The art of deception: The trade-off between the information distortion and perception of FDI location attractiveness

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A B S T R A C T
Objective: The objective of the article was to identify how various forms of information distortion influence foreign direct investment (FDI) location choices and location attractiveness perception. We focused on geopolitical factors that have been known to be an antecedent for FDI location choices but we identified new ways of impacting the perception of location's attractiveness.
Research Design & Methods: To this means, we applied the total interpretive structural modelling (TISM method) based on expert knowledge.
Findings: Our findings illustrate how we cannot perceive FDI location decisions and the evaluation of their attractiveness as a simple, straightforward process. Based on the model, deep fakes are the most crucial geopolitical factors influencing the perception of FDI locations, followed by colour revolutions and false flag operations.
Implications & Recommendations: Our model suggests that the factors influencing FDI location perceptions create a dynamic, interconnected network of several interdependent layers that make FDI location selection challenging. The proposed TISM framework will support managers in formulating effective strategies for deciding on the next steps regarding their FDI location choices.
Contribution & Value Added: In previous studies, scholars mostly assessed geopolitical factors through the lens of the classical approach to geopolitics, i.e. the overall perception of geopolitical risk. Nevertheless, recent geopolitical disruptions (e.g. tensions between China and the US, Russian invasion in Ukraine) as well as technological advancements have uncovered new ways in which geopolitics can affect international relations, including trade and investments.

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INTRODUCTION

Geopolitics has always played a significant role in various areas of life. However, we have observed the gradual intensification of its importance, especially since 2001. Globalization led to an increase in the volume of international trade, strengthened business ties, and created regional blocks. The beginning of the twenty-first century was marked by intensive international cooperation, both in the sphere of entire economies, enterprises, and societies. Consequently, companies have been expanding to foreign markets more frequently, using different entry modes, from exports to foreign direct investment (FDI) (Dorożyński *et al*., 2020). As a form of equity expansion, equity investments are generally considered to be an expression of the company's greatest involvement in a given market, however, they depend on a number of factors, mainly geopolitical ones.

In recent years, international events (such as the kinetic conflict between Ukraine and Russia, the rising diplomatic tensions between China and Taiwan, Brexit, *etc*.) have significantly impacted the performance of existing investments and the feasibility of new ones. The so-called Arab Spring and the US Peacekeeping Mission in these regions have long influenced investments in Africa and the Middle East. Very often, the causes of geopolitical and geoeconomic risk are political instability, terrorism, regional conflicts, and broadly understood cybernetics. Caldara and Iacoviello (2018) believe that geopolitical risk is becoming one of the most important determinants of business decisions. In their research, Li *et al*. (2022) show that governments' control over resources and their political intentions influence the type of companies that later undertake international investments. In this regard, the researchers indicate that various geopolitical factors influence FDI in different global development programs such as *e.g.* the Belt and Road initiative. Lu and Liu (2022) believe that more and more research is focusing on the negative impact of geopolitical factors that disrupt the flow of FDI. Moreover, many geopolitical and geoeconomic events may threaten international investors or force them to change their investment strategy.

The existing body of literature on how geopolitics affects FDI shows that geopolitical risk is a key factor in determining the location and attractiveness of FDI. However, the literature also points to the fact that it is still an underexplored area (Bussy & Zheng, 2023), indicating a few novel research venues: geopolitical risk and uncertainty measurement, geopolitical risk and uncertainty perception, digitization and its impact on managerial responses, *etc*. Therefore, we aimed to explore two aspects that have been pushed to the forefront of attention due to the global increase of geopolitical threats: the influence of the perception of geopolitical tensions on FDI location choices and the use of information distortion in creating managerial perceptions on the matter. We contribute to the field by addressing some crucial gaps not undertaken by previous research and pose three research questions:

RQ1:　What are the critical forms of information distortion affecting the attractiveness of an FDI location in emerging markets?

RQ2:　Which of these forms are interrelated and how?

RQ3:　What are the implications of how geopolitical risk and uncertainty perceptions are shaped for the investment strategies of companies?

The article is structured as follows. Section 2 will focus on understanding the interplay between three elements, *i.e.* FDI, geopolitical risk, uncertainty, and information distortion. Section 3 will present a brief description of the research methodology followed by the results in Section 4. Section 5 will outline practical and theoretical implications along with research limitations, which conclude the study.

LITERATURE REVIEW

Information Tools in Geopolitical Power Struggle

Economic uncertainty, policy uncertainty, and finally geopolitical uncertainty come together to contemporarily create the so-called 'uncertainty trinity' (Carney, 2016) which can have adverse effects on the economies and society at large. Recent years and international developments point to geopolitical uncertainty[1] as a factor requiring intensive monitoring since its impact spreads through numerous channels. Although the discussion on the exact definition of geopolitical risk is an ongoing debate (cf. Gray & Sloan, 2014), we adopted the understanding suggested by Caldara and Iacoviello (2022, p. 1197) who argue that it depicts 'threat, realization and escalation of adverse events associated with wars, terrorism and any tensions among states and political actors that affect the peaceful course of international relations.' In the past decade, the global political landscape has become more volatile and complex with the main sources of friction being rivalry between China, Russia, and the United States and their respective allies. These political disputes often escalate into overt military confrontations, which may appear as regional clashes, but have global implications. On the other hand, geopolitical risk includes also non-violent power

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[1] We differentiate between geopolitical uncertainty where neither the probability nor the actual outcome of the disruption are known and geopolitical risk where the probability of an expected outcome can be assessed (Knight, 1921). In many articles, however these two items are discussed together (Caldara & Iacoviello, 2022; Bussy & Zheng, 2023).

struggles that do not focus on territory disputes but the ability to exercise power and control to benefit oneself (*e.g.* Brexit). Finally, geopolitical risk does not refer only to materialized events but mostly to the perception of such occurrences finally happening (Bussy & Zheng, 2023).

There are two main perspectives on geopolitics. The classical perspective considers the internal dynamics of a state and its interactions with other actors in the international arena. We assume here that geographical borders are fixed and stable and together with other geographical features influence country's foreign policies and actions. Scholars have commonly applied this perspective for delineating and measuring the level of geopolitical risk (cf. Gray & Sloan, 2014). However, another way to approach geopolitics is to turn to the behavioural and psychological aspects of the power game. According to the critical perspective on geopolitics, three main factors influence the power struggle, *i.e.* the infosphere, the noosphere, and the hybrid warfare. By infosphere, we understand a system to share and communicate data or information. Infosphere can be subject to manipulation, which means certain elements can be erased, transferred, or distorted. The element directly related to the infosphere is the noosphere. It refers to human cognition resulting in the collective interconnectedness of ideas and values (Kim *et al.*, 2019). We could argue that the infosphere as a communication system feeds and shapes the noosphere which catalyzes creating perceptions. Exploiting the interplay between infosphere and noosphere has become the key element of hybrid warfare which – although still lacks conceptual clarity – entails using conventional (kinetic) and unconventional (information-related) tools to exert power (Bilal, 2021). Therefore, critical geopolitics is less visible and less understood by the business community or even some political circles as it operates at the perception level. Three main factors can alter people's perceptions. These are emotions, beliefs, and narratives.

According to Hoffman (2007), hybrid warfare is a strategy that simultaneously exploits various (political, conventional, cyber, *etc.*) methods of influence, such as fake news, diplomacy, lawfare, and foreign electoral intervention. Similarly, NATO (2023) defines the concept as actions of dis- or misinformation, cyber-attacks and economic pressure. Muradov (2022) classifies hybrid action as information warfare. The infosphere encompasses all the sources and channels of information that exist in the modern world, such as the Internet, media, academia, social networks, and public events. The infosphere determines how information is created, disseminated, and consumed (Petrie, 2022). The noosphere refers to the collective consciousness and awareness of individuals and groups, which is shaped by their knowledge, experiences, culture, beliefs, *etc.* (Jaseckova & Vartiak, 2023; Ronfeldt & Arquilla, 2020; 2022). The noosphere influences how information is interpreted, evaluated, and acted upon. Zaharna (2016) argues that the noosphere and the infosphere, which represent the intangible and tangible aspects of information respectively, are used to construct images and concepts that define the identity of individuals or social groups.

The strategic objectives of modern power struggle are achieved by manipulating the emotions of individuals or groups with minimal costs. The infosphere and the noosphere are the two mediums that enable emotion management. Various actors can conduct information warfare. These can be *e.g.* states, non-state actors, or individuals. The key feature of modern information warfare is that anyone with access to ICT can be both a target and a source of information. For instance, a person with Internet access can actively participate in hybrid activities by replicating harmful content.

Since 2013, the world has witnessed a growing escalation of international conflicts and information confrontations among major political players, such as China, Russia, and the United States. The current fourth-generation warfare relies heavily on soft power techniques, which target the subconscious layer of human consciousness, the noosphere. The development of new technologies, such as artificial intelligence and deep fakes, alters the way people perceive and disseminate information.

Geopolitical Factors in FDI Location Choices

There is a myriad of factors said to influence the FDI location choice that include the size of the market and its development prospects, labour costs and labour quality, the economy openness, the geographical distance between the host and home countries, taxes, the risk related to the political and macroeconomic situation, corruption level in the host country and others (Chowdhury *et al.*, 2022). However, the interlink between FDI and geopolitical risk and uncertainty has not been a long-standing one. Previous

research has mostly examined political risk in general, without distinguishing the unique aspects of geopolitical risk (Chanegriha *et al.*, 2017). However, according to Pastor and Veronesi (2013), changes in geopolitical risk and uncertainty affect investment decisions. When risk increases, investors demand a higher payoff to proceed with the investment. When uncertainty increases, investors become more reluctant to invest and may postpone or cancel the investment altogether. Likewise, Bussy, and Zheng (2023) studied the FDI and geopolitical risk and uncertainty in emerging markets. Their results imply that geopolitical risk is less pronounced than geopolitical uncertainty in FDI decisions as companies prioritize safety over profit opportunity. Gao *et al.* (2018) point to similar conclusions regarding Japanese investment in China, highlighting the increase in transaction costs and exchange hazards. Historical entanglement of neighbouring countries in times of strained relationship negatively impacts the FDI inflow.

Regional conflicts *per se* can affect geoeconomic activities and remain crucial antecedents for investors (Verma, 2007; Sebastian & Warner, 2014; Luo, 2021; Tang *et al.*, 2023). Along those factors, we can distinguish terrorist attacks on both civilian and government facilities that also proved significant for FDI location choices (Powers & Choi, 2012; Bandyopadhyay *et al.*, 2014; Haider & Anwar, 2014; Shah, 2015; Dimitrova *et al.*, 2022). Moreover, since 2019, a new source of geopolitical risk has emerged, related to the global pandemic (Jaworek *et al.*, 2020; Mazzotta, 2020; Badmus *et al.*, 2022; Ou-Yang & Kim, 2022). The COVID-19 pandemic has triggered a new kind of political conflict called pandemopolitics, which describes the global process that alters the population dynamics of the world and creates a situation of geopolitical and geoeconomic stress (Mionel *et al.*, 2020).

To sum up, previous studies on geopolitical influence on FDI generally focused on events that materialized. However, it remains equally important to study the *perception* of geopolitical threats (Giambona *et al*., 2017; Bussy & Zheng, 2023). In the VUCA[2] world, the outcome of the geopolitical tensions is difficult to predict and managers involved in the FDI decisions need to vastly base their choices on perceptions. In the study, we seek to understand how these geopolitical perceptions can be shaped through various digitalized information channels that are prone to distortion, misinterpretation, or even purposeful manipulation. Unlike Caldara and Iacoviello (2022), we focus not only on the mainstream media outlets as sources for information spread, but allow for the notion that perceptions can be also shaped through other, mostly online channels.

Information Distortion and FDI Location Attractiveness

One of the reasons for increase in the modern society polarization is the spread of distorted information,[3] which became more apparent with the 'digital ubiquity' (Gupta *et al.,* 2023; Mirhoseini *et al.,* 2023). It becomes increasingly easy to influence the perception not only of a specific region but even entire countries through the use of media channels. Online platforms and mainstream media can cause the information to flow at a high speed and can reach a large audience causing 'digital wildfires.' Whilst in the past managers used to suffer from information asymmetry, now data and information are in abundance, shifting the struggle towards processing capacity. The decision processes are additionally blurred by the inability of managers to determine which of the available information is genuine and which could be subject to distortion.

Information distortion can be instigated through various channels including echo chambers and associated informational cascades that either lead to an unintentional increase of the credibility of rumours or to purposeful alterations of viewpoints and outright informational propaganda (Gupta *et al.,* 2023; Wang *et al.,* 2018). The so-called computational propaganda uses big data, bots-automated programs, fake news, and many other digitized tools to influence 'the emotions and (…) [bypass] rational thought, to achieve a specific goal' (Bolsover & Howard, 2017, p. 273). These tools are mediums by which the infosphere and the noosphere create, manage, and control perceptions. In effect, the uncertainty and anxiety over geopolitical tensions can be multiplied causing investors from uninvolved third countries to reconsider their potential FDIs.

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[2] VUCA stands for volatility, uncertainty, complexity, and ambiguity.

[3] Tucker *et al.* (2018) highlight the diversity of information distortions that include rumors, misinformation, disinformation, biased information, and hyper partisan information.

RESEARCH METHODOLOGY

To explore the research questions set in the study, we used total interpretive structural modelling (TISM). It belongs to a set of methods used for multi-criteria decision-making (MCDM) problems and allows for investigating the relationship between the problem components (Sorooshian *et al.,* 2023). As the issue under study here concerns the decision process related to foreign direct investments, TISM constitutes an effective tool for determining not only what affects the FDI location attractiveness but also how and why these antecedents are interconnected.

Data and Sample

Although TISM as an analytical technique follows a fairly standardised protocol and requires that data is collected with the use of a pre-defined fixed questionnaire, it is still classified as a qualitative not quantitative method. Therefore, we collected the data for the study among 40 experts who have at least 15 years of experience working in manufacturing industries (companies classified in Section C of the NACE Rev 2 classification; breakdown of economic activities can be found in Table A1.) and form part of the top-level management team in the company. Moreover, the companies they work for had to be classified as large companies with a recorded history of undertaking FDIs in developing countries. We chose experts in a purposeful manner so that they represented different types of manufacturing activities and were involved in the decision-making of at least three FDIs. We collected the data using the CAWI method between April and June 2023.

Measures

The study related to a 'cause-and-effect' phenomenon where the outcome is the perception of attractiveness of a certain FDI location. Although indisputably the FDI location choice is determined by various groups of factors, here we set the focus on the geopolitical perspective. Hence, we studied the potential antecedents driving the FDI location choice through the lenses of critical geopolitics. Table 1 presents the constructs together with their brief description. We delineated the factors based on the literature review that relate to forms of information distortion and expert input. Combining these two elements enabled us to relate information distortion to the specific case of geopolitics.

Table 1. Potential factors influencing the perception of FDI location attractiveness in developing countries

Factor	Short definition
Disinformation	Mainstream information that may be inaccurate and unverified.
Propaganda	Intentional disinformation about a particular event aimed at reaching a certain objective.
Reflexive control	Process of imposing assumptions and highlighting chosen (often biased) information that leads to a specific impression.
Emotional reflexive games	A process similar to reflexive control that uses strong emotions as the main tool for exerting control.
Colour revolutions	Mass events (demonstrations, social riots) inspired by events in the country or the world.
False flag	Actions aimed at transferring responsibility for a specific event/outcome to another social group/state.
Deep fake	Specific AI disinformation tool that uses sound, image, and video causing temporary or long-term challenges in determining whether the material is real or not.
Cyber attacks	An attempt to disrupt, take over, impair, or gain unauthorized access to a specific system or network.

Source: own study based on Mustak *et al.*, 2023; Kietzmann *et al.*, 2020; Jost *et al.*, 2020; Petratos, 2021; Vasist & Krishnan, 2023; Hua, Chen & Luo, 2018; Pirca & Lallie, 2023; Wach *et al.*, 2023.

Data Analysis

As mentioned before, we used TISM as an analytical framework for the study. The technique consisted of a number of steps that follow one another in a sequence of three phases, *i.e.* preparatory stage, the operation stage, and finally validation stage[4]. These include:

A. Phase 1 – Preparatory stage:

- Step 1: Formulation of the objectives and research questions;
- Step 2: Method establishment;
- Step 3: Identification of the experts and development of the questionnaire;
- Step 4: Testing phase with feedback incorporated into the questionnaire.

B. Phase 2 – Operation stage:

- Step 5: Data and expert opinion collection;
- Step 6: Data interpretation and model development, including construction of aggregated structural self-interactive matrix (SSIM), final reachability matrix and computation of driving power and dependence.

C. Phase 3 – Model validation:

- Step 7: Identification of the experts for validation;
- Step 8: Model validation and potential adjustment to the hierarchical TISM model.

The preparatory stage included the identification of the problem and study objective, the review of potential decision determinants, respondents' selection, and finally questionnaire preparation. Since the factors under study suggested that decisions concerning FDI were not always objective but in a digitalized world are subject to misinformation and 'creating perceptions,' we had to design the questionnaire in a way that ensures as objective and truthful answers as possible. Therefore, instead of asking directly whether factors from Table 1 influenced the perception of FDI location attractiveness, we asked respondents to evaluate the impact of a set of situations (depicting those factors but without naming them) on their FDI decisions (Table A2). Next, in Phase 2, we asked respondents to determine the pairwise relationships between those factors. Based on the aggregated data, we created a structural self-interaction matrix (SSIM) and subsequently translated it to the reachability matrix with transitivity checks. The final reachability matrix allowed for conducting the level partitioning, diagraph design, and contextual interpretation of relationships. In effect, we created a total interpretive structural model. In the final stage of the study, a separate group of experts validated the model (meeting the same criteria described in 'Data and sample' section).

RESULTS AND DISCUSSION

Hierarchical Model Development

We analysed the relationships between all pairs of elements and obtained the binary reachability matrix. This helped us determine the driving power and dependence value of each factor. The strongest driving power was revealed by the usage of deep fakes (F7) followed by the emergence of colour revolutions (F5) and false flag operations (F6). High driving power indicates that these factors were the key elements in influencing the FDI decisions. In terms of dependence, we observed high values among the usage of disinformation (F1), propaganda (F2), and application of both reflexive control (F3) and emotional reflexive games (F4).

We applied transitivity checks to verify the consistency of the model, as suggested by Farris and Sage (1975), Sushil (2017), and Jena *et al.* (2017). We distinguished between 'transitive links' and 'significant transitive links' following Jena *et al.* (2017). We used the CFCS method to construct the crisp reachability matrix, which we then converted into the transitive reachability matrix (Table 2.).

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[4] The article does not elaborate on the TISM method itself. For detailed information on method please see Jena *et al.*, 2017.

Table 2. Transitive reachability matrix

Factors	F1	F2	F3	F4	F5	F6	F7	F8
F1 – Disinformation	1	1	1	1*	0	0	0	0
F2 – Propaganda	1	1	1	1	0	0	0	0
F3 – Reflexive control	1	1	1	1	0	0	0	0
F4 – Emotional reflexive games	1	1*	1	1	0	0	0	0
F5 – Colour revolutions	1	1	1*	1*	1	1	0	0
F6 – False flag	1	1	1*	1*	1	1	0	0
F7 – Deep fake	1	1	1*	1*	1*	1	1	0
F8 – Cyberattacks	1	1	1*	1*	0	0	0	1

Note: * – transitivity check.
Source: own study.

Level Partitioning

To build a hierarchical model, we conducted the level partitioning of factors. We ranked the factors and divided them into subsequent levels based on their reachability and antecedent sets (Table 3). We assigned the usage of disinformation (F1), propaganda (F2), and application of both reflexive control (F3) and emotional reflexive games (F4) to Level 1 (L1) factors, whilst the emergence of colour revolutions (F5) and false flag operations (F6) as well as attempts on cyber attacks (F8) – to Level 2 (L2) factors. Finally, Level 3 (L3) consists of the deep fake application (F7).

Table 3. Level partitioning

Factors	Reachability	Antecedents	Intersection	Level
F1	F1,F2,F3,F4	F1,F2,F3,F4,F5,F6,F7,F8	F1,F2,F3,F4	I
F2	F1,F2,F3,F4	F1,F2,F3,F4,F5,F6,F7,F8	F1,F2,F3,F4	I
F3	F1,F2,F3,F4	F1,F2,F3,F4,F5,F6,F7,F8	F1,F2,F3,F4	I
F4	F1,F2,F3,F4	F1,F2,F3,F4,F5,F6,F7,F8	F1,F2,F3,F4	I
F5	F1,F2,F3,F4,F5,F6	F5,F6,F7	F5,F6	II
F6	F1,F2,F3,F4,F5,F6	F5,F6,F7	F5,F6	II
F7	F1,F2,F3,F4,F5,F6,F7	F7	F7	III
F8	F1,F2,F3,F4,F8	F8	F8	II

Source: own study.

Model validation

To verify the model's validity, we tested the relationships we found. We asked a control group of 10 managers who were not engaged in the initial stage of the study to rate their agreement with the model's relationships. We used a 7-point Likert scale where 1 meant 'strongly disagree' and 7 meant 'strongly agree.' We accepted the relationships with an average score of 4 or more (Figure 1).
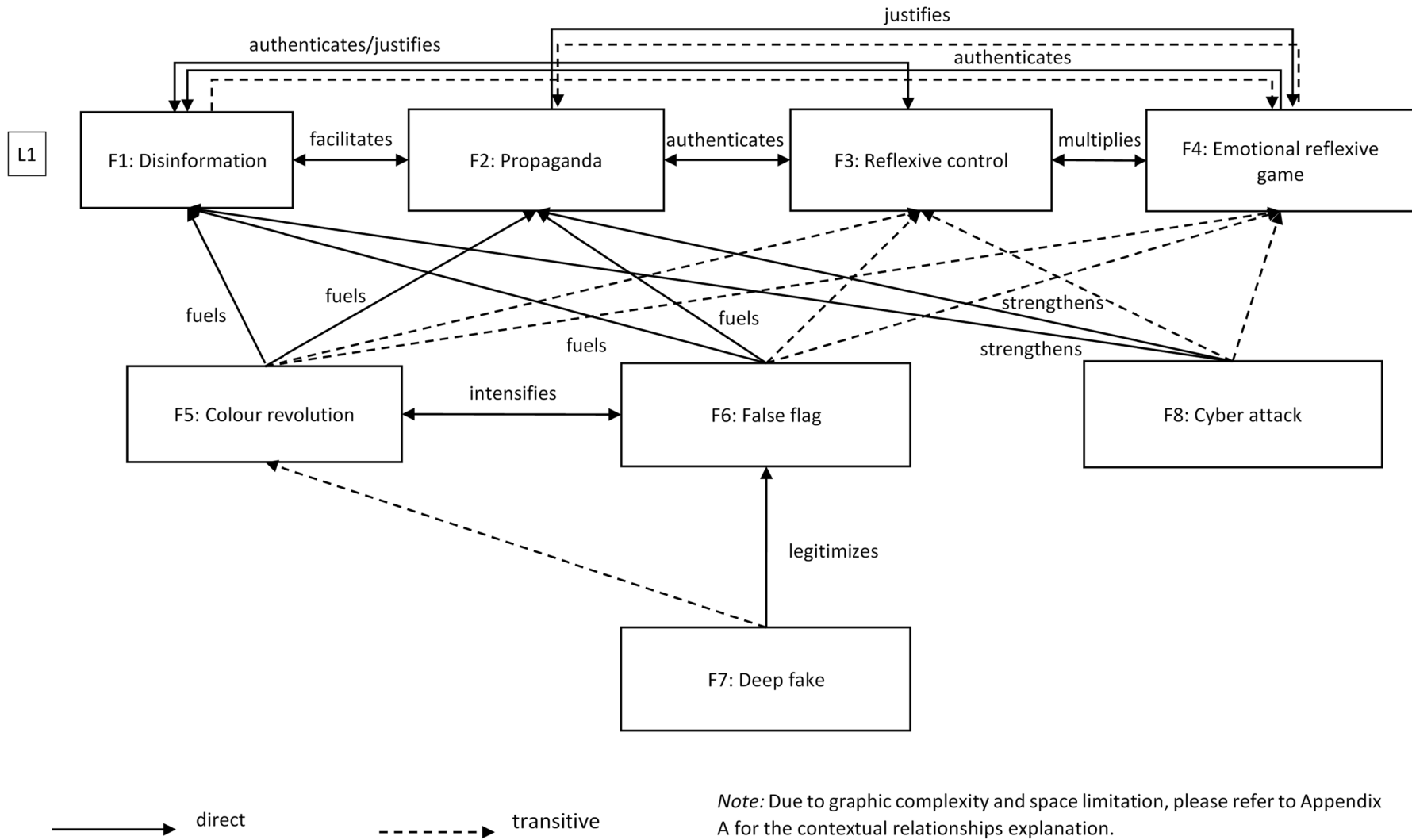
L1

F1: Disinformation — facilitates — F2: Propaganda — authenticates — F3: Reflexive control — multiplies — F4: Emotional reflexive game

authenticates/justifies

justifies

authenticates

fuels

fuels

fuels

fuels

strengthens

strengthens

F5: Colour revolution — intensifies — F6: False flag

F8: Cyber attack

legitimizes

F7: Deep fake

direct

transitive

Note: Due to graphic complexity and space limitation, please refer to Appendix A for the contextual relationships explanation.

Figure 1. Hierarchical model of factors determining the perception of FDI location attractiveness in developing countries
Source: own elaboration with the use of a spreadsheet.

MICMAC Analysis

The study used the MICMAC analysis (Matrice d'impacts croisés multiplication appliquée á un classment, Figure 2) to categorize the factors into four quadrants based on their influence and dependence levels (autonomous, dependent, linkage, and driver quadrants). We obtained the MICMAC scores from the transitive reachability matrix (Table 2). The factors in the driver quadrant were the emergence of colour revolutions (F5) and false flags (F6), usage of deep fake (F7) and attempts at cyber-attacks (F8). These factors had high influence and low dependence on other factors. Moreover, they were crucial for the perception of FDI location attractiveness. The remaining factors (spread of disinformation (F1) and propaganda (F2), usage of reflexive control (F3), and emotional reflexive games (F4)) were in between the linkage and dependent quadrants. These factors display high driving power and, at the same time, medium dependency level. Thus, they were unstable and vulnerable to changes. None of the factors belonged to the autonomous quadrant, which meant that all factors were interrelated in the system.
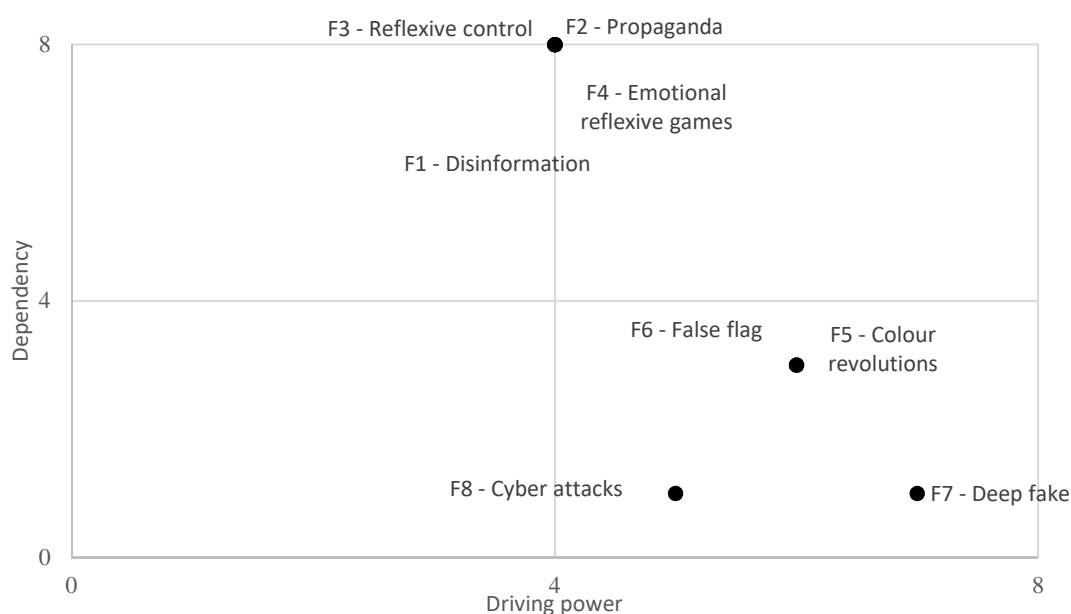

Figure 2. MICMAC analysis
Source: own elaboration with use of a spreadsheet.

The study results indicate that the information distortion related to geopolitical tensions can be achieved through different layers. Levels 2 and 3 of the hierarchical model are specific tools that if used directly and indirectly strengthen the more general tools of dis- and misinformation, emotional steering, and reflexive control. At the same time, cyber-attacks remain the one factor that helps create information distortion but is not related to other L2 and L3 factors.

CONCLUSIONS

We live in turbulent times, full of geopolitical disruptions and technological advancements. Recent changes have already shown that geopolitics can impact FDI location choices and location attractiveness perception in many new ways. In this article, we aimed to find out the directions of this impact and connections between separate geopolitical factors.

The proposed hierarchical model allowed us to answer the first two research questions. It indicates that the most crucial geopolitical factors influencing the perception of FDI locations were the usage of deep fakes, followed by the emergence of colour revolutions and false flag operations. Fake videos ridiculing celebrities and politicians have long ago stopped being just innocent fun. They can influence elections, cause riots, or impact strategic internationalization choices of businesses all over the world

which was also discussed by Tucker *et al.* (2018). Similarly, false flag operations (*e.g.* separatist forces pretending to be Ukrainian forces to provoke Russian troops to attack) may influence not only armies and politicians but also investors as they may potentially distort their perception of a particular FDI location. However, thus far, researchers have discussed false flags operations mostly in the context of exit strategies and not new investments (Gonchar & Greve, 2022). Colour revolutions may have a comparable impact, as they not only overthrow governments but also very often lead to the introduction of a state of emergency that may be one of the factors changing the perception of the attractiveness of a given FDI location. Our results are in line with previous studies by Dimitrova *et al.* (2022) who indicated that terrorist attacks influence FDI decision choices. Our study confirmed that cyberattacks, which are classified as such, also significantly impact the process.

Our findings show that currently, we cannot perceive company's FDI location decision and appraisal of its attractiveness as a simple, straightforward process, but rather as an interconnected ecosystem. Deciding on an FDI location becomes a challenging task since – as our model indicates – the factors influencing the perception of its attractiveness create a dynamic interwoven network with several interdependent layers. In light of recent geopolitical developments, many business owners tackle this challenge. War in Ukraine, tensions in Taiwan, and the trade war between China and the USA, to name just a few struggles, provide a test for many strategic internationalization decisions. Similar concerns may be voiced for investment locations that use the Strait of Hormuz for shipment. The hierarchical model developed from the proposed TISM framework will support managers in formulating effective strategies for deciding on the next steps regarding their FDI location choices, thus answering the third research question. Firstly, the study proves that the perception of geopolitical risk and uncertainty does affect FDI location choices and requires hedging strategies. Managers are prone to be influenced by distortion tools such as deep fakes, cyber-attacks, and mass events. In turn, these tools strengthen general perception strategies, such as dis- and misinformation, emotional pressure, and reflexive control. Given the recent developments in AI technologies, the scale of information distortion will continue to increase and is expected to take on new forms as well. In the era of information abundance, the key managerial skills seem to become first, the awareness of information manipulation and second, the ability to filter and process the information. Since decision-makers suffer from limited cognitive processing capacity, they risk curbing or redirecting FDIs based on the unvalidated information often widespread through social media and other alternative media channels.

These results are also meaningful for host countries willing to attract FDI. On the one hand, the fact that geopolitical perception is relevant for investment should signal the need for either establishing or strengthening transparent and stable governance practices to mitigate potential tensions. On the other hand, they also indicate that host countries should take a proactive role in fighting information distortion (Fang *et al.,* 2018). Such strategies may prove crucial in attracting FDI since Bussy and Zheng (2023) have proven that investors are indeed sensitive to geopolitical turmoil. For instance, some advanced economies (*e.g.* Finland) have successfully set policies and tools to fight misinformation and deep fakes.

Apart from practical implications, the study presented in this article provides also an important and novel input to theoretical research on determinants of perception of companies' FDI location attractiveness. Previous studies focused mostly on other aspects than geopolitics and even if they took geopolitical determinants into account they followed classic instead of critical viewpoint. We expanded Bussy and Zheng's (2023) study on the perception of geopolitical risk and uncertainty by exploring the infospheric channels that impact the FDI-related decision-making process. Secondly, the study incorporates elements of information theory and in particular the sources of information distortion to the FDI location decisions. The increased digitization of business and society has pushed to the forefront factors that previous studies tended either to forego or outright neglect. Information distortion can be both unintentional – resulting from either reasonable disagreement or negligence – or intentional-resulting from manipulation. Regardless of the intention itself, digitization has accelerated and intensified the phenomenon serving as a tool for persuading and creating perceptions. In effect, we point to yet unexplored links in IB literature, namely digitalization, information distortion and FDI investment decisions under geopolitical pressure.

Moreover, in the present article, we proposed a new, systematized research framework. Compared to the conventional multi-criteria decision-making models, which can only provide the ranking of factors determining the attractiveness of company's FDI location choices, the applied framework integrates not only the relationship network but also its contextual interpretation.

However, our study has some limitations. Firstly, the model based on the TISM methodology and its validation are grounded on the subjective opinions of individual experts. Therefore, both the model and its validation are to some point susceptible to expert biases due to their experience or character traits. Secondly, the data collected for the study were limited to the territory of Poland and the scope of the FDI locations in developing countries. Hence, the conclusions formulated in the article are mostly applicable to large companies situated in Poland, deciding on locating their FDI's in developing countries. Even though we are confident our findings will still stay significant in other contexts, we encourage future researchers to conduct similar studies to determine the hierarchical and contextual links of geopolitical factors influencing the perception of attractiveness of FDI locations in other regions of the world.

REFERENCES

Badmus, J.O., Bisiriyu, S.O., & Alawode, O.S. (2022). Does COVID-19 shock endanger the flows of FDI in OECD? Empirical evidence based on AMG panel estimator. *Future Business Journal*, *8*(1), 19, https://doi.org/10.1186/s43093-022-00132-w

Bandyopadhyay, S., Sandler, T., & Younas, J. (2014). Foreign direct investment, aid, and terrorism. *Oxford Economic Papers*, *66*(1), 25-50. https://doi.org/10.1093/oep/gpt026

Bilal, A. (2021). *Hybrid Warfare – New Threats, Complexity, and 'Trust' as the Antidote*. NATO Review. Retrieved from https://www.nato.int/docu/review/articles/2021/11/30/hybrid-warfare-new-threats-complexity-and-trust-as-the-antidote/index.html on April 5, 2023.

Bolsover, G., & Howard, P. (2017). Computational Propaganda and Political Big Data: Moving Toward a More Critical Research Agenda. *Big Data, 5*(4), 273-276. https://doi.org/10.1089/big.2017.29024.cpr

Bussy, A., & Zheng, H. (2023). Responses of FDI to geopolitical risks: The role of governance, information, and technology. *International Business Review, 32*(4), https://doi.org/10.1016/j.ibusrev.2023.102136

Caldara, D., & Iacoviello, M. (2022). Measuring geopolitical risk. *American Economic Review*, *112*(4), 1194-1225. https://doi.org/10.1257/aer.20191823

Carney, M. (2016). *Uncertainty, the Economy and Policy*. Speech, Bank of England, London, June 30. Retrieved from https://www.bis.org/review/r160704c.pdf on June 30, 2023.

Chanegriha, M., Stewart, C., & Tsoukis, C. (2017). Identifying the robust economic, geographical and political determinants of FDI: an Extreme Bounds Analysis. *Empirical Economics*, *52*, 759-776. https://doi.org/10.1007/s00181-016-1097-1

Chowdhury, S., Sharma, R.R., & Yu, Y. (2022). Inward foreign direct investment in emerging economies: A review and future research avenues. *Review of International Business and Strategy*, *33*(5), 717-739. https://doi.org/10.1108/RIBS-03-2022-0033

Dimitrova, A., Triki, D., & Valentino, A. (2022). The effects of business-and non-business-targeting terrorism on FDI to the MENA region: The moderating role of political regime. *International Business Review*, *31*(6). https://doi.org/10.1016/j.ibusrev.2022.101976

Dorożyński, T., Dobrowolska, B., & Kuna-Marszałek, A. (2020). Institutional Quality in Central and East European Countries and Its Impact on FDI Inflow. *Entrepreneurial Business and Economics Review*, *8*(1), 91-110. https://doi.org/10.15678/EBER.2020.080105

Fang, J., Chen, L., Wang, X., & George, B. (2018). Not all posts are treated equal: an empirical investigation of post replying behavior in an online travel community. *Information & Management, 55*(7), 890-900. https://doi.org/10.1016/j.im.2018.04.003

Farris, D.R., & Sage, A.P. (1975). On the use of interpretive structural modelling for worth assessment. *Computers & Electrical Engineering*, *2*(2/3), 149-174.

Gao, G.Y., Wang, D.T., & Che, Y. (2018). Impact of historical conflict on FDI location and performance: Japanese investment in China. *Journal of International Business Studies*, *49*, 1060-1080. https://doi.org/10.1057/s41267-016-0048-6

Giambona, E., Graham, J.R., & Harvey, C.R. (2017). The management of political risk. *Journal of International Business Studies*, *48*(4), 523-533. Retrieved from https://people.duke.edu/~charvey/Research/Published_Papers/P125_The_management_of.pdf on July 2, 2023.

Gonchar, K., & Greve, M. (2022). The impact of political risk on FDI exit decisions. *Economic Systems*, *46*(2). https://doi.org/10.1016/j.ecosys.2022.100975

Gray, C.S., & Sloan, G. (2014). *Geopolitics, geography and strategy*. Routledge.

Gupta, M., Dennehy, D., Parra, C.M., Mantymaki, M., & Dwivedi, Y.K. (2023). Fake news believability: The effects of political beliefs and espoused cultural values. *Information & Management*, *60*(2), https://doi.org/10.1016/j.im.2022.103745

Haider, M., & Anwar, A. (2014). *Impact of terrorism on FDI flows to Pakistan*. MPRA Paper 57165, University Library of Munich. Germany. https://doi.org/10.2139/ssrn.2463543

Hoffman, F.G. (ed.) (2007). *Conflict in the 21st century: The rise of hybrid wars.* Arlington: Potomac Institute for Policy Studies.

Hua, J., Chen, Y., & Luo, X. (2018). Are we ready for cyberterrorist attacks?—Examining the role of individual resilience. *Information & Management*, *55*(7), 928-938, https://doi.org/10.1016/j.im.2018.04.008

Jaseckova, G., & Vartiak, L. (2023). Vernadsky's Concept of the Noosphere in a Global Management Environment: Searching for Ways to Exit Global Crises. *Education*, *3*(2), 328-331. https://doi.org/10.55677/ijssers/V03I2Y2023-15

Jaworek, M., Karaszewski, W., & Kuczmarska, M. (2020). Pandemic risk: doesn't it really matter? Foreign direct investment after COVID-19. *Economics and Law, 19*(2), 275-290. https://doi.org/10.12775/EiP.2020.019

Jena, J., Sidharth, S., Thakur, L.S., Kumar Pathak, D., & Pandey, V.C. (2017). Total Interpretive Structural Modeling (TISM): approach and application. *Journal of Advances in Management Research, 14*(2), 162-181. https://doi.org/ 10.1108/JAMR-10-2016-0087

Jost, P.J., Pünder, J., & Schulze-Lohoff, I. (2020). Fake news - Does perception matter more than the truth?. *Journal of Behavioral and Experimental Economics*, *85*, https://doi.org/10.1016/j.socec.2020.101513

Kietzmann, J., Lee, L.W., McCarthy, I.P., & Kietzmann, T.C. (2020). Deepfakes: Trick or treat?. *Business Horizons, 63*(2), 135-146, https://doi.org/10.1016/j.bushor.2019.11.006

Kim, K.K., Lee, A.R., & Lee, U-K. (2019). Impact of anonymity on roles of personal and group identities in online communities. *Information & Management, 56*(1), 109-121. https://doi.org/10.1016/j.im.2018.07.005

Knight, F.H. (1921). *Risk, uncertainty and profit.* Houghton Mifflin.

Li, J., Van Assche, A., Fu, X., Li, L., & Qian, G. (2022). The Belt and Road Initiative and international business policy: A kaleidoscopic perspective. *Journal of International Business Policy, 5*, 135-151. https://doi.org/10.1057/s42214-022-00136-x

Lu, B., & Liu, W. (2022). *Does Comprehensive Geopolitical Risk Deter FDI Outflows: Evidence from China. Defence and Peace Economics*. https://doi.org/10.1080/10242694.2022.2160140

Luo, D.Y. (2021). *Make Money Move: Understanding the Nexus Between Geopolitical Risk and Foreign Direct Investment*. https://doi.org/10.14288/1.0400154

Mazzotta, S. (2020). *Recent evolution of Chinese Foreign Direct Investment: Sino-European economic relationship through the investment policies*. Università Ca' Foscari Venezia.

Mirhoseini, M., Early, S., El Shamy, N., & Hassanein, K. (2023). Actively open-minded thinking is key to combating fake news: A multimethod study. *Information & Management*, *60*(3), https://doi.org/10.1016/j.im.2023.103761

Mionel, V., Neguț, S., & Mionel, O. (2020). Pandemopolitics. How a public health problem become a geopolitical and geoeconomic issue*. Eurasian Geography and Economics, 61*(4-5), 389-403. https://doi.org/ 10.1080/15387216.2020.1828125

Muradov, I. (2022). The Russian hybrid warfare: the cases of Ukraine and Georgia. *Defence Studies*, *22*(2), 168-191. https://doi.org/10.1080/14702436.2022.2030714

Mustak, M., Salminen, J., Mäntymäki, M., Rahman, A., & Dwivedi, Y.K. (2023). Deepfakes: Deceptions, mitigations, and opportunities. *Journal of Business Research*, *154*, https://doi.org/10.1016/j.jbusres.2022.113368

NATO (2023). NATO's response to hybrid threats. Retrieved from https://www.nato.int/cps/en/natohq/topics_156338.html on March 16, 2023.

Ou-Yang, R., & Kim, Y. (2022). *Geopolitics of Chinese Outward FDI and Its Implications for Asia-Pacific Middle Powers. In The Strategic Options of Middle Powers in the Asia-Pacific*. 57-82. Routledge. https://doi.org/10.1080/00396338.2020.1763608

Pastor, L., & Veronesi, P. (2013). Political uncertainty and risk premia. *Journal of Financial Economics*, *110*(3). https://doi.org/10.1016/j.jfineco.2013.08.007

Petrie, L. (2022). *The News and Social Media Algorithms: An Evaluation of Serendipity in the Infosphere*. Journalism Undergraduate Honors Theses.

Petratos, P.N. (2021). Misinformation, disinformation, and fake news: Cyber risks to business. *Business Horizons*, *64*(6), 763-774. https://doi.org/10.1016/j.bushor.2021.07.012

Pirca, A.M., & Lallie, H.S. (2023). An empirical evaluation of the effectiveness of attack graphs and MITRE ATT&CK matrices in aiding cyber-attack perception amongst decision-makers. *Computers & Security*, *130*, https://doi.org/10.1016/j.cose.2023.103254

Powers, M., & Choi, S.W. (2012). Does transnational terrorism reduce foreign direct investment? Business-related versus non-business-related terrorism. *Journal of Peace Research*, *49*(3), 407-422. https://doi.org/10.1177/0022343312436768

Rajan, R., Rana, N.P., Parameswar, N., Dhir, S., Sushil, & Dwivedi, Y.K. (2021). Developing a modified total interpretive structural model (M-TISM) for organizational strategic cybersecurity management. *Technological Forecasting and Social Change*, *170*, https://doi.org/10.1016/j.techfore.2021.120872

Ronfeldt, D., & Arquilla, J. (2022). *Rethinking Strategy and Statecraft for the Age of 4IR: Implications for Higher Education. Global Initiatives and Higher Education in the Fourth Industrial Revolution*, 133.

Ronfeldt, D., & Arquilla, J. (2020). The *continuing promise of the noosphere and noopolitik: 20 years after. In Routledge Handbook of Public Diplomacy*, 445-480. Routledge. https://doi.org/10.4324/9780429465543

Sebastian, A.G., & Warner, J.F. (2014). Geopolitical drivers of foreign investment in African land and water resources. *African Identities, 12*(1), 8-25. https://doi.org/ 10.1080/14725843.2013.868669

Shah, M.H. (2015). Terrorism and foreign direct investment: An empirical analysis of SAARC countries. *City University Research Journal*, *5*(2). Retrieved from https://mpra.ub.uni-muenchen.de/82008/8/MPRA_paper_82008.pdf on July 1, 2023.

Sorooshian, S., Tavana, M., & Ribeiro-Navarrete, S. (2023). From classical interpretive structural modeling to total interpretive structural modelling and beyond: A half-century of business research. *Journal of Business Research*, *157*. https://doi.org//10.1016/j.jbusres.2022.113642

Sushil, N. (2017). Modified ISM/TISM process with simultaneous transitivity checks for reducing direct pair comparisons. *Global Journal of Flexible Systems Management, 18*(4), 331-351. https://doi.org/ 10.1007/s40171-017-0167-3

Tang, Y., Chen, X.H., Kumer Sarker, P., & Baroudi, S. (2023). Asymmetric effects of geopolitical risks and uncertainties on green bond markets. *Technological Forecasting and Social Change, 189*, https://doi.org/10.1016/j.techfore.2023.122348

Tucker, J.A., Guess, A., Barbera, P., Vaccari, C., Siegel, A., Sanovich, S., Stukal, D., & Nyhan, B. (2018). *Social Media, Political Polarization, and Political Disinformation: A Review of the Scientific Literature*. https://doi.org/10.2139/ssrn.3144139

Vasist, P.N., & Krishnan, S. (2023). Disinformation 'gatecrashes' tourism: An empirical study. *Annals of Tourism Research*, *101*, https://doi.org/10.1016/j.annals.2023.103575

Verma, S.K. (2007). Energy geopolitics and Iran–Pakistan–India gas pipeline. *Energy Policy, 35*(6), 3280-3301. https://doi.org/10.1016/j.enpol.2006.11.014

Wach, K., Duong, C.D., Ejdys, J., Kazlauskaitė, R., Korzynski, P., Mazurek, G., … & Ziemba, E. (2023). The dark side of generative artificial intelligence: A critical analysis of controversies and risks of ChatGPT. *Entrepreneurial Business and Economics Review*, *11*(2), 7-30. https://doi.org/10.15678/EBER.2023.110201

Wang, Q., Yang, X., & Xi, W. (2018). Effects of group arguments on rumor belief and transmission in online communities: an information cascade and group polarization perspective. *Information & Management, 55*(4), 441-449. https://doi.org/10.1016/j.im.2017.10.004

Zaharna, R.S. (2016). Reassessing "Whose Story Wins": The Trajectory of Identity Resilience in Narrative Contests. *International Journal of Communication*, *10*(2016), 4407-4438. Retrieved from https://ijoc.org/index.php/ijoc/article/view/5121/1775 on April 3, 2023.

Appendix:

Table A1. Overview of experts' portfolio

Characteristics		N	%
Current industry represented	Division 10 – Manufacture of food products	17	42.5
	Division 20 – Manufacture of chemicals and chemical products	3	7.5
	Division 21 – Manufacture of basic pharmaceutical products and pharmaceutical preparations	3	7.5
	Division 23 – Manufacture of other non-metallic mineral products	5	12.5
	Division 28 – Manufacture of machinery and equipment n.e.c.	3	7.5
	Division 29 – Manufacture of motor vehicles, trailers and semi-trailers	3	7.5
	Other manufacturing divisions	6	15.0
Ownership of the company represented	Subsidiary of MNC	24	60.0
	Holding company	16	40.0

Source: own study.

Table A2. Information distortion sources: Questionnaire examples

Type	Geopolitics-related examples in the questionnaire
Disinformation	There have been mass media reports that indicate the possibility of an open military conflict between countries A and C. The news is based on an allegedly strained relationship between the countries. Information at the diplomatic and governmental level exclude the possibility of such an event.
Propaganda	A prominent politician from country A delivered a speech that was published by the media, in which he urged the international community to follow the WHO's guidance on COVID-19 and adopt a stricter pandemic policy in his country, thus hindering business operations. The speech did not receive any official endorsement or rejection from country A's government, leaving the issue unresolved and open to interpretation.
Reflexive control	The media report on the outcome of the presidential election in country A, where the new leader was known for criticizing country B harshly. This antagonism is now strongly discussed in the media. Country B is a major supplier of components for firms in your industry. Later, the foreign ministers of both countries meet, but their statements on cooperation are vague.
Emotional reflexive games	A representative of country A's government signed a contract for the delivery of energy for the next 15 with a contractor from country B. The agreement increased potential costs for your company. The representative of government A claimed ignorance of such activities and disassociated himself from the allegedly signed agreement during a press conference at the same time assuring investors that their interests be protected.
Colour revolutions	The government of country A passes a law that is unfavourable to investors from certain countries. The mainstream media is calling on the citizens and businesses of country A to boycott the bill. After several weeks of dealing with the protestants, the government of country A does not change its decision and the mass protests are brought under control.
False flag	The government of country A operates the transmission infrastructure of energy in its country through private companies. The transmission infrastructure was sabotaged by third parties from country B, disrupting supply chains and causing panic among the public. The government managed to restore the normal functioning of the infrastructure after a few days, but the private operators incurred significant financial losses.
Deep fake	A video clip featuring a prominent politician of country A criticizing your industry and announcing legal action against its firms goes viral on social media and mainstream media. However, the politician later holds a press conference, where he refutes such claims and tries to defuse the situation.
Cyber attack	A surge of cyberattacks targeting companies in country A has been observed in recent months. These companies lack adequate security arrangements and cannot control how their data is protected by their partners. The likelihood of similar attacks happening again is high.

Note: Country A – potential location of FDI; country B – third country in close geographical proximity to country A.
Source: own study.

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The contribution share of authors was equal and amounted to ⅓ for each of them.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.