandemic situation, transgender communities are facing challenges in Kerala too. In this context, this article explores the various risks associated with social and cultural access to health, accommodation, food, social acceptance and employment opportunities of the transgender community and evaluating governmental policies for protecting their rights. Research methods include document analysis of different aspects of discrimination incidences by observing news reported from February – September 2020 by Malayala Manorama, the largest newspaper in Kerala. In addition, secondary data analysis of different state governmental measures taken for the study. The study reveals that social and cultural obstacles for the transgender community have heightened during the pandemic period and the lack of proper implementation of the public policy measures.

Keywords: COVID-19, transgender, Kerala, media, public policy

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SESSION 6 Risk prediction and communication - methods, tools and challenges

NATIONAL SPECIFICITIES IN "SAFETIZATION": SAFETY SPEECH ON NUCLEAR WASTE MANAGEMENT IN THE FINNISH AND FRENCH PARLIAMENTS

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While both France and Finland are seen as the forerunners in final disposal of nuclear waste, there are striking differences between the countries in public and policy discussion on the safety of the project. For example, earlier research has shown that notions such as retrievability and reversibility are not only interpreted in highly distinct manners, but also play different roles in the Finnish and French nuclear waste policies.

This paper studies safety-related arguments in national level decision-making on final disposal of nuclear waste in Finland and France, using selected parliamentary documents as the empirical material. The paper adopts "safetization" in decision-making on nuclear waste management as its central concept. By "safetization" we refer to a process whereby, first, threat images of risks and uncertainties are either created or explained away to give assurance of safety. Alternatively, prevailing views of safety can be supported to build further trust and confidence. Second, various – sometimes even exceptional – measures are demanded in order to change current practices and thereby solve the issue and assure safety. Because of "safetization", political power will be re-distributed between key actor groups such as implementers, regulators, and politicians. Our empirical analysis explores such processes whereby Members of Parliament frame, politicize and depoliticize safety.

We argue that safety is not only an outcome of scientific research and technical competence, but that efforts at ensuring safety include also frames of safetization and de-safetization in public debate. Research on energy policy should integrate safetization as a key topic; alongside issues such as energy security and climate change mitigation, given that safetization involves similar politization / de-politization processes and exercise of power.

PRIVACY CONCERN AND PRIVACY-PROTECTIVE BEHAVIOR: THE PRIVACY PARADOX IN THE CONTEXT OF MOBILE APPLICATIONS

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Reporting great concern with online privacy does not necessarily correspond to the occurrence of privacy-protective behaviors. This phenomenon is called the privacy paradox. In the context of smartphone applications, a form of protection would be not to provide an app with access to certain data or not to install an app that requires access to unnecessary data. Studies 1 and 2 used a survey to examine if four factors could be predictors of the reported likelihood of installing a mobile app. In both studies, participants were presented with three fictional apps (puzzle, forecast, and message), in counterbalanced order, and inquired about the level of perceived importance of the app, the discomfort that arises from the type of data accessed by the app, their privacy concern, and the likelihood of installing the app. In Study 1 (N = 227), the number and type of data permissions required by each app were informed and varied across participants. The types of data accessed were internal storage (photos and files), microphone, location, and/or contacts. In Study 2 (N = 214), the number and type of data access permissions were not pre-determined; instead, participants were asked to indicate which permissions they would be willing to provide to each app. In both studies, participants often reported great privacy concerns, but only the level of importance was predictive of the likelihood of installation. In Study 2, the number and type of permissions varied across the apps in a manner consistent with their function. These results, therefore, replicate the privacy-paradox in the context of smartphone apps. The implications of these results will be discussed, especially with regards to the importance of understanding the variables influencing the correlation between reporting privacy concern and behaving to protect your own privacy, and designing interventions to improve this correlation.

CRISIS SIMULATIONS AS A TOOL TO MEASURE EFFICIENCY OF RISK COMMUNICATION AND CITIZEN'S PREPAREDNESS

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Communication about risks is an important part of societies' crisis prevention. Risk communication usually aims to increase citizens' awareness and readiness to both mentally and in practice deal with risks and crises. As peoples' understandings of risks are based on norms, status and values, different people thus understand and act differently in relation to risks and crises. In this presentation, I will draw on material from an ongoing project on risk communication in heterogeneous societies. The project aims to close knowledge gaps on how different groups, especially minorities, understand and relate to risk communication.

However, studying how people deal with a crisis is a challenging task. We therefore used an experimental design with simulations to learn more about how people understand risk communication campaigns and how they act during crises. We have created a home-like environment in RCR Lab, using wall projections, room dividers and furniture. Each simulation (12 in total) lasted for 25-30 minutes and two research participants at a time were exposed to a non-violent gradually evolving crisis that affected the everyday life and the functioning of society. The participants (n=24) were a diverse group aged 21-78, living in urban and rural areas, and with different ethnic backgrounds. Two participants at a time allowed a dialogue about how they perceived the evolving crisis and how they solved or would solve arising situations. All simulations were recorded with audio and video. The dialogue and the actions taken by the participants, along with interviews carried out before and after each simulation, were analyzed to discern patterns of knowledge among the participants. Preliminary results show that while the participants to very different degrees have read and understood previous risk communication campaigns and taken action at home to prepare for crises, they still found creative solutions to challenging situations during the simulated crisis. In other words, differences in information access does not necessarily imply a lack of preparedness or a lack of ability to deal with crises.

MACHINE LEARNING METHODS APPLICATION FOR ASSESSMENT AND PREDICTION OF TRADE CREDIT RISK

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The choice of deferring payment, i.e. granting trade credit to customers has a significant impact on both the long-term relationship between companies and the working capital management chain. While 25 percent of short-term assets may consist of such trade credit, the granting of this credit must be controlled, and each customer must be assessed both before the first invoice is issued and throughout further cooperation. Such an assessment of the buyer's creditworthiness may be made based on information obtained from external sources, but this information can be updated semi-annually and must be is paid for. Meanwhile, the customer's solvency history is accumulated within the company itself, which can be used to assess the buyer's current situation and update his creditworthiness assessment at the current moment.

The work aims to apply machine learning methods to assess the creditworthiness of companies' businesses. First, create a tool for clustering buyers and refine expert credit assessment. Using this information, new buyers or buyers with changed solvency data would be automatically classified into different levels of creditworthiness. During the study, buyers were clustered based on their 2018 solvency history using the K-mean method. 38.99 percent of the cases were revised with an expert creditworthiness assessment. Then, machine learning was performed using a Support vector method with radial basis function and Random forest methods and their results were compared and were found that the latter can correctly assess creditworthiness up to 90 percent of new buyers with information only on their solvency. After examining the dependence of the accuracy of the classification results by the variables, six of them were selected, which were considered to have the most significant influence in the accuracy of the prediction.

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